

Combined EEE Parts List

Spacecraft/Project:	HERSCHAL	Document No:	SPIRE RAL_PRJ 0001095		
Instrument/Model:	SPIRE	Issue No:	3	REV:	0
Subsystem:		Date:	06 November 2004		

SUBJECT:	COMBINED LIST OF EEE PARTS FOR THE SPIRE INSTRUMENT	
PREPARED BY:	E A Clark	
DOCUMENT No:	SPIRE-RAL-PRJ-0001095	
APPROVED BY:	Name	Signature & Date
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DISTRIBUTION

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Subsystem:		Date:	06 November 2004	

CHANGE RECORD

ISSUE	DATE	CHANGE
1	25 Jan 2002	First Issue
2	15 th May 2003	List Updated for the IHDR 07/03
3	06 November 04	Updated for the IQR & CQM EIDP

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Subsystem:		Date:	06 November 2004	

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Subsystem:		Date:	06 November 2004		

DOCUMENT LIST


Note 1

Where a Sub-Systems / Institutes has combined some or all of their Declared lists and / or EEE parts etc into one document, that documents details are recorded below. Only the applicable pages are included in this document.

Note 2

The IFSI combined List DPU: "DCL + DML+ DPL" updated to SPIRE-IFS-DOC-001031 Iss 2: has been sent to ESA for approval, however CGS have subsequently issued these as individual documents, and it is this Declared List that replace the IFSI one in this document

Sub-System	Document	
Institute	Title	Number
ATC	DECLARED COMPONENTS LIST BSM	SPIRE-ATC-PRJ-000704 Iss1.2
CEA/SAp	DECLARED COMPONENTS LIST DRCU. SAp-SPIRE-VM-0098-14	SPIRE-SAP-DOC-
CEA/SBT	DECLARED COMPONENTS LIST Sorption Cooler	Not Applicable
CGS (IFSI)	DECLARED COMPONENTS LIST DCL (EEE Parts)	SPIRE-CGSDOC-002200 Iss
CSA/USK	Not Applicable	
JPL	DECLARED COMPONENTS LIST JFET's & BDA's	Not Supplied
LAM (LAS)	DECLARED COMPONENTS LIST SMEC	SPIRE-LAM-DOC-000932 Iss 1.1
LAM (LAS)	DECLARED COMPONENTS LIST FTS	SPIRE-LAM-DOC-000920 Iss 08
MSSL	Not Applicable	
UCF	DECLARED COMPONENTS LIST	Not Supplied

		<h2>Combined EEE Parts List</h2>		PRODUCT ASSURANCE Space Science and Technology Department	
Spacecraft/Project:	HERSCHAL	Document No:	SPIRE RAL_PRJ 0001095		
Instrument/Model:	SPIRE	Issue No:	3	REV:	0
Subsystem:		Date:	06 November 2004		

INTRODUCTION

The EEE Parts used by RAL Space Science Technical Departments (SSTD co-producers / sub-system suppliers are listed on spreadsheets or tables,

The parts fall into two categories:

- a.) Parts procured from CPPA (Tecnologica), therefore "Approved".
- b.) Self procured parts.

The self-procured parts also fall into two categories.

- b.1) Approved parts. Previously approved on other "space" instruments etc.
- b.2) Parts that will require ESA approval before use on flight hardware.

CPPA parts can be checked on the Tecnologica web site.

SCOPE

This document lists the "EEE parts" used in the provision of the supplied parts of the **Spire** Instrument from the following sub system suppliers. See Table 1.

Table 1

Sub-System / Institute		List Supplied
Acronym	Name	Yes / No / NA
ATC	Astronomy Technology Centre	Yes
UCF	Department of Physics and Astronomy, University of Wales, Cardiff,	No
CEA/Sap	CEA, Service d'Astrophysique Saclay	Yes
CEA/SBT	(CEA) Service du Basse Temperatures Grenoble	No
CSA/USK	Canadian Space Agency (CSA) University of Saskatchewan Canada	N/A
CGS (IFSI)	<i>Instituto di Fisica dello spazio Interplanetario, Rome</i>	Yes
JPL	JPL/Caltech, Pasadena	No
LAM (LAS)	Laboratoire d'Astronomie Spatiale, Marseille	Yes
MSSL	Mullard Space Science Lab Surrey	N/A

Spacecraft/Project:	HERSCHAL	Document	SPIRE-RAL-PRJ-001095		
Instrument/Model:	SPIRE	Issue No:	3	REV:	0
Subsystem:	FPU	Date:	06 November 2004		

APPENDIX A

FIRST / SPIRE	Laboratoire d'Astrophysique de Marseille QM EEE component list Doc. Ref. : LAM/ELE/FTS/QUA/010201	Date : 01-02-2001 Issue : 01 Rev. : 1 Page : 1/8
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FIRST / SPIRE / SMEC / MCU

QM EEE component list

Prepared by :	Date :
P. L.	02-02-2001
Verified by :	Date :
D. P.	

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Document change record

Révision			Modified Pages
Issue - rev.	Date	Approved by	
01 - 0	01-02-01		First issue
01 - 1	05-03-01		definitive choice of RAM memory

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Acronyms

AD	Applicable Document
AIV	Acceptance, Integration and Validation
AVM	Avionics Model
BOL	Beginning Of Life
BSM	Beam Steering Mirror
CEA	Commissariat à l'Energie Atomique
CQM	Cryogenic Qualification Model
EGSE	Electrical Ground Support Equipment
EOL	End of Life
ESA	European Space Agency
FIRST	Far InfraRed ans Submillimetre Telescope
FM	Flight Model
FPU	Focal Plane Unit
FTS	Fourrier Transform Spectrometer
FTSE	FTS warm Electronics
FTSP	FTS Preamplifier for the position encoder signals
H/K	HouseKeeping
H/W	Hardware
ICD	Interface Control Document
I/F	Interface
LAM	Laboratoire d'Astrophysique de Marseille
MAC	Multi Axes Controller
MCE	Mechanism Control Electronics
N/A	Not Applicable
RAL	Rutherford Appleton Laboratory
RD	Reference Document
ROE	Royal Observatory of Edinburgh
SAP	Service d'Astrophysique
S/C	Spacecraft
SM	Spare Model
SMEC	Spectrograph MEChanism
S/W	Software
TBC	To Be Confirmed
TBD	To Be Define
TBW	To Be Written
TC	Tele-Command
TM	TeleMetry
WE	Warm Electronics

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1. Introduction

1.1 *Purpose and scope*

This document provides a primarily list of the active components for the QM model of Herschel / Spire / FTS / MCU units (FSFTSL).

1.2 *Need Date*

Due to the general schedule of Herschel / Spire instrument, we need the QM components for the end of september 2001.

1.3 *Quality Level requirement*

For the QM model, we foresee to use at least commercial components and extended temperature (-40°C to +85°C).

Component must have :

same manufacturer as flight type,
same package as flight type.

1.4 *Configuration of MCU Cryogenic Model (CQM)*

- 2 MAC (multi axes controller),
- 2 SMEC (FTS mechanism I/F),
- 1 BSM (BSM mechanism I/F),
- 1 FDP (back pannel board).

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2. MANUFACTURERS

Code	Manufacturer	Country	Remarks
AND	Analog Devices	USA	
ACT	Actel Corporation	USA	
BBR	Burr Brown	USA	
CAN	ITT Cannon	USA	
CDI	Compensted Devices Inc.	USA	
DAL	Dale	USA	
DEU	Compagnie Deutsch	F	
FCI	Framatome Connectors Int.	F	
FRB	FRB Connectron	USA	
GLN	Glenair	USA	
HAM	Hamamatsu	J	
HAR	Harris	USA	Intersil
HON	Honeywell	USA	
INT	Intersil	USA	
INF	Infineon	D	
IRL	Infrared Laboratories Inc.	USA	
TEK	Tekelec	F	
LTC	Linear Technology Corp.	USA	
MAX	Maxim	USA	
MSC	Microsemi Corporation	USA	
NSC	National Semiconductor	USA	
OPD	Opto Diode	USA	
SEI	Space Electronic Inc.	USA	
SEM	Semicoa	USA	
SFR	Vishay Sfernice	F	
SIL	Siliconix	USA	
SPR	Sprague	F	
STM	STMicro	F	
TEM	Temic (Atmel)	F	
VIT	Vitramon	D	

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Generic Name	Package	Man	Function	Level	QM qty
CONNECTORS CRYO					
MDM-37PSB A172		CAN/F	MDM , 37 pins, gold plated, cryo type		29
MDM-37SSB A172		CAN/F	MDM , 37 sockets, gold plated, cryo type		26
MDM-37SBR A172		CAN/F	MDM , 37 sockets, 90° PCB, gold plated, cryo type		5
MDM-25PSB A172		CAN/F	MDM , 25 pins, gold plated, cryo type		11
MDM-25SSB A172		CAN/F	MDM , 25 sockets, gold plated, cryo type		5
MDM-25SBR A172		CAN/F	MDM , 25 sockets, 90° PCB, gold plated, cryo type		11
MDM male & female screw lock (set of 2)		CAN/F	set of 2 MDM male & female screw lock for rear panel mounting		50
MDM 90° angle mounting braket (set of 2)		CAN/F	set of 2 MDM 90° angle mounting braket		16
MDM female screw lock for PCB connectors (set of 2)		CAN/F	set of 2 MDM female screw lock for PCB connectors		16
MDM-37S dust caps		CAN/F			30
MDM-25S dust caps		CAN/F			16
MDM-37P dust caps		CAN/F			29
MDM-25P dust caps		CAN/F			11
CRYSTAL					
T807-40MHz	TO-5	CEPE/F	cristal		3

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DIODES					
1N3595US	SMD	MSC/US	switching diode		45
1N5712	DO-35	CDI/US	schotky diode		30
MICROCIRCUITS					
7805ALPRP	28-FP	SEi/US	16 bits ADC, 10 μ s		6
7846RP	28-FP	SEi/US	16 bits DAC, 10 μ s		9
AD524SD	16-DIL	AND/US	instrumentation amplifier		33
OP27AJ	TO-99	AND/US	operational amplifier		14
OP400ATC	28-LCC	AND/US	operational amplifier		10
OP467AY	14-DIL	AND/US	operational amplifier		36
LM117H	TO-39	NSC/US	voltage regulator		9
PM139AY	14-DIL	AND/US	voltage comparator		45
UT54LVDS031	16-FP	UMT/IUS	line driver (V _{cc} =5V)		3
UT54LVDS032	16-FP	UMT/US	line receiver (V _{cc} =5V)		3
HX6228	32-FP	HON/US	sram , 25 ns,128k		22
27C1512RP	40-DIL	SEi/US	PROM 32k x 16, 200 ns		9
TSC21020F	MFP-256	ATM/F	32/40 bit floating DSP		3
AD630SE	20-LCC	AND/US	modulator- demodulator		6
HS9-508B	16-FP	INT/US	analog multiplexer		6
AD584TH	TO-99	AND/US	voltage reference		10
A54SX32S	208-CQFP	ACT/US	16k gates antifuse FPGA		6
54HC04	14-FP	STM/F	inverters		6
54HC386	14-FP	STM/F	exclusive or gate		10

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FIRST / SPIRE / FTS / MCU

EEE PART LIST

User code : FSFTSL

DCL code L 058

Prepared by :	Date :
P. Levacher	26-09-2001
Approved by :	Date :
D. Pouliquen	

HERSCHEL / SPIRE / FTS	<p style="text-align: center;">LABORATOIRE D'ASTROPHYSIQUE DE MARSEILLE</p> <p style="text-align: center;">EEE PART LIST</p> <p style="text-align: center;">Doc. Ref. : LAM/ELE/SPI/QUA/000201</p>	Date : 26-09-2001 Issue : 08 Rev. : 00 Page : 2/21
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Document change record

Révision			
Issue - rev.	Date	Approved by	Modifications
01 - 00	29-03-00	D. P.	All : first issue
02 - 00	27-04-00	D. P.	<ul style="list-style-type: none"> • document reference has changed, LAM/ELE/FTS/QUA/000201 is obsolete. • scope paragraph is updated. • acronyms added. • connectors list added to this document in specific paragraphs. • SRAM (65656) reference completed. • EEPROM (28C010) reference completed. • FIFO (67204) reference completed. • qty of 26C31 increased. • reference and package of FPGA changed. • qty of DAC (7846) increased. • qty of decoder (54HC138) increased. • qty of transceiver (54HC245) increased. • qty of HS-508 increased. • reference of analog switch HS-302RH changed to HS-303RH. • transistors 2N2222 & 2N2907 suppressed. • LED for position encoder added • photodiodes for position encoder added • connector backshells added
03 - 00	12-12-00	D. P.	<ul style="list-style-type: none"> • lot of parts changed according to First PPL dated 07-06-2000 • Actel A1280 FPGA changed to RT14100, • ADC AD574A changed to SEI 9220LPRP (speed and power consumption), • voltage regulator diodes added, • instrumentation amplifier AMP01 added, • Jfet transistor (encoder preamplifier) changed by

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			<ul style="list-style-type: none"> TIA hybrid module, • relays added, • crystal added, • voltage regulator added.
04 - 00	01-02-01	D.P.	<ul style="list-style-type: none"> • new component / previous issue are noted "N" in the family column • cryo connector list added in § 6 • LLI components are also listed in § 7
04 - 01	08-02-01	D.P.	<ul style="list-style-type: none"> • correction of an error in the quantities in the LLI components list. • Mosfet added : 3N 163 • Type of Jfet transistor added : 2N 4341
05 - 00	09-02-01	D.P.	<ul style="list-style-type: none"> • line driver and receiver changed to Intersil types (HS9-26C31RH & C32RH) to be conform with the DPU interface • type of transistor added for launch latch drivers: 2N 5153
06 - 00	20-04-01	D.P.	<ul style="list-style-type: none"> • definitive choice of RAM : HX 6228 (SMDP65656 & UT9Q512 suppressed) • qty of 54HC386 increased to 30 • HS1-303RH confirmed (qty = 10), • qty of 1N5712 increased, • diode 1N4148 added • qty of 1N3595 increased, • 54HC04 changed to 54AC04 • precision on zener diode : 1N6312 & 1N6317
07 - 00	23-07-01	D.P.	<ul style="list-style-type: none"> • changes and adds in cryo canon list, • 2N2222A, 2N5154 added, 1N4569 added, • ATP on components identified, • some change in quantities for analog parts,
07 - 01	26-07-01	D.P.	<ul style="list-style-type: none"> • components in cryogenic temperature identified, • self procurement components identified, • correction of some writing errors.
08 - 00	26-09-01	D.P.	<ul style="list-style-type: none"> • Quantities of analog components updated, • Type of Jfet transistor changed to : 2N 4392 • Connector FRB 65 pins added, male, female, saver, • Types and quantities of connectors modified, • Precision added for the type of relay, • ATP for component identified,

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Acronyms

AD	Applicable Document
AIV	Acceptance, Integration and Validation
AVM	Avionics Model
BOL	Beginning Of Life
BSM	Beam Steering Mirror
CEA	Commissariat à l'Energie Atomique
CQM	Cryogenic Qualification Model
EGSE	Electrical Ground Support Equipment
EOL	End of Life
ESA	European Space Agency
FIRST	Far InfraRed ans Submillimetre Telescope
FM	Flight Model
FPU	Focal Plane Unit
FTS	Fourrier Transform Spectrometer
FTSE	FTS warm Electronics
FTSP	FTS Preamplifier for the position encoder signals
H/K	HouseKeeping
H/W	Hardware
ICD	Interface Control Document
I/F	Interface
LAM	Laboratoire d'Astrophysique de Marseille
MAC	Multi Axes Controller
MCE	Mechanism Control Electronics
N/A	Not Applicable
RAL	Rutherford Appleton Laboratory
RD	Reference Document
ROE	Royal Observatory of Edinburgh
SAP	Service d'Astrophysique
S/C	Spacecraft
SM	Spare Model
SMEC	Spectrograph MEChanism
S/W	Software
TBC	To Be Confirmed
TBD	To Be Define
TBW	To Be Written
TC	Tele-Command
TM	TeleMetry
WE	Warm Electronics
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1. SCOPE

This document provide a preliminary list of EEE components which would be used in the flight model of the MCU system (warm electronics + SMEC encoder preamplifier + SMEC position encoders).

The cryo harness connectors are included in this list, with savers and accessories.

