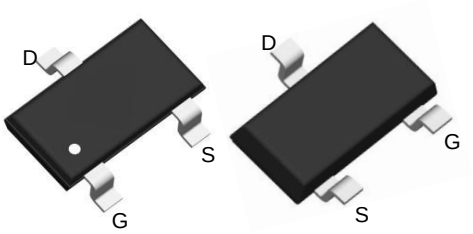
N-Channel Enhancement Mode MOSFET

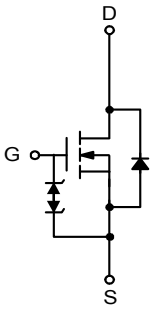
Features

- 55V/2.1A
- $R_{DS(ON)}$=90mΩ (typ) @VGS=4.5V
  $R_{DS(ON)}$=154mΩ (typ) @VGS=2.5V
- 100% UIS & RG Tested
- Reliableand Rugged
- Lead Freeand Green Devices Available
  (RoHS Compliant)

SOT23-3L

Top View Bottom View





N-Channel MOSFET

Applications

- Power Management for Industrial DC/DC Converters

Marking

Marking	AR****

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		55	V
V_{GSS}	Gate-Source Voltage		±12	
I_D	Continuous Drain Current(TJ=150°C）	V_{GS}=4.5V	2.1	A
I_{DM}	Pulsed Drain Current		10	
I_S	Diode Continuous Forward Current		1	A
T_{STG}, T_j	Storage Temperature Range		-55 to 150	°C
PD	Power Dissipation	T_A=25°C	1.25	W
		T_A=70°C	0.8	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	°C/W

Electrical Characteristics (T_A = 25°C Unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	55	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =44V, V_{GS}=0V	-	-	1	μA
		T_j=55°C			5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250μA	0.6	-	1.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=2.1A	-	90	160	mΩ
		V_{GS}=2.5V, I_{DS}=1.5A	-	154	200	
G_{fs}	Forward Transconductance	V_{DS}=5V,I_D=2.1A	-	10	-	S
Body Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.8	1.0	V
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =25V, Frequency=1.0MHz	-	295	-	pF
C_{oss}	Output Capacitance		-	40	-	
C_{rss}	Reverse transfer capacitance		-	15	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=4.5V ,V_{DS}=27V R_G=6Ω,R_L=10Ω,I_D=1A	-	3.6	-	nS
t_r	Turn-on rise Time		-	3.5	-	
$t_{d(OFF)}$	Turn-off delay Time		-	32	-	
t_f	Turn-off rise Time		-	3	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS} =27V, V_{GS}=4.5V, I_{DS}=2.1A	-	2.1	3.9	nC
Q_{gs}	Gate-Source Charge		-	0.6	-	
Q_{gd}	Gate-Drain Charge		-	0.8	-	

TYPICAL CHARACTERISTICS (25℃ Unless Note)

