

## N-Channel Enhancement Mode MOSFET

### Features

- 100V/3A
- $R_{DS(ON)}=220m\Omega$  (typ) @VGS=10V  
 $R_{DS(ON)}=280m\Omega$  (typ) @VGS=4.5V
- 100% UIS & RG Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

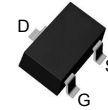
### Applications

- Power Management for Industrial DC/DC Converters

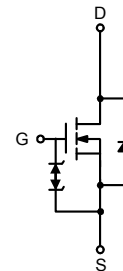
### Marking

Marking	BC****
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### Pin Description



Top View of SOT23-3L



N-Channel MOSFET

### Absolute Maximum Ratings (T = 25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
<b>Common Ratings</b>			
$V_{DSS}$	Drain-Source Voltage	100	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$I_D$	Continuous Drain Current	$T_J=150^\circ\text{C}$ 3	A
$I_{DM}$	Pulsed Drain Current	$T_C=25^\circ\text{C}$ 10	
$I_S$	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 1	A
$T_{STG}, T_J$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
PD	Power Dissipation	$T_A=25^\circ\text{C}$ 1.25	W
		$T_A=70^\circ\text{C}$ 0.8	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C/W}$

## Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	100	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V	-	-	1	μA
		T <sub>J</sub> =85°C	-	-	5	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	1	-	2.5	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
R <sub>DS(ON)</sub>	Drain-Source On-state Resistance	V <sub>GS</sub> =10V, I <sub>DS</sub> =3A	-	220	350	mΩ
		V <sub>GS</sub> =4.5V, I <sub>DS</sub> =2.5A	-	280	400	
G <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =1A	-	10	-	S
<b>Body Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage	I <sub>SD</sub> =1A, V <sub>GS</sub> =0V	-	0.8	1.0	V
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, Frequency=1.0MHz	-	295	-	pF
C <sub>oss</sub>	Output Capacitance		-	40	-	
C <sub>rss</sub>	Reverse transfer capacitance		-	15	-	
t <sub>d(ON)</sub>	Turn-on delay Time	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =50V R <sub>G</sub> =6Ω, I <sub>D</sub> =1A, R <sub>L</sub> =10Ω,	-	3.6	-	nS
t <sub>r</sub>	Turn-on rise Time		-	3.5	-	
t <sub>d(OFF)</sub>	Turn-off delay Time		-	32	-	
t <sub>f</sub>	Turn-off rise Time		-	3	-	
<b>Gate Charge Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, V <sub>GS</sub> =4.5V, I <sub>DS</sub> =1A	-	2.1	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	0.6	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	0.8	-	

**TYPICAL CHARACTERISTICS (25°C Unless Note)**

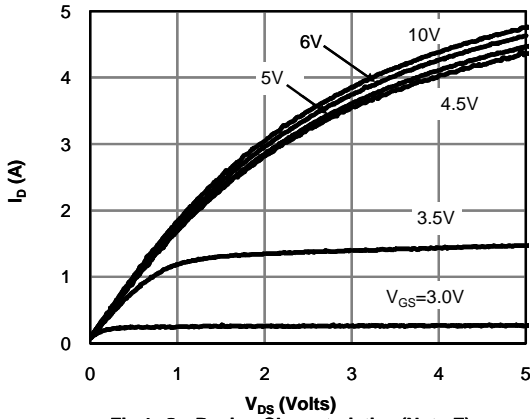


Figure 1: On-Region Characteristics (Note E)

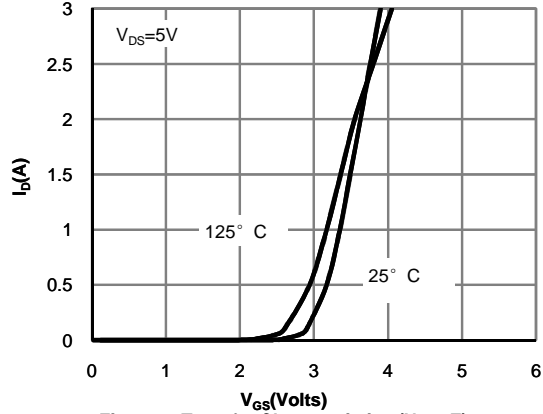


Figure 2: Transfer Characteristics (Note E)