2. REFERENCE DOCUMENTS

- [RD1] ESA/SCC QUALIFIED PARTS LIST (15-01-00)
- [RD2] EUROPEAN PREFERRED PARTS LIST (15-02-00)
- [RD3] CNES / QFT / IN0500 Liste préférentielle des composants
- [RD4] FIRST/Planck Preferred Part List ref. : FP-TLG-LI-0001 (07-06-2000)

3. ABBREVIATIONS

EPPL	European Preferred Parts List
QPL	Qualified Parts List
TD	Total Dose effects
SEL	Single Event Latch up
SEU	Single Event Upset

4. LEGENDE OF LIST COLUMNS

F	ESA component family
GENERIC NAME	part number
MAN.	manufacturer
PACKAGE	mechanical package or housing
FUNCTION	features of the component
QTY	total quantity needed, including attrition
PROC-SPEC	QPL or PPL, procurement specification
LEVEL	Quality level
Q	space qualified
L	LLI component

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5. MANUFACTURERS

Code	Manufacturer	Country	Remarks
AND	Analog Devices	USA	
ACT	Actel Corporation	USA	
ATM	ATMEL	USA / F	
BBR	Burr Brown	USA	
CAN	ITT Cannon	USA	
CDI	Compensted Devices Inc.	USA	
DAL	Dale	USA	
DEU	Compagnie Deutsch	F	
ELT	Eltec	USA	
FCI	Framatome Connectors Int.	F	
FRB	FRB Connectron	USA	
GLN	Glenair	USA	
HAM	Hamamatsu	J	
HAR	Harris	USA	Intersil
HON	Honeywell	USA	
INT	Intersil	USA	
ITF	Interfet	USA	
IRL	Infrared Laboratories Inc.	USA	
TEK	Tekelec	F	
LTC	Linear Technology Corp.	USA	
MAX	Maxim	USA	
MSC	Microsemi Corporation	USA	
NSC	National Semiconductor	USA	
OPD	Opto Diode	USA	
SEI	Space Electronic Inc.	USA	
SEM	Semicoa	USA	
SFR	Vishay Sfernice	F	
SIL	Siliconix	USA	
SPR	Sprague	F	
STM	STMicro	F	
TEM	Temec (Atmel)	F	
VIT	Vitramon	D	

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6. LIST OF CRYO CONNECTORS AND CABLES

F	Generic Name	FLT Part Type	Pack.	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
02 N	MDM-37P FR123	3401 029 01B 37PFR123		CAN/ F	37 cts MDM type connector, pin, + 4000mm AWG26 wires	SCC 3401/029	SCC B	8	Y	N	cryo @ 4K
02 N	MDM-37S FR114	3401 029 01B 37P FR114		CAN/ F	37 cts MDM type connector, socket, with 508 mm AWG28 wires	SCC 3401/029	SCC B	13	Y	N	cryo @ 4K
02 N	MDM-37S FR***	3401 029 01B 37PFR***		CAN/ F	37 cts MDM type connector, socket, with 500mm length of cable supplied by LAM	SCC 3401/029	SCC B	13	Y	N	cable type is TBD , cryo @ 4K
02	MDM-25S FR116	3401 029 01B 25SFR116		CAN/ F	25 cts MDM type connector, socket, uninsulated wire	SCC 3401/029	SCC B	5	Y	N	cryo @ 4K
02	MDM- 25P FR136 (MDM-25PCBR)	3401 029 01B 25PFR136		CAN/ F	25 cts MDM type connector, pin, 90° PCB	SCC 3401/029	SCC B	5	Y	N	cryo @ 4K
2	MDM-37 PS (SAVER)	3401 041 06B 37PS		CAN/ F	MDM connector saver, 37 cts	SCC 3401/041	SCC B	35	Y	N	cryo @ 4K
2	MDM-25 PS (SAVER)	3401 041 04B 25PS		CAN/ F	MDM type connector saver, 25 cts	SCC 3401/041	SCC B	7	Y	N	cryo @ 4K

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2	MDM male & female screwlock (set of 2)	3401 032 01		CAN/ F	set of 2 MDM male & female screwlock for front panel mounting	SCC 3401/032	SCC B	28	Y	N	cryo @ 4K
2	MDM male & female screwlock (set of 2)	3401 032 02		CAN/ F	set of 2 MDM male & female screwlock for rear panel mounting	SCC 3401/032	SCC B	28	Y	N	cryo @ 4K
2	MDM 90° angle mounting braket	3401 032 03		CAN/ F	set of 2 MDM 90° angle mounting braket	SCC 3401/032	SCC B	5	Y	N	cryo @ 4K
2	MDM male screwlock for savers (set of 2)	3401 032 05		CAN/ F	set of 2 MDM male screwlock assembly for saver	SCC 3401/032	SCC B	22 (tbc)	Y	N	cryo @ 4K
2	MDM female screwlock for PCB connectors	3401 032 06		CAN/ F	set of 2 MDM female screwlock for PCB connectors	SCC 3401/032	SCC B	5	Y	N	cryo @ 4K
2	MDM-accessories			GLN/ US	backshell for 37 cts MDM connector	TBD	TBD	TBD			cryo @ 4K

	CABLES										
	cable with 11 shielded twisted pairs + general shield			TBD	AWG 30 (TBC)	TBD	TBD	100m			cryo @ 4K self procurement

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7. LIST OF IDENTIFIED LLI COMPONENTS

F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
08	7805ALPRP	7805ALPRPFK	28-FP	SEI/ US	16 bits analog digital converter, 10 µs	7805ALPRP 0319.99	E	10	N	Y	prefered type / ATP 09-04
08	7846RP	7846RPFS	28-FP	SEI/ US	16 bits Digital Analog converter, 10 µs	7846RP0728 .99	S	15	N	Y	prefered type / ATP 09-04
08	27C1512RP	27C1512RPDK	40-DIL	SEI/ US	32k x 16 PROM, 200ns	TL-DS-007	K	18	N	Y	prefered type / ATP 09-04
08	AD630SE/883	5962-89807012A	20-LCC	AND/ US	modulator/ demodulator	5962-89807	B	10	N	Y	obsolete type, ATP 09-04

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8. LIST OF EEE PARTS

New component / previous issue are noted "N" in the Family column.

F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LLI	Remarks
CAPACITORS											
01	805 TI $47 \text{ p} \leq C \leq 1.5 \text{ n}$		chip 0805	VIT/D	ceramic chip capacitor, type I, 50 V	SCC 3009/003	SCC C	TBD	Y	N	
01	805 TII $1 \text{ n} \leq C \leq 27 \text{ n}$		chip 0805	VIT/D	ceramic chip capacitor, type II, 50 V	SCC 3009/008	SCC C	TBD	Y	N	
01	1812 TI $3.3 \text{ n} \leq C \leq 18 \text{ n}$		chip 1812	VIT/D	ceramic chip capacitor, type I, 50 V	SCC 3009/005	SCC C	TBD	Y	N	
01	1812 TII $22 \text{ n} \leq C \leq 270 \text{ n}$		chip 1812	VIT/D	ceramic chip capacitor, type II, 50 V	SCC 3009/010	SCC C	TBD	Y	N	
01	CLR 79 $15 \mu \leq C \leq 1200 \mu$ $8 \mu \leq C \leq 560 \mu$			SPR/ F	tantalum capacitor 15V 30V	SCC 3003/005	SCC C	TBD	Y	N	
CONNECTORS											
02	DEMA 9S NMB FO	3401 002 01 B DEMA9SNMBFO		CAN/ F	9 socket, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02	DBMA 25S NMB FO	3401 002 01 B DBMA25SNMBFO		CAN/ F	25 socket, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02 N	DBMA 25P NMB FO	3401 002 01 B DBMA25PNMBFO		CAN/ F	25 pin, subm. connector w/o cts	SCC 3401/001	SCC B	7	Y	N	
02	DCMA 37S NMB FO	3401 002 01 B DCMA37SNMBFO		CAN/ F	37 socket, subm. connector w/o cts	SCC 3401/001	SCC B	17	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
02 N	Contacts male (crimp #20/24)	3401 005 01 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02	Contacts female (crimp #20/24)	3401 005 02 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1100	Y	N	
02 N	Contacts male (crimp #26/28)	3401 005 03 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02 N	Contacts female (crimp #26/28)	3401 005 04 B		CAN/ F	socket contacts for D*MA connector	SCC 3401/005	SCC B	1000	Y	N	
02	DEBMA 9 PS NMB FO (saver)	3401 020 01 B BDEBMA 9 PS NMB FO		CAN/ F	subm. 9 p connector saver w/o contacts	SCC 3401/020	SCC B	14	Y	N	
02	DBBMA 25 PS NMB FO (saver)	3401 020 01 B DBBM 25 PS NMB FO		CAN/ F	subm. 25 p connector saver w/o contacts	SCC 3401/020	SCC B	24	Y	N	
02	DCBMA 37 PS NMB FO (saver)	3401 020 01 B DCBM 37 PS NMB FO		CAN/ F	subm. 37 p connector saver w/o contacts	SCC 3401/020	SCC B	34	Y	N	
02	Saver contacts	3401 021 01 B		CAN/ F	contacts for D*MA saver connector	SCC 3401/021	SCC B	2000	Y	N	
02	DE-60-20	3401 022 07 B		CAN/ F	dust cap for DEBMA 9S (red)	SCC 3401/022	SCC B	7	Y	N	
02	DB-60-20	3401 022 11 B		CAN/ F	dust cap for DBBMA 25S (red)	SCC 3401/022	SCC B	17	Y	N	
02 N	DB-59-20	3401 022 12 B		CAN/ F	dust cap for DBBMA 25P (red)	SCC 3401/022	SCC B	7	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
02	DC-60-20	3401 022 13 B		CAN/ F	dust cap for DCBMA 37S (red)	SCC 3401/022	SCC B	17	Y	N	
02	screw-lock assembly (female)	3401 022 01 B NMB variant 01		CAN/ F	screw-lock assembly (female) for D*MA connectors	SCC 3401/022	SCC B	27	Y	N	
02	screw-lock assembly (female)	3401 022 01 B NMB variant 06		CAN/ F	screw-lock assembly (female) for D*MA connectors saver	SCC 3401/022	SCC B	72	Y	N	
02 N	KNB 065 13 10 110	3401 016 01B 05 MC 33 33 33		FRB/ F	KNB type, right angle PCB 65 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 084 13 10 110	3401 016 01B 07 MC 33 33 33		FRB/ F	KNB type, right angle PCB 84 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 120 13 10 111	3401 016 01B 10 MC 35 35 35		FRB/ F	KNB type, right angle PCB 120 contacts pins connector	SCC 3401/016	SCC B	7	Y	N	
02 N	KNB 065 26 30 121	3401 016 01B 17 FD 36 36 36		FRB/ F	KNB type, PCB, 65 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	L	Remarks
02	KNB 084 26 30 121	3401 016 01B 19 FD 36 36 36		FRB/ F	KNB type, PCB, 84 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02	KNB 120 26 30 121	3401 016 01B 22 FD 36 36 36		FRB/ F	KNB type, PCB, 120 contacts recept. connector	SCC 3401/016	SCC B	7	Y	N	
02 N	KNB 065 SAVER	3401 016 01B 17 FM 00 00 00		FRB/ F	KNB type, 65 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 084 SAVER	3401 016 01B 19 FM 00 00 00		FRB/ F	KNB type, 84 contacts saver	SCC 3401/016	SCC B	13	Y	N	
02	KNB 120 SAVER	3401 016 01B 22 FM 00 00 00		FRB/ F	KNB type, 120 contacts saver	SCC 3401/016	SCC B	13	Y	N	

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	CRYSTAL										
03	T807	3501011XXB	TO-5	CMA/ F	crystal 40 MHz	SCC-3501- 011	SCC B	6	Y	N	PPL / ATP11-07
	DIODES										
04	1N3595US-1	JAN S 1N3595US- 1 Hrd Glass	SMD	MSC/ US	switching diode, 225mA, 125V	MIL-PRF- 19500/241	JAN S	196	Y	N	PPL / ATP 24-09
04	1N4148-1	510102302B	DO-35	MSC/ US	switching diode,	SCC 5101/023	JAN S	12	Y	N	PPL / ATP 24-09
04	1N6312/US	JAN S 1N6312/US	B-SQ- Melf	MSC/ US	voltage regulator diode, 0.5W, 3.3V	MIL-PRF- 19500/533	JAN S	6	Y	N	PPL / ATP 08-10
04	1N6317/US	JAN S 1N6317/US	B-SQ- Melf	MSC/ US	voltage regulator diode, 0.5W, 5.1V	MIL-PRF- 19500/533	JAN S	6	Y	N	PPL / ATP 08-10
04	1N4569A-1	JANS1N4569AUR- 1	DO- 213AA	CDI/ US	voltage regulator, temp comp., 0.4W, 6.4V	MIL-PRF- 19500/452	JAN S	7	Y	N	PPL / ATP 08-10
04	1N5712-1	CDS5712-1	DO-35	CDI/ US	Schottky diode, 20V, 35mA	MIL-PRF- 19500/445	Class S	91	N	N	PPL / ATP 24-09
04	OD-880W		die	OPD/ US	LED (position encoder)	TBD	TBD	7	N		only for comments, self procurement (in mechanism @ 4K)
04	S2386-18K		die	HAM/ J	photodiode (pos. encoder)	TBD	TBD	17	N		only for comments, self procurement (in mechanism @ 4K)

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	CONVERTERS										
08	7805ALPRP	7805ALPRPFE	28-FP	SEI/ US	16 bits analog digital converter, 10 µs	7805ALPR P0319.99	E	10	N	Y	preferred type / ATP 09-04
08	7846RP	7846RPFS	28-FP	SEI/ US	16 bits Digital Analog converter, 10 µs	7846RP07 28.99	S	15	N	Y	preferred type / ATP 09-04
	INSTR; AMPLIFIER										
08	AD524SD	5962-8853901VEA	16-DIL	AND/ US	instrumentation amplifier	5962- 88539	QML-V	44	Y	N	preferred type / ATP 24-09
	OPERATIONAL AMPLIFIER										
08	OP27AJ	M38510/13503 SGA	TO-99	AND/ US	operational amplifier	MIL-M- 38510/135	Class S	17	Y	N	preferred type / ATP 24-09
08	OP400ATC	5962-8777101V3A	28-LCC	AND/ US	operational amplifier (quad)	5962- 87771	Class V	54	Y	N	preferred type / ATP 24-09
08	OP467AY	5982-9325801VCA	14-DIL	AND/ US	operational amplifier (quad)	5962- 93258	Class S	44	Y	N	preferred type / ATP 24-09
	VOLTAGE REGULATOR										
08	LM117H	5962- R9951703VXA	TO-39	AGI/ US	voltage regulator	SMD-5962- 99517 B	Class S	17	Y	N	PPL / ATP 24-09 + ATP 08-10

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	VOLTAGE COMPARATOR										
08	HS9-139HR	5962F9861301VXC	14-FP	NSC/US	voltage comparator (quad)	SMD-5962-986301	V	58	Y	N	
	LINE DRIVER RECEIVER										
08	HS9-26C31RH-QS9000	5962F9666301VEC	16-FP	SIL/US	line driver, 3 state output	5962-96663	QML-V	7	Y	N	PPL /ATP 11-07
08	HS9-26C32RH-QS9000	5962F9568901VEC	16-FP	SIL/US	line receiver	5962-95689	QML-V	7	Y	N	PPL /ATP 11-07
	MEMORY										
08	HX 6228/TVHC	6962H9853701VXC	32-FP	HON/US	128k x 8 SRAM, 25 ns	5962-98537	QML-V	54		N	ATP 11-07
08	27C1512RP	27C1512RPDK	40-DIL	SEI/US	32k x 16 PROM, 200ns	TL-DS-007	K	18	N	Y	ATP 09-04

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	DSP										
08	TSC21020F	5962-9953901VXC	MFP-256	ATM- F	32/40 bit Floating Point DSP	5962- 99539	SCC B	6	N	N	PPL / ATP 11-07
	MODEM & SWITCHES										
08	AD630SE/883	5962-89807012A	20-LCC	AND/ US	modulator/ demodulator	5962- 89807	B	10	N	Y	obsolete, ATP 09-04
08	HS9-508BRH- QS9000	5962F9674202 VEC	16-FP	INT/ US	8 channel analog multiplexer	5962- 96742	QML V	27	Y	N	prefered type / ATP 24-09
08	HS9-303RH	5962R9581301 VCC	14-FP	INT/ US	analog switch	5962- 95813	QML V	38	Y	N	ATP 24-09
	VOLTAGE REFERENCE										
08	AD584TH	5962-3812802 VGA	TO-99 (H8)	AND/ US	programmable voltage reference	5962- 38128	QML-V	17		N	prefered type / ATP 24-09
	FPGA & GATES										
08	RT54SX32S	SA/032003EYC	208- CQFP	ACT/ US	16k gates Antifuse FPGA	SMD-5962- 01508	Class S	12	N	N	prefered type / ATP 11-07
08	54AC04	5962-8760901VXA	FP	STM/ F	inverter gate	SMD-5962- 87609	SCC B	7	Y	N	PPL / ATP 11-07
08	54HC386	920112102BF	FP	STM/ F	exclusive or gate	SCC-9201- 121	SCC B	0 (TBC)	Y	N	PPL / ATP 11-07

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
	RELAYS										
09	ETD2G 26 (TBC)	3601 012 ...		LEA/ US	relay, 2 PDT, 26 V	SCC-3601- 012	SCC B	0 TBC	Y	N	PPL
09	DFIC 26	3602 019 02 B 26V		LEA/ US	latching relay, 2PDT, 26 V	SCC-3602- 019	SCC B	16	Y	N	PPL
	RESISTORS										
10	model 104, 5% 10 Mohms			ELT/ US	tubular resistor with leads, 5 %			40		N	T = 4K
10	model 104, 5% 20 Mohms			ELT/ US	tubular resistor with leads, 5 %			60		N	T = 4K
10	PHR 1206	PHR 1206 ...	1206 SMD	DAL/ US	chip resistor, 0.1 %, 25 ppm/°C, 250 mW	MIL-R- 55342/7	FRL R	TBD	Y	N	
10	RM1206 5.6 < R < 1M		1206 SMD	DAL/ US	chip resistor, 1 %, 50 ppm/°C, 250 mW	MIL-R- 55342/7	FRL R	TBD	Y	N	
10	RNC 50 1 < R < 1M (TBC)			SFR/ F	film resistor, 0.5%, 50 ppm/°C	SCC 4001/009	SCC C	TBD	Y	N	
10	SIL 47 < R < 1M (TBC)		SIL- ?	SFR/ F	film resistor, 2%, E48	SCC 4005/003	SCC C	TBD	Y	N	
	TRANSISTORS										
12	2N2219A		TO-39	STM/ F	NPN transistor, 800 mW	SCC-5201- 003	SCC B	7	Y	N	PPL / ATP 24-09
12	2N2905A (TBC)		TO-39	STM/ F	PNP transistor, 600 mW	SCC-5202- 002	SCC B	0	Y	N	PPL, qty =TBC

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F	Generic Name	FLT Part Type	Package	Man / C	Function	Proc-Spec	Level	Qty	Q	LL I	Remarks
12	2N2222A	520100204B	TO-18	STM/ F	NPN transistor, 400 mW	SCC-5201- 002	SCC B	34	Y	N	PPL / ATP 24-09
12	2N2907A	520200102B	TO-18	STM/ F	PNP transistor, 400 mW	SCC-5202- 001	SCC B	34	Y	N	PPL / ATP 24-09
12	2N5153	520400202B	TO-39	STM/ F	PNP transistor, 1000 mW	SCC-5204- 002	SCC B	71	Y	N	PPL / ATP 24-09
12	2N5154	520301002B	TO-39	STM/ F	NPN transistor, 1000 mW	SCC-5203- 010	SCC B	71	Y	N	PPL / ATP 24-09
12	3N163		TO-72	SIL/U S	Mosfet transistor			30			in cryo mechanism @ 4K
12	2N4392		TO-18	SIL/U S	FET transistor		class S	14			
12	TIA front end (TBC)		TO-5	IRL/ US	preamplifier hybrid module		TBD	0 TBC	N		only for comments, self procurement if used in mechanism @ 4K
12	MB-1 bracket (TBC)			IRL/ US	bracket for TIA preamplifier		TBD	0 TBC	N		only for comments, self procurement if used in mechanism @ 4K



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HERSCHEL DPU_s/ICU

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REGISTRAZIONE DELLE MODIFICHE / CHANGE RECORD

EDIZIONE ISSUE	DATA DATE	AUTORIZZAZIONE CHANGE AUTHORITY	OGGETTO DELLA MODIFICA E SEZIONI AFFETTE REASON FOR CHANGE AND AFFECTED SECTIONS
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1. SCOPE

The scope of this document is to define the components to be used in the HERSCHEL DPUs/ICU Project. This document is based on the HERSCHEL DPUs/ICU Project architecture defined for the Critical Design Review.