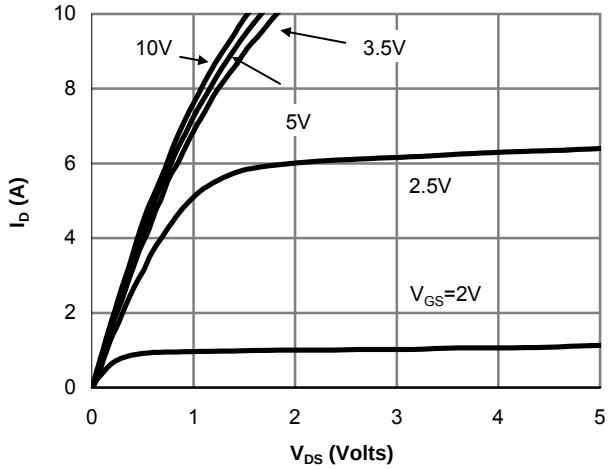


Fig 1: On-Region characteristics

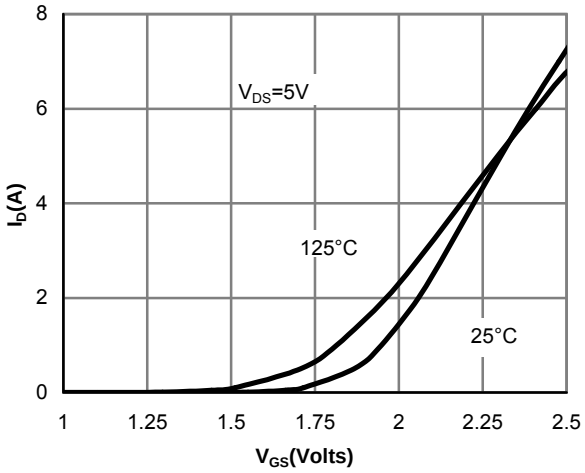


Figure 2: Transfer Characteristics

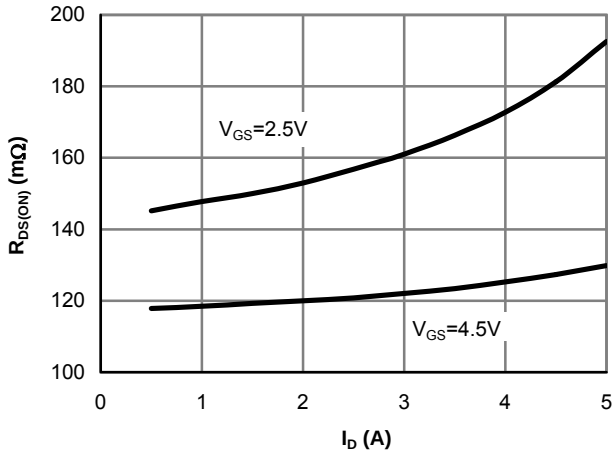


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

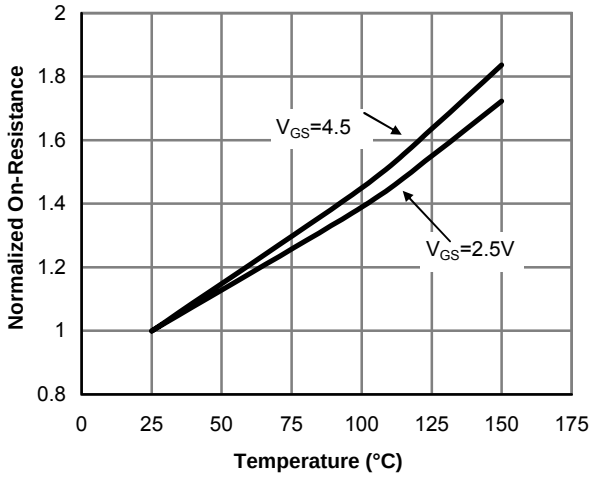


Figure 4: On-Resistance vs. Junction Temperature

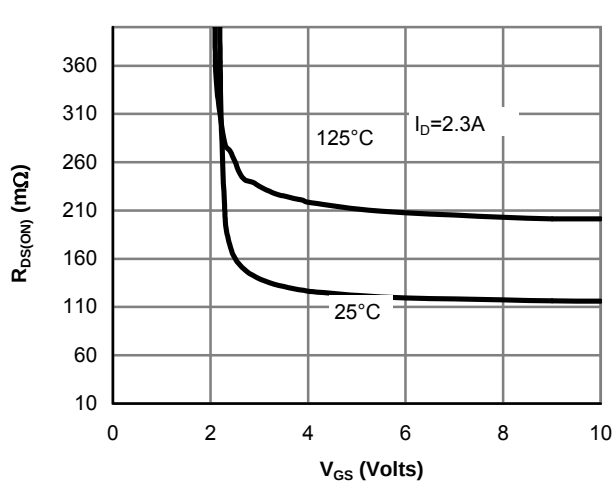


Figure 5: On-Resistance vs. Gate-Source Voltage

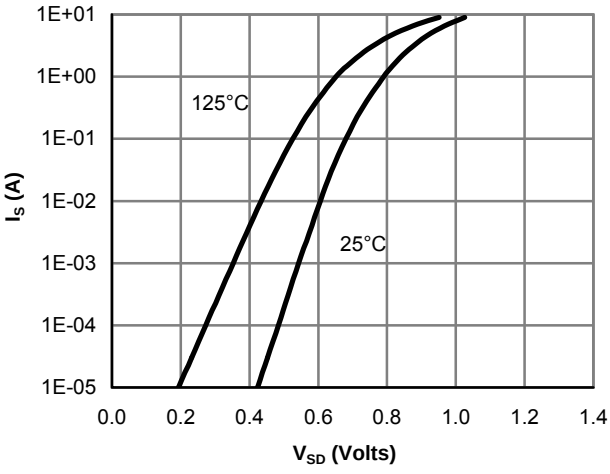


Figure 6: Body-Diode Characteristics

TYPICAL CHARACTERISTICS (continuous)

