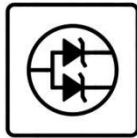


# MSKSEMI

SEMICONDUCTOR



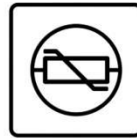
ESD



TVS



TSS



MOV



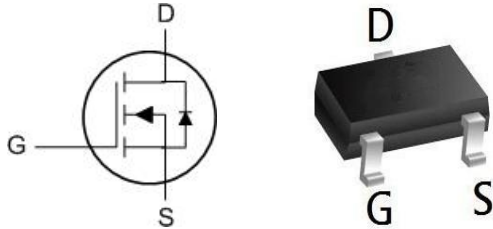
GDT



PLED

Product data sheet

**SOT23 Pin Configuration**



**Product Summary**

BVDSS	RDSON	ID
100V	105 mΩ	3A

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench technology

**Absolute Maximum Ratings**

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

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient <sup>1</sup>	---	125	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	80	$^\circ C/W$

**Electrical Characteristics**  $T_c=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	100	110	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> <sup>note3</sup>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.95	3.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>note2</sup>	$V_{GS} = 10V, I_D = 3A$	-	105	140	m $\Omega$
<b>Dynamic Characteristics</b> <sup>note4</sup>						
$C_{iss}$	Input Capacitance	$V_{DS} = 50V, V_{GS} = 0V,$ $f = 1.0MHz$	-	196	-	pF
$C_{oss}$	Output Capacitance		-	25.9	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	21.4	-	pF
$Q_g$	Total Gate Charge	$V_{DS} = 50V, I_D = 3A,$ $V_{GS} = 10V$	-	4.3	-	nC
$Q_{gs}$	Gate-Source Charge		-	3.5	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	3.1	-	nC
<b>Switching Characteristics</b> <sup>note4</sup>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 50V, I_{DS}=3A$ $R_G = 2\Omega, V_{GEN} = 10V$	-	14.7	-	ns
$t_r$	Turn-On Rise Time		-	3.5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	20.9	-	ns
$t_f$	Turn-Off Fall Time		-	2.7	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current <sup>note2</sup>		-	-	4.5	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	12	A
$V_{SD}$	Drain to Source Diode Forward Voltage <sup>note3</sup>	$V_{GS} = 0V, I_S = 3A$	-	-	1.3	V
$t_{rr}$	Body Diode Reverse Recovery Time	$V_{GS} = 0V, I_F = 3A,$ $di/dt = 100A/\mu s$	-	32.1	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Time Charge		-	39.4	-	nC
$I_{rrm}$	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**