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2. APPLICABLE & REFERENCE DOCUMENTS

2.1 APPLICABLE DOCUMENTS

AD	DOC. N.	ISSUE	TITLE
1	HERS-GEN-PL-CGS-002	DRAFT	HERSCHEL DPUs/ICU Product Assurance Plan

2.2 REFERENCE DOCUMENTS

RD	DOC. N.	ISSUE	TITLE

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3. METHODOLOGY FOR THE COMPILATION OF THE PRESENT DCL

The methodology used in the compilation of the DCL respects the following fields of table:

ID	Sequentially line item number to identify the device type
COMPONENT TYPE	Description of the part function, generic part number and value, tolerance, max rating for passives
FM COMPONENT P/N	Specific Hi-Rel Part Number (MIL or DSCC or ESA, ecc.) indicated as would be stated in the relevant procurement specification (Partmarking)
CASE	Component package
SPECIFICATION	Detail Procurement Specification Number
QPL/QML REFERENCE	Identification reference of qualification status of the parts (ESA or Nasa PPL or QML or QPL)
QUALITY LEV.	Qualification Level (Failure Rate Level for passive) indicates the screening level to which the part is bring procured
MANUFACTURER	Manufacturer of the device
REMARKS	User Specific comments (e.g.: Requested for approval number issued by the part user)
UNIT/BOARD Q.TY	User need quantity of identified part for Unit/Board (see Legenda Nr.1 for unit acronyms, Legenda Nr.2 for board acronyms and para. 3.1, 3.2, 3.3 for Unit/Board configuration)



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HERSCHEL DPUs/ICU

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Legenda Nr.1

ACRONYM	UNIT NAME
HI	HIFI ICU Unit
SD	SPIRE DPU Unit
PD	PACS DPU Unit

Legenda Nr.2

ACRONYM	BOARD NAME
DC1	DC/DC Converter Main
DC2	DC/DC Converter Redundant
PL1	PL IF Board Main
PL2	PL IF Board Redundant
CP1	CPU Board Main
CP2	CPU Board Redundant
MB	Motherboard



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3.1 HIFI ICU UNIT CONFIGURATION

The current HIFI ICU Unit configuration foresees the following boards:

Board name	Q.ty
DC/DC Converter Main	1
DC/DC Converter Redundant	1
PL IF Board Main	1
PL IF Board Redundant	1
CPU Board Main	1
CPU Board Redundant	1
Motherboard	1



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3.2 SPIRE DPU UNIT CONFIGURATION

The current SPIRE DPU Unit configuration foresees the following boards:

Board name	Q.ty
DC/DC Converter Main	1
DC/DC Converter Redundant	1
PL IF Board Main	1
PL IF Board Redundant	1
CPU Board Main	1
CPU Board Redundant	1
Motherboard	1



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3.3 PACS DPU UNIT CONFIGURATION

The current PACS DPU Unit configuration foresees the following boards:

Board name	Q.ty
DC/DC Converter Main	1
DC/DC Converter Redundant	1
PL IF Board Main	1
PL IF Board Redundant	1
CPU Board Main	1
CPU Board Redundant	1
Motherboard	1

 CARLO GAVAZZI SPACE SpA	HERSCHEL DPUs/ICU	N° Doc: <i>Doc N°:</i>	
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ANNEX 1. DECLARED COMPONENTS LIST

On the next pages, follows an attachment (ANNEX 1) which contains the complete Declared Components List.

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
ANALOG IC									
Ana_1	Operational Amplifier OP27SA J5	M38510/13503SGA	CAN 8	MIL-M-38510/135	QML-38535	S	AD		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Ana_2	Instrumentation Amplifier AD524SD/QMLV	5962-8853901VEA	16 CDIP	5962-88539	QML-38535	V	AD	Part in the CPP list.	
Ana_3	Positive Voltage Regulator HS2-117RH	5962F9954701VUC	TO 39	5962-99547	QML-38535	V	INTERSIL		HI/DC1:5, HI/DC2:5, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Ana_4	Negative Voltage Regulator LM137H	M38510/11803SXA	TO 39	MIL-M-38510/118	QML-38535	S	NATIONAL		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ana_5	Voltage reference AD584TH/QMLVR	5962R3812802VGA	CAN 8	5962-38128	QML-38535	V	AD		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1, HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ana_6	Precision Quad Op. Amp. OP400AY/QML	5962-8777101VCA	14 CDIP	5962-87771	QML-38535	V	AD	Part in the CPP list.	HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Ana_7	Precision Quad.Voltage Comparator HS9-139RH	5962F9861301VXC	CDFP3-F14	5962-98613	QML-38535	V	INTERSIL		HI/DC1:3, HI/DC2:3, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Ana_8	Pulse Width Modulator Controller Current Mode UC1846JQMLV	5962-8680601VEA	16 DIP	5962-86806	QML-38535	V	TI		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Ana_9	Voltage Reg. High Efficiency UC1834JQMLV	5962-8774201VEA	16 DIP	5962-87742	QML-38535	V	TI		HI/DC1:3, HI/DC2:3

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Ana_10	Temperature Trasducer AD590MF/QMLV	5962-8757104VXA	2 FP	5962-87571	QML-38535	V	AD	Part in the CPP list.	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ana_11	Voltage Comparator/Buffer RH1011H	RH1011H		SEE REMARKS	SEE REMARKS		LINEAR TEC	Not in QPL, present in CPP list	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
CAPACITOR									
Cap_1	Tantalum Capacitor 8,2uF 60V 10% CLR79	M39006/22-0585	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/PL1:1, HI/PL2:1, HI/CP1:1, HI/CP2:1, SD/PL1:1, SD/PL2:1, SD/CP1:1, SD/CP2:1, PD/PL1:1, PD/PL2:1, PD/CP1:1, PD/CP2:1, HI/DC1:14, HI/DC2:14, SD/DC1:9, SD/DC2:9, PD/DC1:9, PD/DC2:9
Cap_2	Tantalum Capacitor 47uF 10V 10% CLR79	M39006/22-0485	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

**HERSCHEL DPUs/ICU
Declared Components List**

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Cap_3	Tantalum Capacitor 15uF 30V 10% CLR79	M39006/22-0545	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/PL1:1, HI/PL2:1, HI/CP1:3, HI/CP2:3, SD/PL1:1, SD/PL2:1, SD/CP1:3, SD/CP2:3, PD/PL1:1, PD/PL2:1, PD/CP1:3, PD/CP2:3, HI/DC1:9, HI/DC2:9, SD/DC1:9, SD/DC2:9, PD/DC1:9, PD/DC2:9
Cap_4	Tantalum Capacitor 68uF 30V 10% CLR79	M39006/22-0551	T2	MIL-PRF-39006/22	QPL-39006	R	MALLORY		
Cap_5	Tantalum Capacitor 33uF 15V 10% CLR79	M39006/22-0505	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_6	Tantalum Capacitor 10uF 50V 10% CLR79	M39006/22-0565	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/PL1:2, HI/PL2:2, SD/PL1:2, SD/PL2:2, PD/PL1:2, PD/PL2:2, HI/DC1:10, HI/DC2:10, SD/DC1:10, SD/DC2:10, PD/DC1:10, PD/DC2:10
Cap_7	Chip Ceramic Capacitor 10nF 100V 10%	CDR32BX103BKUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		HI/PL1:2, HI/PL2:2, SD/PL1:2, SD/PL2:2, PD/PL1:2, PD/PL2:2
Cap_8	Chip Ceramic Capacitor 15nF 100V 10%	CDR33BX153BKUR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		PD/CP1:1, PD/CP2:1
Cap_9	Chip Ceramic Capacitor 47nF 50V 10%	CDR33BX473AKUR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		

**HERSCHEL DPUs/ICU
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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Cap_10	Chip Ceramic Capacitor 100nF 50V 10%	CDR33BX104AKUR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		HI/PL1:56, HI/PL2:56, HI/CP1:73, HI/CP2:73, SD/PL1:48, SD/PL2:48, SD/CP1:73, SD/CP2:73, PD/PL1:33, PD/PL2:33, PD/CP1:99, PD/CP2:99, HI/DC1:27, HI/DC2:27, SD/DC1:16, SD/DC2:16, PD/DC1:16, PD/DC2:16
Cap_11	Chip Ceramic Capacitor 100pF 100V 1%	CDR32BP101BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		HI/PL1:8, HI/PL2:8, HI/CP1:1, HI/CP2:1, SD/PL1:8, SD/PL2:8, SD/CP1:1, SD/CP2:1, PD/PL1:8, PD/PL2:8, PD/CP1:1, PD/CP2:1
Cap_12	Chip Ceramic Capacitor 30pF 100V 5%	CDR32BP300BJWR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_13	Chip Ceramic Capacitor 39nF 50V 10% (C1210)	CDR33BX393AKWR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		
Cap_14	Chip Ceramic Capacitor 1nF 100V 10%	CDR32BP102BKWR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1,
Cap_15	Tantalum Capacitor 6.8µF 35V 10%	M39003/01-2784	CSR13	MIL-PRF-39003/01	QPL-39003	R	KEMET		
Cap_16	Tantalum Capacitor 15µF 20V 10%	M39003/01-2769	CSR13	MIL-PRF-39003/01	QPL-39003	R	KEMET		
Cap_17	Chip Ceramic Capacitor 1nF 100V 1%	CDR32BP102BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		PD/CP1:1, PD/CP2:1
Cap_18	Tantalum Capacitor 20µF 10V 10% CLR79	M39006/22-0482	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_19	Tantalum Capacitor 100µF 25V 10% CLR79	M39006/22-0531	T1	MIL-PRF-39006/22	QPL-39006	R	MALLORY-TANSITOR		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Cap_20	Ceramic Capacitor 100nF 100V 10%	CKR06BX104KR	CKR06	MIL-PRF-39014/2	QPL-39014	R	AVX-KEMET		
Cap_21	Ceramic Capacitor 470nF 50V 10%	CKR06BX474KR	CKR06	MIL-PRF-39014/2	QPL-39014	R	AVX-KEMET		

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Declared Components List**

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Cap_22	Ceramic Capacitor 1µF 50V 10%	CKR06BX105KR	CKR06	MIL-PRF-39014/2	QPL-39014	R	AVX-KEMET		HI/DC1:63, HI/DC2:63, SD/DC1:13, SD/DC2:13, PD/DC1:13, PD/DC2:13
Cap_23	Stack Capacitor 47µF 50V 10%	87106-039	case3(thru hole)	DSCC87106	SEE REMARKS		AVX-PRESIDIO	Not in QPL, present in CPP list	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_24	Chip Ceramic Capacitor 470pF 100V 1%	CDR31BP471BFUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_25	Chip Ceramic Capacitor 1nF 100V 10%	CDR31BX102BKUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		
Cap_26	Chip Ceramic Capacitor 3.3nF 100V 10%	CDR31BX332BKUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		
Cap_27	Chip Ceramic Capacitor 4.7nF 100V 10%	CDR31BX472BKUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		HI/DC1:6, HI/DC2:6, SD/DC1:6,
Cap_28	Chip Ceramic Capacitor 10nF 50V 10%	CDR31BX103AKUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		HI/DC1:38, HI/DC2:38, SD/DC1:10, SD/DC2:10, PD/DC1:10, PD/DC2:10
Cap_29	Chip Ceramic Capacitor 15nF 50V 10%	CDR31BX153AKUR	0805	MIL-PRF-55681/7	QPL-55681	R	KEMET		
Cap_30	Chip Ceramic Capacitor 220pF 100V 1%	CDR32BP221BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_31	Chip Ceramic Capacitor 330pF 100V 1%	CDR32BP331BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_32	Chip Ceramic Capacitor 430pF 100V 1%	CDR32BP431BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_33	Chip Ceramic Capacitor 470pF 100V 1%	CDR32BP471BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		HI/DC1:4, HI/DC2:4, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Cap_34	Chip Ceramic Capacitor 680pF 100V 1%	CDR32BP681BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_35	Chip Ceramic Capacitor 4.7nF 100V 10%	CDR32BX472BKUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_36	Chip Ceramic Capacitor 33nF 50V 10%	CDR32BX333AKUR	1206	MIL-PRF-55681/8	QPL-55681	R	KEMET		
Cap_37	Chip Ceramic Capacitor 1nF 100V 1%	CDR33BP102BFUR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		
Cap_38	Chip Ceramic Capacitor 3.3nF 50V 1%	CDR33BP332AFUR	1210	MIL-PRF-55681/9	QPL-55681	R	KEMET		HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Cap_39	Chip Ceramic Capacitor 3.3nF 100V 1%	CDR34BP332BFUR	1812	MIL-PRF-55681/10	QPL-55681	R	KEMET		
Cap_40	Chip Ceramic Capacitor 33nF 100V 10%	CDR34BX333BKUR	1812	MIL-PRF-55681/10	QPL-55681	R	KEMET		
Cap_41	Chip Ceramic Capacitor 47nF 100V 10%	CDR34BX473BKUR	1812	MIL-PRF-55681/10	QPL-55681	R	KEMET		
Cap_42	Chip Ceramic Capacitor 100nF 50V 10%	CDR34BX104AKUR	1812	MIL-PRF-55681/10	QPL-55681	R	KEMET		
Cap_43	Chip Ceramic Capacitor 180nF 50V 10%	CDR34BX184AKUR	1812	MIL-PRF-55681/10	QPL-55681	R	KEMET		
Cap_44	Chip Ceramic Capacitor 4.7nF 100V 1%	CDR35BP472BFUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
Cap_45	Chip Ceramic Capacitor 10nF 100V 1%	CDR35BP103BFUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
									HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Cap_46	Chip Ceramic Capacitor 22nF 50V 1%	CDR35BP223AFUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
Cap_47	Chip Ceramic Capacitor 56nF 100V 10%	CDR35BX563BKUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
									HI/DC1:6, HI/DC2:6, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Cap_48	Chip Ceramic Capacitor 100nF 100V 10%	CDR35BX104BKUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
Cap_49	Chip Ceramic Capacitor 150nF 100V 10%	CDR35BX154BKUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
Cap_50	Chip Ceramic Capacitor 270nF 50V 10%	CDR35BX274AKUR	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
									HI/DC1:11, HI/DC2:11, SD/DC1:10, SD/DC2:10, PD/DC1:10, PD/DC2:10
Cap_51	Chip Ceramic Capacitor 470nF 50V 10%	CDR35BX474AKUS	1825	MIL-PRF-55681/11	QPL-55681	R	KEMET		
Cap_52	Chip Ceramic Capacitor 510pF 100V 1%	CDR32BP511BFUR	1206	MIL-PRF-55681/8	QPL-55681	R	AVX, KEMET		
									HI/PL1:29, HI/PL2:29, SD/PL1:23, SD/PL2:23, PD/PL1:16, PD/PL2:16
Cap_53	Chip Ceramic Capacitor 2.2nF 50V 1%	CDR32BP222AFUR	1206	MIL-PRF-55681/8	QPL-55681	R	AVX, KEMET		
									HI/DC1:1, HI/DC2:1
Cap_54	Tantalum Chip Capacitor 47uF 15V 10%	CWR29HK476KCHA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		
									HI/DC1:13, HI/DC2:13, SD/DC1:8, SD/DC2:8, PD/DC1:8, PD/DC2:8
Cap_55	Tantalum Chip Capacitor 15uF 35V 10%	CWR29MK156KCXA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		
									HI/DC1:7, HI/DC2:7, SD/DC1:5, SD/DC2:5, PD/DC1:5, PD/DC2:5
Cap_56	Tantalum Chip Capacitor 33uF 25V 10%	CWR29KK336KCHA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		

HERSCHEL DPUs/ICU
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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Cap_57	Tantalum Chip Capacitor 4.7uF 50V 10%	CWR29NK475KCHA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		HI/DC1:20, HI/DC2:20, SD/DC1:10, SD/DC2:10, PD/DC1:10, PD/DC2:10
Cap_58	Tantalum Chip Capacitor 47uF 20V 10%	CWR29JK476KCXA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Cap_59	Tantalum Chip Capacitor 22uF 10V 10%	CWR29FK226KCEA	CWR29	MIL- PRF-55365/11	QPL-55365	C	AVX Tantalum		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

