

Aerospace and Hi-rel ESCC, JANS & QML products





Content

Aerospace Diodes and rectifiers	4
Bipolar diodes	4
Schottky diodes.....	5
Rad-hard and hi-reliability Bipolar transistors	6
Rad-hard MOSFETs.....	8
Rad-hard Logic ICs.....	10
CMOS4000 Logic series	11
54HC and 54HCT Logic series	13
54AC and 54ACT Logic series	16
54VCX Logic series	19
Rad-hard LVDS interfaces	20
Rad-hard Voltage references.....	21
Rad-hard Comparators	22
Rad-hard A/D converters	23
Rad-hard Operational amplifiers	24
Rad-hard Positive Voltage regulators	26
Rad-hard Negative Voltage regulators	29
Rad-hard PWM controllers.....	30
Rad-hard MOSFET Driver - Dual Low-Side	31
Rad-hard Integrated current limiter	33
Demoboards for Rad-hard products	34





Aerospace Diodes and rectifiers

Featured product

STPS40A150CHR
STPS60A150CHR
STPS80A150CHR

Aerospace series of 150 V -
2 x 20A/30A/40A Schottky rectifier

STPSX0A150CHR FEATURES

- Forward current: 2 x 40 A - 2 x 30 A – 2 x 40 A
- Repetitive peak voltage: 150 V
- Low forward voltage drop
- Monolithic dual die - common cathode
- Hermetic packages : SMD.5 and TO-254AA
- 3 Mrad(Si) – No SEB up to 60 MeV.mg/cm²
- ESCC qualified (STPS40A150CHR : 3Q2019)



TO-254



SMD.5

RAD-HARD AND HIGH-RELIABILITY DIODES AND RECTIFIERS

Bipolar diodes

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Type	V _{RRM} max. (V)	I ₀ max. (A)	V _F max. @ rated I _F (V)	T _{RR} max. (ns)	T _J max. (°C)	Temp. range (°C)
1N6640U	Aerospace 0.3 A, 75 V switching diode	3 Mrad(Si) HDR	ESCC	5101/027	LCC-2D	Single	75	0.3	1.06	9	175	-65 to 175
1N6642U	Aerospace 0.3 A, 100 V switching diode	3 Mrad(Si) HDR	ESCC	5101/026	LCC-2D	Single	100	0.3	1.2	9	175	-65 to 175
1N5806U	Aerospace 2.5 A - 150 V switching fast rectifier	150 krad (Si) LDR 3 Mrad HDR	ESCC	5101/014	LCC-2A	Single	150	2,5	1,00	30	175	-65 to 175
1N5811U	Aerospace 6 A - 150 V switching fast rectifier	150 krad (Si) LDR 3 Mrad HDR	ESCC	5101/013	LCC-2B	Single	150	6	0,95	35	175	-65 to 175
BYW81HR*	Aerospace 1 & 2 x 15A - 200V power fast rectifier	-	ESCC	5103/029	SMD.5	Single	200	15	1,15	40	150	-55 to 150
BYV54HR*	Aerospace 40A - 200V power fast rectifier	-	ESCC	5103/031	TO-254AA	Single	200	40	1,30	60	150	-55 to 150
STPS40A200HR**	Rad-Hard 40A - 200V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV. cm ² /mg @ 100% VRRMmax	ESCC	tbd	SMD.5	Single	200	40 ⁽¹⁾	tbd	tbd	175	-65 to 175

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Type	V _{RRM} max. (V)	I _o max. (A)	V _f max. @ rated I _f (V)	T _{RR} max. (ns)	T _j max. (°C)	Temp. range (°C)
STPS40200CHR**	Rad-Hard 40A - 200V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 100% VRRMmax	ESCC	tbd	TO-254AA	Dual common cathode	200	2 x 20 ⁽¹⁾	0,87	60	175	-65 to 175
STTH60200CHR**	Aerospace 60A - 200V fast recovery rectifier	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 100% VRRMmax	ESCC	tbd	SMD1	Dual common cathode	200	2 x 30 ⁽¹⁾	0,95	60	175	-65 to 175
STTH60400HR	Aerospace 60A - 400V fast recovery rectifier	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 100% VRRMmax	ESCC	5103/032	SMD1	Dual common cathode	400	2 x 20 ⁽¹⁾	1,15	80	175	-65 to 175

Schottky diodes

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Type	V _{RRM} max. (V)	I _o max. (A)	V _f max. @ 125°C rated I _f (V)	IFSM (A)	T _j max. (°C)	Temp. range (°C)
1N5822U	Aerospace 3 A - 40 V switching Schottky diode	150 krad (Si) LDR 3 Mrad HDR	ESCC	5106/020	LCC-2B	Single	40	3	0,46	80	150	-55 to 150
1N5819U	Aerospace 1 A - 45V switching Schottky diode	150 krad (Si) LDR 3 Mrad HDR	ESCC	5106/021	LCC-2B	Single	45	1	0,45	25	150	-55 to 150
STPS40A45CHR**	Rad-Hard 40A - 45V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg	ESCC	tbd	TO-254AA	Dual monolithic common cathode	45	2 x 20 ⁽¹⁾	tbd	tbd	175	-65 to 175
STPS60A45CHR**	Rad-Hard 60A - 45V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg	ESCC	tbd	SMD.5	Dual monolithic common cathode	45	2 x 30 ⁽¹⁾	tbd	tbd	175	-65 to 175
STPS1045HR*	Aerospace 2 x 10A - 45V power Schottky	-	ESCC	5106/017	SMD.5	Dual monolithic common cathode	45	2 x 10	0,80	200	175	-65 to 175
STPS20100HR*	Aerospace 1 & 2 x 20A - 100V / 200 V power Schottky	-	ESCC	5106/016	TO-254 SMD.5	2 x Single Single	100 200	1 x 20 2 x 20	0,90	250	175	-65 to 175
STPS40100HR*	Aerospace 2x20A - 100V power Schottky	-	ESCC	5106/019	TO-254	Dual Schottky common cathode	100	2 x 20	0,85	300	175	-65 to 175
STPS40A150CHR**	Rad-Hard 40A - 150V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 85% VRRMmax	ESCC	tbd	TO-254AA	Dual monolithic common cathode	150	2 x 20 ⁽¹⁾	tbd	190	175	-65 to 175
STPS60A150CHR	Rad-Hard 60A - 150V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 85% VRRMmax	ESCC	5106/023	SMD.5	Dual monolithic common cathode	150	2 x 20 ⁽¹⁾	0,76	190	175	-65 to 175
STPS80A150CHR	Rad-Hard 80A - 150V power Schottky diode	Immune to 3 Mrad(Si) HDR no SEB @ 60 MeV.cm2/mg @ 85% VRRMmax	ESCC	5106/023	SMD.5	Dual monolithic common cathode	150	2 x 40 ⁽¹⁾	0,81	190	175	-65 to 175

Note: (*) Not recommended for new design

(**) Under development

(1) max continuous current

Please contact ST sales office for information about the specific conditions for products in die form



Rad-hard and hi-reliability Bipolar transistors

Featured product

2ST3360

100 krad, 60 V, 0.8 A,
NPN and PNP complementary
transistor



2ST3360 FEATURES

Parameters	NPN	PNP
$V_{CE0 \text{ min}}$	60 V	60 V
$I_C \text{ (max)}$	0.8 A	0.8 A
$h_{FE} \text{ at 1 A - 2 V}$	160	160

- Flat-8 hermetic package
- 100 krad (Si) low dose rate
- Temperature range: -65 to 200 °C
- Linear gain characteristics
- ESCC qualified: 5207/009 specification

This bipolar transistor is a dual complementary NPN and PNP housed in Flat-8 hermetic package and specifically designed for space applications. Developed from ST's rad-hard high current density technology, it ensures high switching and best-in-class radiation hardness performances. Suitable for power MOSFET driver applications, it is ESCC 5207/009 qualified.

2ST3360 DEVICE SUMMARY

Part number	Agency specification	Quality level	Radiation level	Package	Lead finish	Marking	Packing
2ST3360K1	-	Engineering model	-	Flat-8	Gold	2ST3360K1	Waffle pack
2ST3360RKG	5207/009/10R	ESCC flight	100 krad		Gold	520700910R	
2ST3360RKT	5207/009/11R	ESCC flight	100 krad		Solder dip	520700511R	

NPN BIPOLAR TRANSISTORS

Part number	Description	Radiation level	$H_{FE} \text{ min.}$	Package	Agency qualification	Agency detail specification	Temperature range (°C)
2N2222AUB	40 V, 0.8 A	Up to 100 krad	100 @ 10 V - 150 mA	UB	ESCC	5201/002	-65 °C to 200 °C
SOC2222AHR				LCC-3			
JANS2N2222AUB				UB	DLA	19500/255	
2N3700UB	80 V, 1 A	Up to 100 krad	100 @ 10 V - 150 mA	UB	ESCC	5201/004	
SOC3700HR				LCC-3			
JANS2N3700				UB	DLA	19500/391	
2N5551UB	160 V, 0.5 A	Up to 100 krad	80 @ 5 V - 10 mA	UB	ESCC	5201/019	
SOC5551HR				LCC-3			
JANS2N5551UB				UB	DLA	19500/761	
2N5154ESYHR	80 V, 5 A	Up to 100 krad	70 @ 2.5 A/5 V	TO-257	ESCC	5203/010	
2N5154SHR				SMD.5			

NPN DUAL MATCHED BIPOLAR TRANSISTORS

Part number	Description	Radiation level	H _{FE} min.	Package	Agency qualification	Agency detail specification	Temperature range (°C)
2N2920AK	60 V, 0.03 A	Up to 100 krad	300 @ 5 V - 1 mA	Flat-8	ESCC	5207/002	-65 to 200 °C
SOC2920AHR				LCC-6			

