

**Features**

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

**Product Summary**



$V_{DS}$	100	V
$I_D$	5	A
$R_{DS(ON)}$ Typ (at $V_{GS}=10V$ )	105	m $\Omega$
$R_{DS(ON)}$ Typ (at $V_{GS}=4.5V$ )	140	m $\Omega$

**Applications**

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D@T_A=25^{\circ}C$	5	A
Continuous Drain Current <sup>1</sup>	$I_D@T_A=70^{\circ}C$	3.2	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	12	A
Total Power Dissipation <sup>4</sup>	$P_D$	2.5	W
Storage Temperature Range	$T_{STG}$	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	$T_J$	-55 to 150	$^{\circ}C$

**Thermal Characteristics**

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	---	74	$^{\circ}C/W$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	---	80	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3A$	---	105	140	$m\Omega$
		$V_{GS}=4.5V, I_D=2A$	---	140	170	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	---	2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=2A$	---	18	---	nC
Gate-Source Charge	$Q_{gs}$		---	2.5	---	
Gate-Drain Charge	$Q_{gd}$		---	4	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DS}=50V, V_{GS}=10V, R_G=1.8\Omega, I_D=3A$	---	7.5	---	ns
Rise Time	$T_r$		---	6	---	
Turn-Off Delay Time	$T_{d(off)}$		---	21	---	
Fall Time	$T_f$		---	9	---	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	765	---	pF
Output Capacitance	$C_{oss}$		---	38	---	
Reverse Transfer Capacitance	$C_{rss}$		---	33	---	

**Drain-Source Diode Characteristics**

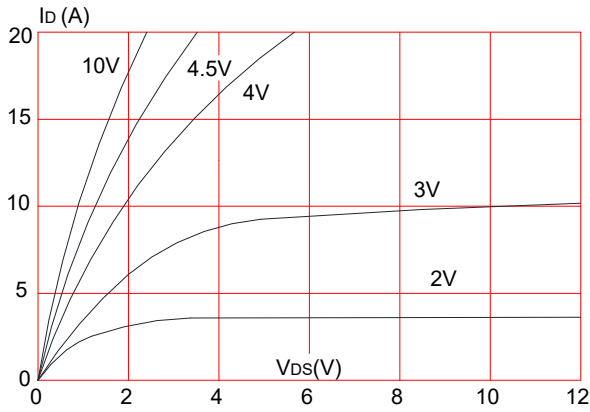
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=3A, T_J=25^\circ\text{C}$	---	---	1.2	V
Reverse recovery time	$t_{rr}$	$I_F=3A, diF/dt=125A/\mu s$	---	21	---	ns
Reverse recovery charge	$Q_{rr}$		---	22	---	nC

**Note:**

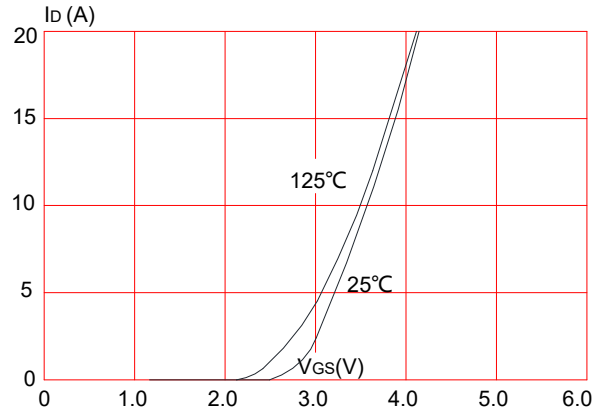
1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

**Typical Characteristics**

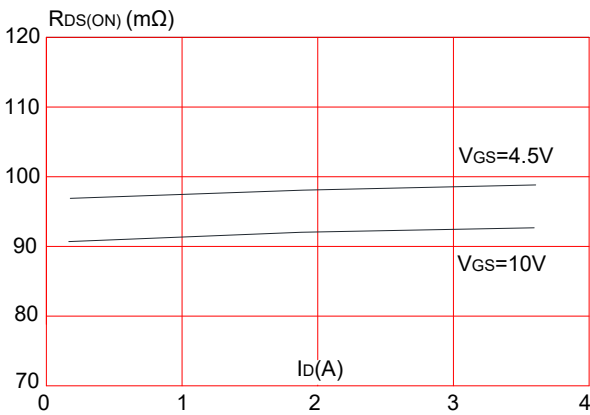
**Figure 1: Output Characteristics**



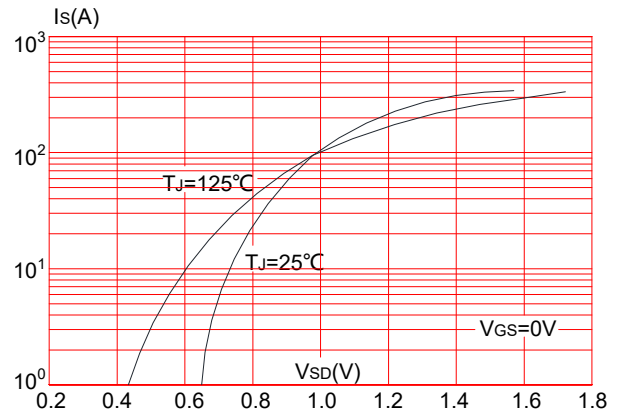
**Figure 2: Typical Transfer Characteristics**