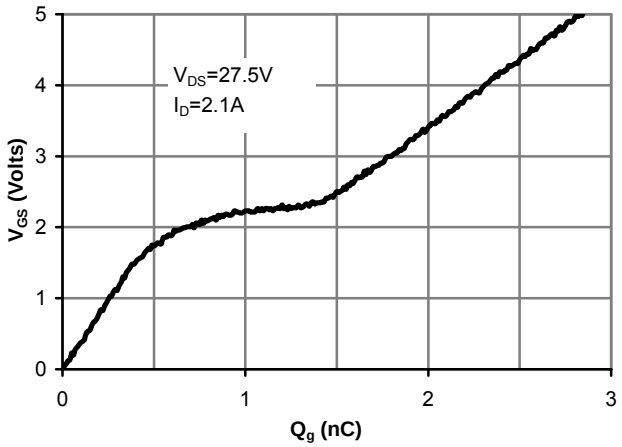


Figure 7: Gate-Charge Characteristics

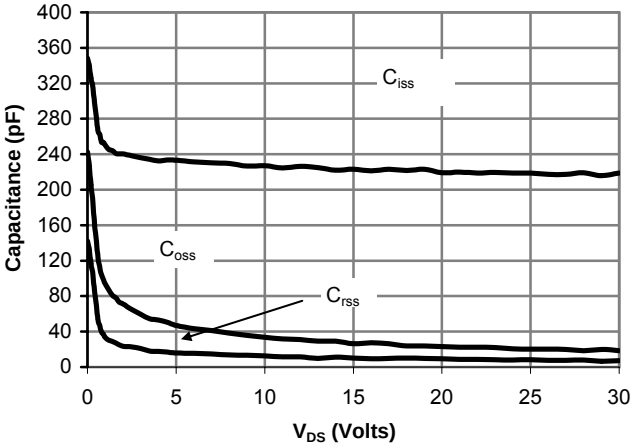


Figure 8: Capacitance Characteristics

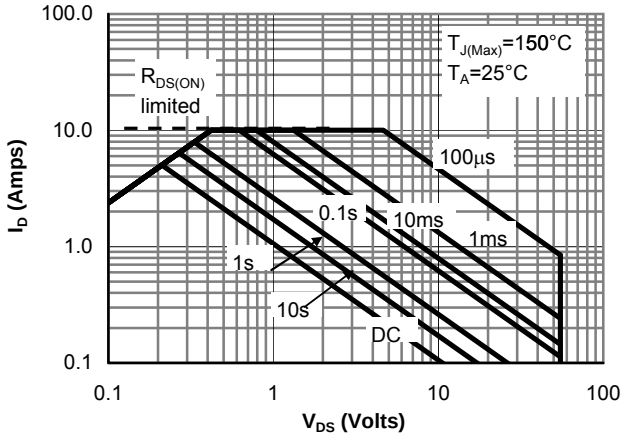


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

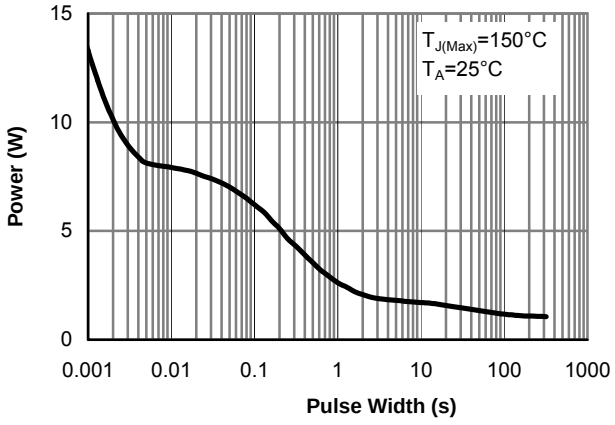