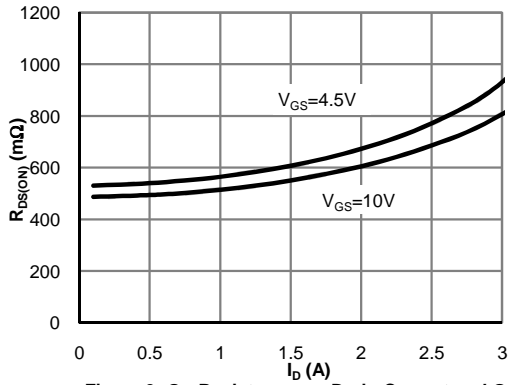


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

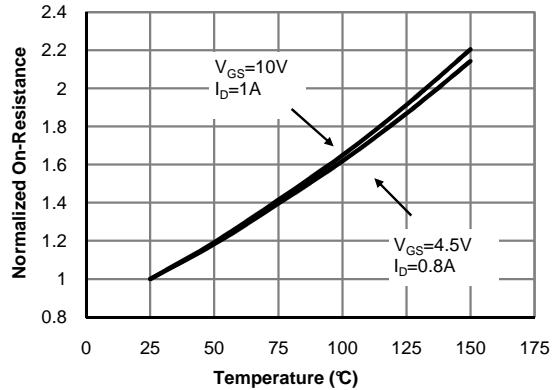


Figure 4: On-Resistance vs. Junction Temperature (Note E)

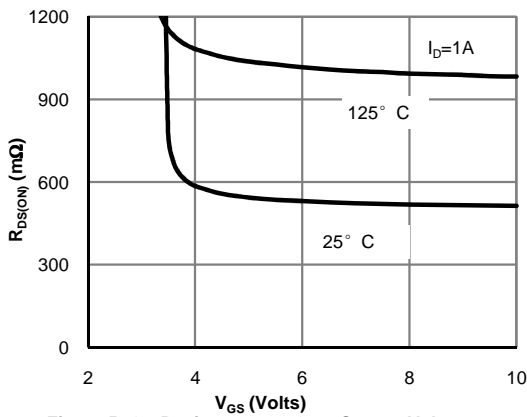


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

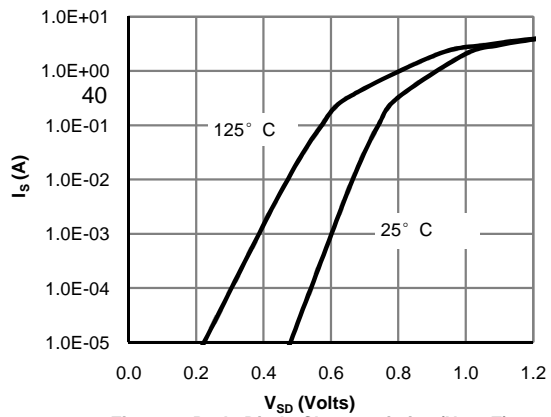


Figure 6: Body-Diode Characteristics (Note E)