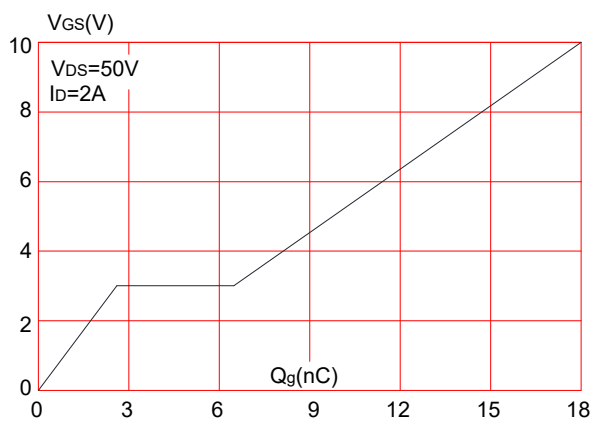
**Figure 3: On-resistance vs. Drain Current**



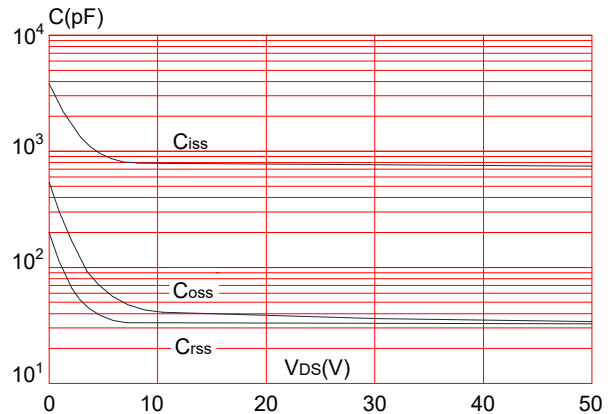
**Figure 4: Body Diode Characteristics**



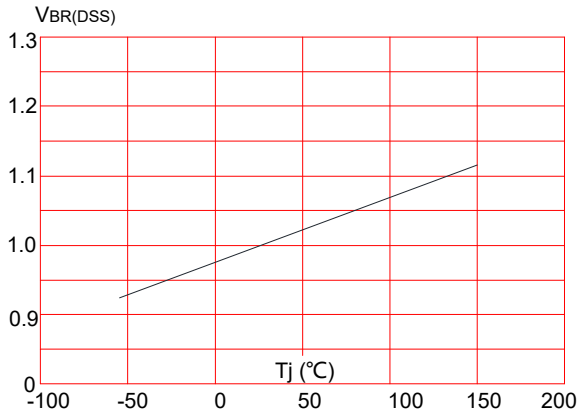
**Figure 5: Gate Charge Characteristics**



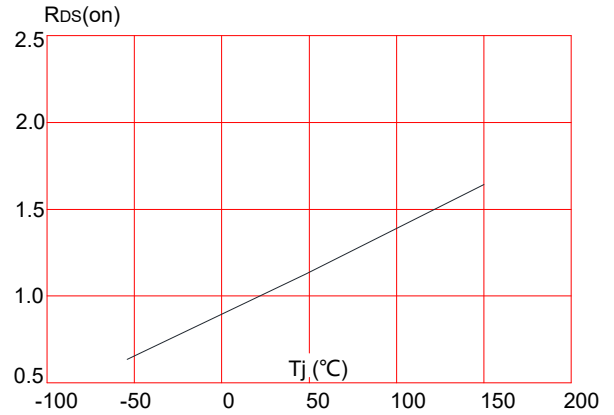
**Figure 6: Capacitance Characteristics**



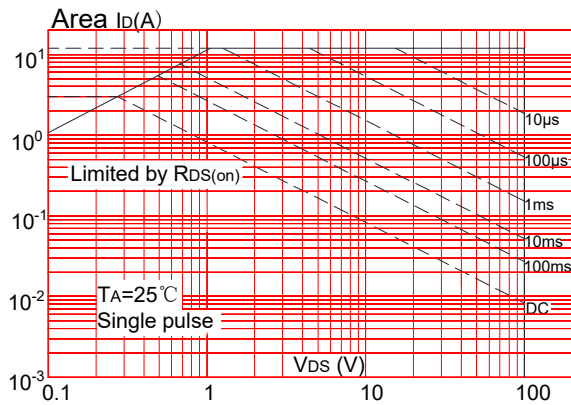
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