**HERSCHEL DPUs/ICU
Declared Components List**

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
CONNECTOR									
Con_1	96-pin Female Solder Connector	KDC 096 2232	96-pin	SEE REMARKS	SEE REMARKS	NA	FRB	Not in QPL, present in CPP list	HI/MB:12, SD/MB:12, PD/MB:12
Con_2	96-pin Male Solder Connector 90°	KDC 096 1310	96-pin	SEE REMARKS	SEE REMARKS	NA	FRB	Not in QPL, present in CPP list	HI/PL1:2, HI/PL2:2, HI/CP1:2, HI/CP2:2, SD/PL1:2, SD/PL2:2, SD/CP1:2, SD/CP2:2, PD/PL1:2, PD/PL2:2, PD/CP1:2, PD/CP2:2, HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Con_3	60-pin Micro Strip Connector Male	536280-2	60-pin	AMP-spec. 108-1272	SEE REMARKS	NA	AMP	Not in QPL, present in CPP list	HI/CP1:2, HI/CP2:2, SD/CP1:2, SD/CP2:2, PD/CP1:2, PD/CP2:2
Con_4	60-pin Micro Strip Connector Female	536279-2	60-pin	AMP-spec. 108-1272	SEE REMARKS	NA	AMP	Not in QPL, present in CPP list	HI/CP1:2, HI/CP2:2, SD/CP1:2, SD/CP2:2, PD/CP1:2, PD/CP2:2
Con_5	9 removable crimp contacts male rectangular connector (DEMA 9P)	340100201BDEMA9PNMBFO	SEE ESA SCC 3401/002	ESA SCC 3401/002	ESA QPL	B	ITT CANNON		HI:2, SD:2, PD:2
Con_6	9 removable crimp contacts female rectangular connector (DEMA 9S)	340100201BDEMA9SNMBFO	SEE ESA SCC 3401/002	ESA SCC 3401/002	ESA QPL	B	ITT CANNON		HI:4, SD:4, PD:4
Con_7	15 removable crimp contacts female rectangular connector (DAMA 15S)	340100201BDAMA15SNMBFO	SEE ESA SCC 3401/002	ESA SCC 3401/002	ESA QPL	B	ITT CANNON		HI:4
Con_8	25 removable crimp contacts female rectangular connector (DBMA 25S)	340100201BDBMA25SNMBFO	SEE ESA SCC 3401/002	ESA SCC 3401/002	ESA QPL	B	ITT CANNON		HI:2
Con_9	25 removable crimp contacts male rectangular connector (DBMA 25P)	340100201BDBMA25PNMBFO	SEE ESA SCC 3401/002	ESA SCC 3401/002	ESA QPL	B	ITT CANNON		HI:8, SD:6
Con_10	9 contacts female rectangular connector (MDM 9S)	340102901B9SFR112	SEE ESA SCC 3401/029	ESA SCC 3401/029	ESA QPL	B	ITT CANNON		PD:6
Con_11	SCREW LOCK FEMALE (var.01) for connectors ESA SCC 3401/002	340102201BNMB	SEE ESA SCC 3401/022	ESA SCC 3401/022	ESA QPL	B	ITT CANNON		HI:40, SD:24, PD:12
Con_12	Crimp Contact 20P (for AWG 20, 22, 24) for connectors ESA SCC 3401/002	340100501B	SEE ESA SCC 3401/005	ESA SCC 3401/005	ESA QPL	B	ITT CANNON		
Con_13	Crimp Contact 20S (for AWG 20, 22, 24) for connectors ESA SCC 3401/002	340100502B	SEE ESA SCC 3401/005	ESA SCC 3401/005	ESA QPL	B	ITT CANNON		
Con_14	Crimp Contact 26P (for AWG 26, 28) for connectors ESA SCC 3401/002	340100503B	SEE ESA SCC 3401/005	ESA SCC 3401/005	ESA QPL	B	ITT CANNON		

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Con_15	Crimp Contact 26S (for AWG 26, 28) for connectors ESA SCC 3401/002	340100504B	SEE ESA SCC 3401/005	ESA SCC 3401/005	ESA QPL	B	ITT CANNON		
Con_16	SAVER TYPE DEBMA 9PS	340102001BDEBMA9PSNMBFO	SEE ESA SCC 3401/020	ESA SCC 3401/020	ESA QPL	B	ITT CANNON		HI:6, SD:6, PD:6
Con_17	SAVER TYPE DABMA 15PS	340102001BDABMA15PSNMBFO	SEE ESA SCC 3401/020	ESA SCC 3401/020	ESA QPL	B	ITT CANNON		HI:4
Con_18	SAVER TYPE DBBMA 25PS	340102001BDBBMA25PSNMBFO	SEE ESA SCC 3401/020	ESA SCC 3401/020	ESA QPL	B	ITT CANNON		HI:10, SD:6
Con_19	CONTACT 20 FOR SAVERS PIN/SOCKET TYPE D*MA	340102101B	SEE ESA SCC 3401/021	ESA SCC 3401/021	ESA QPL	B	ITT CANNON		622
Con_20	SAVER TYPE MDM 9PS	340104101B9PS	SEE ESA SCC 3401/041	ESA SCC 3401/041	ESA QPL	B	ITT CANNON		PD:6
Con_21	SCREW LOCK (var.02) for connectors ESA SCC 3401/029	340103202B	SEE ESA SCC 3401/032	ESA SCC 3401/032	ESA QPL	B	ITT CANNON		PD:12
Con_22	SCREW LOCK (var.06) for savers ESA SCC 3401/020	340102206BNMB	SEE ESA SCC 3401/022	ESA SCC 3401/022	ESA QPL	B	ITT CANNON		HI:40, SD:24, PD:12
Con_23	SCREW LOCK (var.05) for savers ESA SCC 3401/041	340103205B	SEE ESA SCC 3401/032	ESA SCC 3401/032	ESA QPL	B	ITT CANNON		PD:12
DIODE									
Dio_1	Switching diode	JANS1N6642	DO 35	MIL-PRF-19500/578	QML-19500	JANS	MICROSEMI		
Dio_2	Schottky rectifier 40V1A	JANS1N5819-1	DO 41	MIL-PRF-19500/586	QML-19500	JANS	MICROSEMI		
Dio_3	1N5711 Rect Schottky diode	CDS1N5711UR-1	DO-213AA	MIL-PRF-19500/444	SEE REMARKS	S	MICROSEMI	In the CPP list but no JANS level in QML list.	
Dio_4	Switching diode	JANS1N6642US	SMD	MIL-PRF-19500/578	QML-19500	JANS	MICROSEMI CDI		HI/CP1:2, HI/CP2:2, SD/CP1:2, SD/CP2:2, PD/CP1:2, PD/CP2:2, HI/DC1:14, HI/DC2:14, SD/DC1:13, SD/DC2:13, PD/DC1:13, PD/DC2:13
Dio_5	Ultra Fast Rectifier Diode	JANS1N5811US	SMD	MIL-PRF-19500/477	QML-19500	JANS	MICROSEMI		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1, HI/DC1:40, HI/DC2:40, SD/DC1:20, SD/DC2:20, PD/DC1:20, PD/DC2:20
Dio_6	Schottky Rectifier Diode	JANS1N5822US	SMD	MIL-PRF-19500/620	QML-19500	JANS	MICROSEMI		

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Dio_7	Diode Zener 4,7V 0,5W 1%	JANTXV1N6316CUS	SMD	MIL-PRF-19500/533	QML-19500	JANTXV	MICROSEMI	No JANS level in QML list.	
Dio_8	Diode Zener 12V 1,5W 5%	JANS1N4467US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		HI/DC1:3, HI/DC2:3, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Dio_9	Diode Zener 5,1V 0,5W 5%	JANS1N6317US	SMD	MIL-PRF-19500/533	QML-19500	JANS	MICROSEMI		HI/DC1:5, HI/DC2:5, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Dio_10	Diode Zener 15V 1,5W 5%	JANS1N4469US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		
Dio_11	Diode Zener 11V 1,5W 5%	JANS1N4466US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		
Dio_12	Diode Zener 8,2V 1,5W 5%	JANTXV1N4463US	SMD	MIL-PRF-19500/406	QML-19500	JANTXV	MICROSEMI	No JANS level in QML list.	
Dio_13	Diode Zener 5,1V 1,5W 1%	JANS1N6490US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		
Dio_14	Diode Zener 20V 1,5W 5%	JANS1N4472US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		
Dio_15	Diode Zener 6,8V 0,5W 5%	JANS1N6320US	SMD	MIL-PRF-19500/533	QML-19500	JANS	MICROSEMI		
Dio_16	Diode Zener 10V 1,5W 5%	JANS1N4465US	SMD	MIL-PRF-19500/406	QML-19500	JANS	MICROSEMI		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Dio_17	Dual Power Diode	JANTXV1N6660R	TO 254AA	MIL-PRF-19500/608	QML-19500	JANTXV	SENSITRON	No JANS level in QML list.	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

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DIGITAL IC									
Dig_1	32/40-bit floating point DSP microprocessor TSC21020F-20SBSV	5962-9953901VXC	256 MQFP-F	5962-99539	QML-38535	V	ATMEL	Part in the CPP list.	HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Dig_2	16 eq gates Actel Rad Tolerant FPGA RT54SX32S-CQ208E	5962-0150803QYC	208 CQFP	5962-01508	SEE REMARKS	Q	ACTEL	Part present in CPP list, not QML qualified	HI/PL1:1, HI/PL2:1, HI/CP1:1, HI/CP2:1, SD/PL1:1, SD/PL2:1, SD/CP1:1, SD/CP2:1, PD/PL1:1, PD/PL2:1, PD/CP1:1, PD/CP2:1
Dig_3	MIL-STD-1553 Advanced Communication Engine BU-61582F1	5962-9688701KYA	70 FP	5962-96887	SEE REMARKS	K	DDC	Part present in CPP list, not QML qualified	HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Dig_4	512K x 8 bit Static RAM 25ns UT9Q512-UCC	5962D0053601TUC	36 FP	5962-00536	QML-38535	T	UTMC		HI/CP1:10, HI/CP2:10, SD/CP1:10, SD/CP2:10, PD/CP1:10, PD/CP2:10
Dig_5	32K x 8 bit Radation Hardened PROM UT28F256-45PCCH	5962R9689103VYC	28 DIP	5962-96891	SEE REMARKS	V	UTMC	Part present in CPP list, not QML qualified	HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Dig_6	IEEE-1355 Communication Controller TSS901EASV	5962-01A1701VXC	196 MQFP	5962-01A17	QML-38535	V	ATMEL	Part present in the CPP list	PD/CP1:1, PD/CP2:1
Dig_7	256K x 32 bit EEPROM	79C0832RT2QK-20	96 QFP	SEE REMARKS	SEE REMARKS		MAXWELL	Part present in CPP list, not QML qualified	HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Dig_8	8K x 16 Dual Port Ram SMK2-67025EV-30SV	5962-9161709VZC	84 MQFPF	5962-91617	QML-38535	V	ATMEL	Part in the CPP list.	PD/CP1:2, PD/CP2:2
Dig_9	Quad LVDS Driver UT54LVDS031UCC	5962R9583302VXC	16 FP	5962-95833	SEE REMARKS	V	UTMC	Part present in CPP list, not QML qualified	PD/CP1:3, PD/CP2:3

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Dig_10	Quad LVDS Receiver UT54LVDS032UCC	5962R9583402VXC	16 FP	5962-95834	SEE REMARKS	V	UTMC	Part present in CPP list, not QML qualified	PD/CP1:2, PD/CP2:2
Dig_11	Quad RS422 Driver HS9-26C31RH-Q	5962F9666301VXC	16 CDFP	5962-96663	QML-38535	V	INTERSIL		HI/PL1:4, HI/PL2:4, SD/PL1:2, SD/PL2:2
Dig_12	Quad RS422 Receiver HS9-26C32RH-Q	5962F9568901VXC	16 CDFP	5962-95689	QML-38535	V	INTERSIL		HI/PL1:4, HI/PL2:4, SD/PL1:4, SD/PL2:4
Dig_13	16K x 9 bit FIFO Memory SMDP67206FV-15SV	5962-9317704VNC	28 CDFP	5962-93177	QML-38535	V	ATMEL		HI/PL1:12, HI/PL2:12, SD/PL1:6, SD/PL2:6
Dig_14	Triple Programmable Interval Timer HS9-82C54RH-Q	5962R9571301VXC	24 CDFP	5962-95713	QML-38535	V	INTERSIL		
Dig_15	16-bit Buffer 54ACTQ16244K	54ACTQ16244K02V	48 CFP	SEE REMARKS	SEE REMARKS		STM	Part present in CPP list, not QML qualified	HI/PL1:1, HI/PL2:1, HI/CP1:3, HI/CP2:3, SD/PL1:1, SD/PL2:1, SD/CP1:3, SD/CP2:3, PD/PL1:1, PD/PL2:1, PD/CP1:3, PD/CP2:3
Dig_16	8-bit Buffer 54ACTQ244K02V	54ACTQ244K02V	20 CFP	SEE REMARKS	QML-38535		STM	Part present in CPP list	HI/PL1:2, HI/PL2:2, HI/CP1:1, HI/CP2:1, SD/PL1:1, SD/PL2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Dig_17	8-bit Transceiver 54ACTQ245K02V	54ACTQ245K02V	20 CFP	SEE REMARKS	QML-38535		STM	Part present in CPP list	
Dig_18	16-bit Transceiver 54ACTQ16245K02V	54ACTQ16245K02V	48 CFP	SEE REMARKS	SEE REMARKS		STM	Part present in CPP list, not QML qualified	HI/CP1:4, HI/CP2:4, SD/CP1:4, SD/CP2:4, PD/CP1:4, PD/CP2:4
Dig_19	16-bit Latch 54ACTQ16374K02V	54ACTQ16374K02V	48 CFP	SEE REMARKS	SEE REMARKS		STM	Part present in CPP list, not QML qualified	HI/CP1:3, HI/CP2:3, SD/CP1:3, SD/CP2:3, PD/CP1:3, PD/CP2:3

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Dig_20	8-bit Latch 54ACTQ374K02V	54ACTQ374K02V	20 CFP	SEE REMARKS	QML-38535		STM	Part present in CPP list	
									HI/PL1:1, HI/PL2:1, HI/CP1:1, HI/CP2:1, SD/PL1:1, SD/PL2:1, SD/CP1:1, SD/CP2:1, PD/PL1:1, PD/PL2:1, PD/CP1:1, PD/CP2:1
Dig_21	Hex Inverter Schmitt Trigger 54HC14K	940900702BF	14 FP	ESA/SCC 9409/007	SEE REMARKS	B	STM	Part in the CPP list.	
Dig_22	8-bit Buffer 54ACTQ541K02V	54ACTQ541K02V	20 CFP	SEE REMARKS	QML-38535		STM	Part in the CPP list.	
									HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Dig_23	12-bit A/D Converter AD574ATD/QMLV	5962-8512702VXA	28 CDIP	5962-85127	QML-38535	V	AD	Part in the CPP list.	
									HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Dig_24	8 Channel Analog Multiplexer HS1-508BRH-Q	5962F9674202VEC	16 DIP	5962-96742	QML-38535	V	INTERSIL		
									HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Dig_25	Quad 2-Input OR Gate 54ACTQ32WRQMLV	5962R8973601VDA	20CFP	5962-89736	QML-38535	V	NATIONAL		
									HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1
INDUCTOR									
Ind_1	Common mode filter inductor L1	DPU-EM-310.09-0		SEE DRAWING DPU-EM- 310.09-0	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	
									HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ind_2	Differential mode filter inductor L2	DPU-EM-310.10-0		SEE DRAWING DPU-EM- 310.10-0	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	
									HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ind_3	Output power inductor L3	DPU-EM-310.11-0		SEE DRAWING DPU-EM- 310.11-0	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	
									HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

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Ind_4	Output power inductor L4	DPU-EM-310.12-0	SEE DRAWING DPU-EM-310.12-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	HI/DC1:1, HI/DC2:1
Ind_5	Differential mode filter inductor L5	DPU-EM-310.13-0	SEE DRAWING DPU-EM-310.13-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Ind_6	Common mode filter inductor L7	DPU-EM-310.15-0	SEE DRAWING DPU-EM-310.15-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-001	HI/DC1:6, HI/DC2:6
OPTOISOLATOR									
Opt_1	Quad Optoisolator 66179	66179-300		SEE REMARKS	SEE REMARKS		MICROPAC	Not in QPL, present in CPP list	HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
QUARTZ / OSCILLATOR									
Osc_1	20MHz, TTL CLOCK OSCILLATOR QT6T9-20M000000	MCM4114-3M 20.000 MHZ	14 DIP	SEE REMARKS	SEE REMARKS		Q-TECH	Not in QPL, present in CPP list	HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Osc_2	16MHz, TTL CLOCK OSCILLATOR QT6T9-16M000000	MCM4114-1M 16.000 MHZ	14 DIP	SEE REMARKS	SEE REMARKS		Q-TECH	Not in QPL, present in CPP list	HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1

