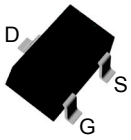
Features

- 60V/3A
  $R_{DS(ON)}$=74mΩ(typ.)@V_{GS}=10V
  $R_{DS(ON)}$=84mΩ(typ.)@V_{GS}=4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

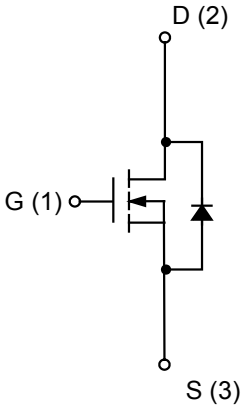
Applications

- Power Management in DC/AC Inverer Systems.

Pin Description



Top View of SOT-23-3



N-Channel MOSFET

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_A=25°C	3	A
I_D	Continuous Drain Current	T_A=25°C	3	A
		T_A=70°C	2.3	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	9	A
P_D	Maximum Power Dissipation	T_A=25°C	1	W
		T_A=70°C	0.64	
$R_{\theta JA}$ [c]	Thermal Resistance-Junction to Ambient	Steady State	125	°C/W
I_{AS} [b]	Avalanche Current, Single pulse	L=0.5mH	5	A
E_{AS} [b]	Avalanche Energy, Single pulse	L=0.5mH	6	mJ

Note a：Pulse width limited by max junction temperature.
Note b：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).
Note c：Surface Mounted on 1in^2 pad area.

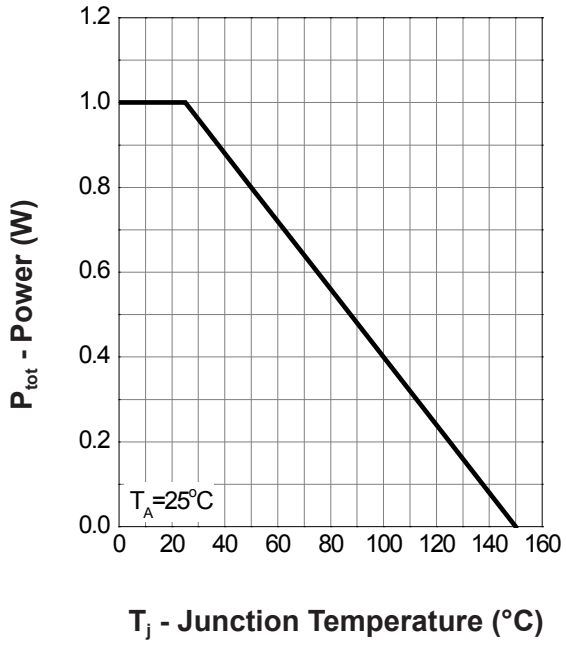
Electrical Characteristics (T_A= 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_{DS}=250μA	0.7	1.0	1.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V , V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=2A	-	74	100	mΩ
		V_{GS}=4.5V, I_{DS}=2A	-	84	120	mΩ
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=1A ,V_{GS}=0V	-	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=1A, dI_{SD}/dt=100A/ms	-	14	-	ns
Q_{rr}	Reverse Recovery Charge		-	11	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,f=1MHz	-	2.5	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	270	350	pF
C_{oss}	Output Capacitance		-	30	-	
C_{rss}	Reverse Transfer Capacitance		-	15	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	5	9	ns
t_r	Turn-on Rise Time		-	8	15	
$t_{d(OFF)}$	Turn-off Delay Time		-	14	25	
t_f	Turn-off Fall Time		-	3	6	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_{DS}=2A	-	3.5	-	nC
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=2A	-	7	10	
Q_{gs}	Gate-Source Charge		-	0.8	-	
Q_{gd}	Gate-Drain Charge		-	1.2	-	

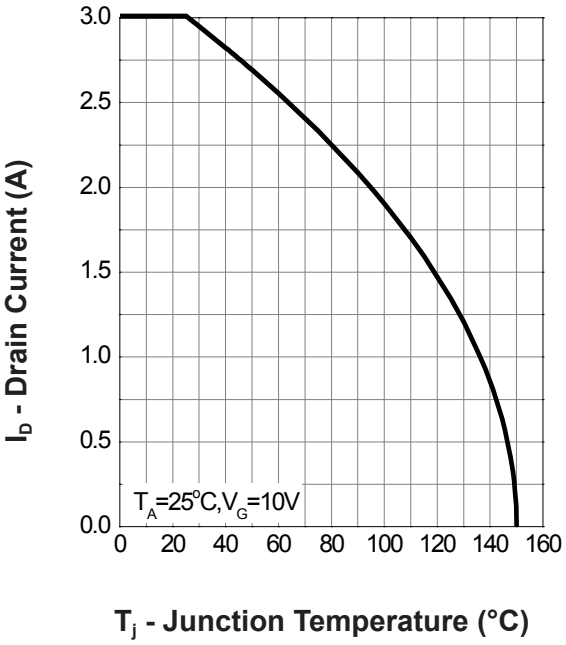
Note d：Pulse test ; pulse width≤300ms, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

