

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
60V	44mΩ@10V	5A
	49mΩ@4.5V	

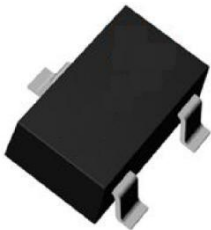
### Feature

- Trench power MV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$

### Application

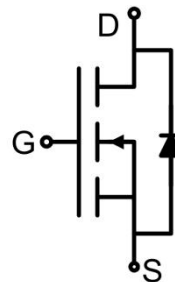
- PWM application
- Load switch

### Package

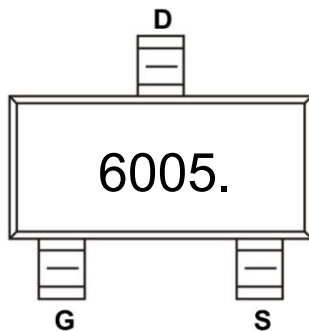


SOT-23-3L

### Circuit diagram



### Marking



### Absolute maximum ratings( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	5	A
Continuous Drain Current ( $T_A=70^{\circ}\text{C}$ )	$I_D(70^{\circ}\text{C})$	4	A
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	25	A
Power Dissipation	$P_D$	2.5	W
Thermal Resistance Junction to Ambient <sup>2)</sup>	$R_{\theta JA}$	50	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	$T_J$	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=5.0\text{A}$		35	44	m $\Omega$
		$V_{GS}=4.5\text{V}, I_D=4.0\text{A}$		39	49	
<b>Dynamic characteristics<sup>3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		1018		pF
Output Capacitance	$C_{oss}$			70		
Reverse Transfer Capacitance	$C_{rss}$			62		
Total Gate Charge	$Q_g$	$V_{DS}=30\text{V}, V_{GS}=10\text{V}, I_D=10\text{A}$		26.4		nC
Gate-Source Charge	$Q_{gs}$			5.4		
Gate-Drain Charge	$Q_{gd}$			6.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=30\text{V}, V_{GS}=10\text{V}, I_D=2\text{A}$ $R_L=1\Omega, R_G=3\Omega$		10		nS
Turn-on rise time	$t_r$			20		
Turn-off delay time	$t_{d(off)}$			29		
Turn-off fall time	$t_f$			21		
<b>Source-Drain Diode characteristics</b>						
Diode Continuous Current	$I_S$				5	A
Diode Forward voltage	$V_{SD}$	$V_{GS}=0\text{V}, I_S=5\text{A}$			1.2	V
Reverse recover time	$T_{rr}$	$I_S=20\text{A}, di/dt=-500\text{A}/\mu\text{s}$		23		nS
Reverse recovery charge	$Q_{rr}$			11.7		nC

Notes:

- 1) Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
- 2)  $R_{\theta JA}$  is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JL}$  is guaranteed by design, while  $R_{\theta JA}$  is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.
- 3) Guaranteed by design, not subject to production testing.