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

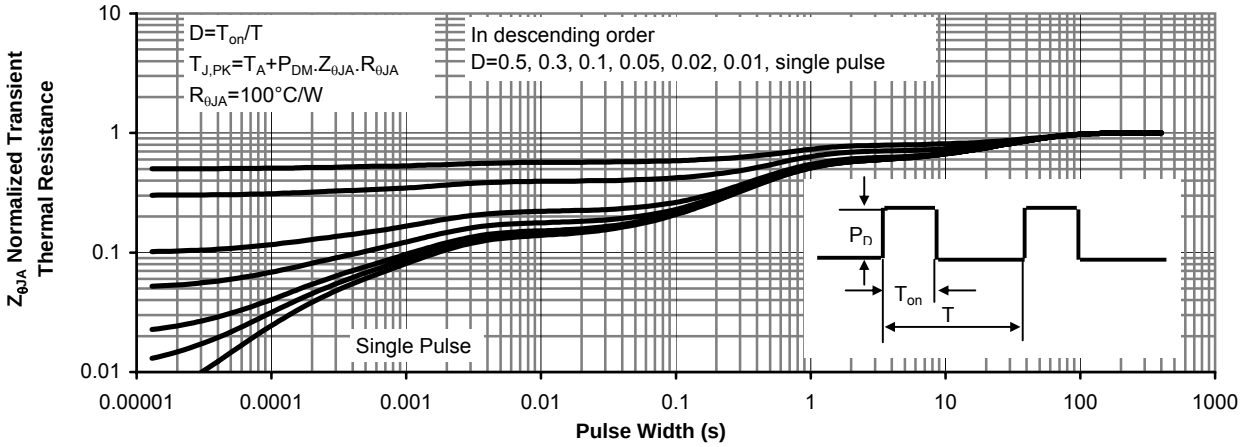
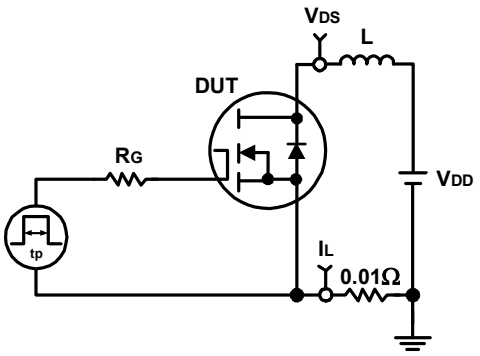
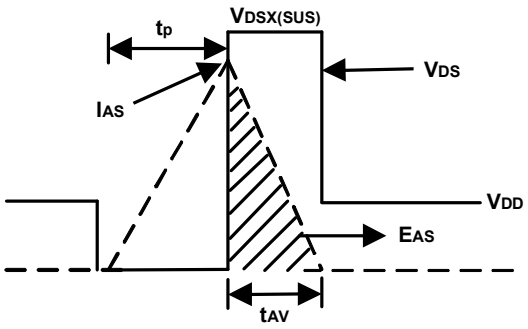


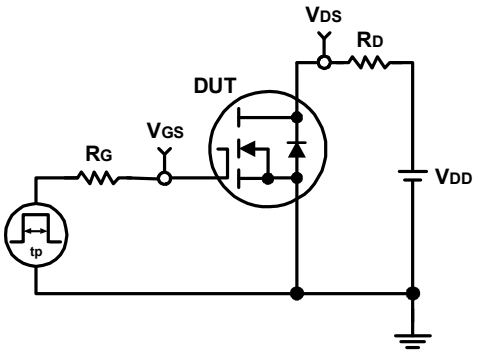
Figure 11: Normalized Maximum Transient Thermal Impedance