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RESISTOR									
Res_1	Resistor 0,1 Ohm 1W 1%	RWR81NR100FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		HI/DC1:7, HI/DC2:7, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_2	Resistor 1 Ohm 1W 1%	RWR81N1R00FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_3	Resistor 10 Ohm 1W 1%	RWR81N10R0FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		HI/DC1:4, HI/DC2:4, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_4	Resistor 22,1 Ohm 1W 1%	RWR81N22R1FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		HI/PL1:24, HI/PL2:24, SD/PL1:12, SD/PL2:12
Res_5	Network Resistor 13+1 pin 10K0 Ohm 0,325W 1%	M8340103M1002FB	14 FP	MIL-PRF-83401/3	QPL-83401	M	DALE		HI/PL1:5, HI/PL2:5, HI/CP1:8, HI/CP2:8, SD/PL1:5, SD/PL2:5, SD/CP1:8, SD/CP2:8, PD/PL1:5, PD/PL2:5, PD/CP1:10, PD/CP2:10
Res_6	Chip Resistor 51,1 Ohm 0,1W 1%	M55342K06B51D1R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_7	Chip Resistor 75 Ohm 0,1W 1%	M55342K06B75D0R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_8	Chip Resistor 100 Ohm 0,2W 1%	400101701C1000F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:7, PD/CP2:7
Res_9	Chip Resistor 110 Ohm 0,1W 1%	M55342K06B110DR	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_10	Chip Resistor 150 Ohm 0,1W 1%	M55342K06B150DR	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_11	Chip Resistor 200 Ohm 0,1W 1%	M55342K06B200DR	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_12	Chip Resistor 249 Ohm 0,2W 1%	400101701C2490F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		PD/CP1:1, PD/CP2:1
Res_13	Chip Resistor 301 Ohm 0,1W 1%	M55342K06B301DR	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_14	Chip Resistor 332 Ohm 0,2W 1%	400101701C3320F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		SD/PL1:18, SD/PL2:18
Res_15	Chip Resistor 511 Ohm 0,1W 1%	M55342K06B511DR	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_16	Chip Resistor 1K Ohm 0,1W 1%	M55342K06B1E00R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_17	Chip Resistor 1,21K Ohm 0,1W 1%	M55342K06B1E21R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_18	Chip Resistor 1,5K Ohm 0,1W 1%	M55342K06B1E50R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_19	Chip Resistor 1,69K Ohm 0,1W 1%	M55342K06B1E69R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_20	Chip Resistor 2K Ohm 0,1W 1%	M55342K06B2E00R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_21	Chip Resistor 2,26K Ohm 0,1W 1%	M55342K06B2E26R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_22	Chip Resistor 3,01K Ohm 0,2W 1%	400101701C3011F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		SD/PL1:6, SD/PL2:6
Res_23	Chip Resistor 3,92K Ohm 0,1W 1%	M55342K06B3E92R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_24	Chip Resistor 5,11K Ohm 0,1W 1%	M55342K06B5E11R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_25	Chip Resistor 5,36K Ohm 0,1W 1%	M55342K06B5E36R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_26	Chip Resistor 5,9K Ohm 0,1W 1%	M55342K06B5E90R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_27	Chip Resistor 6,81K Ohm 0,1W 1%	M55342K06B6E81R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_28	Chip Resistor 7,5K Ohm 0,1W 1%	M55342K06B7E50R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
									HI/PL1:17, HI/PL2:17, HI/CP1:4, HI/CP2:4, SD/PL1:16, SD/PL2:16, SD/CP1:4, SD/CP2:4, PD/PL1:13, PD/PL2:13, PD/CP1:6, PD/CP2:6
Res_29	Chip Resistor 10K Ohm 0,2W 1%	400101701C1002F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		
Res_30	Chip Resistor 12,1K Ohm 0,1W 1%	M55342K06B12E1R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_31	Chip Resistor 13,3K Ohm 0,1W 1%	M55342K06B13E3R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_32	Chip Resistor 15K Ohm 0,1W 1%	M55342K06B15E0R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_33	Chip Resistor 18,7K Ohm 0,1W 1%	M55342K06B18E7R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_34	Chip Resistor 20K Ohm 0,1W 1%	M55342K06B20E0R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_35	Chip Resistor 30,1K Ohm 0,1W 1%	M55342K06B30E1R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
									PD/CP1:6, PD/CP2:6
Res_36	Chip Resistor 33,2K Ohm 0,2W 1%	400101701C3322F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		
Res_37	Chip Resistor 40,2K Ohm 0,1W 1%	M55342K06B40E2R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_38	Chip Resistor 46,4K Ohm 0,1W 1%	M55342K06B46E4R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_39	Chip Resistor 53,6K Ohm 0,1W 1%	M55342K06B53E6R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_40	Chip Resistor 68,1K Ohm 0,1W 1%	M55342K06B68E1R	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
									HI/PL1:28, HI/PL2:28, SD/PL1:24, SD/PL2:24, PD/CP1:6, PD/CP2:6
Res_41	Chip Resistor 100K Ohm 0,2W 1%	400101701C1003F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		
Res_42	Chip Resistor 121K Ohm 0,1W 1%	M55342K06B121ER	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_43	Chip Resistor 178K Ohm 0,1W 1%	M55342K06B178ER	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_44	Chip Resistor 200K Ohm 0,1W 1%	M55342K06B200ER	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_45	Chip Resistor 221K Ohm 0,1W 1%	M55342K06B221ER	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
Res_46	Chip Resistor 825K Ohm 0,1W 1%	M55342K06B825ER	0705	MIL-PRF-55342/6	QPL-55342	R	DALE		
									HI/PL1:1, HI/PL2:1, HI/CP1:1, HI/CP2:1, SD/PL1:1, SD/PL2:1, SD/CP1:1, SD/CP2:1, PD/PL1:1, PD/PL2:1, PD/CP1:1, PD/CP2:1
Res_48	Chip Resistor 1M Ohm 0,2W 1%	400101701C1004F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		
Res_49	Network Resistor SIP 9+1 470 Ohm 5%	M8340109M4700JC	10 SIP	MIL-PRF-83401/9	QPL-83401	M	IRC, VISHAY		

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_50	Network Resistor SIP 9+1 330 Ohm 5%	M8340109M3300JC	10 SIP	MIL-PRF-83401/9	QPL-83401	M	IRC, VISHAY		HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_51	Chip Resistor 1,0M Ohm 0,25W 1%	400102003C1004F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_52	Chip Resistor 100K Ohm 0,25W 1%	400102003C1003F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:6, HI/DC2:6, SD/DC1:6, SD/DC2:6, PD/DC1:6, PD/DC2:6
Res_53	Chip Resistor 10 Ohm 0,25W 1%	400102003C10R0F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_54	Chip Resistor RM1206 20 Ohm 1/4W 1%	D55342K07B20D0R	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_55	Chip Resistor RM1206 5.62K Ohm 1/4 W 1%	D55342K07B5E62R	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_56	Chip Resistor 33,2K Ohm 0,25W 1%	400102003C3322F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_57	Chip Resistor 1K Ohm 0,25W 1%	400102003C1001F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:24, HI/DC2:24, SD/DC1:19, SD/DC2:19, PD/DC1:19, PD/DC2:19
Res_58	Chip Resistor 10K Ohm 0,25W 1%	400102003C1002F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:16, HI/DC2:16, SD/DC1:11, SD/DC2:11, PD/DC1:11, PD/DC2:11
Res_59	Chip Resistor 2K Ohm 0,25W 1%	400102003C2001F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:4, HI/DC2:4, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Res_60	Chip Resistor RM1206 121 Ohm 1/4 W 1%	D55342K07B121DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_61	Chip Resistor RM1206 681 Ohm 1/4 W 1%	D55342K07B681DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_62	Chip Resistor RM1206 147 Ohm 1/4 W 1%	D55342K07B147DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_63	Chip Resistor RM1206 169 Ohm 1/4 W 1%	D55342K07B169DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_64	Chip Resistor 4,75K Ohm 0,25W 1%	400102003C4751F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_65	Chip Resistor RM1206 71.5 Ohm 1/4 W 1%	D55342K07B71D5R	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_66	Chip Resistor RM1206 5.62K Ohm 1/4 W 1%	D55342K07B5E62R	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_67	Chip Resistor RM1206 221 Ohm 1/4 W 1%	D55342K07B221DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		
Res_68	Chip Resistor RM1206 340 Ohm 1/4 W 1%	D55342K07B340DR	1206	MIL-PRF-55342/7	QPL-55342	R	DALE		

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_69	Chip Resistor 2,21K Ohm 0,25W 1%	400102003C2211F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:5, HI/DC2:5, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_72	Resistor 56,2 Ohm 1W 1%	RWR81N56R2FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_73	Chip Resistor 10 Ohm 0,2W 1%	400101701C10R0F6	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		HI/CP1:88, HI/CP2:88, SD/CP1:88, SD/CP2:88, PD/CP1:88, PD/CP2:88
Res_74	Chip Resistor 1.82K Ohm 0,2W 1%	400101701C1821F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		HI/CP1:1, HI/CP2:1, SD/CP1:1, SD/CP2:1, PD/CP1:1, PD/CP2:1
Res_75	Resistor 75 Ohm 1W 1%	RWR81N75R0FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		HI/DC1:8, HI/DC2:8, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_76	Resistor 10 Ohm 3W 1%	RWR89N10R0FR	RWR89	MIL-PRF-39007/11	QPL-39007	R	DALE-IRC		
Res_77	Resistor 0.1 Ohm 3W 1%	RWR89NR100FR	RWR89	MIL-PRF-39007/11	QPL-39007	R	DALE-IRC		
Res_78	Resistor 0,150 Ohm 1W 1%	RWR81NR150FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_79	Resistor 0,332 Ohm 1W 1%	RWR81NR332FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_80	Resistor 0,562 Ohm 1W 1%	RWR81NR562FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_81	Resistor 0,750 Ohm 1W 1%	RWR81NR750FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_82	Resistor 1,10 Ohm 1W 1%	RWR81N1R10FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_83	Resistor 1,50 Ohm 1W 1%	RWR81N1R50FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_84	Resistor 4,99 Ohm 1W 1%	RWR81N4R99FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_85	Resistor 15 Ohm 1W 1%	RWR81N15R0FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		HI/DC1:4, HI/DC2:4, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_86	Resistor 49,9 Ohm 1W 1%	RWR81N49R9FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_87	Resistor 100 Ohm 1W 1%	RWR81N1000FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_88	Metal film 100 Ohm 0,05% 5ppm	400101104C1000W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_89	Metal film 1K Ohm 0.05% 5ppm	400101104C1001W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/PL1:2, HI/PL2:2, SD/PL1:2, SD/PL2:2, PD/PL1:2, PD/PL2:2, HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_90	Metal film 1,1K Ohm 0.05% 5ppm	400101104C1101W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		
Res_91	Metal film 1,24K Ohm 0.05% 5ppm	400101104C1241W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Res_92	Metal film 1,5K Ohm 0.05% 5ppm	400101104C1501W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_93	Metal film 2,43K Ohm 0.05% 5ppm	400101104C2431W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_94	Metal film 3,61K Ohm 0.05% 5ppm	400101104C3611W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		
Res_95	Metal film 3,74K Ohm 0.05% 5ppm	400101104C3741W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/PL1:1, HI/PL2:1, SD/PL1:1, SD/PL2:1, PD/PL1:1, PD/PL2:1
Res_96	Metal film 4,99K Ohm 0.05% 5ppm	400101104C4991W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_97	Metal film 5,11K Ohm 0.05% 5ppm	400101104C5111W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		
Res_98	Metal film 8,66K Ohm 0.05% 5ppm	400101104C8661W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_99	Metal film 10K Ohm 0.05% 5ppm	400101104C1002W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_100	Metal film 15K Ohm 0.05% 5ppm	400101104C1502W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1,
Res_101	Metal film 20K Ohm 0.05% 5ppm	400101104C2002W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_102	Metal film 100K Ohm 0.05% 5ppm	400101104C1003W	RNC90	ESA/SCC 4001/011	ESA QPL	C	SFERNICE		
Res_103	Chip Resistor 475 Ohm 0.2W 1%	400101701C4750F4	0705	ESA/SCC 4001/017	ESA QPL	C	SFERNICE		
Res_104	Chip Resistor 1 Ohm 0,25W 1%	400102003C1R00F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_105	Chip Resistor 1,10 Ohm 0,25W 1%	400102003C1R10F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_106	Chip Resistor 1,50 Ohm 0,25W 1%	400102003C1R50F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_107	Chip Resistor 2 Ohm 0,25W 1%	400102003C2R00F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_108	Chip Resistor 2,49 Ohm 0,25W 1%	400102003C2R49F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_109	Chip Resistor 5,11 Ohm 0,25W 1%	400102003C5R11F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_110	Chip Resistor 5,62 Ohm 0,25W 1%	400102003C5R62F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_111	Chip Resistor 7,5 Ohm 0,25W 1%	400102003C7R50F6	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_112	Chip Resistor 33,2 Ohm 0,25W 1%	400102003C33R2F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_113	Chip Resistor 47,5 Ohm 0,25W 1%	400102003C47R5F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:3, HI/DC2:3
Res_114	Chip Resistor 75 Ohm 0,25W 1%	400102003C75R0F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_115	Chip Resistor 100 Ohm 0.25W 1%	400102003C1000F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:5, HI/DC2:5, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_116	Chip Resistor 243 Ohm 0.25W 1%	400102003C2430F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Res_117	Chip Resistor 332 Ohm 0.25W 1%	400102003C3320F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:6, HI/DC2:6, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Res_118	Chip Resistor 475 Ohm 0.25W 1%	400102003C4750F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_119	Chip Resistor 825 Ohm 0.25W 1%	400102003C8250F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_120	Chip Resistor 1,5K Ohm 0.25W 1%	400102003C1501F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:3, HI/DC2:3, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Res_121	Chip Resistor 1,82K Ohm 0.25W 1%	400102003C1821F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:6, HI/DC2:6, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2
Res_122	Chip Resistor 2,49K Ohm 0.25W 1%	400102003C2491F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_123	Chip Resistor 2,74K Ohm 0.25W 1%	400102003C2741F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:7, HI/DC2:7, SD/DC1:3, SD/DC2:3, PD/DC1:3, PD/DC2:3
Res_124	Chip Resistor 3,32K Ohm 0.25W 1%	400102003C3321F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:5, HI/DC2:5, SD/DC1:2, SD/DC2:2, PD/DC1:2, PD/DC2:2

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_125	Chip Resistor 3,65K Ohm 0,25W 1%	400102003C3651F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_126	Chip Resistor 4,32K Ohm 0,25W 1%	400102003C4321F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1
Res_127	Chip Resistor 5,11K Ohm 0,25W 1%	400102003C5111F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:6, HI/DC2:6, SD/DC1:6, SD/DC2:6, PD/DC1:6, PD/DC2:6
Res_128	Chip Resistor 6,19K Ohm 0,25W 1%	400102003C6191F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:3, HI/DC2:3, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_129	Chip Resistor 7,50K Ohm 0,25W 1%	400102003C7501F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_130	Chip Resistor 8,25K Ohm 0,25W 1%	400102003C8251F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_131	Chip Resistor 11,0K Ohm 0,25W 1%	400102003C1102F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_132	Chip Resistor 12,1K Ohm 0,25W 1%	400102003C1212F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_133	Chip Resistor 13,0K Ohm 0,25W 1%	400102003C1302F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_134	Chip Resistor 15K Ohm 0,25W 1%	400102003C1502F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_135	Chip Resistor 17,4K Ohm 0,25W 1%	400102003C1742F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_136	Chip Resistor 20K Ohm 0,25W 1%	400102003C2002F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:4, HI/DC2:4, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_137	Chip Resistor 22,1K Ohm 0,25W 1%	400102003C2212F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_138	Chip Resistor 24,3K Ohm 0,25W 1%	400102003C2432F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1
Res_139	Chip Resistor 27,4K Ohm 0,25W 1%	400102003C2742F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_140	Chip Resistor 47,5K Ohm 0,25W 1%	400102003C4752F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_141	Chip Resistor 51,1K Ohm 0,25W 1%	400102003C5112F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_142	Chip Resistor 56,2K Ohm 0,25W 1%	400102003C5622F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1
Res_143	Chip Resistor 68,1K Ohm 0,25W 1%	400102003C6812F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2
Res_144	Chip Resistor 82,5K Ohm 0,25W 1%	400102003C8252F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_145	Chip Resistor 121K Ohm 0,25W 1%	400102003C1213F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_146	Chip Resistor 150K Ohm 0,25W 1%	400102003C1503F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_147	Chip Resistor 174K Ohm 0,25W 1%	400102003C1743F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_148	Chip Resistor 200K Ohm 0,25W 1%	400102003C2003F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_149	Chip Resistor 332K Ohm 0,25W 1%	400102003C3323F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:3, HI/DC2:3
Res_150	Chip Resistor 475K Ohm 0,25W 1%	400102003C4753F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_151	Chip Resistor 511K Ohm 0,25W 1%	400102003C5113F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_152	Chip Resistor 681K Ohm 0,25W 1%	400102003C6813F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_153	Chip Resistor 768K Ohm 0,25W 1%	400102003C7683F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_154	Chip Resistor 100 Ohm 0,1W 1%	M55342K06B100DR	0705	MIL-PRF-55342/6	QPL-55342	R	IRC, MINI-SYSTEMS, STATE OF THE ART, VISHAY DALE		
Res_155	Chip Resistor 2,21K Ohm 0,1W 1%	M55342K06B2E21R	0705	MIL-PRF-55342/6	QPL-55342	R	IRC, MINI-SYSTEMS, STATE OF THE ART, VISHAY DALE		HI/PL1:4, HI/PL2:4
Res_156	Chip Resistor 221 Ohm 0,1W 1%	M55342K06B221DR	0705	MIL-PRF-55342/6	QPL-55342	R	IRC, MINI-SYSTEMS, STATE OF THE ART, VISHAY DALE		HI/PL1:24, HI/PL2:24
Res_157	Chip Resistor 68 Ohm 0,1W 2%	M55342K06B68G0R	0705	MIL-PRF-55342/6	QPL-55342	R	IRC, MINI-SYSTEMS, STATE OF THE ART, VISHAY DALE		HI/PL1:6, HI/PL2:6, SD/PL1:6, SD/PL2:6, PD/PL1:6, PD/PL2:6
Res_158	Chip Resistor 19,6 Ohm 0,25W 1%	400102003C19R6F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

HERSCHEL DPUs/ICU
Declared Components List

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ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_159	Chip Resistor 40,2 Ohm 0,25W 1%	400102003C40R2F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_160	Chip Resistor 59 Ohm 0,25W 1%	400102003C59R0F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_161	Chip Resistor 71,5 Ohm 0,25W 1%	400102003C71R5F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_162	Chip Resistor 78,7 Ohm 0,25W 1%	400102003C78R7F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_163	Chip Resistor 90,9 Ohm 0,25W 1%	400102003C90R9F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_164	Chip Resistor 196 Ohm 0,25W 1%	400102003C1960F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_165	Chip Resistor 301 Ohm 0,25W 1%	400102003C3010F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_166	Chip Resistor 402 Ohm 0,25W 1%	400102003C4020F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_167	Chip Resistor 511 Ohm 0,25W 1%	400102003C5110F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_168	Chip Resistor 590 Ohm 0,25W 1%	400102003C5900F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_169	Chip Resistor 715 Ohm 0,25W 1%	400102003C7150F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_170	Chip Resistor 787 Ohm 0,25W 1%	400102003C7870F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_171	Chip Resistor 909 Ohm 0,25W 1%	400102003C9090F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Res_172	Chip Resistor 3,01K Ohm 0,25W 1%	400102003C3011F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_173	Chip Resistor 7,15K Ohm 0,25W 1%	400102003C7151F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_174	Chip Resistor 9,09K Ohm 0,25W 1%	400102003C9091F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_175	Chip Resistor 30,1K Ohm 0,25W 1%	400102003C3012F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_176	Chip Resistor 40,2K Ohm 0,25W 1%	400102003C4022F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_177	Chip Resistor 78,7K Ohm 0,25W 1%	400102003C7872F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_178	Chip Resistor 90,9K Ohm 0,25W 1%	400102003C9092F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_179	Chip Resistor 196K Ohm 0,25W 1%	400102003C1963F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_180	Chip Resistor 402K Ohm 0,25W 1%	400102003C4023F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_181	Chip Resistor 590K Ohm 0,25W 1%	400102003C5903F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_182	Chip Resistor 715K Ohm 0,25W 1%	400102003C7153F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		