PNP BIPOLAR TRANSISTORS

Part number	Description	Radiation level	H _{FE} min.	Package	Agency qualification	Agency detail specification	Temperature range (°C)
2N2907AUB	60 V, 0.6 A	Up to 100 krad	100 @ 10 V - 150 mA	UB	ESCC	5202/001	-65 to 200 °C
SOC2907AHR				LCC-3			
JANS2N2907AUB				UB	DLA	19500/291	
2N5401UB	150 V, 0.5 A	Up to 100 krad	60 @ -10 mA, -5 V	UB	ESCC	5202/014	
SOC5401HR				LCC-3			
JANS2N5401UB				UB	DLA	19500/766	
2N5153ESYHR	80 V, 5 A	Up to 100 krad	70 @ -2.5 A/-5 V	TO-257	ESCC	5204/002	
2N5153SHR				SMD.5			

PNP DUAL MATCHED BIPOLAR TRANSISTORS

Part number	Description	Radiation level	H _{FE} min.	Package	Agency qualification	Agency detail specification	Temperature range (°C)
2N3810K	60 V, 0.05 A	Up to 100 krad	125 @ 10 mA - 5 V	Flat-8	ESCC	5207/005	-65 °C to 200 °C
SOC3810HR				LCC-6			

NPN AND PNP COMPLEMENTARY TRANSISTORS

Part number	Description	Radiation level	H _{FE} min.	Package	Agency qualification	Agency detail specification	Temperature range (°C)
2ST3360	60 V, 0.8 A	Up to 100 krad	160 @ 1 A - 2 V	Flat-8	ESCC	5207/009	-65 °C to 200 °C
JANS2ST3360K					DLA	M19500/773	

Please contact ST sales office for information about the specific conditions for product in die form and for other packages

RADIATION HARDNESS ASSURANCE

JANS products are fully comply with the corresponding MIL-PRF-19500 specification.

ESCC products are fully comply with the corresponding ESCC detailed specification.

JANS radiation assurance

On top of the MIL-PRF-19500 specification (Group D, subgroup 2 inspection, between 50 and 300 rad/s.) ST JANSR include additional wafer by wafer 100 krad Low dose rate guarantee at 0.1 rad/s., identical to the ESCC 100 krad guarantee.

ESCC radiation assurance

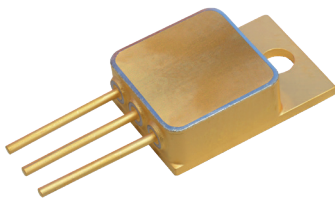
Each production lot is tested according to the ESCC basic specification 22900, with a minimum of 10 samples per diffusion lot and 5 samples per wafer. Irradiation at 0.1 rad (Si)/s. and acceptance of each individual wafer is guaranteed if all 10 samples comply with the post radiation electrical characteristics provided in the data-sheets.

Delivery of the parts include the radiation verification test (RVT) report with data for each parameter at 30, 50, 70 and 100 krad (Si) and after 24 hours at room temperature and after 168 hours at 100°C.

Featured product

STRH40P10

100 krad, 100 V, 34 A,
P-channel Power MOS-FET



TO-254AA

STRH40P10 FEATURES

BVDSS min	100 V
Id	34 A
RDS(on)	0.060 Ohm
Qg	162 nC

- Fast switching
- 100% avalanche tested
- Hermetic package
- 100 krad TID
- SEE radiation hardened

This P-channel Power MOSFET is developed with ST's unique STripFET™ process and ESCC qualified. It is specifically designed for space applications to sustain high TID and provide immunity to heavy ion effects. Suitable for current limiter and motor control applications.

STRH40P10 DEVICE SUMMARY

Part number	Agency specification	Quality level	Radiation level	Package	Lead finish	Marking	Packing
STRH40P10HY1	-	Engineering model	-	TO-254AA	Gold	STRH40P10HY1 + BeO	Strip pack
STRH40P10HYG	5205/025/01	ESCC flight	100 krad		Gold	520502501R + BeO	
STRH40P10HYT	5205/025/02	ESCC flight	100 krad		Solder dip	520502502R + BeO	

RAD-HARD POWER MOSFET

Part number	Description	Radiation level	Agency qualification	Agency detail specification	Package	Type	V _{DS} (V)	I _D max. (A)	R _{DS(on)} max. (mOhm)	Qg max. (nC)	Temperature range (°C)
STRH40N6	60V, 30A N-channel	50 krad SEE hardened	ESCC	5205/024	SMD.5	N	60	30	45	52	-55 to 150 °C
STRH100N6	60V, 40A N-channel			5205/022	TO-254AA			40	13,5	160	
STRH8N10	100V, 6A N-channel			5205/023	SMD.5		100	6	300	22	
STRH100N10	100V, 48A N-channel			5205/021	TO-254AA			48	35	162	
STRH12P10	100V, 12A P-channel	100 krad SEE hardened	ESCC	5205/029	TO-257AA	P	-100	12	300	48	
STRH40P10	100V, 34A P-channel			5205/025	TO-254AA			34	75	194	

Note: Contact ST sales office for information about conditions for product in die form and other packages availability

RADIATION HARDNESS ASSURANCE

Each production lot is tested for total ionizing dose (according to the ESCC 22900 specification, window 1.) and Heavy-ions (according to MIL-STD-750E, method 1080).

Total ionizing dose

Each production lot is tested according to the ESCC basic specification 22900, with a minimum of 10 samples per diffusion lot and 5 samples per wafer. Irradiation at 0.1 rad (Si)/s. and acceptance of each individual wafer is guaranteed if all 10 samples comply with the post radiation electrical characteristics provided in the data-sheets.

Heavy-ions

SEB and SEGR tests are performed with a fluence of $3e+5$ ions/cm². The acceptance criteria are

- SEB: drain voltage tested, VGS = - 2 V. Stop condition: as SEB occurs or fluence reaches $3e+5$ ions/cm².
- SEGR: gate current tested. Gate stress is performed before and after irradiation. Stop condition: as gate current reaches 1 mA (during irradiation or PIGS test) or fluence reaches $3e+5$ ions/cm².

Delivery of the parts include the radiation verification test (RVT) report with data for each parameter at 30, 50, 70 and 100 krad (Si) and after 24 hours at room temperature and after 168 hours at 100°C.

Featured products

54AC164245

Rad-hard 16-bit transceiver 3.3 V to 5 V bidirectional level shifter

54VCXH162245

Rad-hard low voltage CMOS 16-bit bus buffer transceiver (3-state) with 3.6 V tolerant inputs and outputs

54AC164245 FEATURES

- Dual supply bidirectional level shifter
- Extended voltage range from 2.3 V to 5.5 V
- Separated enable pin for 3-state output
- Schmidt-triggered I/Os: 100 mV hysteresis
- Internal 26 Ω limiting resistor on each I/O
- High speed: Tpd = 8 ns maximum
- Fail safe & Cold spare
- Fully compatible with 54ACS164245
- Hermetic package
- 100 krad (Si)
- SEL-free up to 110MeV.cm²/mg LET ions
- RHA QML-V qualified: SMD: 5968-98580

54VCXH162245 FEATURES

- V_{cc} range: 1.65 V to 3.6 V
- 1.65 V to 3.6 V inputs and outputs
- High speed outputs: 2.5 ns to 4.3 ns max
- Symmetrical impedance
- Power down protection on inputs & outputs
- 26 Ω series resistors in A port output
- 100 mV typical input hysteresis
- Bus hold on both ports
- Cold spare
- Latch-up exceeds 300 mA (JESD 17)
- 300 krad (Si) – product full CMOS
- SEE-free up to 110MeV.cm²/mg LET ions
- RHA QML qualified: SMD 5962-02508



Flat-48

54AC164245 DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	Mass	EPPL ¹	Temperature range
RHFAC164245K1	-	Engineering model	Flat-48	Gold	1.50 g	-	-55 °C to +125 °C
RHRAC164245K01V	5962R9858008VYC	QML-V flight				Yes	

Note: 1. EPPL = ESA preferred part list

54VCXH162245 DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	Mass	EPPL ¹	Temperature range
RHRXH162245K1	-	Engineering model	Flat-48	Gold	1.50 g	-	-55 °C to +125 °C
RHFHX162245K03V	5962F0250802VXC	QML-V flight				Yes	