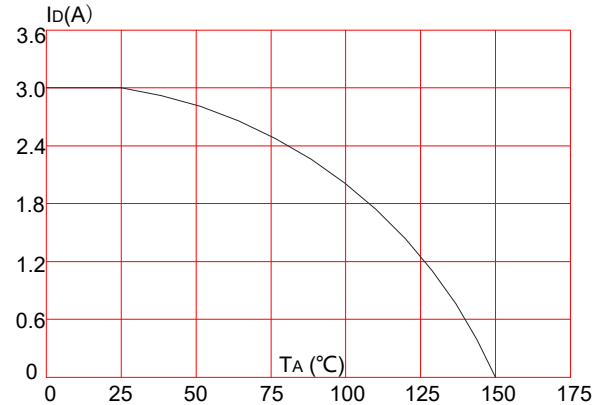
**Figure 8: Normalized on Resistance vs. Junction Temperature**



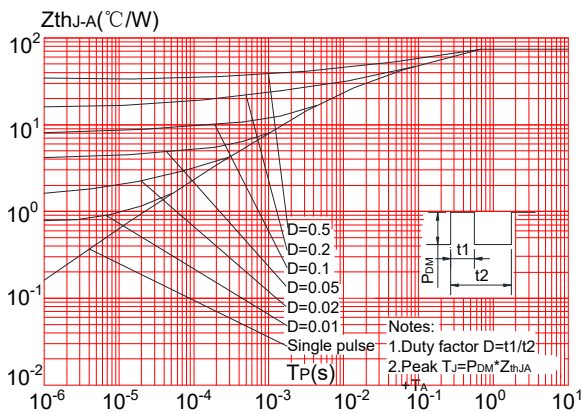
**Figure 9: Maximum Safe Operating**



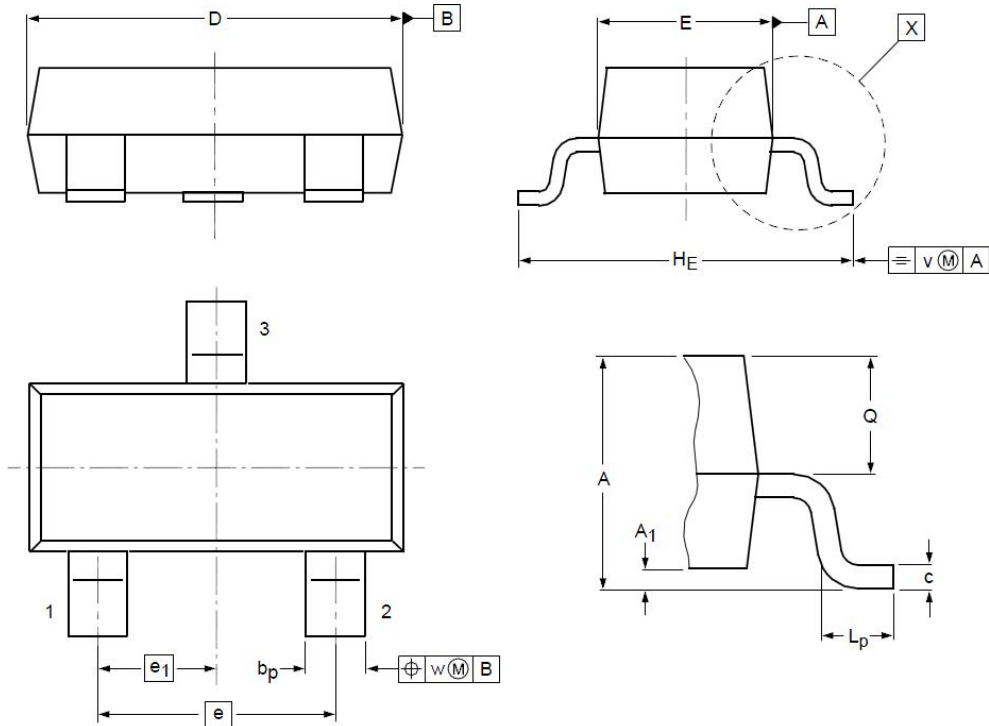
**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**



**Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**



**SOT23-3L Package Outline Dimensions**



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.90	1.07	1.25	<b>e<sub>1</sub></b>	--	0.95	--
<b>A<sub>1</sub></b>	0.01	0.05	0.10	<b>H<sub>E</sub></b>	2.50	2.80	3.00
<b>b<sub>p</sub></b>	0.30	0.40	0.50	<b>L<sub>p</sub></b>	0.30	0.45	0.60
<b>c</b>	0.10	0.15	0.20	<b>Q</b>	0.23	0.28	0.33
<b>D</b>	2.70	2.90	3.10	<b>V</b>	--	0.20	--
<b>E</b>	1.40	1.55	1.75	<b>W</b>	--	0.20	--
<b>e</b>	--	1.90	--				