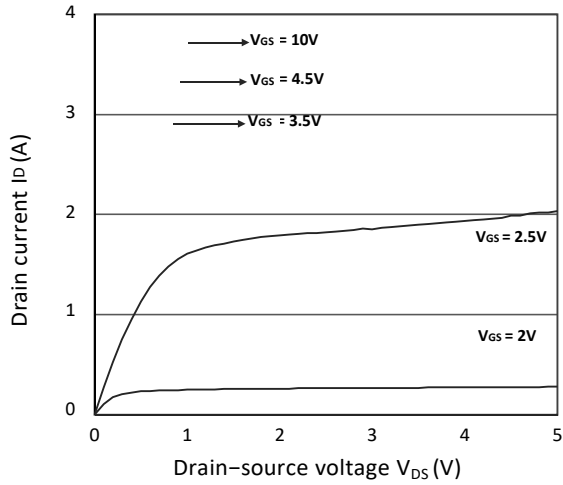


Figure 1. Output Characteristics

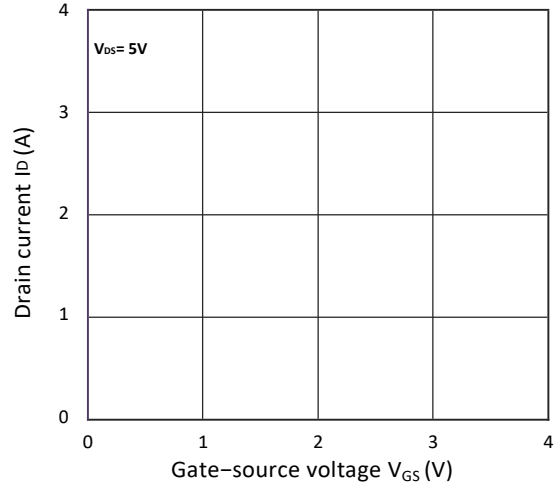


Figure 2. Transfer Characteristics

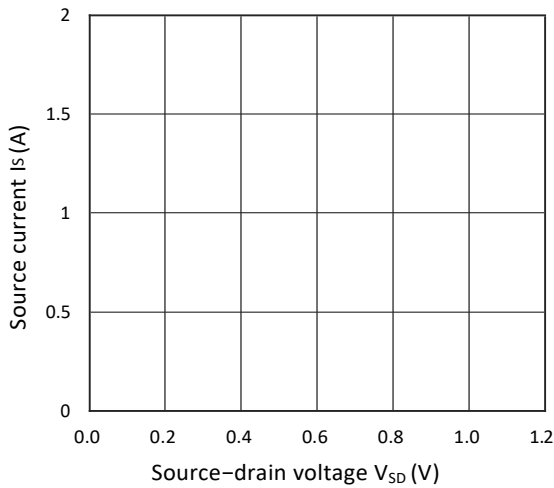


Figure 3. Forward Characteristics of Reverse

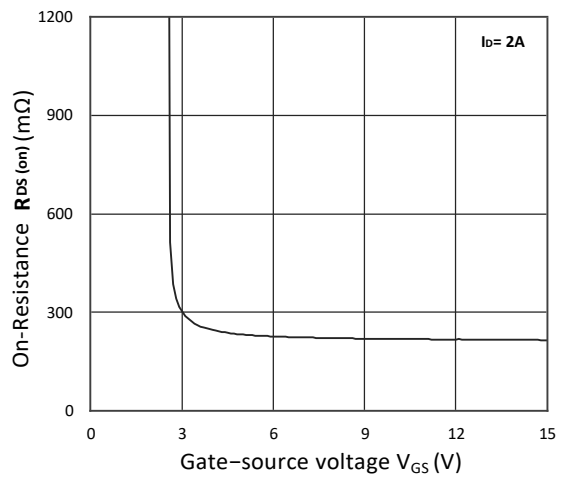


Figure 4.  $R_{DS(on)}$  vs.  $V_{GS}$

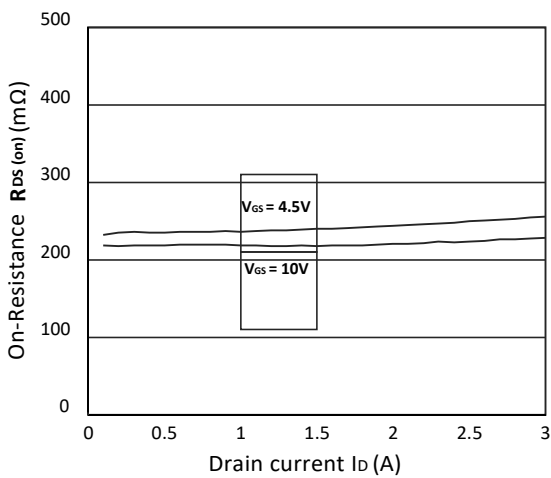


Figure 5.  $R_{DS(on)}$  vs.  $I_D$

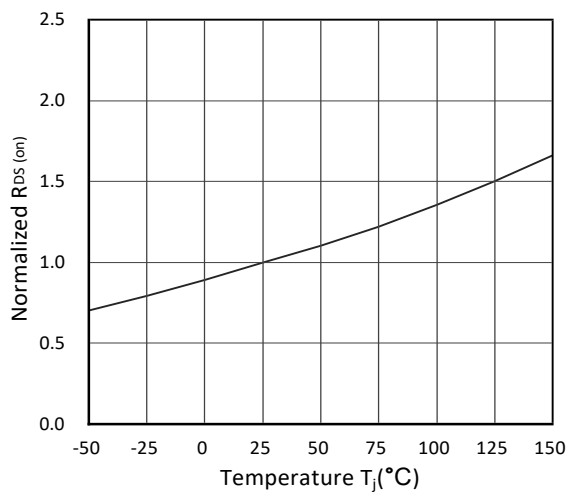


Figure 6. Normalized  $R_{DS(on)}$  vs. Temperature