Note: 1. EPPL = ESA preferred part list

RAD-HARD LOGIC SERIES

CMOS4000 Logic series

Part number	Description Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc} (V)		V _m range (V)	Temperature range (°C)
							min.	max.		
HCC4001B	Quad 2-input NOR gate	100 krad (Si) SEL Free @ 110 Mev. cm2/mg	ESCC	9201/041	Flat-14 - DIL-14		3	20	0 to V _{cc}	-55 to +125
HCC4002B	Dual 4-input NOR gate			9201/042	Flat-14 - DIL-14					
HCC4008B	4-Bit full adder			9202/039	Flat-16 - DIL-16					
HCC4011B	Quad 2-input NAND gate			9201/043	Flat-14 - DIL-14					
HCC4012B	Dual 4-input NAND gate			9201/044	Flat-14 - DIL-14					
HCC4013B	Dual D flip-flop			9203/023	Flat-14 - DIL-14					
HCC4014B	8-stage static synchronous shift register			9306/014	Flat-16 - DIL-16					
HCC4015B	Dual 4-stage static shift register			9306/015	Flat-16 - DIL-16					
HCC4017B	Decade counter/divider			9204/020	Flat-16 - DIL-16					
HCC4018B	Presetable divide-by-n counter			9204/021	Flat-16 - DIL-16					
HCC4019B	Quad AND/OR select gate			9202/051	Flat-16 - DIL-16					
HCC4020B	14-stage binary/ripple counter			9204/022	Flat-16 - DIL-16					
HCC4021B	8-stage static shift register			9306/016	Flat-16 - DIL-16					
HCC4022B	Divide-by-8 counter/divider			9204/023	Flat-16 - DIL-16					
HCC4023B	Triple 3-input NAND gate			9201/045	Flat-14 - DIL-14					
HCC4024B	7-stage binary/ripple counter			9204/024	Flat-14 - DIL-14					
HCC4025B	Triple 3-input NOR gate			9201/046	Flat-14 - DIL-14					
HCC4027B	Dual J-K master-slave flip-flop			9203/022	Flat-16 - DIL-16					
HCC4028B	BCD-to-decimal decoder			9205/010	Flat-16 - DIL-16					
HCC4029B	Presetable up/down counter			9204/025	Flat-16 - DIL-16					
HCC4030B	Quad exclusive OR gate			9201/047	Flat-14 - DIL-14					
HCC4034B	8-stage static bidirectional bus register			9306/025	Flat-24 - DIL-24					
HCC4040B	12-stage binary/ripple counter			9204/026	Flat-16 - DIL-16					
HCC4041UB	Quad true/complement buffer			9202/040	Flat-14 - DIL-14					
HCC4042B	Quad clocked D latch			9202/041	Flat-16 - DIL-16					
HCC4043B	Quad 3-state NOR R/S latch			9202/042	Flat-16 - DIL-16					
HCC4044B	Quad 3-state NAND R/S latch			9202/043	Flat-16 - DIL-16					
HCC4046B	Micropower phase locker loop			9202/044	Flat-16 - DIL-16					
HCC4047B	Monostable/astable multivibrator			9207/003	Flat-14 - DIL-14					
HCC4049UB	Hex inverting buffer/converter			9202/045	Flat-16 - DIL-16					
HCC4050B	Hex non-inverting buffer/converter			9202/046	Flat-16 - DIL-16					
HCC4051B	Single 8-channel analog mux/demux			9202/047	Flat-16 - DIL-16					
HCC4052B	Different 4-channel analog mux/demux			9202/048	Flat-16 - DIL-16					
HCC4053B	Triple 2-channel analog mux/demux			9202/049	Flat-16 - DIL-16					
HCC4060B	14-stage counter/divider AND oscillator	9204/052	Flat-16 - DIL-16							

CMOS4000 Logic series

Part number	Description Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{CC} (V)		V _{IN} range (V)	Temperature range (°C)
							min.	max.		
HCC4063B	4-bit magnitude comparator	100 krad (Si) SEL Free @ 110 Mev. cm2/mg	ESCC	9209/001	Flat-16 - DIL-16		3	20	0 to V _{CC}	-55 to +125
HCC4066B	Quad bilateral switch			9408/005	Flat-14 - DIL-14					
HCC4067B	Single 16-channel analog mux/ demux			9408/009	Flat-24 - DIL-24					
HCC4068B	8-input NAND/AND gate			9201/061	Flat-14 - DIL-14					
HCC4069UB	Hex inverter			9401/010	Flat-14 - DIL-14					
HCC4070B	Quad exclusive OR gate			9201/048	Flat-14 - DIL-14					
HCC4071B	Quad 2-input OR gate			9201/063	Flat-14 - DIL-14					
HCC4072B	Dual 4-input OR gate			9201/082	Flat-14 - DIL-14					
HCC4073B	Triple 3-input AND gate			9201/064	Flat-14 - DIL-14					
HCC4075B	Triple 3-input OR gate			9201/065	Flat-14 - DIL-14					
HCC4076B	4-bit D-type register			9306/022	Flat-16 - DIL-16					
HCC4077B	Quad exclusive NOR gate			9201/055	Flat-14 - DIL-14					
HCC4078B	8-input NOR/OR gate			9201/062	Flat-14 - DIL-14					
HCC4081B	Quad 2-input AND gate			9201/052	Flat-14 - DIL-14					
HCC4082B	Dual 4-input AND gate			9201/066	Flat-14 - DIL-14					
HCC4093B	Quad 2-input NAND Schmitt trigger			9409/002	Flat-14 - DIL-14					
HCC4094B	8-stage shift-and-store bus register			9306/026	Flat-16 - DIL-16					
HCC4098B	Dual monostable multivibrator			9206/003	Flat-16 - DIL-16					
HCC40103B	Presettable 8-bit binary down counter			9204/036	Flat-16 - DIL-16					
HCC40106B	Hex Schmitt trigger			9409/005	Flat-14 - DIL-14					
HCC40107B	Dual 2-input NAND buffer/ divider			9401/013	Flat-14 - DIL-14					
HCC40109B	Quad low-to-high voltage level shifter			9407/003	Flat-16 - DIL-16					
HCC40161B	Binary counter with asynchronous clear			9204/054	Flat-16 - DIL-16					
HCC40174B	Hex D flip-flop			9203/038	Flat-16 - DIL-16					
HCC40193B	Presettable 4-bit binary up/ down counter			9204/041	Flat-16 - DIL-16					
HCC4503B	Hex 3-state non-inverter buffer			9401/030	Flat-16 - DIL-16					
HCC4512B	8-channel data selector with 3-state output			9408/006	Flat-16 - DIL-16					
HCC4514B	4-bit latch/4- to 16-line decoder with output high			9408/012	Flat-24 - DIL-24					
HCC4515B	4-bit latch/4- to 16-line decoder with output low			9205/011	Flat-24 - DIL-24					
HCC4516B	Presettable 4-bit binary up/ down counter			9204/045	Flat-16 - DIL-16					
HCC4520B	Dual binary up/down counter			9204/028	Flat-16 - DIL-16					
HCC4532B	8-input priority encoder			9202/065	Flat-16 - DIL-16					
HCC4538B	Dual precision monostable multivibrator			9207/007	Flat-16 - DIL-16					
HCC4555B	Dual 1-of-4 decoder/demux with output high	9408/011	Flat-16 - DIL-16							
HCC4556B	Dual 1-of-4 decoder/demux with output low	9408/025	Flat-16 - DIL-16							

Note: Please contact ST sales office for information about the specific conditions for other HCC4xxx part numbers and for products in die form

54HC and 54HCT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc}		V _{in} range (V)	Temperature range (°C)
							min. (V)	max. (V)		
M54HC00	Quad 2-input NAND gate	50 krad (Si) SEL free @ 110 MeV.cm2/mg	ESCC	9201/105	Flat-14 - DIL-14		2.0	6.0	0 to V _{cc}	-55 to +125
M54HC02	Quad 2-input NOR gate			9201/113	Flat-14 - DIL-14					
M54HC03	Quad 2-input NAND open drain			9201/114	Flat-14 - DIL-14					
M54HC04	Hex inverter			9401/033	Flat-14 - DIL-14					
M54HC08	Quad 2-input AND gate			9201/106	Flat-14 - DIL-14					
M54HC10	Triple 3-input NAND gate			9201/107	Flat-14 - DIL-14					
M54HC11	Triple 3-input AND gate			9201/117	Flat-14 - DIL-14					
M54HC14	Hex Schmitt inverter			9409/007	Flat-14 - DIL-14					
M54HC20	Dual 4-input NAND gate			9201/118	Flat-14 - DIL-14					
M54HC21	Dual 4-input AND gate			9201/108	Flat-14 - DIL-14					
M54HC27	Triple 3-input NOR gate			9201/109	Flat-14 - DIL-14					
M54HC30	8-input NAND gate			9201/110	Flat-14 - DIL-14					
M54HC32	Quad 2-input OR gate			9201/111	Flat-14 - DIL-14					
M54HC73	Dual J-K flip-flop with clear			9203/071	Flat-14 - DIL-14	Negative-edge				
M54HC74	Dual D-type flip-flop with preset and clear			9203/050	Flat-14 - DIL-14	Positive-edge				
M54HCT74	Dual D-type flip-flop with preset and clear			9203/070	Flat-14 - DIL-14	Positive-edge TTL Compatible				
M54HC75	4-bit D-type latch			9203/065	Flat-16 - DIL-16					
M54HC85	4-bit magnitude comparator			9209/004	Flat-16 - DIL-16					
M54HC86	Quad exclusive OR gate			9201/119	Flat-14 - DIL-14	Pinout 1				
M54HC109	Dual J-K flip-flop with preset and clear			9306/048	Flat-16 - DIL-16	Positive-edge				
M54HC123	Dual retriggerable monostable multivibrator with clear			9207/006	Flat-16 - DIL-16					
M54HC125	Quad bus 3-state buffer			9401/039	Flat-14	Inverted enables				
M54HC132	Quad 2-input Schmitt NAND gate			9201/120	Flat-14 - DIL-14					
M54HC137	3- to 8-line decoder latch inverter			9205/013	Flat-16 - DIL-16					
M54HC138	3- to 8-line decoder inverter			9408/046	Flat-16 - DIL-16					
M54HC139	Dual 2- to 4-line decoder/demultiplexer			9205/017	Flat-16 - DIL-16					
M54HC148	8- to 3-line priority encoder	9410/017	Flat-16 - DIL-16							
M54HC151	8-channel multiplexer	9408/054	Flat-16 - DIL-16							

