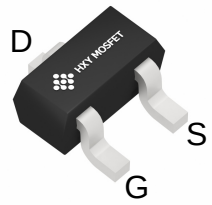
SI1012X-T1-GE3

N-Channel Enhancement Mode MOSFET

Description

The SI1012X-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.



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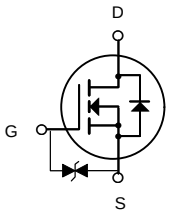


N-Channel MOSFET

General Features

V_{DS} = 20V I_D =0.8A

$R_{DS(ON)}$ <250mΩ@ V_{GS}=4.5V

$R_{DS(ON)}$ <360mΩ@ V_{GS}=2.5V

ESD Rating：HBM≥2000V

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

Product ID	Pack	Marking	Qty(PCS)
SI1012X-T1-GE3	SOT-523	34K	3000

Absolute Maximum Ratings (T_A=25℃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	℃
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient (Note 2)	850	℃/W

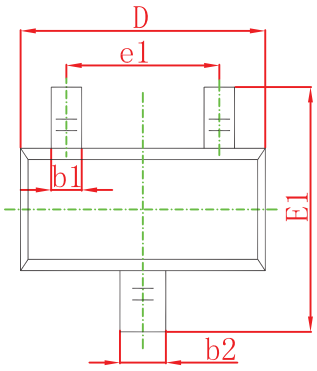
Electrical Characteristics (T_J=25 ˚C, unless otherwise noted)

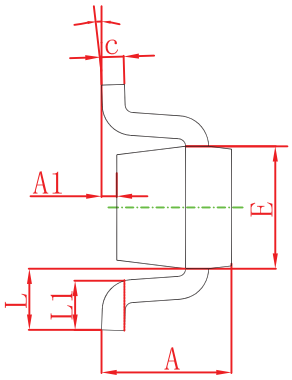
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC CHARACTERISTICE						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±8V, V_{DS} = 0V			±10	μA
Gate threshold 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

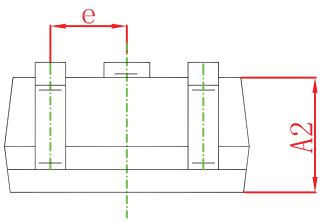
Notes:

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

SOT-523 Package Information

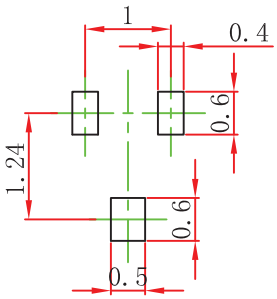






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	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:±0.05mm.
3.The pad layout is for reference purposes only.

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