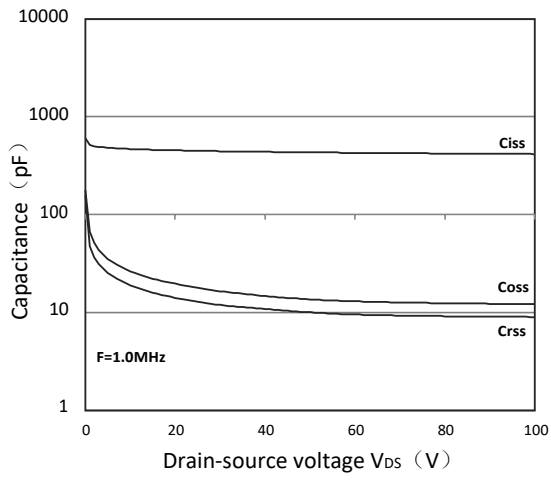


Figure 7. Capacitance Characteristics

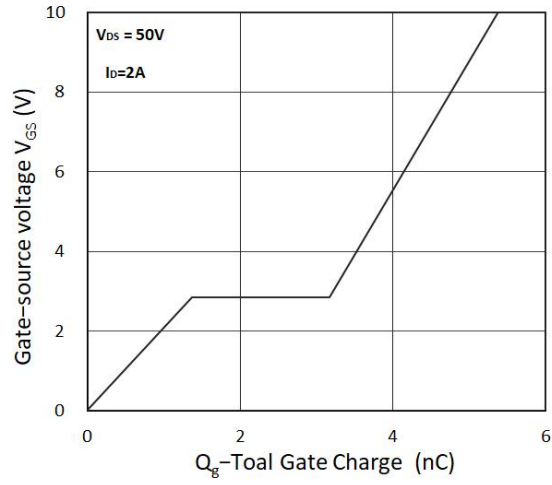
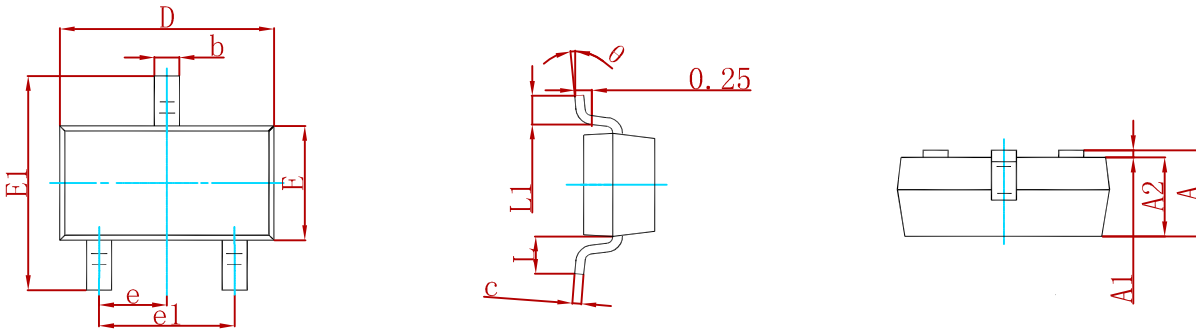


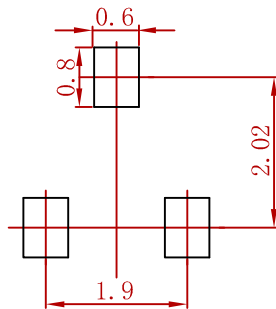
Figure 8. Gate Charge Characteristics

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**Suggested Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance: ± 0.05mm.
  3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
5N10	SOT-23	3000

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