54HC and 54HCT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc}		V _{in} range (V)	Temperature range (°C)
							min. (V)	max. (V)		
M54HC153	Dual 4-channel multiplexer	50 krad (Si) SEL free @ 110 MeV.cm ² /mg	ESCC	9408/038	Flat-16 - DIL-16		2.0	6.0	0 to V _{cc}	-55 to +125
M54HC154	4- to 16-line decoder/demultiplexer			9205/023	Flat-24 - DIL-24					
M54HC157	Quad 2-channel multiplexer			9408/057	Flat-16 - DIL-16					
M54HC158	Quad 2-channel multiplexer inverter			9408/059	Flat-16 - DIL-16					
M54HC160	Synchronous decade counter with async clear			9204/062	DIL-16					
M54HC161	Synchronous binary counter with async clear			9204/059	Flat-16 - DIL-16					
M54HC164	8-bit SIPO shift register			9306/041	Flat-14 - DIL-14					
M54HC165	8-bit PISO shift register			9306/042	Flat-16 - DIL-16					
M54HC166	8-bit PISO shift register with clear			9306/043	Flat-16 - DIL-16					
M54HC174	Hex D-type flip-flop with clear			9306/052	Flat-16 - DIL-16					
M54HC175	Quad D-type flip-flop with clear			9203/052	Flat-16 - DIL-16					
M54HC191	4-bit synchronous binary up/down counter			9204/066	Flat-16 - DIL-16					
M54HC193	Synchronous up/down binary counter			9204/065	Flat-16 - DIL-16					
M54HC194	4-bit PIPO shift register			9306/047	Flat-16 - DIL-16	4 shift modes				
M54HC237	3- to 8-line decoder latch			9205/021	Flat-16 - DIL-16					
M54HC240	Octal bus 3-state buffer inverter			9401/034	Flat-20 - DIL-20	Independent enables				
M54HC244	Octal bus 3-state buffer			9401/048	Flat-20 - DIL-20	Inverted enables				
M54HCT244	Octal bus 3-state buffer			9402/009	Flat-20 - DIL-20	Inverted enables TTL compatible				
M54HC245	Octal bus 3-state transceiver			9405/013	Flat-20 - DIL-20					
M54HCT245	Octal bus 3-state transceiver			9405/014	Flat-20 - DIL-20	TTL compatible				
M54HC251	8-channel 3-state multiplexer			9408/048	Flat-16 - DIL-16					
M54HC257	Quad 2-channel 3-state multiplexer			9408/047	Flat-16					
M54HC259	8-bit addressable latch			9203/073	Flat-16 - DIL-16					
M54HC273	Octal D-type flip-flop with clear			9203/053	Flat-20 - DIL-20					
M54HC283	4-bit binary full adder			9202/075	Flat-16 - DIL-16					
M54HC367	Hex bus 3-state buffer			9401/044	Flat-16 - DIL-16	Independent enables				
M54HC373	Octal D-type 3-state latch			9203/059	Flat-20 - DIL-20					
M54HCT373	Octal D-type 3-state latch			9203/064	Flat-20 - DIL-20	TTL compatible				

54HC and 54HCT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc}		V _m range (V)	Temperature range (°C)
							min. (V)	max. (V)		
M54HC374	Octal D-type 3-state flip-flop	50 krad (Si) SEL free @ 110 MeV.cm ² /mg	ESCC	9203/060	Flat-20 - DIL-20		2.0	6.0	0 to V _{cc}	-55 to +125
M54HC393	Dual binary counter			9204/074	Flat-14 - DIL-14					
M54HC540	Octal bus 3-state buffer inverter			9401/049	Flat-20 - DIL-20					
M54HC541	Octal bus 3-state buffer			9401/047	Flat-20 - DIL-20	Non-inverted enables				
M54HC573	Octal D-type 3-state latch			9202/072	Flat-20 - DIL-20	Through-chip pinout				
M54HC574	Octal D-type 3-state flip-flop			9203/054	Flat-20 - DIL-20	Through-chip pinout				
M54HC590	8-bit binary 3-state counter register			9204/071	Flat-16 - DIL-16					
M54HC595	8-bit shift register 3-state output latch			9306/051	Flat-16 - DIL-16					
M54HC597	8-bit latch/shift register			9306/054	Flat-16 - DIL-16					
M54HC688	8-bit equality comparator			9209/005	Flat-20 - DIL-20					
M54HC4020	14-stage binary counter			9204/070	Flat-16 - DIL-16					
M54HC4040	12-stage binary counter			9204/069	Flat-16 - DIL-16					
M54HC4049	Hex buffer/convertor (inverter)			9401/037	Flat-16 - DIL-16					
M54HC4050	Hex buffer/convertor			9401/038	Flat-16 - DIL-16					
M54HC4051	Single 8-channel analog mux/demux			9408/064	Flat-16 - DIL-16					
M54HC4053	Triple 2-channel analog mux/demux			9408/065	Flat-16 - DIL-16					
M54HC4060	14-stage binary counter/oscillator			9204/076	Flat-16 - DIL-16					
M54HC4066	Quad bilateral switch			9408/052	Flat-14 - DIL-14					
M54HC4078	8-input NOR/OR gate			9201/123	Flat-14 - DIL-14					
M54HC4094	8-bit SIPO 3-state shift register			9306/050	Flat-16 - DIL-16					
M54HC4514	4- to 16-line decoder latch	9205/019	Flat-24 - DIL-24							

Note:

Please contact ST sales office for information about the specific conditions for other 54HC or 54HCT part numbers and for products in die form

54AC and 54ACT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc}		V _{in} range (V)	Temperature range (°C)
							min. (V)	max. (V)		
RHFAHC00	Rad-hard quad High Speed 2-input NAND gate	300 krad (Si) SEL free @ 125 Mev. cm2/mg	QML-V	5962F18202	Flat-14	Grounded lid	1.7	3.6	0 to V _{DD}	-55 to +150
54AC00	Rad-hard quad 2-input NAND gate			5962F87549	Flat-14 - DIL-14	Grounded lid	2.0	6.0		
54ACT00	Rad-hard quad 2-input NAND gate			5962F87699	Flat-14 - DIL-14		4.5	5.5		
54AC02	Rad-hard quad 2-input NOR gate			5962F87612	Flat-14 - DIL-14		2.0	6.0		
54ACT02	Rad-hard quad 2-input NOR gate			5962F89791	Flat-14 - DIL-14		4.5	5.5		
54AC04	Rad-hard hex inverter			5962F87609	Flat-14 - DIL-14	Grounded lid	2.0	6.0		
54ACT04	Rad-hard hex inverter			5962F89734	Flat-14 - DIL-14	Grounded lid	4.5	5.5		
54AC08	Rad-hard quad 2-input AND gate			5962F87615	Flat-14 - DIL-14	Grounded lid	2.0	6.0		
54ACT08	Rad-hard quad 2-input AND gate			5962F89547	Flat-14 - DIL-14		4.5	5.5		
54AC10	Rad-hard triple 3-input NAND gate			5962F87610	Flat-14 - DIL-14		2.0	6.0		
54ACT10	Rad-hard triple 3-input NAND gate			5962F92182	Flat-14 - DIL-14		4.5	5.5		
54AC11	Rad-hard triple 3-input AND gate	300 krad (Si) SEL free @ 110 Mev. cm2/mg		5962F87611	Flat-14 - DIL-14		2.0	6.0		
54ACT11	Rad-hard triple 3-input AND gate			5962F90772	Flat-14 - DIL-14		4.5	5.5		
54AC14	Rad-hard hex Schmitt inverter			5962F87624	Flat-14 - DIL-14	Grounded lid	2.0	6.0		
54AC14A	Rad-Hard Hex Schmitt Inverter			5962F87624	Flat-14 - DIL-14	Low transient current	2.0	6.0		
54ACT14	Rad-hard hex Schmitt inverter			5962F96813	Flat-14 - DIL-14		4.5	5.5		
54AC32	Rad-hard quad 2-input OR gate			5962F87614	Flat-14 - DIL-14	Grounded lid	2.0	6.0		
54ACT32	Rad-hard quad 2-input OR gate			5962F89736	Flat-14 - DIL-14		4.5	5.5		
54AC74	Rad-hard dual D-type flip-flop with preset and clear			5962F88520	Flat-14 - DIL-14		2.0	6.0		
54ACT74	Rad-hard dual D-type flip-flop with preset and clear			5962F87525	Flat-14 - DIL-14	Grounded lid	4.5	5.5		
54AC86	Rad-hard quad exclusive OR		5962F89550	Flat-14 - DIL-14		2.0	6.0			
54ACT86	Rad-hard quad exclusive OR		5962F90687	Flat-14 - DIL-14		4.5	5.5			
54AC138	Rad-hard 3- to 8-line decoder inverter		5962F87622	Flat-16 - DIL-16	Grounded lid	2.0	6.0			

54AC and 54ACT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{cc}		V _{in} range (V)	Temperature range (°C)
							min. (V)	max. (V)		
54ACT138	Rad-hard 3- to 8-line decoder inverter	300 krad (Si) SEL free @ 110 Mev. cm2/mg	QML-V	5962F87554	Flat-16 - DIL-16		4.5	5.5	0 to V _{DD}	-55 to +150
54AC139	Rad-hard dual 2- to 4-line decoder/demultiplexer			5962F87623	Flat-16 - DIL-16		2.0	6.0		
54ACT139	Rad-hard dual 2- to 4-line decoder/demultiplexer			5962F87553	Flat-16 - DIL-16		4.5	5.5		
54AC151	Rad-hard 8-channel multiplexer			5962F87691	Flat-16 - DIL-16		2.0	6.0		
54ACT151	Rad-hard 8-channel multiplexer			5962F88756	Flat-16 - DIL-16		4.5	5.5		
54AC157	Rad-hard quad 2-channel multiplexer			5962F89539	Flat-16 - DIL-16		2.0	6.0		
54ACT157	Rad-hard quad 2-channel multiplexer			5962F89688	Flat-16 - DIL-16		4.5	5.5		
54AC161	Rad-hard synchronous binary counter with asynchronous clear			5962F89561	Flat-16 - DIL-16		2.0	6.0		
54ACT161	Rad-hard synchronous binary counter with asynchronous clear			5962F91722	Flat-16 - DIL-16		4.5	5.5		
54AC174	Rad-hard hex D-type flip-flop with clear			5962F87626	Flat-16 - DIL-16		2.0	6.0		
54ACT174	Rad-hard hex D-type flip-flop with clear			5962F87757	Flat-16 - DIL-16		4.5	5.5		
54AC191	Rad-hard 4-bit synchronous binary up/down counter			5962F89749	Flat-16 - DIL-16		2.0	6.0		
54ACT191	Rad-hard 4-bit synchronous binary up/down counter			5962F04228	Flat-16 - DIL-16		4.5	5.5		
54AC240	Rad-hard octal bus 3-state buffer inverter			5962F87550	Flat-20		2.0	6.0		
54ACT240	Rad-hard octal bus 3-state buffer inverter			5962F87759	Flat-20		4.5	5.5		
54AC244	Rad-hard octal bus 3-state buffer			5962F87752	Flat-20	Grounded lid	2.0	6.0		
54ACT244	Rad-hard octal bus 3-state buffer			5962F87760	Flat-20	Grounded lid	4.5	5.5		
54AC245	Rad-hard octal bus 3-state transceiver			5962F87758	Flat-20	Grounded lid	2.0	6.0		
54ACT245	Rad-hard octal bus 3-state transceiver			5962F87663	Flat-20		4.5	5.5		
54AC273	Rad-hard octal D-type flip-flop with clear			5962F87756	Flat-20	Grounded lid	2.0	6.0		
54ACT273	Rad-hard octal D-type flip-flop with clear	5962F01527	Flat-20		4.5	5.5				
54AC373	Rad-hard octal D-type 3-state latch	5962F87555	Flat-20	Grounded lid	2.0	6.0				
54ACT373	Rad-hard octal D-type 3-state latch	5962F87556	Flat-20		4.5	5.5				

