



Description

The SI1012R-T1-GE3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 20V$ $I_D = 0.8A$

$R_{DS(ON)} < 250\text{ m}\Omega @ V_{GS}=4.5V$

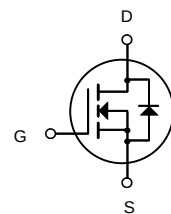
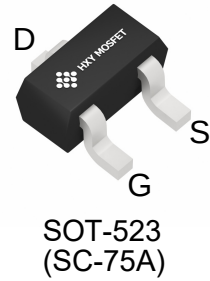
$R_{DS(ON)} < 360\text{ m}\Omega @ V_{GS}=2.5V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
SI1012R-T1-GE3	SOT-523(SC-75)	HXY MOSFET	3000

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 8	V
I_D	Drain Current-Continuous	0.8	A
P_D	Maximum Power Dissipation	0.15	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	850	$^\circ\text{C/W}$



Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

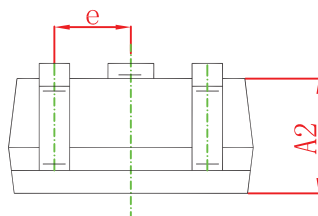
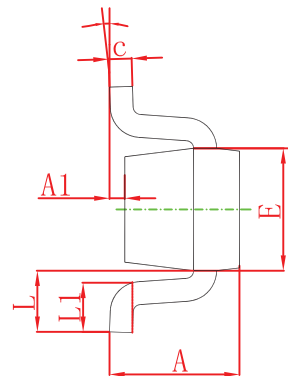
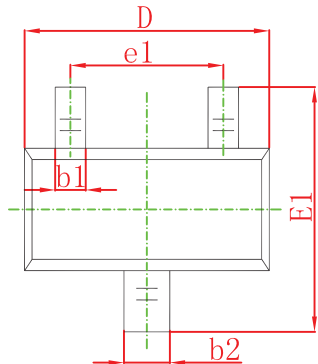
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC CHARACTERISTICE						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V,V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±8V, V _{DS} = 0V			±10	μA
Gate threshold voltage (note2)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	1.0	V
Drain-source on-resistance (note2)	R _{DS(on)}	V _{GS} =4.5V, I _D =0.5A		0.18	0.25	Ω
		V _{GS} =2.5V, I _D =0.5A		0.27	0.36	Ω
Maximum Continuous Drain to Source Diode Forward Current	I _S	--			0.8	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}	--			1.2	A
Diode forward voltage	V _{SD}	I _S =0.5A, V _{GS} =0V			1.2	V
DYNAMIC CHARACTERISTICS (note4)						
Input capacitance	C _{iss}	V _{DS} =16V,V _{GS} =0V, f =1MHz		50		pF
Output capacitance	C _{Oss}			7		pF
Reverse transfer capacitance	C _{rss}			4.5		pF
SWITCHING CHARACTERISTICS (note4)						
Turn-on delay time (note3)	t _{d(on)}	V _{GS} =4.5V,V _{DS} =10V, R _L =10Ω		2		nS
Turn-on rise time (note3)	t _r			32		nS
Turn-off delay time (note3)	t _{d(off)}			47		nS
Turn-off fall time (note3)	t _f			22		nS

Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300 μs , Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producing.

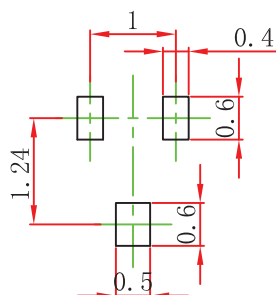


SOT-523(SC-75A)Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



Note:
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.



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