**TYPICAL CHARACTERISTICS** (contin)

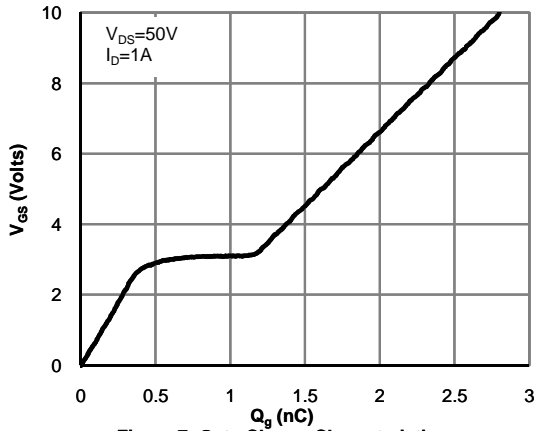


Figure 7: Gate-Charge Characteristics

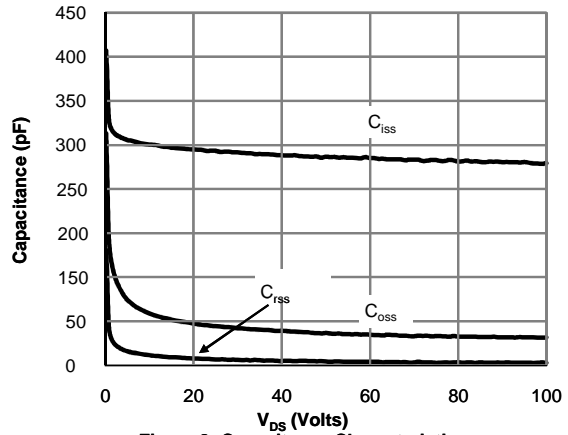


Figure 8: Capacitance Characteristics

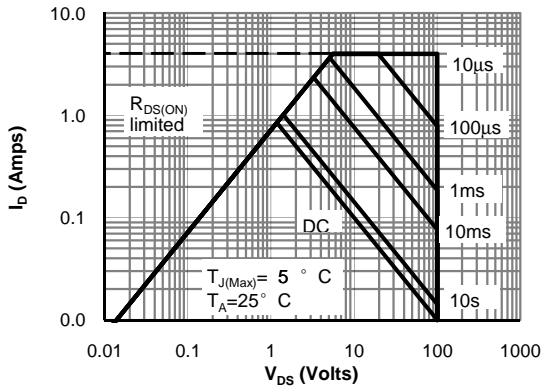


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

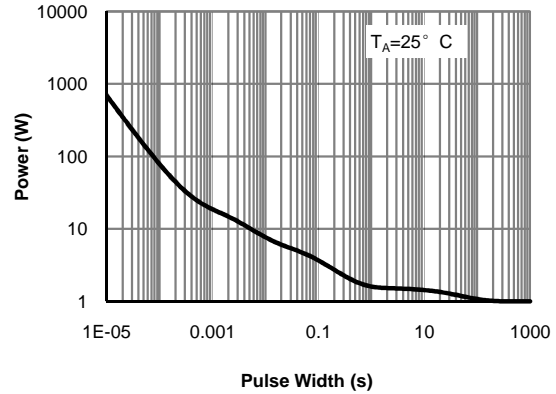


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

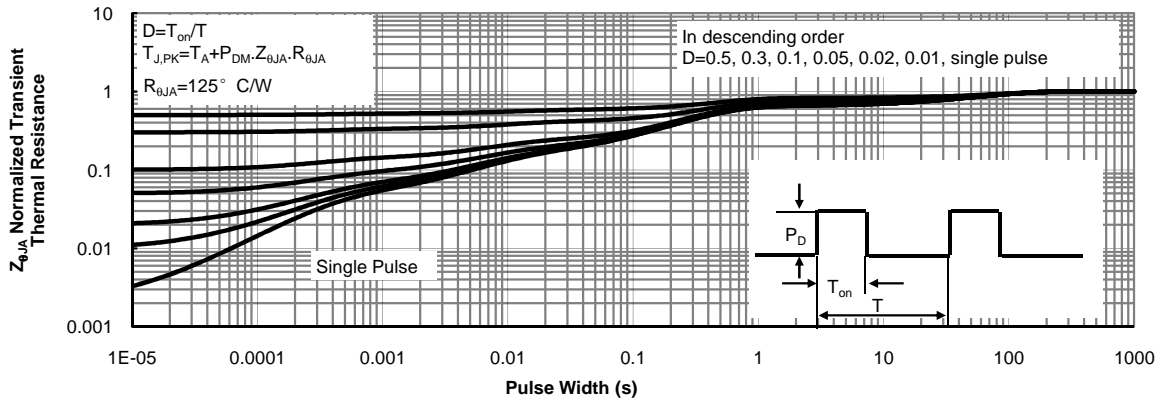
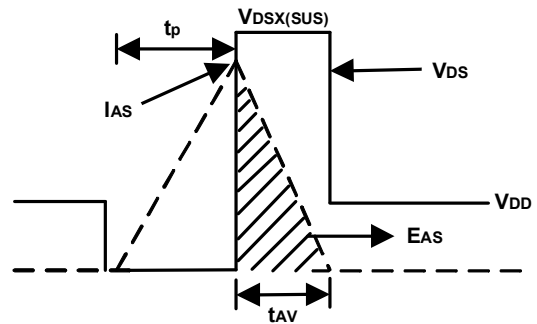
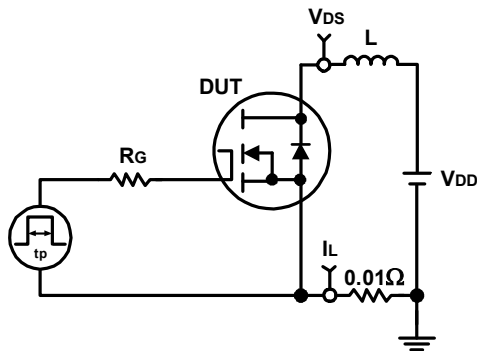
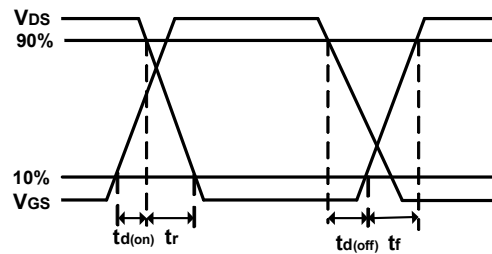
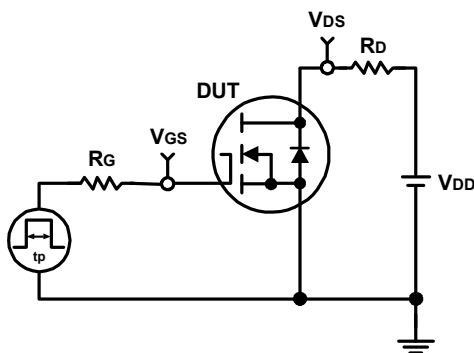