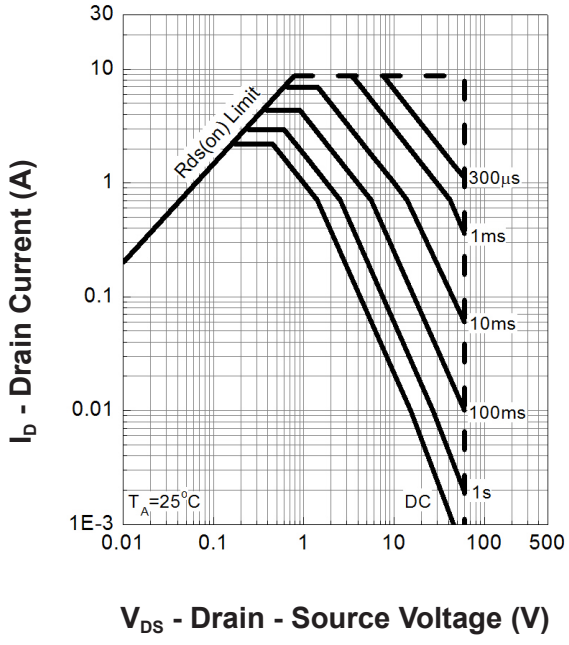
Power Dissipation



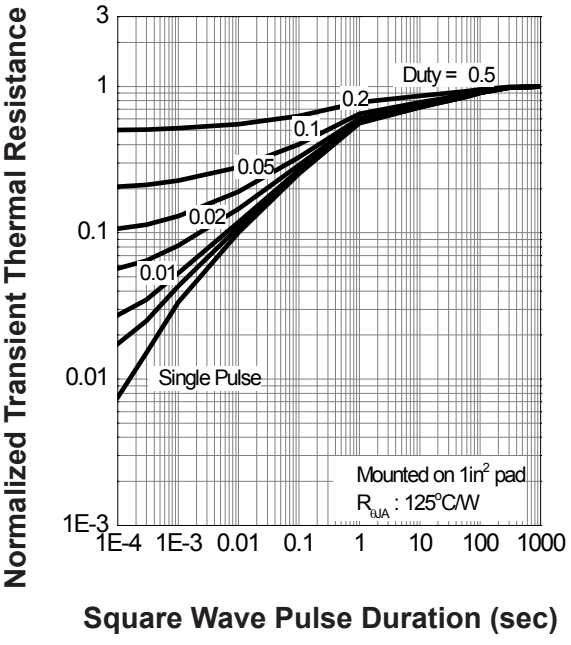
Drain Current



Safe Operation Area

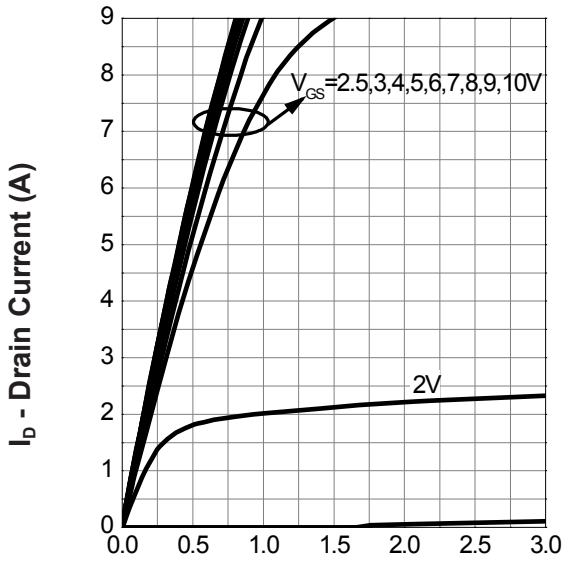


Thermal Transient Impedance

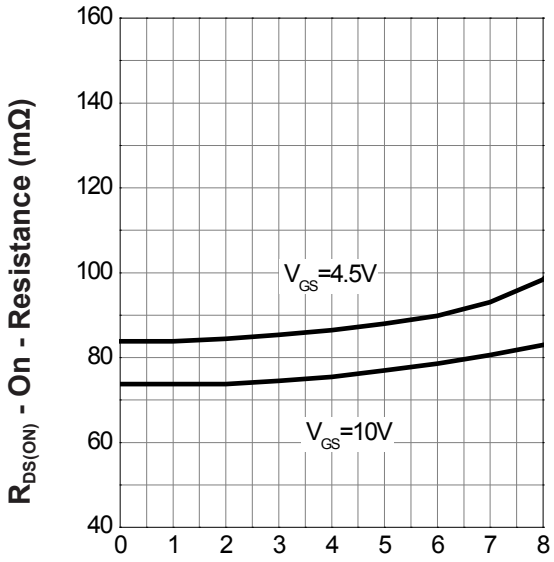


Typical Operating Characteristics(Cont.)