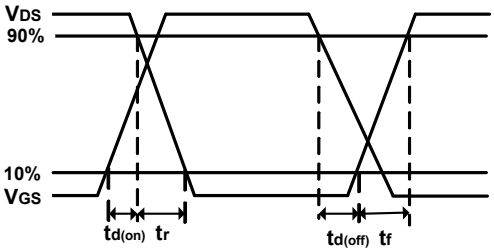
Avalanche Test Circuit and Waveforms





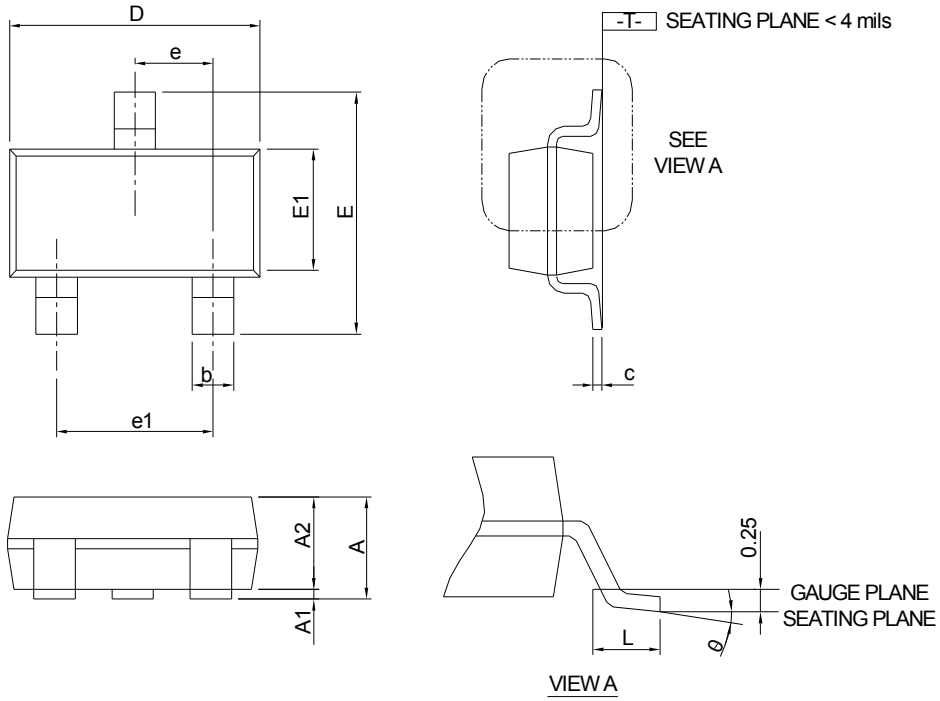
Switching Time Test Circuit and Waveforms





Package Information

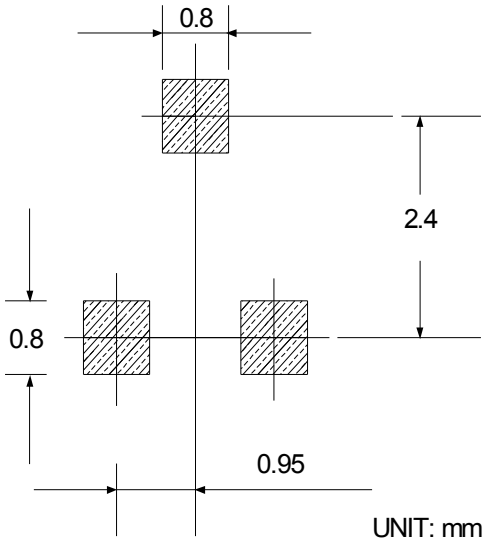
SOT23-3L



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
θ	0°	8°	0°	8°

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.

RECOMMENDED LAND PATTERN



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