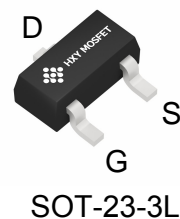




## General Description

The Si2328DS-T1-GE3 use advanced SGT MOSFET technology to provide low  $R_{DS(ON)}$ , low gate charge, fast switching and excellent avalanche characteristics.

This device is specially designed to get better ruggedness and suitable to use in



## General Features

$V_{DS} = 100V$   $I_D = 5A$

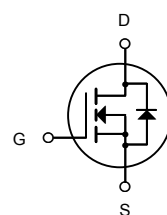
$R_{DS(ON)} < 140m\Omega @ V_{GS} = 10V$

## Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
Si2328DS-T1-GE3	SOT-23-3L	HXY MOSFET	3000

## Absolute Maximum Ratings ( $T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	5	A
$I_D @ T_C = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	2.2	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	11	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation <sup>4</sup>	1	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JC}$	Thermal Resistance from Junction-to-Ambient <sup>3</sup>	80	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	125	$^\circ C/W$



## Electrical Characteristics $T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	100	110	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V	-	-	1	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
On Characteristics <sup>note3</sup>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0	1.95	3.0	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance <sup>note2</sup>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3A	-	95	140	mΩ
Dynamic Characteristics <sup>note4</sup>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	196	-	pF
C <sub>oss</sub>	Output Capacitance		-	25.9	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	21.4	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = 50V, I <sub>D</sub> = 3A, V <sub>GS</sub> = 10V	-	4.3	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	3.5	-	nC
Q <sub>gd</sub>	Gate-Drain(“Miller”) Charge		-	3.1	-	nC
Switching Characteristics <sup>note4</sup>						
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = 50V, I <sub>DS</sub> =3A R <sub>G</sub> = 2Ω, V <sub>GEN</sub> = 10V	-	14.7	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	3.5	-	ns
t <sub>d(off)</sub>	Turn-Off Delay Time		-	20.9	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	2.7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current <sup>note2</sup>		-	-	4.5	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage <sup>note3</sup>	V <sub>GS</sub> = 0V, I <sub>S</sub> =3A	-	-	1.3	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	V <sub>GS</sub> = 0V, I <sub>F</sub> = 3A, di/dt =100A/μs	-	32.1	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Time Charge		-	39.4	-	nC
I <sub>rrm</sub>	Peak Reverse Recovery Current		-	2.1	-	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production
5.  $V_{DD}=50$  V,  $R_G=50$   $\Omega$ ,  $L=0.3$  mH, starting  $T_J=25$   $^{\circ}\text{C}$