## Typical Characteristics

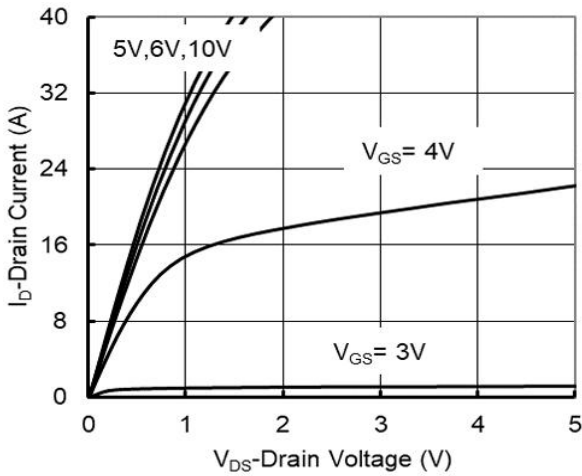


Figure 1. Output Characteristics

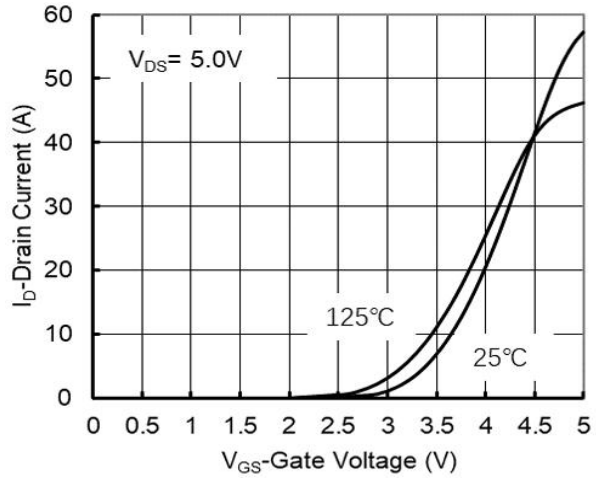


Figure 2. Transfer Characteristics

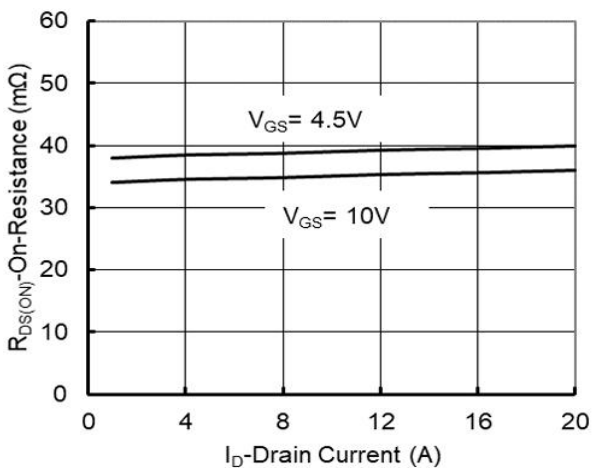


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

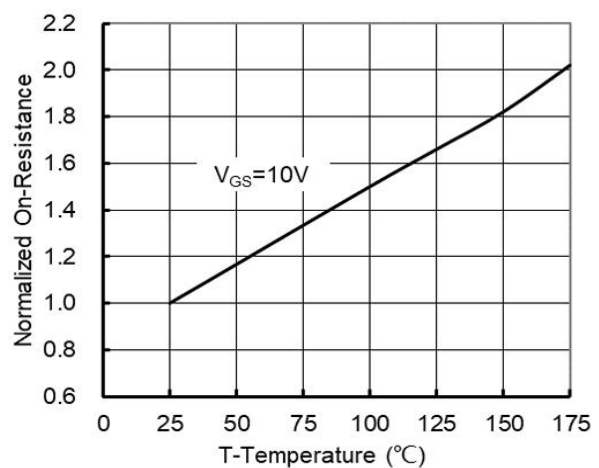


Figure 4. On-Resistance vs. Junction Temperature

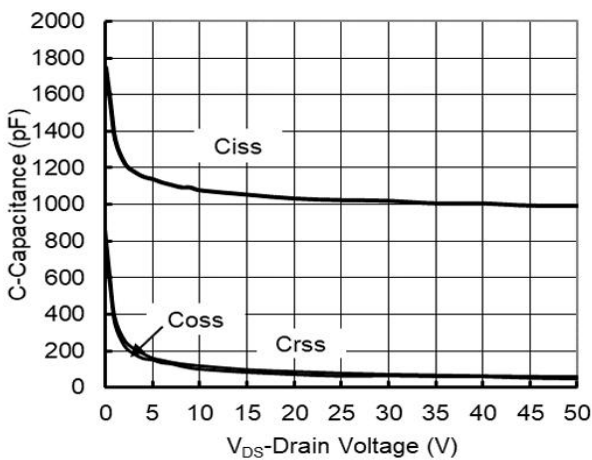


Figure 5. Capacitance Characteristics

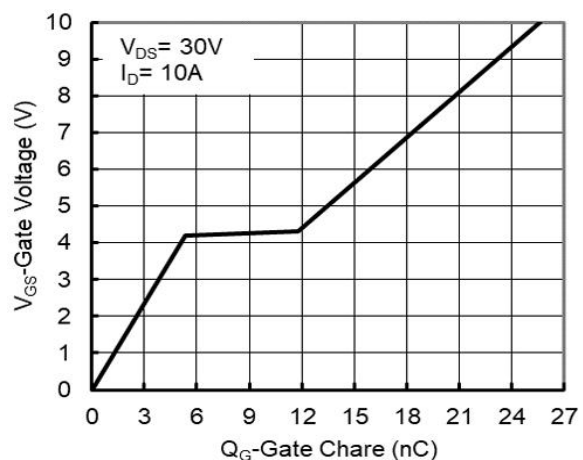


Figure 6. Gate Charge