54AC and 54ACT Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Other features	V _{CC}		V _{IN} range (V)	Temperature range (°C)
							min. (V)	max. (V)		
54AC374	Rad-hard octal D-type 3-state flip-flop	300 krad (Si) SEL free @ 110 MeV. cm2/mg	QML-V	5962F87694	Flat-20		2.0	6.0	0 to V _{DD}	-55 to +150
54ACT374	Rad-hard octal D-type 3-state flip-flop			5962F87631	Flat-20		4.5	5.5		
54AC521	Rad-hard 8-bit comparator with enable			5962F90985	Flat-20		2.0	6.0		
54AC540	Rad-hard octal 3-state buffer/line driver			5962F87695	Flat-20		2	6		
54AC541	Rad-hard octal bus 3-state buffer			5962F88706	Flat-20	Grounded lid, Non inverted enables	2.0	6.0		
54ACT541	Rad-hard octal bus 3-state buffer			5962F89795	Flat-20		4.5	5.5		
54AC574	Rad-hard octal D-type 3-state flip-flop			5962F96773	Flat-20		2.0	6.0		
54ACT574	Rad-hard octal D-type 3-state flip-flop			5962F89601	Flat-20		4.5	5.5		
54AC2525	Rad-hard 1-to-8 skew clock driver			5962F92174	Flat-14		2	6		
54AC16244	Rad-hard 16-bit bus non-inverting transceiver			5962F04210	Flat-48		2.0	6.0		
54ACT16244	Rad-hard 16-bit bus non-inverting transceiver			5962F92022	Flat-48		4.5	5.5		
54AC16245	Rad-hard 16-bit bus transceiver 3-Inverting			5962F04211	Flat-48		2.0	6.0		
54ACT16245	Rad-hard 16-bit 3-state buffer transceiver			5962F92023	Flat-48		4.5	5.5		
54AC16373	Rad-hard 16 D-type 3-state latch			5962F04212	Flat-48		2.0	6.0		
54ACT16373	Rad-hard 16-bit 3-state D-type latch			5962F92024	Flat-48		4.5	5.5		
54AC16374	Rad-hard 16 D-type 3-state flip-flop			5962F04213	Flat-48		2.0	6.0		
54ACT16374	Rad-hard 16-bit 3-state D-type flip-flop			5962F92025	Flat-48		4.5	5.5		
54AC164245	Rad-hard 16-bit 3 to 5 V level shifter 3-state transceiver	100 krad (Si) SEL free @ 110 MeV. cm2/mg		5962R98580	Flat-48		2.3	6.0		

Note:

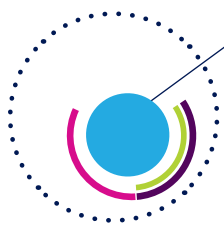
Please contact ST sales office for information about the specific conditions for other 54AC or 54ACT part number, product in die form and QML-Q versions

54VCX Logic series

Part number	Description	Radiation level	Agency qualification	Agency generic specification		Package	Other features	V _{cc}		V _{in} range (V)	Temperature range (°C)
								min. (V)	max. (V)		
54VCXH162244	16-bit transceiver non inverting	300 krad (Si) SEL and SEU free @ 110 MeV/cm ² /mg	QML-V	5962F05210	5962F0521002VXC	Flat-48	26 ohm on outputs Cold spare	1.65	3.6	-0.3 to 3.6	-55 to +150
54VCXH162245	16-bit transceiver 3-state non inverting			5962F05208	5962F0250802VXC	Flat-48	Cold spare				
54VCXHR162245	16-bit transceiver 3-state non inverting with resistor			5962F05213	5962F0521302VXC	Flat-48	Cold spare				
54VCXH162373	16-bit D-type latch 3-state			5962F05211	5962F0521102VXC	Flat-48	Cold spare				
54VCXH162374	16-bit D-type flip-flop 3-state			5962F05212	5962F0521202VXC	Flat-48	Cold spare				
54VCXH163245	16-bit transceiver bi-voltage 3.3 V-1.6 V 3-state			5962F11207		Flat-48	Cold spare				

Note:

Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions



Rad-hard LVDS interfaces

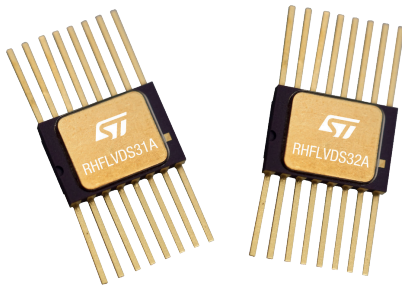
Featured products

RHFLVDS31A

Rad-hard quad LVDS driver

RHFLVDS32A

Rad-hard quad LVDS receiver



Ceramic Flat-16

RHFLVDS31A AND RHFLVDS32A FEATURES

- ANSI TIA/EIA-644 compliant
- 400 Mbps (200 MHz)
- Cold spare on all pins
- V_{cc} : 3.3 V operating
4.8 V absolute maximum
- Enlarged common mode: -4 to +5 V
- Power consumption: 55 mW at 3.3 V
- ESD: 8kV on LVDS pins
- Hermetic package
- 300 krad (Si) – ELDRS free
- SEL-free up to 135 MeV.cm²/mg LET ions
- SET/SEU-free up to:
 - LVDS31A: 67 MeV.cm²/mg LET ions
 - LVDS32A: 32 MeV.cm²/mg LET ions
- RHA QML-V qualified

RHFLVDS31A AND RHFLVDS32A DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	EPPL ¹	Temperature range
RHFLVDS31AK1	-	Engineering model	Ceramic Flat-16	Gold	-	-55 °C to +125 °C
RHFLVDS31AK01V	5962F98651	QML-V flight			Target	
RHFLVDS32AK1	-	Engineering model			-	
RHFLVDS32AK01V	5962F98652	QML-V flight			Target	

Note: 1. EPPL = ESA preferred part list

RAD-HARD LVDS INTERFACE

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Number of channels		Data rate max. (Mbps)	Other features	V_{cc}		V_{lcm} range (V)	Temp. range (°C)
						drivers	receivers			min. (V)	max. (V)		
RHFLVDS31A	Quad LVDS driver	300 krad (Si) SEL & SEU free @ 135 MeV/cm ² /mg SET fully Characterized	QML-V	5962F98651	Flat-16	4	0	400	Cold spare Large input Common Mode	3.0	3.6	-	-55 to +125
RHFLVDS315	Quad LVDS driver			5962F98651	Flat-16	4	0					-	
RHFLVDS32A	Quad LVDS receiver			5962F98652	Flat-16	0	4					-4.0 to +5.0	
RHFLVDS315	Quad LVDS receiver			5962F98652	Flat-16	4	0					-4.0 to +5.0	
RHFLVDSR2D2	Dual LVDS transceiver	300 krad (Si) SEL & SEU free @ 120 MeV/cm ² /mg SET fully Characterized		5962F06202	Flat-18	2	2	-4.0 to +5.0					
RHFLVDS2281	Dual 4x4 LVDS crosspoint switch	300 krad (Si) SEL & SEU free @ 135 MeV/cm ² /mg SET fully Characterized		5962F01537	Flat-64	8	0	-4.0 to +5.0					
RHFLVDS217	Rad-Hard LVDS Serializer	300 krad (Si) SEL & SEU free @ 120 MeV.cm ² /mg SET fully Characterized		5962F01534	Flat-48	3	0	-					
RHFLVDS218	Rad-Hard LVDS Deserializer		5962F01535	Flat-48	0	3	-4.0 to +5.0						

Notes: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions



Rad-hard Voltage references

Featured product

RHF1009A

Rad-hard adjustable 2.5 V / 5.5 V precision shunt Voltage references



Ceramic Flat-10

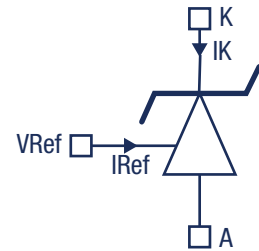
RHF1009A FEATURES

- Adjustable shunt, 2.5 V to 5.5 V
- High precision $\pm 0.3\%$ at 2.5 V at 25°C
- Wide operating current: 60 μ A to 12 mA
- 20 ppm/°C typ
- Stable on capacitive load
- 300 krad rad(si)

- ELDRS-free up to 300 krad
- SEL-free up to 120 MeV.cm²/mg LET ions
- SET characterized
- RHA QML-V: qualification in progress

RHF1009A APPLICATIONS

- Space systems
- Space data acquisition systems
- Aerospace instrumentation
- ADC references



Internal schematic

RHF1009A DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	Mass	EPPL ¹	Temperature range
RHF1009AK1	-	Engineering model	Ceramic Flat-10	Gold	0.50 g	-	-55 °C to +125 °C
RHF1009AK01V ²	5962F14222	QML-V flight				Target	

Notes:

1. EPPL = ESA preferred part list
2. Not yet in full production

RAD-HARD VOLTAGE REFERENCE

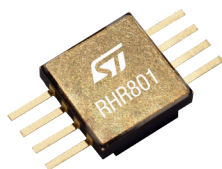
Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Reference voltage (V)	Precision min. bol ¹ (%)	Supply current		Temperature range (°C)
								min. (mA)	max. (mA)	
RHF100	1.2 V precision shunt Vref	300 krad (Si) HDR & LDR - ELDRS free SEL immune @ 120 MeV.cm ² /mg @ 125 °C SET: fully characterized	QML-V	5962F14225	Flat-10	1.2	0.15	0.06	12.0	-55 to +125
RHF1009A	Ajustable 2.5 / 5.5 V precision shunt Vref	300 krad (Si) HDR & LDR - ELDRS free SEL immune @ 120 MeV.cm ² /mg @ 125 °C SET: fully characterized	QML-V	5962F14222	Flat-10	2.50 to 5.50	0.15	0.06	12.0	-55 to +125

Notes: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

Featured product

RHR801

Rad-hard very high-speed comparator



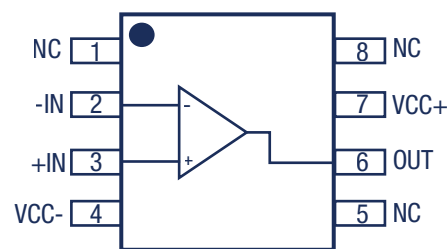
Ceramic Flat-8

RHR801 FEATURES

- Propagation time of 7 ns
- Rise/fall time: 1.1 ns on 10 pF
- Low consumption: 1.4 mA
- Single supply: 3 V to 5 V
- 100 krad (Si)
- SEL-free up to 120 MeV.cm²/mg
- SET characterized
- RHA QML-V qualified: SMD: 5962-10214

RHR801 APPLICATIONS

- High-speed timing
- High-speed sampling
- Clock recovery
- Clock distribution
- Phase detectors



Pin connections - Top view

RHR801 DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	Mass	EPPL ¹	Temperature range
RHR801K1	-	Engineering model	Ceramic Flat-8	Gold	0.45 g	-	-55 °C to +125 °C
RHR801K01V	5962R10215	QML-V flight				Target	

Note: 1. EPPL = ESA preferred part list

Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

RAD-HARD COMPARATOR

Part number	Description	Radiation level	Agency qualification	SMD / detailed specification	Package	Number of operators	V _{cc}		Response time (ns)	Input offset V _{io} typ. (μV)	Supply current / operator typ. (mA)	Rail-to-rail input	Output configuration	Temp. range (°C)
							min. (V)	max. (V)						
RHR801	Rad-hard very high-speed comparator	100 krad (Si) HDR - SEL immune @ 120 MeV.cm ² /mg @ 125°C SET: Fully characterized	QML-V	5962R10215	Flat-8	1	2.5	5.0	7	100	1.4	Yes	Push pull	-55 to +125

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions



Rad-hard A/D converters

RAD-HARD A/D CONVERTERS

Part number	Description	Radiation level	Agency qualification	SMD / detailed specification	Package
RHF1201	12-bit 50 MSPS A/D converter	300 krad (Si) high and low dose rate SEFI and SEL immune @ 110 MeV.cm ² /mg @ 125 °C	QML-V	5962F05217	S0-48
RHF1401	14-bit 30 MSPS A/D converter	300 krad (Si) high and low dose rate SEFI and SEL immune @ 110 MeV.cm ² /mg @ 125 °C	QML-V	5962F06260	S0-48
RHFAD128	8-channel 12-bit A/D converter	300 krad (Si) high and low dose rate SEFI and SEL immune @ 125 MeV.cm ² /mg @ 125 °C	QML-V	5962F18204	Falt-16

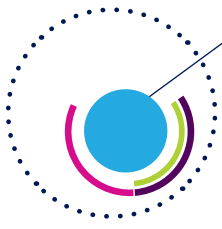
Part number	V _{CC}		Resolution bit	Effective resolution bit	Sampling frequency max. (MSPS)	Number of channels	Power @ full speed (mW)	Single and Differential input	Input amplitude max. (V _{pp})	Temperature range (°C)
	min. (V)	max. (V)								
RHF1201	2.3	2.7	12	10.3	50	1	100	Yes	2.0	-55 to +125
RHF1401	2.3	2.7	14	11.7	30	1	85	Yes	2.0	-55 to +125
RHFAD128	2.7	3.6	12	11.4	1	8	6	Yes	VCC	-55 C to 125

Note: Please contact ST sales office for information about the specific conditions for QML-Q versions

RAD-HARD D/A CONVERTERS

Part number	Description	Radiation level	Agency qualification	SMD / detailed	Package	V _{CC}		Resolution bit	THD (dBc)	SNR (sB)	Sampling frequency	Output	Temp. range (°C)
						min. (V)	max. (V)						
RHRDAC1612	16-bit 12ksps D/A converter	100 krad (Si) high and low dose rate SEL immune @ 110 MeV.cm ² /mg @ 125 °C	QML-V	5962R16211	Flat-24	1,8	3,6	16	89,5	96	12	Voltage	-55 to 125

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions



Rad-hard Operational amplifiers

Featured product

RHF484

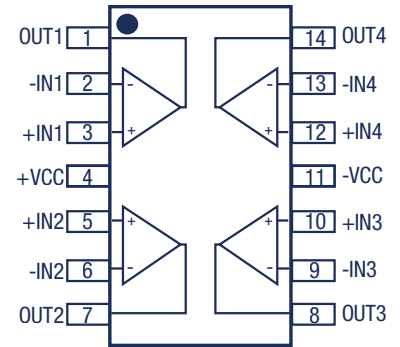
Rad-hard precision quad operational amplifier

RHF484 FEATURES

- V_{CC} : 4 to 14 V operating
- Rail-to-rail input/output
- 8 MHz gain bandwidth product
- Low input offset voltage: 60 μ V typ
- Supply current: 2.2 mA typ. per amplifier
- Input bias current: 6 nA typ
- Hermetic package
- 300 krad I(Si)
- ELDRS-free up to 300 krad
- SEL-free up to 120 MeV.cm²/mg LET ions
- SET characterized
- RHA QLM-V qualified: SMD 5962-08222



Ceramic Flat-14 W



Pin connections - Top view

RHF484 DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Lead finish	Mass	EPPL	Temperature range
RHF484K1	-	Engineering model	Ceramic Flat-14 W	Gold	0.70 g	-	-55 °C to +125 °C
RHF484K-01V	5962F08222	Flight model				-	

Note:

Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

RAD-HARD OPERATIONAL AMPLIFIERS

Part number	Description	Radiation level	Agency qualification	SMD / detailed specification	Package
RHF310	Low-power high-speed single op-amp	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET: Fully characterized	QML-V	5962F07233	Flat-8S
RHF330	1 GHz low-noise single op-amp	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET: Fully characterized	QML-V	5962F07231	Flat-8S
RHF350	550 MHz single op-amp	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET: Fully characterized	QML-V	5962F07232	Flat-8S
RHF43B	Precision single op-amp	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET: Fully characterized	QML-V	5962F06237	Flat-8
RHF484	Precision quad op-amp	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET: Fully characterized	QML-V	5962F08222	Flat-14W
RHR61	Low-power CMOS single op-amp	100 krad (Si) SEL Immune @ 120MeV.cm2/mg @ 125°C SET : Fully characterized	QML-V	5962F16204	Flat-8
RHR64	Low-power CMOS quad op-amp	101 krad (Si) SEL Immune @ 120MeV.cm2/mg @ 125°C SET : Fully characterized	QML-V	5962F16205	Flat-14

Part number	Number of operators	V _{CC}		Bandwidth max. (MHz)	Slew rate typ. (V/μs)	Supply current by channel typ. (mA)	Rail-to-rail		Input offset V _{io} typ. (μV)	Temp. range (°C)
		min. (V)	max. (V)				in	out		
RHF310	1	4.5	5.5	120	115	0.4	No	No	3.5	-55 to +125
RHF330	1	4.5	5.5	1000	1800	16.6	No	No	180	-55 to +125
RHF350	1	4.5	5.5	550	940	4.1	No	No	800	-55 to +125
RHF43B	1	3	16	8	3	2.2	No	Yes	100	-55 to +125
RHF484	4	3	16	8	3	2.2	No	Yes	100	-55 to +125
RHR61	1	1,5	5,5	0,7	3	0,06	Yes	Yes	1	-55 to 125
RHR64	4	1,5	5,5	0,7	3	0,06	Yes	Yes	1	-55 to 125

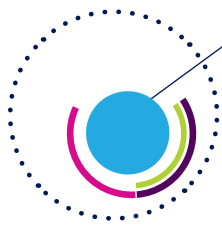
Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

RAD-HARD DIFFERENTIAL AMPLIFIERS

Part number	Description	Radiation level	Agency qualification	SMD / detailed specification	Package
RHF200	Fully Differential amplifier	300 krad (Si) - ELDRS free SEL Immune @ 110MeV.cm2/mg @ 125°C SET : Fully characterized	QML-V	5962F17210	Flat-16

Part number	Internal gain setting	V _{CC}		Bandwidth max. (MHz)	Slew rate typ. (V/μs)	Supply current typ. (mA)	High input Z	Output rail-to-rail	Output offset V _o max. (mV)	Temp. range (°C)
		min. (V)	max. (V)							
RHF200	yes	4,5	5,5	420	520	27	Yes	Yes	10	-55 to 125