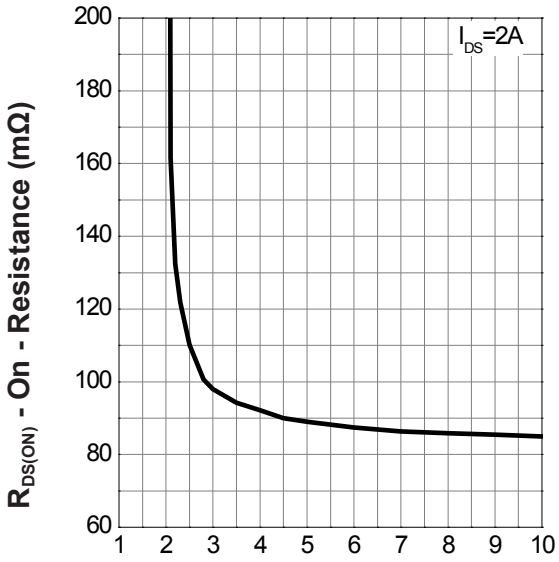
Output Characteristics



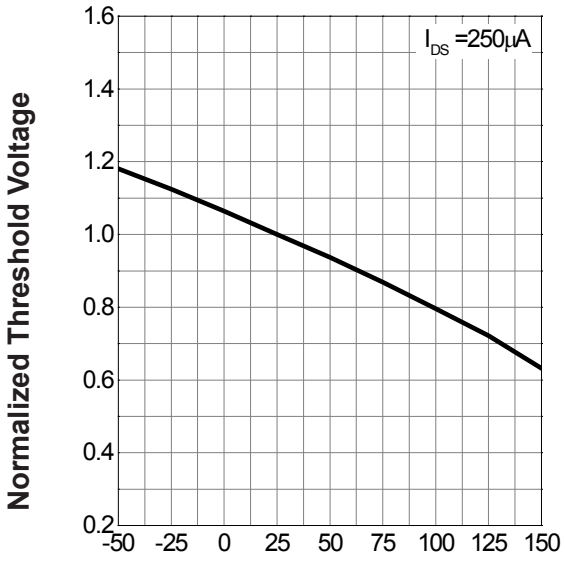
Drain-Source On Resistance



Gate-Source On Resistance

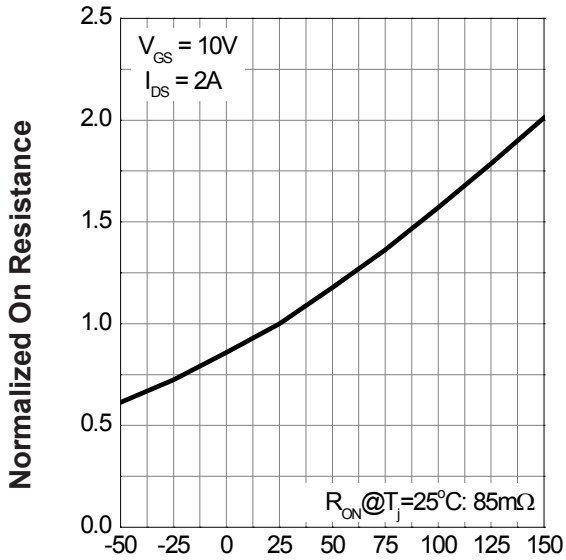


Gate Threshold Voltage

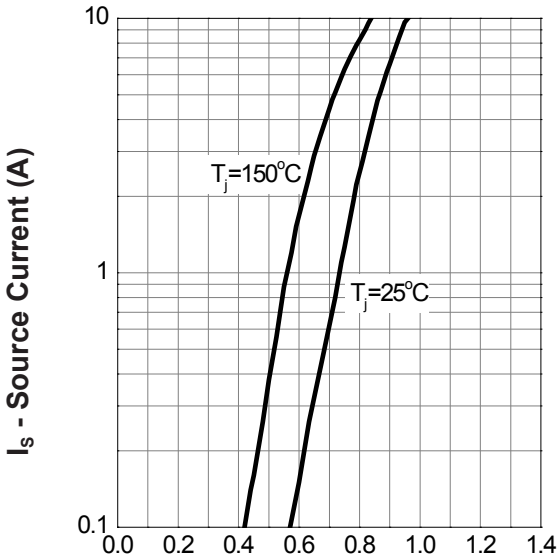


Typical Operating Characteristics(Cont.)