## Typical Characteristics

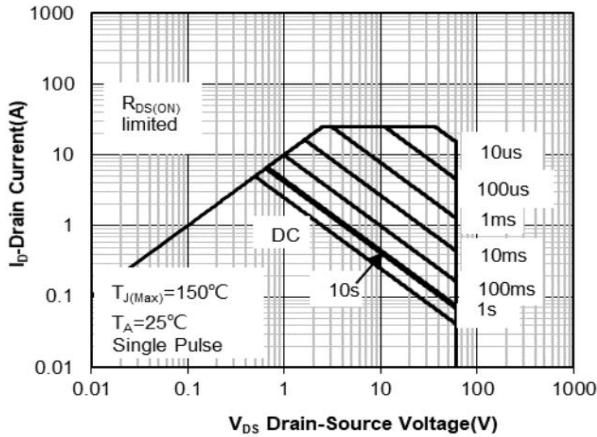


Figure 7. Safe Operation Area

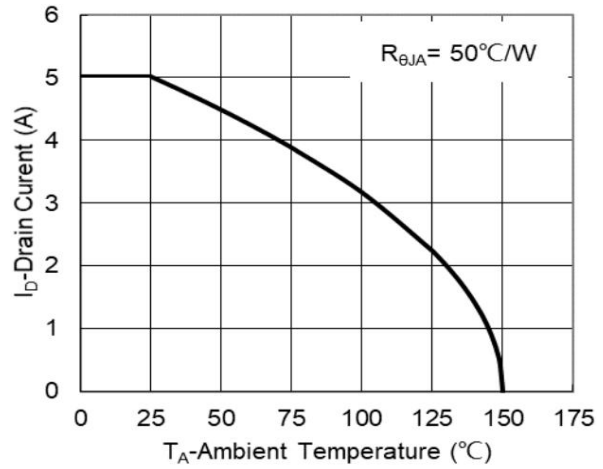


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

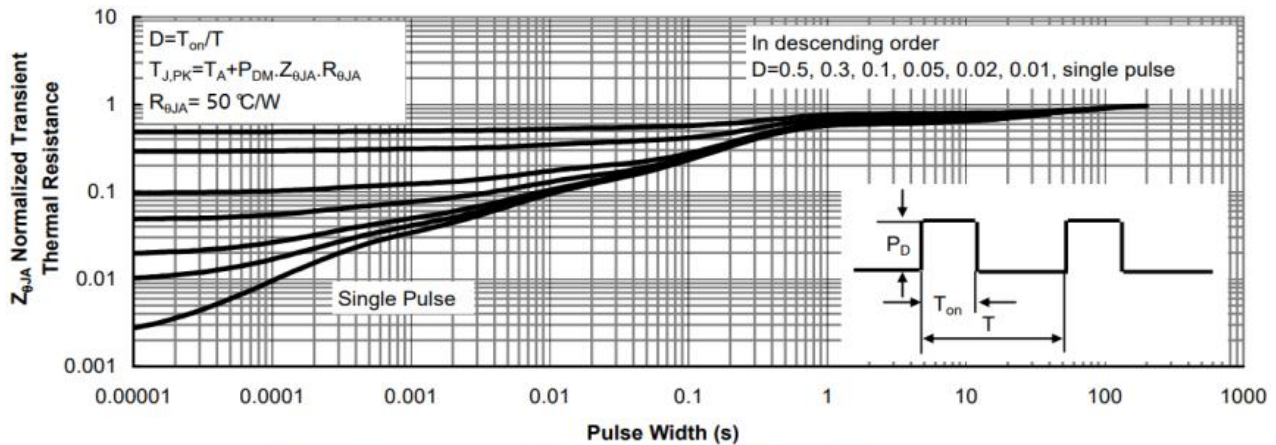
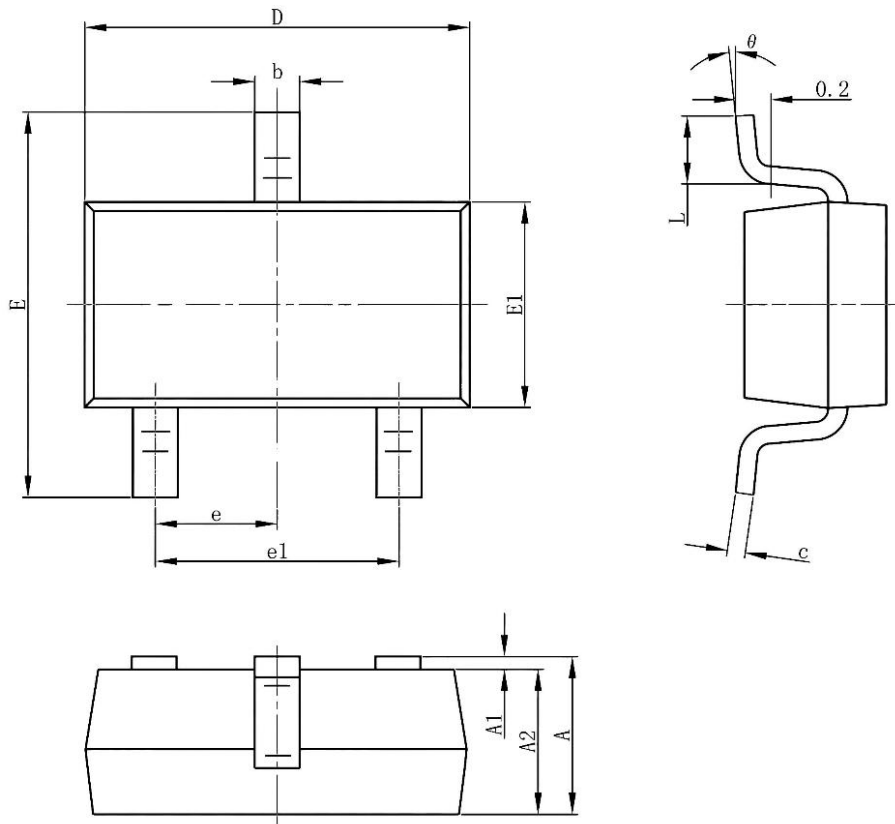


Figure 9. Normalized Maximum Transient Thermal Impedance

### SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.200	0.000	0.008
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950 BSC.		0.037 BSC.	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°