HERSCHEL DPUs/ICU
Declared Components List

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Res_183	Chip Resistor 787K Ohm 0,25W 1%	400102003C7873F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_184	Chip Resistor 909K Ohm 0,25W 1%	400102003C9093F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
Res_185	Resistor 0.499 Ohm 1W 1%	RWR81NR499FR	RWR81	MIL-PRF-39007/9	QPL-39007	R	DALE-IRC		
Res_186	Chip Resistor 30,1 Ohm 0,25W 1%	400102003C30R1F4	1206	ESA/SCC 4001/020	ESA QPL	C	SFERNICE		
TRANSFORMER									
Trf_1	MIL-STD-1553 Long Stub Transformer, Turns Ratio 2:1	HLP6002		MIL-PRF-21038, MIL-STD-202	SEE REMARKS		BETA TRANSFORMER	Not in QPL, present in CPP list	HI/PL1:2, HI/PL2:2, SD/PL1:2, SD/PL2:2, PD/PL1:2, PD/PL2:2
Trf_2	GALVANIC ISOLATION TRANSFORMER TRF1	DPU-EM-310.04-0	SEE DRAWING DPU-EM-310.04-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-002	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Trf_3	MAIN POWER TRANSFORMER TRF2	DPU-EM-310.05-0	SEE DRAWING DPU-EM-310.05-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-002	HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Trf_4	PRIMARY CURRENT SENS TRANSFORMER TRF3	DPU-EM-310.06-0	SEE DRAWING DPU-EM-310.06-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-002	HI/DC1:2, HI/DC2:2, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1

**HERSCHEL DPUs/ICU
Declared Components List**

ID	COMPONENT TYPE	FM COMPONENT PN	CASE	SPECIFICATION	QPL/QML REFERENCE	Quality Level	MANUFACTURER	REMARKS	UNIT/BOARD Q.TY
Trf_5	MAIN POWER TRANSFORMER TRF4	DPU-EM-310.07-0	SEE DRAWING DPU-EM-310.07-0	SEE REMARKS	SEE REMARKS		BLU ELECTRONIC	PAD: DPU-PA-CGS-002	HI/DC1:1, HI/DC2:1
TRANSISTOR									
Trs_1	Transistor NPN 2N2222A	520100202B	TO 18	ESA/SCC 5201/002	ESA QPL	B	STM		
Trs_2	N Channel Power MOSFET 100V	JANSR2N7261	TO-205AF	MIL-PRF-19500/601	QML-19500	JANS	IR	Part present in CPP list	
Trs_3	PNP Transistor 2N2905A	520200202B	TO 39	ESA/SCC 5202/002	ESA QPL	B	STM		
Trs_4	NPN Signal Transistor 2N2222A	520100205B	SMD	ESA/SCC 5201/002	ESA QPL	B	STM		HI/DC1:5, HI/DC2:5, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Trs_5	PNP Signal Transistor 2N2907A	520200105B	SMD	ESA/SCC 5202/001	ESA QPL	B	STM		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Trs_6	N Channel Power MOSFET 100V	JANSR2N7268	TO 254AA	MIL-PRF-19500/603	QML-19500	JANS	IR		HI/DC1:4, HI/DC2:4, SD/DC1:4, SD/DC2:4, PD/DC1:4, PD/DC2:4
Trs_7	NPN Power Transistor 2A, 2N5154	520301002B	TO 39	ESA/SCC 5203/010	ESA QPL	B	STM		HI/DC1:1, HI/DC2:1
Trs_8	P Channel Power MOSFET 100V	JANSR2N7422	TO-254AA	MIL-PRF-19500/662	QML-19500	JANS	IR		HI/DC1:1, HI/DC2:1, SD/DC1:1, SD/DC2:1, PD/DC1:1, PD/DC2:1
Trs_9	PNP Power Transistor High Speed Switching	JANTXV2N5153	TO 39	MIL-PRF-19500/545	QML-19501	JANTXV	MICROSEMI-SEMICOA		HI/DC1:3, HI/DC2:3
CABLE									
Cab_1	SPM TYPE AWG 26 PAIR TWISTED WIRE	390101813B	SEE ESA ESCC 3901/018	ESA ESCC 3901/018	ESCC QPL	B	W.L.GORE		
Cab_2	SPM TYPE AWG 20 PAIR TWISTED WIRE	390101816B	SEE ESA ESCC 3901/018	ESA ESCC 3901/018	ESCC QPL	B	W.L.GORE		

BSM Electronics Parts Lists

Author : Ian Pain / Brian Stobie
Date: 16-Jun-04
Version: 1.4

Document Prepared By:	Ian Pain		
Document Approved By:	Gary Rae / Colin Cunningham	Signature and Date:	
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* indicates master copy

Contents

1 WARM ELECTRONICS

2 BEAM STEERING MECHANISM

- 2.1 SPIRE Beam Steering Mirror Assembly Standard Parts List
- 2.2 SPIRE Beam Steering Mirror Assembly Non-Standard Parts List

1 Warm Electronics

Parts Lists for electronic components will be issued by LAM when the detailed design is finalised.

2 Beam Steering Mechanism

2.1 SPIRE Beam Steering Mirror Assembly Standard Parts List

This list defines the space-qualified parts used in the BSM mechanism that are covered in the ESA/SCC EEE Components Specifications.

Quantity count is total for BSM project (all models) not per model.

Part number	Description	Quantity	Notes	Project approval	ESA approval
Glenair GS83513/02-FN-429B	Micro-miniature rectangular connector (MDM type) with uninsulated solder buckets. Upscreening by Glenair	6	For 3 models plus		
			Connector deleted		
3401 041 06 B 37 PS	Connector saver, 37-way MDM type	10			
3401 032 05 B	Screw lock assembly for connector saver	20			
3401 032 01 B	Screw lock assembly for connector	20			
Cu TEK-021 (30AWG)	PTFE insulated Screened Twisted Pair wire, 30 AWG	1	Changed from 3901 013 41 B 050M per CTD 01/88		
Cu TEK-020 (30AWG)	PTFE insulated Screened Twisted Quad wire, 30 AWG	1	Changed from 3901 013 46 B 050M per CTD 01/88		
			(MICROSWITCH DELETED)		
CX-1030-CU	Cernox Thermometers (CX1030)	10			

2.2 SPIRE Beam Steering Mirror Assembly Non-Standard Parts List

The following are also provided by the UK ATC

Part number	Description	Quantity	Notes	Project approval	ESA approval
000000-0239-500	Motor coils, common to PACS. Supplier is Zeiss.	40	Parts will be supplied with QA documents per Zeiss/PACS		
FP212	Infineon sensors	20	Same sensor as used on ISOPhot. ATC to supply PAD sheet. ATC incorporate in mounting (BSM-020-007) and qualify along with BSM		
	Launch Latch		deleted		
722-7959-1	Chop sensor flexible harness (jiggle frame to BSM structure) Flexitape, manufactured by TAYCO.	10	Exact spec TBD. Type will be space proven and cryogenically suitable. ATC to supply PAD sheet.		
RNF 100	Heat Shrink 2.4mm bore. (motor harness terminals, etc)	1	MIL-DTL-25053/5 class 2 (clear) or space rated equivalent.		

SPIRE-SAP-COM-001306



DSM-DAPNIA SAP

DEPARTEMENT D'ASTROPHYSIQUE, DE PHYSIQUE DES PARTICULES DE
PHYSIQUE NUCLÉAIRE ET DE L'INSTRUMENTATION ASSOCIÉE

COMMISSARIAT À L'ÉNERGIE ATOMIQUE

DIRECTION DES SCIENCES DE LA MATIÈRE

SERVICE D'ASTROPHYSIQUE,

MAUGUEN Valérie
E.E.E Parts Manager

HERSCHEL

SPIRE

Note

DATE : 13 June 2002 N/RÉF. : SAP-SPIRE-VM-0077-02	SUBJECT : Self-procured Parts List Project Herschel/SPIRE
FROM : V. Mauguén Fax N°: 33 1 69 08 79 96	TO : K. King Project Manager Fax N°: 00 44 123 5446667 R. Orfei Parts Responsable Fax N°: 00 39 06 4993 4383 COPY : JL. Auguères, C.Cara, (SAP-CEA) Tecnologica : E. Diaz 00 34 95 4467339 Top-Rel : G. Gallina 00 39 06 2285266

Following the action n° 27 (see minutes of the meeting in Rome, ref. FP/TPR/MIN/0353) find here attached a list of self-procured parts for the SPIRE/DRCU units (CEA Saclay). All lists and P.A.D.s shall be forwarded to Alcatel by the Pls.

V. Mauguén
(EE Parts Manager)

Self-Procured Parts List

CEA Saclay

1) QM

Part Type	Pack.	Quality / details specifications, upscreening..	Manuf	Total Need	Remarks
1N5617	Pack A	JAN TX	MSC/U	156	No longer required
1N6642	Melf	JAN TX	MSC/U	802	procurement accepted from Technologica
OP400A (die ref OP4000GBC from AD, packaged by HCM France)	FP14	Upscreening : tests according to ESA/SCC 9000 (level C)	AD/U + HCM	755	No P.A.D ready because the packaging has not begun
DAC8800BR	DIL 20	#833C	AD/U	14	TID test failed Part eliminated
AD589TH	HO2-A	#883B	AD/U	5	No longer required
2N2907A	TO18	ESA/SCC 5201/001-02 level C	STM/F	4	procurement accepted from Technologica
2N5154	TO39	ESA/SCC 8203/010 level C	STM/F	278	*: No response
1N5615		JAN TX	MSC/U	TBD	New need: *
OP484AM	FP14	5962-0051701QEA	AND/U	7	New need: *
UC1834J	DIP16	883B	TI/U	30	New need: *
2N2905A		ESA/SCC 5202/002 level C	STM/F	17	New need: *

* To be confirmed by the CPPA. CEA requires its procurement through Technologica/TOP-Rel.



Self-Procured Parts List

CEA Saclay



Sap

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2) FM

Part Type	Pack.	Quality / details specifications, upscreening..	Manuf.	Total Need	Remarks
OP400A (die ref OP4000GBC from AD, packaged by HCM France)	FP14	Upscreening : tests according to ESA/SCC 9000 (level B)	AD/U + HCM	972	No P.A.D ready because the packaging has not begun
DAC8800BR	DIL 20	7833C + radiations tests + upscreening	AD/U	14	TID test failed Part eliminated
CEC WPS 47 nf 30ppm 1% 25v	SMD 2528	ESA/SCC C + LAT2	EUR/F	515	not been approved by the HSO Parts Control Board (message 6900-331)
1N5615		ESA/SCC 5103/02-10B or JANS (MIL-PRF 19500)	MSC/U	TBD	New need: *
OP484AM/QML V	FP14	5962-0051701VEA	AND/U	10	New need: *
UC1834J/QML V	DIP16	5962-8774201VEA	TI/U	58	New need: *
2N2905A		ESA/SCC 5202/002 level B	STM/F	30	New need: *

* To be confirmed by the CPPA. CEA requires its procurement through Tecnologica/TOP-Rel.



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SPIRE ***Declared Components List***

User Code: FSDRCC

06 December 2001

Edition: 11

Revision: 0

SAp-SPIRE-VM-0051-01

Prepared by :	Date :
V. Mauguen	
Checked by :	Date :
C. Cara	



SPIRE/DRCU Instrument Herschel Mission



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Document change record

Révision			Modifications
Issue - rev.	Date	Approved by	
0	23/08/00		Preliminary List, including capacitors, connectors, crystals, diodes, integrated circuits, resistors, wires & cables, and miscellaneous. No quantities.
1	18/09/00		<ul style="list-style-type: none"> Quantities for parts types: OP400, PM139, HS303, HS508BRH, HS1840, ADC7809, DAC 7545, HS-26C31, HS-26C32, FPGA, resistors and MAT02. components eliminated: HS-508ARH (new version: B), wires & cables, and miscellaneous.
2	9/10/00		Parts type to be eliminated: resistors CMS type SMC3 (obsolete)
3	27/10/00		<ul style="list-style-type: none"> Obsolete parts for space: OP27, OP297, OP497, OP482, AD580, AD7545G Standardisation proposals: LM124 (instead of OP400) , AD565ATD (instead of 7545ARP, AD584TH (instead of AD580 & REF-02), SEI7809LPRP (instead of ADS7809).
4	29/11/00		Components definitely eliminated: OP27, OP297, OP497, OP482, HS1840 (obsolete) and AD584TE-LCC20 (to be replaced by AD584TH-TO99), and ADS7809 (replaced by 7809LPRP).
5	16/01/01		<ul style="list-style-type: none"> new quantities (<u>more actual</u>), and for all parts we are sure to use, <u>including attritions</u>. Components definitely eliminated: OP400AY-DIP14 & LM124 (no accepted by CEA), AD580TH (no need) New components: UT54LVDS031 (item 18), UT54LVDS032 (item 19) Type reduction accepted: RT54SX32S-1 CQ208E (instead of all FPGA types).



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6	02/01/01	<ul style="list-style-type: none"> • Components definitely eliminated: HS1840; AD584TH (replaced by REF02AL) ; AD565 (standardisation refused) & 1N5617 (replaced by 1N4148) • New components: 1N4148 (item 1), 54HC137 (item 20), 54HC164 (item 21), HS117RH (item 22). For these new parts types, the package is to be confirmed.
7	14/03/01	<ul style="list-style-type: none"> • a new colon “WIH” to identify cables/connectors for Warm Interbox Hardness (no crio harness). Today only connectors because cables not identified yet. • PM139: any need more (quantity: 0) • New connector type: HE801 144P • New colons for costing • Attrition for STM parts • Quantity identified for connectors accessories • Components eliminated of the list: ADS7809, OP400AY, AD584, AD589, old version of FPGAs.
8	14/06/01	<ul style="list-style-type: none"> • New components: capacitor KM-94 220nF(item 19), 54HC595 (item 23), OP215 (item 24) • Quantities have changed for: UT54LVDS032, HS-508RH, MAT-02, HS-033RH, SEI7809, 26C31, 26C32, AMP02, 1N4148, 2N2222A, 2N2907A, 7545ARP • Components eliminated of the list:PM139 • Components self-procured: OP400, DAC8800, REF02AL (only for QM) and OP15AL (only for QM) because don't exist in FP & QM quality level
9	23/07/01	<ul style="list-style-type: none"> • new components: CMS1206 100nF (item 21) to replace CMS1210, CHPHR0505 10R (item 62), 1R (item 70), diode 1N6642, PHR0603 143K (item 72), 17K (item 73), 29K (item 74), 475R (item 75), 51.1K & 6.65K, CHPHR0805 1K (item 77), PHR0603 4K (item 78), fifo 16K*9 FP28 ref: 672061EV-15 • Quantities have changed for: CHPP0603 200R (item 24), CHP0805 470pF, 47pF, CEC 47nF (item 10), KM94-1 220nF, OP400, TAJC 10µF 16V, HS508BRH, SEI7809LPRP, CMS1210 100nF, UT54LVDS031, OP215, TAJC 10µF 16v, REF02AL, CHPHR0805 100R & 10K, PHR0603 4.99K, CHPHR0805 200R



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9	04/09/01	1	<ul style="list-style-type: none"> new components: OP15AL & AMP01 (parts types existing in PACS's list FPBOLC) quantities have changed for SEI 7545
10	23/10/01		<ul style="list-style-type: none"> new components: 54HC14 , MMDP-65656GV-40sB quantities have changed for AD590 parts eliminated: T1507 16MHz & 20MHz to replace by T807 20MHz correction of Part Number for SMDP-67206 modification for attrition rules (only for CHIP capacitors and resistors)
11	06/12/01		<ul style="list-style-type: none"> new components: <ul style="list-style-type: none"> Capacitor CMS 0805 T1 1,5nF (item 5) HE801 connectors: KNB0965510110 (item 10), KNB0964430121 (item 11), KNC1605510110 (item 14) & KNC1604430121 (item 15) - savers: KNB096 44 91 944 (item 24) & KNC160 44 91 944 (item 26) quartz 10 MHz T807 resistors: RLR07/2H4 1R (item 37) Chip CMS P0603 type P(0,01%) 9K76 (item 38), 13K3 (item 39), 17K4 (item 40), 18K2 (item 41), 27K4 (item 42), 61K (item 43), 90K9 (item 44), 95K3 (item 45), 97K6 (item 46) , 102K (item 47) & 267R (item 48). relays: type TL, GP2 & EL210 parts to be eliminated: <ul style="list-style-type: none"> quartz T1507 @ 11,0592 MHz (STC 3665) 3549_350100933B Chip CMS P0603 type P(0,01%): 200R (item 20), 475R (item 21), 6.65K (item 24), 8K (item 25), 16K9 (item 28), 28K7 (item 30), 65K (item 32), 143K (item 35) & 147K (item 36). CHPHR 0505: 10R2 (item 2), 10K (item 6). Capacitor CMS 0805 T1 470pF quantities have changed for: 2N2222, 2N5154, 1N5618, AD589, OP215, OP15, AD590 & HS508
			<ul style="list-style-type: none">



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Distribution list

Ken King	RAL		2
Eva Diaz	TL		2
Olga Ramos	TL		2
Susanna Gadeano	TL		2
Giovanni Gallina	TP		2
			2
Christophe Cara	CEA / SAp		2
F. Pinsard	CEA / SAp		
			2
P. Levacher	LAM		2
			2



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I. Acronyms

ABCL	As Built Configuration List	MOC	Mission Operations Centre
AD	Applicable Document	MOS	Margin Of Safety
AO	Announcement of Opportunity	MRB	Material Review Board
API	Application Programming Interface	N/A	Not Applicable
AIT	Assembly Integration & Test after delivery	NCR	Non Conformance Report
AIV	Assembly Integration & Verification before delivery	OAT	Osservatorio Astronomico di Trieste
AVM	Avionics Model	OBDH	On Board Data Handling
BOL	Begin Of Life	OGS	Operational Ground Segment
CC	Configuration Control	PA	Product Assurance
CCS	Central Checkout System	PDF	Portable Document Format (Adobe Acrobat)
CIDL	Configuration Item Data List	PFM	Proto-Flight Model
CEA	Commissariat à l'Énergie Atomique	PGSE	Pneumatic Ground Support Equipment
CMB	Cosmic Microwave background	PI	Principal Investigator
Co-I	Co-Investigator	PLM	Payload Module
COTS	Commercial Off The Shelf Software	PM	Project Manager
CQM	Cryogenic Qualification Model	PO	Parts Order
DMS	Document Management System	PR	Public Relations
DPC	Data Processing Centres	PS	Project Scientist
DPCM	Data Processing Centres Manager	PSF	Point-Spread-Function
EGSE	Electric Ground Support Equipment	QA	Quality Assurance
EOL	End Of Life	QLA	Quick Look Analysis
EP	Entrance Pupil	RAL	Rutherford Appleton Laboratory
ESA	European Space Agency	RD	Reference Document
ESOC	European Space Operations Centre	RFW	Request For Waiver
ESTEC	European Space Technology and Research Centre	RH	Relative Humidity
FINDAS	FIRST Integrated Network And Data Archive System	RMS	Root Mean Square
FIRST	Far InfraRed and Sub-millimetre Telescope	RTA	Real Time Analysis
FOV	Field-Of-View	S/C	Spacecraft
FPA	Focal Plane Assembly	SAMBA	Satellite for Measurement of Background Anisotropies
FPU	Focal Plane Unit	SAp	Service d'Astrophysique
FS	Flight Spares	SCMP	Software Configuration Management Plan
HK	House-Keeping	SE	System Engineer
HTML	Hyper Text Mark-up Language	SIP	Science Implementation Plan
HTTP	Hyper Text Transport Protocol	SPIRE	S
H/W	Hardware	SPMP	Software Project Management Plan
ICD	Interface Control Document	SQAP	Software Quality Assurance Plan
IDIS	Integrated Data and Information System	SRR	Software Requirements Review
IDIS-DT	IDIS Development Team	SS	Survey Scientist
IDIS-MT	IDIS Management Team	SSD	Space Science Department (ESTEC)
IID-A	Instrument Interface Document, Part A	S/W	Software
IID-B	Instrument Interface Document, Part B	TBC	To Be Confirmed
IS	Instrument Scientist	TBD	To Be Determined
LAM	Laboratoire d'Astrophysique de Marseille	TBN	To Be Nominated
LAN	Local Area Network	TBW	To Be Written
LEOP	Launch & Early Orbit Phase	TC	Tele-Command
LM	Local Manager	TM	TeleMetry
LOS	Line Of Sight	TRB	Test Review Board
MGSE	Mechanic Ground Support Equipment	URD	User Requirements Document
		WFE	Wave Front Error
		WWW	World Wide Web



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1. INTRODUCTION

1.1 Purpose and scope

This document provides a list of the electrical components which would be used in the flight model of the DRCU system (DCU & SCU).