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

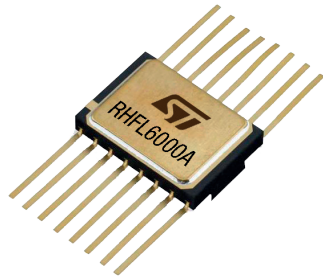


Rad-hard Positive Voltage regulators

Featured product

RHFL6000A

Rad-hard adjustable positive voltage regulator



Flat-16

RHFL6000A FEATURES

- Input voltage range from 2.5 to 12 V
- 2 A guaranteed output current
- Low dropout voltage: 0.3 V typ. @ 0.4 A
- Embedded overtemperature and overcurrent protection
- Adjustable overcurrent limitation
- Output overload monitoring/signaling
- Adjustable output voltage
- Internal control loop accessible via an external pin, optional
- Inhibit (ON/OFF) TTL compatible control
- Programmable output short-circuit current
- Remote sensing operation
- Rad-hard: guaranteed up to 300 krad MIL-STD-883J method 1019.9 high dose rate and 0.01 rad/s in ELDRS conditions
- Radiation environment:
SET/SEL/SEB: - SEL free @ LET=120 MeV*cm²/mg - SET: less than 3.3% of V_{OUT} @ 120 MeV
- Heavy-ions SET dedicated internal circuitry implemented for absorbing output transient
- Operating junction temperature range: -55 °C to +125 °C
- QML-V qualified: SMD 5962F1521601

26

RHFL6000A DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Terminal finish	Mass	Temperature range
RHFL6000AKP1	-	EM	Flat-16P	Gold	0.70 g	-55 to +125 °C
RHFL6000AKP01V	5962F1521601VXC	QML-V		Gold	0.70 g	
RHFL6000AKP02V	5962F1521601VXA	QML-V		Solder Dip	0.70 g	

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

RAD-HARD POSITIVE VOLTAGE REGULATORS

Part number	Description	Radiation level	Qualification	Agency generic specification	EPPL	Package
RHFL6000AKP1	2A Adjustable positive voltage regulator	-	-	-	Target	Flat-16P
RHFL6000AKP01V	2A Adjustable positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 120 MeV.cm ² /mg	QML-V	5962F15216	Target	Flat-16P
RHFL6000AKP02V	2A Adjustable positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 120 MeV.cm ² /mg	QML-V	5962F15216	Target	Flat-16P

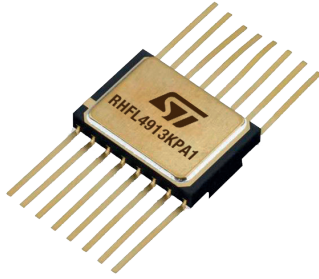
Part number	Lead finish	V _{IN}		I _{OUT} max. (A)	V _{OUT}		V _{DROP} typ. (V)	Inhibit pin	Temp. range (°C)
		min. (V)	max. (V)		min. (V)	max. (V)			
RHFL6000AKP1	Gold	2,5	12	2,0	1,25	VI + 0.3)	0.3 @ 0.4 A 0.550 @ 2 A	Y	-55 to 125
RHFL6000AKP01V	Gold	2,5	12	2,0	1,25	VI + 0.3)	0.3 @ 0.4 A 0.550 @ 2 A	Y	-55 to 125
RHFL6000AKP02V	Solder Dip	2,5	12	2,0	1,25	VI + 0.3)	0.3 @ 0.4 A 0.550 @ 2 A	Y	-55 to 125

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

Featured product

RHFL4913A

Rad-hard adjustable positive voltage regulator



Flat-16



SMD5C

RHFL4913A FEATURES

- Extended V_{CC} range: 3 to 12V
- Adjustable output voltage
- Maximum output current: 3 A
- Very low voltage drop: 350 mV (typ.) @ 400 mA
- Over temperature and over current protection
- Adjustable overcurrent limitation
- Very low noise: 40 μ V_{RMS} (10 Hz-100 kHz)
- Inhibit (ON/OFF) TTL-compatible control
- Programmable output short-circuit current
- Low quiescent current:
 - 1.5 mA (typ.) @ no load
 - 150 μ A in shutdown
- 300 krad (Si)
- ELDRS-free up to 300 krad
- SEL-free up to 120 MeV.cm²/mg LET ions
- QML-V qualified: SMD 5962-02524

RHFL4913A DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Terminal finish	Mass	Temperature range (°C)
RHFL4913KPA1	-	EM	Flat-16P	Gold	0.70 g	-55 to +125
RHFL4913KPA-01V	5962F0252401VXC	QML-V		Gold	0.70 g	
RHFL4913KPA-02V	5962F0252401VXA	QML-V		Solder Dip	0.70 g	
RHFL4913SCA1	-	EM1	SMD5C	Gold	2.50 g	
RHFL4913SCA07V	5962F0252403VUC	QML-V		Gold	2.50 g	

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

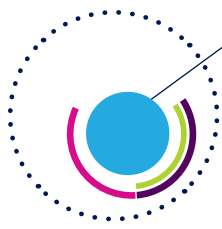
RAD-HARD POSITIVE VOLTAGE REGULATORS

Part number	Description	Radiation level	Qualification	Agency generic specification	EPPL
RHFL4913xx15	1.5 V fixed positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 120 MeV.cm ² /mg	QML-V	5962-15215	Target
RHFL4913xx25	2.5 V fixed positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 68 MeV.cm ² /mg	QML-V	5962F02534	Y
RHFL4913xx33	3.3 V fixed positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 68 MeV.cm ² /mg	QML-V	5962F02535	Y
RHFL4913xx50	5.0 V fixed positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 68 MeV.cm ² /mg	QML-V	5962F02536	Y
RHFL4913A	Adjustable positive voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 120 MeV.cm ² /mg	QML-V	5962F02524	Y

Part number	Package	Lead finish	V _{IN}		I _{OUT} max. (A)	V _{OUT}		V _{DROP} typ. (V)	Inhibit pin	Temp. range (°C)
			min. (V)	max. (V)		min. (V)	max. (V)			
RHFL4913xx15	SMD.5 Flat-16P TO-257	Gold or Solder Dip	3.00 ⁽¹⁾	12	3 2 3	1,47	1,53	0.35 @ 0.4 A 0.75 @ 2 A	Y	-55 to 125
RHFL4913xx25	SMD.5 Flat-16P TO-257	Gold or Solder Dip	3.00 ⁽¹⁾	12	3 2 3	2,45	2,55	0.35 @ 0.4 A 0.75 @ 2 A	Y	-55 to 125
RHFL4913xx33	SMD.5 Flat-16P TO-257	Gold or Solder Dip	3.00 ⁽¹⁾	12	3 2 3	3,23	3,37	0.35 @ 0.4 A 0.75 @ 2 A	Y	-55 to 125
RHFL4913xx50	SMD.5 Flat-16P TO-257	Gold or Solder Dip	3.00 ⁽¹⁾	12	3 2 3	4,90	5,10	0.35 @ 0.4 A 0.75 @ 2 A	Y	-55 to 125
RHFL4913A	Flat-16P SMD5C	Gold or Solder Dip	3.00 ⁽¹⁾	12	2 3	1,23	9,00	0.35 @ 0.4 A 0.90 @ 2 A	Y	-55 to 125

Note: (1) V_{IN} min can be as low as 2.5 V in some conditions

Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

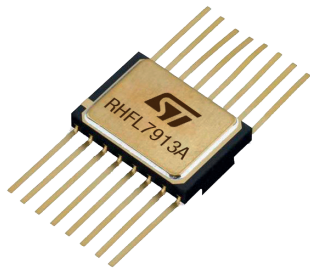


Rad-hard Negative Voltage regulators

Featured product

RHFL7913A

Rad-hard adjustable negative voltage regulator



Flat-16



SMD5C

RHFL7913A FEATURES

- Extended V_{CC} range: -3 to -12V
- Adjustable output voltage
- Maximum output current: 3 A
- Over temperature and over current protection
- Adjustable overcurrent limitation
- Load short circuit monitoring
- Inhibit (ON/OFF) TTL-compatible control
- Programmable output short-circuit current limitation
- Remote sensing operation
- Rad-hard: 300 krad in Mil-1019.7 at High & ELDRS low dose rate conditions
- Heavy ions, SEL immune at 68 MeV/cm²/mg LET ions
- QML-V qualified: SMD 5962-02532

RHFL4913A DEVICE SUMMARY

Order codes	SMD pin	Quality level	Package	Terminal finish	Temperature range (°C)
RHFL7913KPA1	-	EM	Flat-16P	Gold	-55 to +125
RHFL7913KPA-01V	5962F0253201VXC	QML-V		Gold	
RHFL7913KPA-02V	5962F0253201VXA	QML-V		Solder Dip	
RHFL7913SCA1	-	EM	SMD5C	Gold	
RHFL7913SCA-03V	5962F0253202VYC	QML-V		Gold	

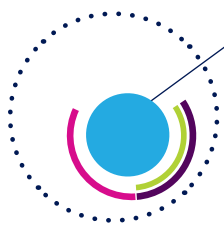
Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

RAD-HARD NEGATIVE VOLTAGE REGULATORS

Part number	Description	Radiation level	Qualification	Agency generic specification	EPPL
RHFL7913A	Adjustable negative voltage regulator	300 krad (Si) high and low dose rate, ELDRS free SEL free @ 120 MeV.cm ² /mg	QML-V	5962F02532	Y

Part number	Package	Lead finish	V_{IN}		I_{OUT} max. (A)	V_{OUT}		V_{DROP} typ. (V)	Inhibit pin	Temp. range (°C)
			min. (V)	max. (V)		min. (V)	max. (V)			
RHFL7913A	Flat-16P SMD5C	Gold or Solder Dip	-12	-1,3	-2 -3	-9,5	-1,2	0.5 @ -0.4 A 0.8 @ -1 A	Y	-55 to 125

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

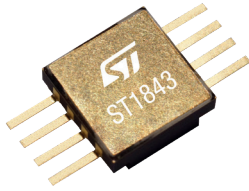


Rad-hard PWM controllers

Featured product

ST1843/5

Rad-hard Current Mode PWM Controller



Flat-8

ST1843/5 FEATURES

- Current mode operation to 500 kHz automatic feed forward compensation
- Trimmed oscillator for precise frequency control
- High current totem pole output
- Rad Hardened:
 - ST1843 50 krad (Si)
 - ST1845 100 krad (Si)
- ESCC qualified:
 - ST1843 - 9108/020/01F-02F
 - ST1845 - 9108/021/01R-02R
- Hermetic Package FLAT-8