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

### Avalanche Test Circuit and Waveforms

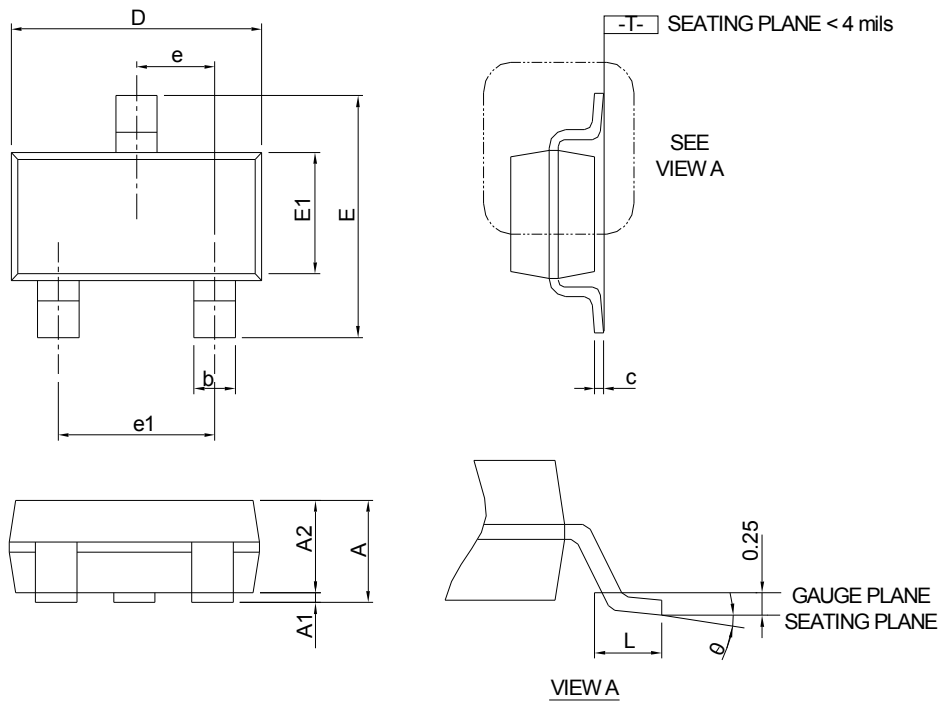


### Switching Time Test Circuit and Waveforms



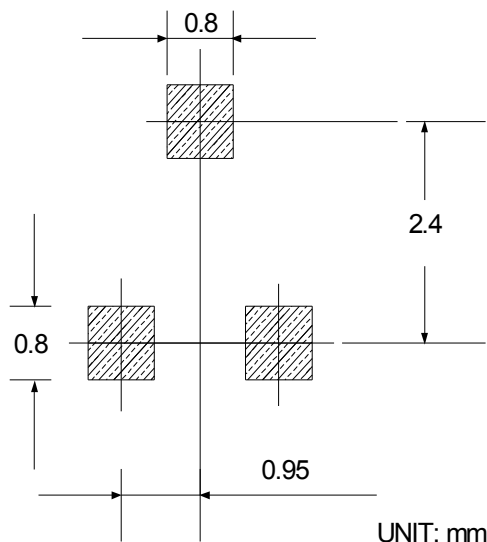
## Package Information

SOT23-3L



SYMBOL	SOT 23-3L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.20		0.047
A1	0.00	0.08	0.000	0.003
A2	0.90	1.12	0.035	0.044
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
$\theta$	0°	8°	0°	8°

### RECOMMENDED LAND PATTERN



Note : Dimension D and E1 do not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 10 mil per side.

## Attention

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