The harness connectors are not included in this list, only savers on warm electronics and cryogenics connectors are included.

1.2 Documents

1.2.1 Applicable Documents

1.2.2 Reference Documents

- [RD1] ESA/SCC QUALIFIED PARTS LIST (15-01-00)
- [RD2] EUROPEAN PREFERRED PARTS LIST (15-02-00)
- [RD3] CNES / QFT / IN0500 Liste préférentielle des composants
- [RD4] FIRST/Planck Preferred Part List ref. : FP-TLG-LI-0001 (07-06-2000)



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2. LEGEND OF LIST COLUMNES

Generic Name : Part Name

Manuf : Manufacturer

Pkg. : Preferred Package / Housing

Part Description : Details / Features of the component

Radiation Harness : Radiation marker

FLT Part Type: Flight Part Type

Preferred Proc-Spec : Preferred Procurement Specification

Level : Required Quality Level

LAT: Lot Acceptance Tests

FM parts : Quantity for Flight Model

FS parts : Quantity for Flight Spare

Needs CEA : Total quantity (PFM + FS)

Attr parts : Attrition quantity

PO : Total quantity for order (Needs CEA + Attr)

3. RADIATION CONSTRAINTS

3.1 Abbreviations

TD : Total Dose effects

SEE : Single Event Effect

SEU : Single Event Upset

SEL : Single Event Latch up (Soft error due to heavy ions)



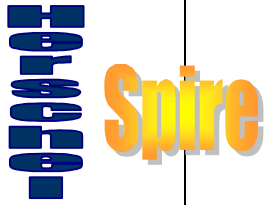
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4. LIST OF COMPONENT MANUFACTURERS

Code	Country	Manufacturer	Address / Seller
TBD		To Be Defined	
ACTEL	USA	Actel Corporation	
AD	USA	Analog Devices	1500 Space Park Drive CA 95052 Santa Clara USA Tel /Fax: 1(0)408 5627408/526 www.analog.com
ATMEL	USA	Atmel	
BB	USA	Burr Brown	
CAN	F	ITT Cannon	BP 359 Av; du Mal deLattre de Tassigny F-39105 DOLE Cedex Tel/Fax: 33(1)84729469/9593 www.ittcannon.com
CEPE	F	CEPE	C-MAC France 44, avenue de la Glacière BP165 F-95100 ARGENTEUIL Tel/Fax : 33(0)139983633/50 Cepe.com@hol.fr
EFD	F	Eurofarad	23, rue Jeanne d' Arc F-77400 LAGNY Te/Fax : 33(0)160317000/64305063 www.eurofarad.com
FCI	France	Framatome Connector International	3, rue de Vallon Hameau d'activités n°2 F-91550 Marolles-en-brie Tel/Fax: 33(0)145107844/40 www.fciconnect.com
FRB		Hypertac S.A.	31, rue Isidore Maille F-76410 St Aubin Les Elboeufs Tel/Fax: 33(0)232969176/70 www.frb-connectron.com Frb.connectron.ama@wanadoo.fr
HARRIS	USA	HARRIS	INTERSIL 2401 Palm Bay Road, N.E. FL 32905 Palm Bay USA Tel/Fax: 1(0)407 7279207/95361 www.semi.harris.com



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HON	USA	Honeywell	12001 State Highway 55 MN 55441 PLYMOUTH USA Tel/Fax: 1(0)6129542888/257 www.honeywell.com
LCC	GB	LCC/AVX LTD	Long Road 7Q4 7ER Paignton Devon England Tel/fax : 44(0)1803528046/6223 www.avxcorp.com
LM	USA	Lockheed Martin	
LT	USA	Linear Technology	Mac Carthy Boulevard CA 95035 MILPITAS USA Tel/Fax: 1(0)4084321900/40507 www.linear-tech.com
MAXIM	USA	Maxim	
	USA	Microsemi	2830 S. Fairview Street PO Box 26890 CA 92704 Santa Anna Tel/Fax: 1(0)7149798220/5575989 www.microsemi.com
NS	USA	National Semiconductor	2900 Semiconductor Drive PO Box 58090 CA 95052 Santa Clara Tel/Fax: 1(0)4087215000/399803 www.national.com
SEI	USA	Space Electronic Inc.	REP' FRANCE
SFR	F	Sfernice	
TEMIC	F	Temec, Matra Harris	NANTES
TI	USA	Texas Instruments - Unitrode	7 Continental Boulevard NH 03054 MERRIMACK USA Tel/Fax: 1(0)034242410/3460 www.unitrode.com
VIS	F	Vishay S.A. division Sfernice	199, Bld de la Madeleine BP 1159 F-06003 NICE Cedex 1 Tel/fax: 33(0)493372727/26
VIT	F	Vitramon	



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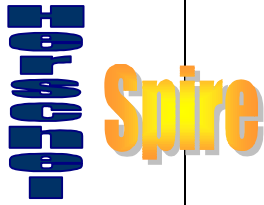
5. GENERAL ATTRITION RULES FOR FLIGHT AND SPARE MODELS

The following table shows the attrition quantities to be applied for parts families. For high cost semiconductor parts, the attrition quantities will be done case by case in the next chapter.

Net Quantity	Chip Capacitors and resistors	Other resistors, capacitors and filters	Semiconductors, relays and connectors with fixed contacts	Connectors bodies, saver bodies and crystals
1 - 5	+10	+4	+3	+2
6 - 8	+10	+5	+4	+2
9 - 15	+10	+6	+5	+3
16 - 25	+15	+7	+6	+4
26 - 40	+20	+10	+8	+5
41 - 60	+20	+13	+10	+6
61 - 100	+25	+17	+15	+10%
101 - 150	+25	+25	+20	+10%
151 - 250	+35	+37	+28	+10%
>= 251	+15%	+15%	+11%	+10%

6. SPECIAL ATTRITION RULES FOR HIGH COST SEMICONDUCTOR PARTS

High cost parts	Net Quantity : 1 - 5	Net Quantity : >5
PROM	+100%	+100%
FPGA RT54SX32S	+2	+4



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7. LIST OF PARTS

7.1 Family Codes

Family Code	Group Code	Family	
01	01	Capacitors	Ceramic
	02	Capacitors	Ceramic Chip
	03	Capacitors	Tantalum Solid
02	01	Connectors	Circular
	02		Rectangular
	03		Printed Circuit Board
	07		Microminiature
03	01	Piezo-Electric Devices	Crystal Resonator
	99		Miscellaneous
04	01	Diodes	Switching
	02		Rectifier
	03		Voltage Regulator
	04		Voltage Reference
07	01	Inductors	RF Coils
	02		Cores
	03		Chip
08	10	Microcircuits	Microprocess/Microcontrol/
	20		Memory SRAM
	21		Memory DRAM
	22		Memory PROM
	23		Memory EPROM
	24		Memory EEPROM
	29		Memory Others
	30		Programmable Logic
	40		ASIC Technologies Digital
			ASIC Technologies Linear
			ASIC Technologies Mixed
		Linear Sample & Hold Amplifier	
	99		Miscellaneous

* <i>obsolete part for space, proposal (x)</i>																														
* new components/last lis																														
<i>in italic: type proposal by Tecnologica, but not acceptable by CEA</i>																														
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procurement	FM parts	FS parts						
											Tol																			
Capacitors																														
CMS 0805 T1 (NPO) 1% 30ppm																														
1	1-		33 pF, 25 V		A612CC 0330F NC 300900306C33C0FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	25	93	N	118			62	31						
2	1-		47 pF, 25 V		A612CC 0470F NC 300900306C47C0FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	67.2	448	N	515			360	88						
4	1-		470 pF, 25 V		A612CC 0471F NC 300900306C4700FA	ESA/SCC 3009	ESA/SCC 3009/003	e					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	134.4	896	N	4030			720	176						
*	5	1-	1,5nF		A612CC 0152F NC 300900306C15C2FA	ESA/SCC 3009	ESA/SCC 3009/003	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	805	134.4	896	N	1030			720	176						
CMS 1206 T2 10% ou 20%																														
21	1-		100nF, 50v,10%		A620ZD0104K NC 300900306C104KC	according to ESA/SCC 3009	ESA/SCC 3009/023	C					Capacitors, Ceramic, Fixed, Chip, Type II, terminaisons Ni barrier	EPPL	TPC	1206	575.4	3836	N	4411			2973	863						
CMS 1210 T2 (BX) 10%																														
20	1-		10 nF, 50 100 V		A613GE 0103K NC 3009 009 06 C 103KE	ESA/SCC 3009	ESA/SCC 3009/009	C					Capacitors, Ceramic, Fixed, Chip, Type II (dielectric BX/2C1), terminaisons Ni barrier	EPPL/ QPL ESA	TPC	1210	25	90	N	115			60	30						
CMS 2220 T1 (NPO) 1% 30ppm																														
9	1-		15 nF, 25 V		A615CC 0153F NC 300900606C153FA	ESA/SCC 3009	ESA/SCC 3009/011	C					Capacitors, Ceramic, Fixed, Chip, Type I (dielectric:COG-NPO)	EPPL	TPC	2220	10	12	N	22			8	4						
CEC class1 30ppm 1% 25V																														
10	1-		47 nF, 25 V		CEC W PS 47nF 1% 25V		ESA/SCC C + LAT 2						Low voltage ceramic chip capacitors, class I (dielectric:COG-NPO)	?	Eurofarad	2528	67.2	448	N	515			360	88						
KM94-1 1%																														

* <i>obsolete part for space, proposal (x)</i> new components/last lis																								
<i>in italic: type proposal by Technologica, but not acceptable by CEA</i>																								
Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts
												Tol											9 LIA-P	2 LIA-P
																							3LIA-S	LIA-S
																							2 BIAS	BIAS
																							2 DAC	DAC-F
																							1 BP	BP
																							TEMP	TEMP
																							2 CK-UF	CK-UF
																							BP	BP
																							distrib	distrib
19	1-		220 nF, 40 V		KM94 S1 220nF 1% 40V								Metallized Polycarbonate Capacitors		Eurofarad	3218	297.6	1984	N	2282			1584	400
			TAJ 10%																					
13	1-		2,2uF 6,3V		TAJ A 225K 006	ESA/SCC 3012	ESA/SCC 3012/001-011C						Capacitors, leadless surface mounted, tantalum, solid electrolyte, enclosed anode connection	EPPL	TPC	SMD size A	20	42	N	62			28	14
15	1-		10uF, 16V		TAJ C 106K 016	ESA/SCC 3012	ESA/SCC 3012/001-013C						Capacitors, leadless surface mounted, tantalum, solid electrolyte, enclosed anode connection	EPPL	TPC	SMD size C	25	129	N	154			97	32
Connectors																								
1	2-		DBMA 25P		3401 002 B DBMA 25P NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	28	P	33			14	14
2	2-		DBMA 25S		3401 002 B DBMA 25S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	33	P	38			18	15
3	2-		DCMA 37S		3401 002 B DCMA 37S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		2	6	P	8			4	2
4	2-		DBMA 44 S		3401 002 B DBMA 44S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High Density Crimp Contact CableConnector	QPL ESA	CAN/F		2	3	P	5			2	1
5	2-		DDMA50P		3401 002 B DDMA 50P NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-01	B					D Subminiature Rectangular Connector without contacts	QPL ESA	CAN/F		5	30	P	35			24	6
6	2-		DCMA 62S		3401 002 B DCMA 62S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High density Crimp Contact CableConnector	QPL ESA	CAN/F		2	6	P	8			4	2
7	2-		DDMA 78 S		3401 002 B DDMA 78S NMB FO	ESA/SCC 3401	ESA/SCC 3401/002-02	B					D Subminiature Rectangular High density Crimp Contact CableConnector	QPL ESA	CAN/F		2	3	P	5			2	1
8	2-		HE 801 65 P/MC		3401 016 01 B 05 MC 343 00 343 KNB 065 13 55 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 65 solder 90° male contacts	QPL ESA	HYP/G		4	18	N	22			14	4
9	2-		HE 801 65 E/FD		3401 016 01 B 17 FD 36 00 36 KNB 065 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 65 solder straight-through female contacts	QPL ESA	HYP/G		5	28	N	33			14	14
*	10	2-	HE 801 96 P/MC		3401 016 01B 08 MC 33 00 33 KNB 096 55 10 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 96 solder 90° male contacts	QPL ESA	HYP/G		5	3	N	8			2	1

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Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts	
												Tol												9 LIA_P	2 LIA-P
																								3LIA-S	LIA-S
																								2 BIAS	BIAS
																								2 DAC	DAC-F
																								1 BP	BP
																								TEMP	TEMP
																								2 CK-UF	CK-UF
																								BP	BP
																								distrib	distrib
*	11	2-	HE 801 96 E/FD		3401 016 01B 17 FD 36 00 36 KNB 096 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 96 solder straight-through female contacts	QPL ESA	HYP/G		5	4	N	9				2	2
	12	2-	HE808 144 P/MC		3401 039 01B 144 55 10 110 KMC 144 55 10 110	ESA/SCC 3401	ESA/SCC 3401/039	B					HE 808 High Density PCB Connector, Plug 3 rows equipped with 144 solder 90° male contacts	QPL ESA	HYP/G		2	3	N	5				2	1
	13	2-	HE808 144 E/FD		3401 39 01B 144 44 30 121 KMC 144 44 30 121	ESA/SCC 3401	ESA/SCC 3401/039	B					HE 808 High Density PCB Connector, Receptacle 3 rows equipped with 144 solder straight-through female contacts	QPL ESA	HYP/G		2	4	N	6				2	2
*	14	2-	HE 801 160 P/MC		3401 016 01B 12 MC 34 00 34 KNC 160 55 10 110	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Plug 2 rows equipped with 96 solder 90° male contacts	QPL ESA	HYP/G		3	5	N	8				3	2
*	15	2-	HE 801 160 E/FD		3401 016 01B 24 MC 36 00 36 KNC 160 44 30 121	ESA/SCC 3401	ESA/SCC 3401/016	B					HE 801 PCB Connector, Receptacle 2 rows equipped with 96 solder straight-through female contacts	QPL ESA	HYP/G		4	8	N	12				4	4
			Contact																						
		2-	2020 Pin		PIN 3401-005-01B	ESA/SCC 3401	ESA/SCC 3401/005 01B	B					Male Contact crimp for D*MA connectors, AWG 20,22 &24	QPL ESA	CAN/F		375	2200	P	2575				1550	650
		2-	2020 Socket		SOCK 3401-005-02B	ESA/SCC 3401	ESA/SCC 3401/005 02B	B					Female Contact crimp for D*MA connectors, AWG 20,22 &24	QPL ESA	CAN/F		199	1047	P	1246				598	449
		2-	2020 Pin/Socket		PIN SOCKET 3401-021-01B	ESA/SCC 3401	ESA/SCC 3401/021 01B	B					Male/Female Contact crimp for D*MA connectors savers	QPL ESA	CAN/F		792	3985	P	4777				2640	1345
		2-	2026 Pin		PIN 3401-005-03B	ESA/SCC 3401	ESA/SCC 3401/005 03B	B					Male Contact crimp for D*MA connectors, AWG 26&28	QPL ESA	CAN/F		375	2200	P	2575				1550	650
		2-	2026 socket		SOCK 3401-005-04B	ESA/SCC 3401	ESA/SCC 3401/005 04B	B					Female Contact crimp for D*MA connectors, AWG 26 & 28	QPL ESA	CAN/F		199	1047	P	1246				598	449
		2-	2222 socket		SOCK 3401-005-08B	ESA/SCC 3401	ESA/SCC 3401/005 08B	B					Female Contact crimp for D*MA connectors, AWG 22, 24 & 26	QPL ESA	CAN/F		280	606	P	886				404	202
			Screw-lock																						
		2-	Male DB, DC		D 20419-48 NMB	ESA/SCC 3401	ESA/SCC 3401/022 03B	B					Screw-lock male	QPL ESA	CAN/F		10	56	P	66				28	28
		2-	female		3401 022 01 B NMB	ESA/SCC 3401	ESA/SCC 3401/022 01B	B					Screw-lock female	QPL ESA	CAN/F		26	102	P	128				60	42
		2-	Screw-lock saver DMA		3401 022 06 B NMB D20418-7	ESA/SCC 3401	ESA/SCC 3401/022 06B	B					Srew-lock for DMA savers	QPL ESA	CAN/F		34	218	P	252				136	82