RAD-HARD PWM CONTROLLERS

Part number	Description	Radiation level	Agency qualification	Agency generic specification	EPPL	Package	Lead finish	Other features	V _{CC}		Temp. range (°C)
									min. (V)	max. (V)	
ST1843K1	Current-mode PWM controller	50 krad (Si)	EM	-	Y	Flat-8	Gold	Duty cycle up to 100%	8,2	30	-55 to 150
ST1843FKG			ESCC	9108/020/01F	Y		Gold		8,2	30	
ST1843FKT				9108/020/02F	Y		Solder Dip		8,2	30	
ST1845K1	Current-mode PWM controller	100 krad (Si)	EM	-	Y		Gold	Duty cycle up to 50%	8	30	
ST1845RKG			ESCC	9108/021/01R	Y		Gold		8	30	
ST1845RKT				9108/021/02R	Y		Solder Dip		8	30	

Note: Please contact ST sales office for information about the specific conditions for products in die form and QML-Q versions

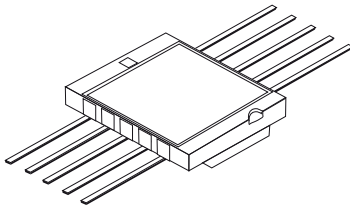


Rad-hard MOSFET Driver - Dual Low-Side

Featured product

RHFPM4423/4

Rad-hard 4.5 A dual low-side MOSFET driver



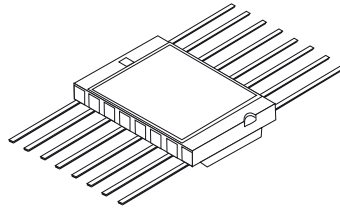
FLAT-10

RHFPM4423/4 FEATURES

- Wide operating voltage range: 4.65 V to 18 V
- Parallel driving capability up to 9 A
- Inverting (4423) and Non-inverting (4424) configuration
- Input 5V logic level compatibility
- 110 ns typical propagation delay
- Matched propagation delays between the two channels (5 ns max.)
- 20 mV maximum low level output voltage
- 30 ns rise and fall times
- +/-5 V common mode bouncing between signal and power grounds
- TID: 100 krad HDR and LDR
- QML-V qualified:
- RHRPM4423 - 5962-99511
- RHRPM4424 - 5962-99560
- Hermetic package FLAT-10 and FLAT-16

RHFPM4423/4 APPLICATIONS

- Switched-mode power supplies
- DC-DC converters
- Motor contr



FLAT-16

RHFPM4423/4 DEVICE SUMMARY

Order codes	Description	SMD pin	Quality level	EPPL	Package	Max. power dissipation (mW)	Mass (g)	Temperature range
RHFPM4423LK	Dual Low Side Gate Driver inverting	5962R9956007	QML-V	-	FLAT-10	200	0.7	-55 to +125 °C
RHFPM4423K		5962R9956007	QML-V	-	FLAT-16	550	0.7	
RHFPM4424LK	Dual Low Side Gate Driver Non inverting	5962R9956007	QML-V	-	FLAT-10	200	0.7	
RHFPM4424K		5962R9956007	QML-V	-	FLAT-16	550	0.7	

RAD-HARD GATE DRIVER

Part number	Description	Radiation level	Agency qualification	Agency generic specification	Package	Lead finish	Other features	V _{cc}		Sink / Source current max (A)	Temperature range (°C)
								min. (V)	max. (V)		
RH-PM4423LK1	Dual Low Side Gate Driver inverting	100 krad (Si) high dose rate SEL free @ 60 MeV.cm ² /mg	EM	-	Flat-10	Gold	30n ns typ Rise & Fall +/- 5ns matching Vol = 20 mV max	4,65	18	4/4.5 sing ch. 8/9 parall. Chs	-55 to 125
RHRPM4423LK01V			QML-V	5962R9956007		Gold					
RHRPM4423LK02V			QML-V	5962R9956007		Solder Dip					
RH-PM4423K1			EM	-	Flat-16	Gold					
RHRPM4423K01V			QML-V	5962R9956007		Gold					
RHRPM4423K02V			QML-V	5962R9956007		Solder Dip					
RHRPM4423D2V					QML-V	5962R9956007					
RH-PM4424LK1	Dual Low Side Gate Driver Non inverting	100 krad (Si) high dose rate SEL free @ 60 MeV.cm ² /mg	EM	-	Flat-10	Gold	30n ns typ Rise & Fall +/- 5ns matching Vol = 20 mV max	4,65	18	4/4.5 sing ch. 8/9 parall. Chs	-55 to 125
RHRPM4424LK01V			QML-V	5962R9956007		Gold					
RHRPM4424LK02V			QML-V	5962R9956007		Solder Dip					
RH-PM4424K1			EM	-	Flat-16	Gold					
RHRPM4424K01V			QML-V	5962R9956007		Gold					
RHRPM4424K02V			QML-V	5962R9956007		Solder Dip					
RHRPM4424D2V					QML-V	5962R9956007					

Note: Contact ST sales office for information about the specific conditions for products in die form

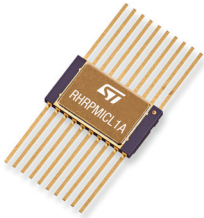


Rad-hard Integrated current limiter

Featured product

RHFBM1CL1

Rad-hard integrated current limiter



FLAT-20

RHFBM1CL1 FEATURES

- Wide-range supply voltage: 8.5 to 52 V DC
- Very low DC current: 1.5 mA (typ.)
- External current limitation setting
- Embedded current sense
- 3 modes of operation
 - Latched
 - Re-triggerable
 - Foldback
- Configurable trip-off and recovery times
- Smart current limitation for repetitive overload
- Floating Ground functionality
- STATUS (digital telemetry) and TM (analog telemetry) pins allow respectively to remotely monitoring the status and the current load
- Flat-20 Hermetic Package
- Radiation hardened:
 - TID: 100 krad (Si) HDR & LDR
 - SEL & SEU free up to 78 MeV.cm²/mg
 - SET characterized
- Evaluation boards available (one for each mode of operation)

RHFBM1CL1 DEVICE SUMMARY

Order codes	SMD Pin	Quality level	Package	Terminal finish	Mass (g)	Temp. range
RH-PM1CL1AK1	-	EM	Flat-20	Gold	0.70 g	-55 to +125 °C
RHRPM1CL1AK01V	-	-		Gold	0.70 g	
RHRPM1CL1AK02V	-	-		Solder Dip	0.70 g	

RAD-HARD INTEGRATED CURRENT LIMITER

Part number	Description	Radiation level	Qualification	Agency generic specification	EPPL
RH-PM1CL1AK1	Configurable Current Limiter	-	-	-	-
RHRPM1CL1AK01V*		100 krad (Si) high dose rate	QML-V	TBD	-
RHRPM1CL1AK02V*					-

Part number	Package	Lead finish	Other features	V _{CC}		Peak drive current max (A)	Reaction time (μs) max	Temp. range (°C)
				min. (V)	max. (V)			
RH-PM1CL1AK1	Flat-20	Gold	Floating Ground Fully configurable	8,5	52	0,25	3	-55 to 125
RHRPM1CL1AK01V*		Gold		8,5	52	0,25	3	
RHRPM1CL1AK02V*		Solder Dip		8,5	52	0,25	3	

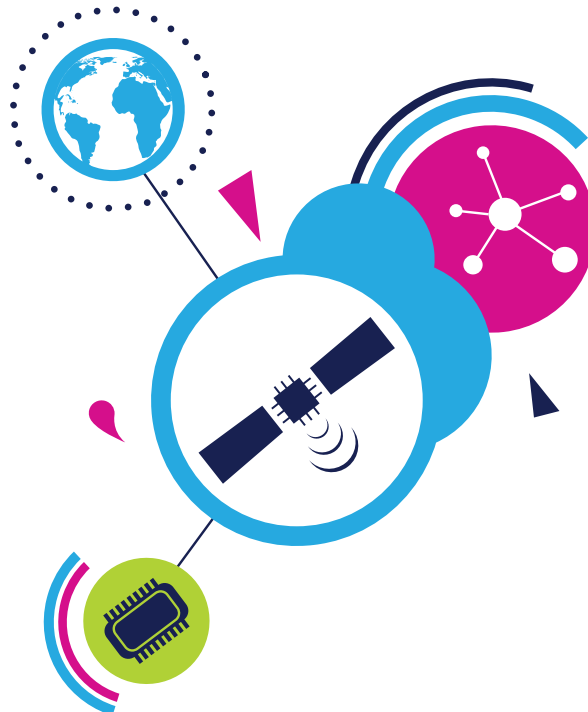
Note: Waiting for Agency Certification



Demoboards for Rad-hard products

DEMOBOARDS FOR RAD-HARD PRODUCTS

Part Type	Description
EVAL-RHF1201V2	RHF1201 demoboard
EVAL-RHF1401V2	RHF1401 demoboard
EVALRHF43BV1	RHF43B and RHF484 demoboard
EVALRHF310V1	RHF310 demoboard
EVALRHF330V1	RHF330 demoboard
EVALRHF350V1	RHF350 demoboard
EVAL-RHF100	RHF100 demoboard
EVAL-RHF1009A	RHF1009A demoboard
EVAL-RHRICL1ATV1	Demoboard RHRPMICL1 Triggereable Mode
EVAL-RHRICL1ALV1	Demoboard RHRPMICL1 Latched Mode
EVAL-RHRICL1AFV1	Demoboard RHRPMICL1 Foldback Mode



life.augmented



© STMicroelectronics - July 2019 - Printed in United Kingdom - All rights reserved
The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies
All other names are the property of their respective owners