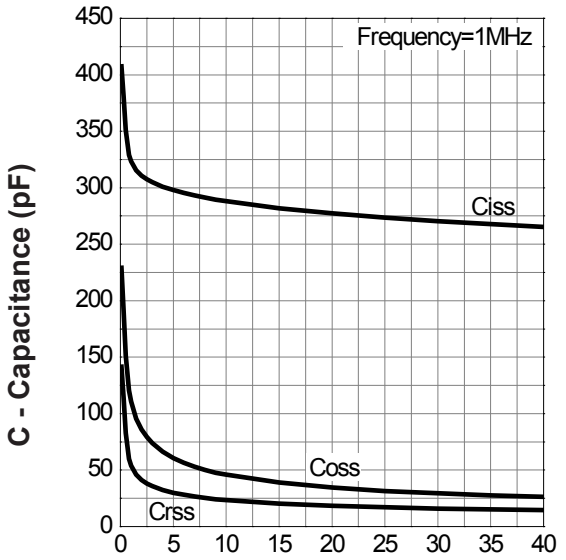
Drain-Source On Resistance



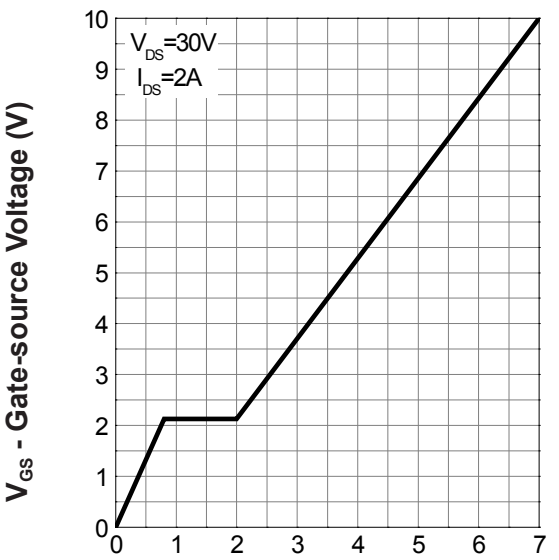
Source-Drain Diode Forward



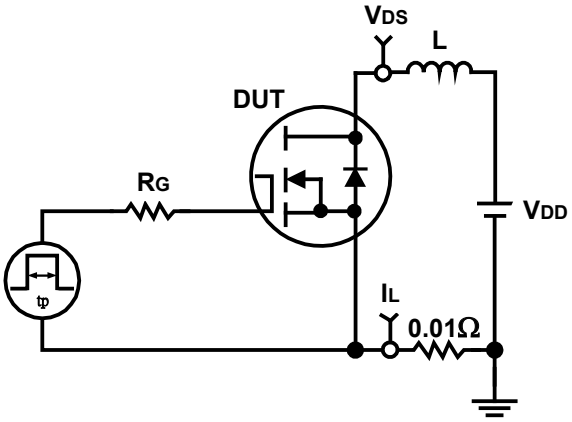
Capacitance

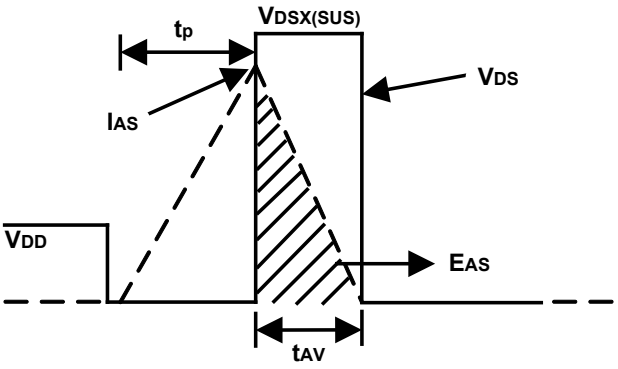


Gate Charge

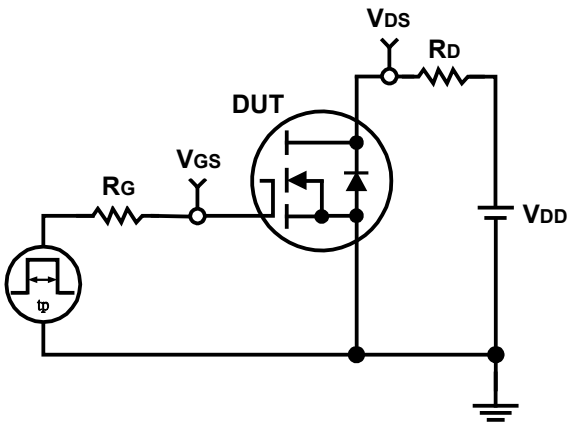