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												Tol																								
	3-		T807 20 MHz STC 3342		STC 3342 variante 42	ESA/SCC 3501	ESA/SCC 3501/008	B					Cristal units in metal holder based on type 807	QPL ESA EPPL	CEP/F	TO 807	3	3	N	6			2	1												
*	3-		T807 10 MHz STC 3342			ESA/SCC 3501	ESA/SCC 3501/008	B					Cristal units in metal holder based on type 807	QPL ESA EPPL	CEP/F	TO 807	3	6	N	9			4	2												
	3-		T1507 11,0592 MHz		T1507 @ 11.0592 MHz (STC 3665) 3549_350100933B	ESA/SCC 3501	ESA/SCC 3501/009	B					Cristal units in metal holder based on type 1507	QPL ESA EPPL	CEP/F	TO 8	0	0	N	0			0	0												
Diodes																																				
3			1N5617		JANS 1N5617	MIL-PRF-19500	MIL-PRF-19500/429	S					Silicon, Power Rectifier, Fast Recovery	QPL ESA EPPL	MSC/U	Melf/A	29.92	272	NC	302			136	136												
1			1N4148		1N4148-1	ESA/SCC 5101	ESA/SCC 5101/023-02B	B					High Speed Silicon Diode	QPL ESA	MSC/U	DO35	15	90	N	105			60	30												
2			1N6642		JANS1N6642U									QPL ESA	MSC/U	MELF	99	900	N	999			722	178												
Inductors																																				
Integrated circuits monolithic																																				
Amplifiers																																				
1	8-		OP 400 A	Type reduction (1c)	OP400 ATC/QML V	MIL-I-38535	5962-87771 01V3A	V					Quad Low-Offset, Low-Power Operational Amplifier	QML3853 5	AND/U	LCC28	93.06	846	N	939	Y		660	186												
24	8-		OP 215		OP215AZ/QML V	MIL-PRF-38535	5962-88538 01VPA	V			100K rad		DUAL Precision JFET INPUT Operational Amplifier	QML3853 5	AND/U	CerDIP 8	6	21	N	27			14	7												
26	8-		OP15		OP15AL/QMLR	MIL-PRF-38535	5962R8954203VHA	V					OP AMP, JFET-INPUT, RAD-HARD	QML3853 5	AND/U	FP	5	15	N	20			10	5												

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																							9 LIA_P	2 LIA-P	
																							3LIA-S	LIA-S	
																							2 BIAS	BIAS	
																							2 DAC	DAC-F	
																							1 BP	BP	
																							TEMP	TEMP	
																							2 CK-UF	CK-UF	
																							BP	BP	
																							distrib	distrib	
Instrumentation Amplifier																									
25	8-		AMP02AZ		AMP02-903Z	ADS0011177	Built on a QML line but not covered on an SMD						High Accuracy Instrumentation Amplifier	AND/U	CerDIP8		15	72		87			48	24	
27	8-		AMP01		AMP01N/QMLV	MIL-PRF-38535	5962-8863003VKA	v					Instrumentation Amplifier, low noise, precision	QML38535	AND/U	FP14		3	3		6			2	1
Mux																									
3	8-		HS 303 RH		HS9-303RH-QS 9000	MIL-PRF-38535	5962R9581301VXC	v			0,1M		Analog Switch, Dual, SPDT, Radiation Hardened CMOS	EPPL QML-38535	HAR/U	FP-14	28.93	263	N	292			206	57	
4	8-		HS 508 BRH		HS9-508BRH-QS9000	MIL-PRF-38535	5962F9674202VXC	v			0,3M		single 8-Channel MUX, with Overvoltage Protection, Radiation Hardened DI CMOS	QML-38535	HAR/U	FP-16	28	153	N	181			110	43	
S/Hold																									
HCMOS																									
32	8-		54HC14		54HC14	ESA/SCC 9409	ESA/SCC 9409/007	B					HCMOS Hex Schmitt Trigger Inverters	QPL ESA	STM/F	FP14		3	3		6			2	1
20	8-		54 HC 137	no more required	54HC137 K	ESA/SCC 9205	ESA/SCC 9205/13-02B	B			50k		HCMOS 3 to 8 line decoders/demultiplexers with address latches & inverted outputs	QPL ESA	STM/F	FP16		0	0		0			0	0
21	8-		54 HC 164		54 HC 164 K01(2)V	ESA/SCC 9306 MIL-PRF-38535	ESA/SCC 9306/041 5962-8416201VXA(C)	B V			50k		HCMOS 8 bit sipo shift regiser	EPPL QML	STM/F	FP14		4	6		10			4	2
23	8-		54 HC 595		54 HC 595K	ESA/SCC 9306	ESA/SCC 9306/051	B V			50k		HCMOS 8 bit shift regiser	QPL ESA	STM/F	FP10		8	40		48			30	10
Temp Sensor																									
28			AD590M		AD590MF/883B	883B	5962-87571 04MXA	v			tol to 50k		Microcircuit linear, radiation hardened, Temperature Transducer, Two Terminals, monolithic silicon	EPPL QML-38535	AND/U	FP2A		10	44	N	54			33	11
Voltage Ref																									

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												Tol											9 LIA-P	2 LIA-P
																							3LIA-S	LIA-S
																							2 BIAS	BIAS
																							2 DAC	DAC-F
																							1 BP	BP
																							TEMP	TEMP
																							2 CK-UF	CK-UF
																							BP	BP
																							distrib	distrib
29	8-		AD 589 T H		AD 589 TH /QMLV	MIL-PRF-38535	5962-8992901VXA	V				?	Two-Terminal IC 1.2V Reference	QML-38535	AND/U	CAN2	3	4	N	7			2	2
6	8-		REF-02A	Type reduction (15a)	REF02AL	MIL-PRF-38535	5962-8551401VHA	V					Volt Reference +5V adjustable output, precision	QML-38535	AND/U	FP10	10	42	N	52			32	10
			Regulator																					
22a	8-		HS-117RH	TBC	HS9S-117RH-Q	MIL-PRF-35535	5962F9954701VXC	V				300K	Radiation Hardened Adjustable Positive Voltage Regulator	QML-35535	HAR/U	TO-257	4	9	N	13			6	3
			RAM/SRAM																					
30	8-		67206		SMDP-67206FV-15SV	MIL-PRF-38535	5962-9317704VZC	V					FIFO MEMORY, 16K X 9 PARALLEL, LOW POWER, 15 NS	QML 38535	MHS/F	FP28	4	6		10			4	2
31	8-		65656G		SMDP-65656GV-40SV	MIL-PRF-38535	QML-V	V					ACCESS TIME											
													32K*8 Very Low Power CMOS SRAM Rad Tolerant (45nS)	QML 38535	MHS/F	FP28	3	3		6			2	1
			ADC																					
7b	8-	4	SEI 7809LPRP				7809LPRP0901,99	K	Y			RE	A/D convertor, 16 bit serial, latch-protected	QML-38535	SEI	FP24	6	27	Y	33	30		18	9
			DAC																					
8c	8-	4	7545A		7545ARP		7545ARP0610,99	S					CMOS 12-Bit Buffered Multiplying DAC	QML-38535	SEI/U	FP20	15	96	Y	111		Y	64	32
8c	8-	4	7545A		7545ARP		7545ARP0610,99	S					CMOS 12-Bit Buffered Multiplying DAC	QML-38535	SEI/U	FP20	10	45	Y	55	58	N	30	15
			DAC8800		DAC880BR/883C	MIL-STD-883C							octal 8-bit CMOS DAC	883B	AND/U	DIL20	5	9		14		Y	6	3
			E/R diff																					
9	8-		HS-26C31RH		HS9-26C31RH-QS9000	MIL-PRF-38535	5962F9666301VXC	V					Quad EIA RS422, Radiation Hardened CMOS, Differential Driver, with 3-State Output	QML-38535	HAR/U	FP16	5	10	N	15			6	4

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																							2 DAC	DAC-F	
																							1 BP	BP	
																							TEMP	TEMP	
																							2 CK-UF	CK-UF	
																							BP	BP	
																							distrib	distrib	
10	8-		HS-26C32RH		HS9-26C32RH -QS9000	MIL-PRF-38535	5962F9568901VXC	v				100K	Quad EIA RS422, Radiation Hardened CMOS, Differential Receiver, with 3-State Output	EPPL QML-38535	HAR/U	FP16		5	10	N	15			6	4
18	8-		UT54LVDS031		UT54LVDS031	MIL-PRF-38535	5962R9583302VXC	v				1M	Quad CMOS Differential Line Driver, LVDS, Rad-Hard	QML-38535	NS	FP16		6	21	N	27			14	7
19	8-		UT54LVDS032		UT54LVDS032	MIL-PRF-38535	5962R9583402VXC	v				300K	Quad CMOS Differential Line Receiver, LVDS	QML-38535	UTMC	FP16		15	66	N	81			52	14
			FPGA																						
11c	8-		RT 54SX32S		RT54SX32S CQ208E	SA-0320-EYC	SMD + Mfr Amend					rt 75-100k	32000 Gates, SX-A Family, FPGA, RadTolerant and Hired	QML-38535	ACT/U	CQFP-208		4	12	N	16			10	2
																						total without			
Resistors																									
RLR07/2H4 1% 100ppm 1/8W 200V																									
*	37		1R		2H4/RLR 07 1R	ESA/SCC 4001	ESA/SCC 4001/006-01	C					High Reliability, Resistor, Fixed, Film, non hermetically sealed based on type RLR07	EPPL	SFER			10	54		64			42	12
CHP HR 0505 1/8W 2% 50V +/- 200 ppm																									
4	10-		1R		CHPHR 0505 1R00 F6 BE	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505		0	0	P	0			0	0
CHP HR 0505 1/8W 1% 50V +/- 100 ppm																									
2	10-		10R2		CHPHR 0505 10R2 F4 BE	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505		25	112	P	437			90	22
3	10-		100R	0505 TBD	CHPHR 0505 100R0 F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL	SFER	505	479.1	3194	P	3673			2562	632	
4	10-		1K		CHPHR 0505 1K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	71.7	478	N	550			384	94	
5	10-		5K	4.99K	CHPHR 0505 5K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability, Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	67.2	448	N	515			360	88	

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																							1 BP	BP
																							TEMP	TEMP
																							2 CK-UF	CK-UF
																							BP	BP
																							distrib	distrib
6	10-		10K		CHPHR 0505 10K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability,Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	206.4	1374	N	1580			1104	270
7	10-		15K		CHPHR 0505 15K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability,Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	206.1	1374	N	1580			1104	270
8	10-		30K	30k1	CHPHR 0505 30K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	134.4	896	N	1030			720	176
9	10-		100K		CHPHR 0505 100K F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability,Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	201.6	1344	N	1546			1080	264
10	10-		1Mo		CHPHR 0505 1Mo F4	ESA/SCC 4001	ESA/SCC 4001/016-03	C					High reliability,Resistor, Fixed, Chip	EPPL QPL ESA	SFER	505	134.4	896	N	1030			720	176
CHP CMS 0805 1/5W 1% 75V +/-200 ppm																								
11	10-		10R		CHPHR 0805 K 1% R 10U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	96	N	121			64	32
CHP CMS 0805 1/5W 1% 75V +/-100 ppm																								
12	10-		68R	68R1	CHPHR 0805 K 1% R 100U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	75	N	100			50	25
13	10-		100R		CHPHR 0805 K 1% R 100U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	92.7	618	N	711			412	206
14	10-		200R		CHPHR 0805 K 1% R 200U	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	96	N	121			64	32
15	10-		1K		CHPHR 0805 K 1% R 1K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	20	36	N	56			24	12
16	10-		10K		CHPHR 0805 K 1% R 10K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	144	N	169			96	48
17	10-		15K		CHPHR 0805 K 1% R 15K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	10	6	N	16	20		4	2
18	10-		33,2K		CHPHR 0805 K 1% R 33K2	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	15	21	N	36			14	7
19	10-		100K		CHPHR 0805 K 1% R 100K	ESA/SCC 4001	ESA/SCC 4001/018	C					Resistor, Fixed, Chip	EPPL QPL ESA	SFER	805	25	90	N	115			60	30
Chip CMS 0603 type P 0,01% +/-10 ppm 1/10W																								
20	10-		200R	251R	PHR 0603 Y2000LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistor, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64
48	10-		267R		PHR 0603 Y2670LB	ESA/SCC 4001	ESA/SCC 4001/023-05	c					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24
24	10-		475R		PHR 0603 Y4750LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistor, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24
22	10-		4K		PHR 0603 Y4001LB	ESA/SCC 4001	ESA/SCC 4001/023-05	c					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	15	18	NC	33			12	6

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SPIRE / Herschel CEA Saclay, User Code: FSDRCC

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Item N°	Family Code	Group Code	GENERIC NAME	comments	FLT Part Type	FLT Generic Spec	FLT Detail Spec	Level	evaluation	upscreening	Lat	Rad	FLT Description	Status	Manuf	Pkg	Attr.	Needs CEA	LLI	Total Need	PO	Self procure d	FM parts	FS parts								
												Tol																				
																								9 LIA-P	2 LIA-P							
																								3LIA-S	LIA-S							
																								2 BIAS	BIAS							
																								2 DAC	DAC-F							
																								1 BP	BP							
																								TEMP	TEMP							
																								2 CK-UF	CK-UF							
																								BP	BP							
																								distrib	distrib							
23	10-		5K 4,99K		PHR 0603 Y4991LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	81	NC	106			54	27								
24	10-		6,65K		PHR 0603 Y6651LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24								
25	10-		8K		PHR 0603 Y8001LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64								
* 38	10-		9K76		PHR 0603 Y9762LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	128	NC	153			96	32								
26	10-		10K		PHR 0603 Y1002LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	301.4	2009	NC	2310			1607	402								
* 39	10-		13K3		PHR 0603 Y1332LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64								
27	10-		15K		PHR 0603 Y1502LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	163.2	1088	NC	1251			864	224								
28	10-		16K9		PHR 0603 Y1692LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24								
* 40	10-		17K4		PHR 0603 Y1742LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	35	192	NC	227			144	48								
* 41	10-		18K2		PHR 0603 Y1822LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	35	192	NC	227			144	48								
29	10-		20K		PHR 0603 Y2002LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	10	12	NC	22			8	4								
30	10-		28K7		PHR 0603 Y2872LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	86.4	576	NC	662			432	144								
* 42	10-		27K4		PHR 0603 Y2742LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24								
31	10-		54K 51,1K		PHR 0603 Y5112LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	54.9	366	NC	421			252	114								
* 43	10-		61K		PHR 0603 Y6102LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	15	18	NC	33			12	6								
32	10-		65K		PHR 0603 Y6502LB	ESA/SCC 4001	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64								
* 44	10-		90K9		PHR 0603 Y9532LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	105.6	704	NC	810			576	128								
* 45	10-		95K3		PHR 0603 Y9532LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	121			72	24								
* 46	10-		97K6		PHR 0603 Y9762LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	52.8	352	NC	405			288	64								

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												Tol											9 LIA-P	2 LIA-P										
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																							2 CK-UF	CK-UF										
																							BP	BP										
																							distrib	distrib										
* 47	10-		102K		PHR 0603 Y1023LB	ESA/SCC 4001	ESA/SCC 4001/023-05	C					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	105.6	704	NC	810			576	128										
35	10-		143K		PHR 0603 Y1433LB	ESA/SCC 4004	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	211.2	1408	NC	1619			1152	256										
36	10-		147K		PHR 0603 Y1473LB	ESA/SCC 4004	ESA/SCC 4001/023-05	e					Resistors, Fixed, Chips, thin film, high precision wraparound	EPPL	SFER	603	25	96	NC	424			72	24										
Transistors																																		
1	12-	16	MAT02		MAT02-903H		in accordance with the "AND Standard Space Level products program" as QML-V equivalent part (MAT02-903H)	ADS0011413	S			RT 200K	Low Noise, Matched Dual Monolithic Transistor		AND	TO78	49.28	448	N	497			360	88										
	12-		2N2907A		2N2907A AHR 520200103B	ESA/SCC 5202	ESA/SCC 5202/001-02	B					Transistors, Low power, PNP	QPL ESA EPPL	STM/F	TO18	6	18		24			10	8										
	12-		2N5154		2N5154	ESA/SCC 5203	ESA/SCC 5203/010						Transistors, low & hight power, NPN	QPL ESA EPPL	STM/F	TO39 ou TO257	15	102		117			68	34										
	12-		2N2222A		2N2222A	ESA/SCC 5201	ESA/SCC 5201/002-02	B					Transistors, low power, NPN, switching	QPL ESA EPPL	STM/F	TO18	6	20		26			12	8										
Relays																																		

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												Tol											9 LIA-P	2 LIA-P
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																							TEMP	TEMP
																							2 CK-LF	CK-LF
																							BP	BP
																							distrib	distrib
	9-	17	TL		TL 2PDT 1A 12V 500R 2ms	ESA/SCC 3602	ESA/SCC 3602/002						Relays, Electromagnetic, latching 28Vdc, 1A, 2PDT, TO5 CAN	QPL ESA EPPL	Deutsch	TO5		40		40			20	20
	9-	17	GP2		GP2 2PDT 2A 12V 180R 4ms	ESA/SCC 3602	ESA/SCC 3602/003-02	B					Relays, Electromagnetic, latching 28Vdc, 2A, 2PDT, half size crystal can	QPL ESA EPPL	Leach Intersil	self-crystal		14		14			7	7
	9-	17	EL210		EL210 2PDT 10A 12V 60R 15ms	ESA/SCC 3602	ESA/SCC 3602/009-06	B					Relays, Electromagnetic, latching 28Vdc, 15A, 2PDT	QPL ESA EPPL	Deutsch	gaure-ind		12		12			6	6
	9-	16	EL210			ESA/SCC 3601	ESA/SCC 3601/017						Relays, Electromagnetic, non latching 28Vdc, 15A, 2PDT	QPL ESA EPPL	Deutsch			12		12			6	6