## Typical Characteristics

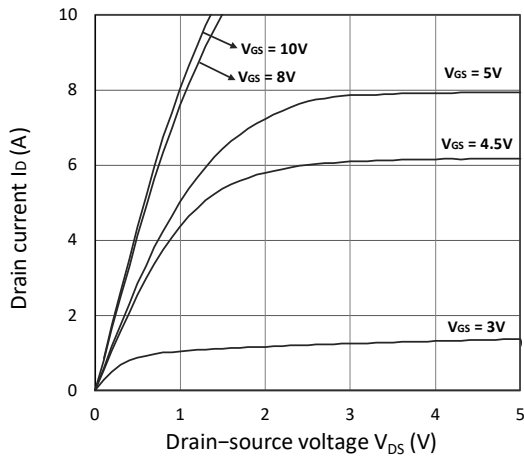


Figure 1. Output Characteristics

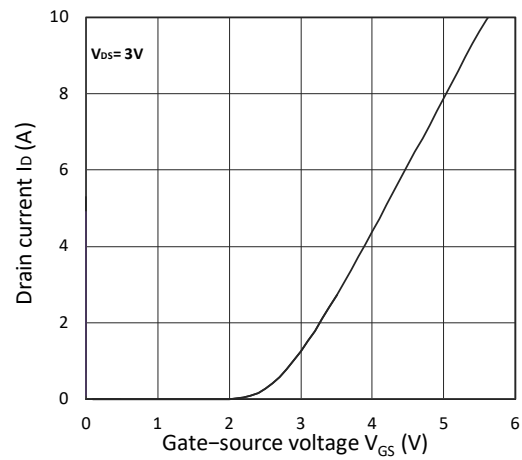


Figure 2. Transfer Characteristics

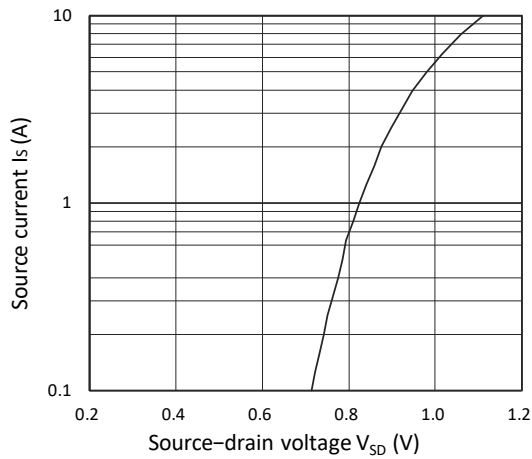


Figure 3. Forward Characteristics of Reverse

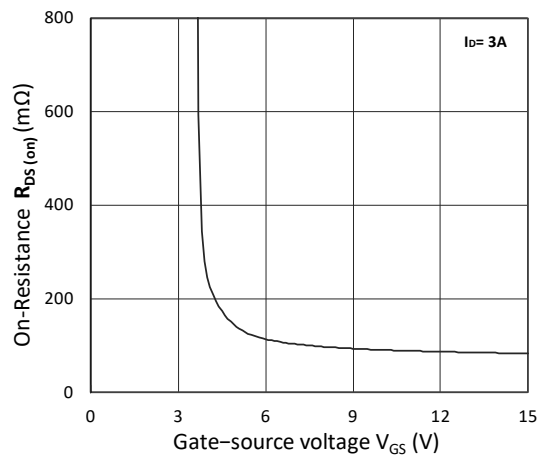


Figure 4.  $R_{DS(on)}$  vs.  $V_{GS}$

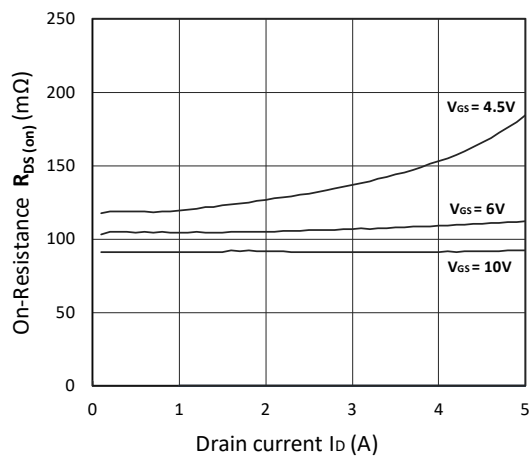


Figure 5.  $R_{DS(on)}$  vs.  $I_D$

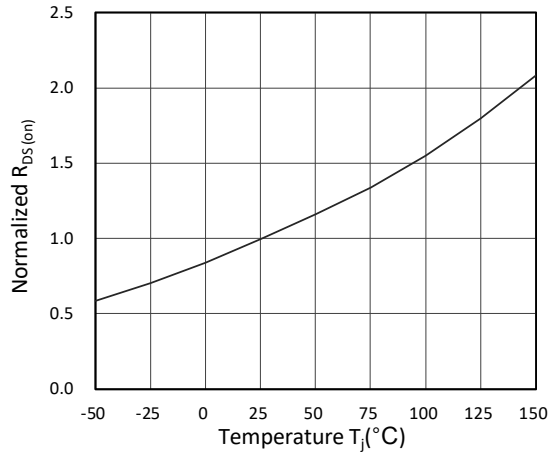


Figure 6. Normalized  $R_{DS(on)}$  vs. Temperature

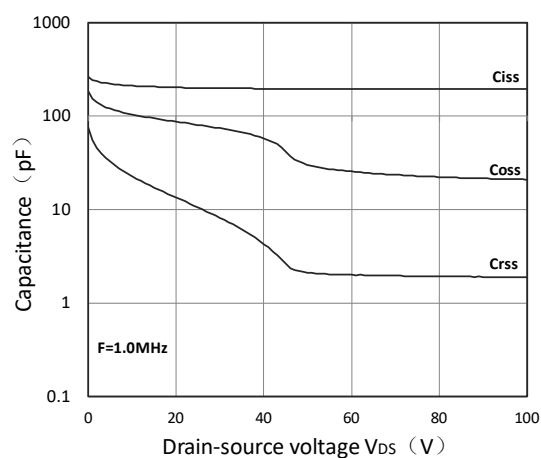


Figure 7. Capacitance Characteristics

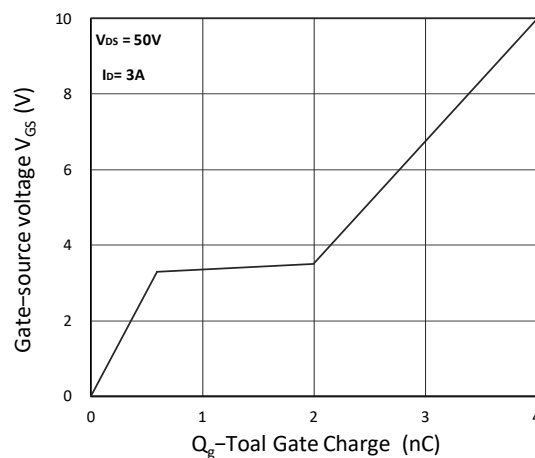
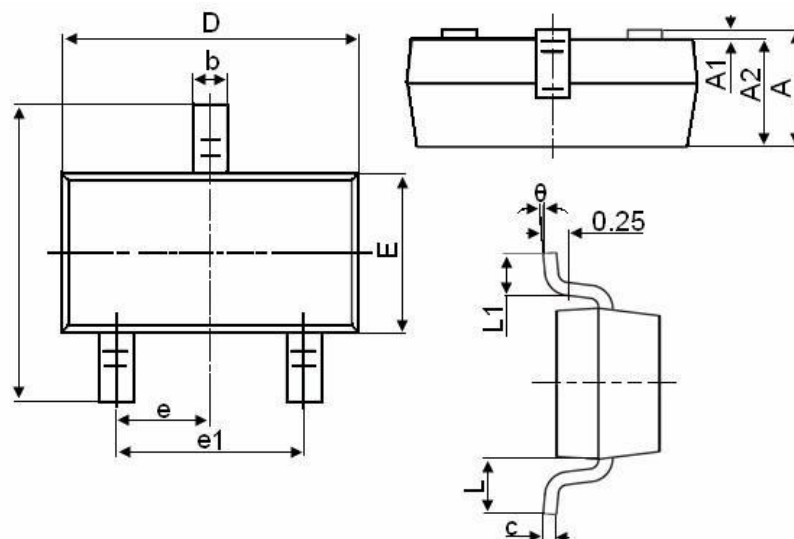


Figure 8. Gate Charge Characteristics



## SOT-23-3L Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.800	3.000
E	1.500	1.700
E1	2.650	2.950
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.600
θ	0°	8°



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