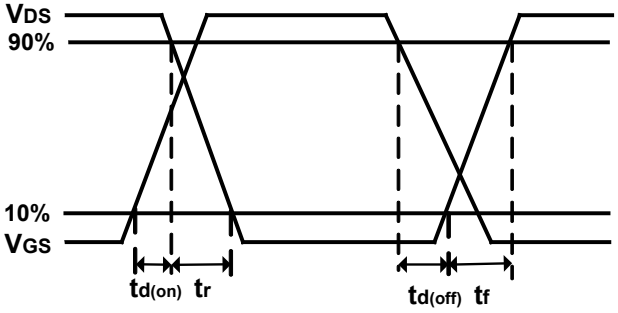
Avalanche Test Circuit and Waveforms





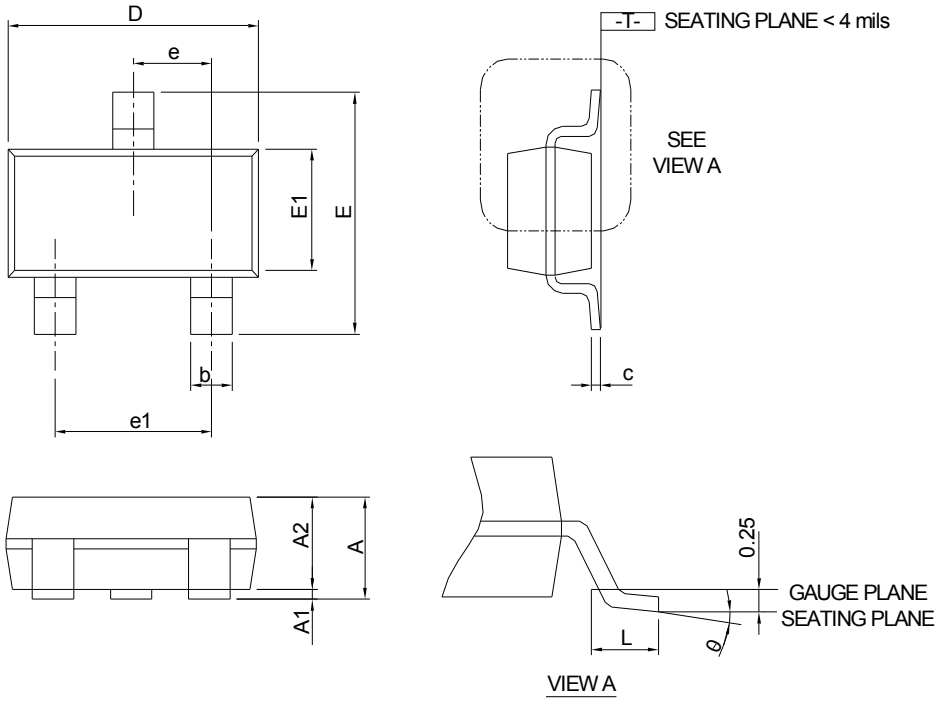
Switching Time Test Circuit and Waveforms





Package Information

SOT-23-3



SYMBOL	SOT-23-3			
	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