

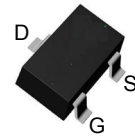
Features

- -60V/-2A,
 $R_{DS(ON)} = 130m\Omega(\text{typ.}) @ V_{GS} = -10V$
 $R_{DS(ON)} = 180m\Omega(\text{typ.}) @ V_{GS} = -4.5V$
- 100% UIS+ R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

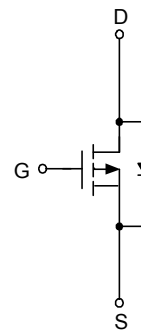
Applications

- DC-DC Converters.
- Load Switch.
- Power Management.

Pin Description



Top View of SOT 23-3L



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±20	
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	-2	A
I _D [*]	Continuous Drain Current	T _A =25°C	-2	A
		T _A =70°C	-1.5	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	-6	A
P _D	Maximum Power Dissipation	T _A =25°C	2	W
		T _A =70°C	1.3	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	60	°C/W
		Steady State	100	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	7	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	12	mJ

Note * : $t \leq 10\text{s}$.

Note a : Pulse width is limited by maximum junction temperature.

Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J = 25^\circ\text{C}$).

Note c : Surface Mounted on 1in^2 pad area.

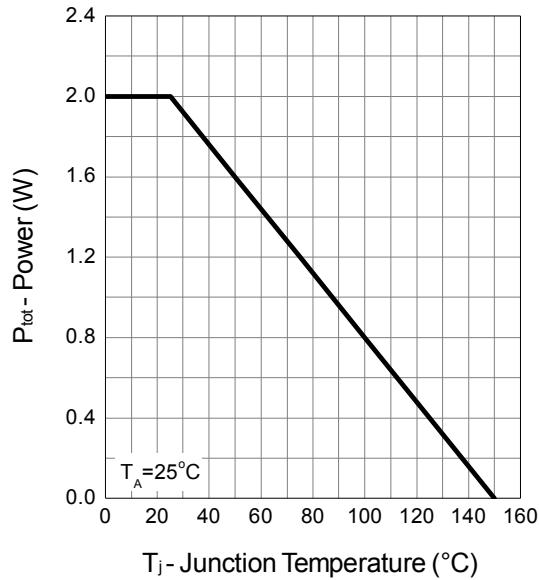
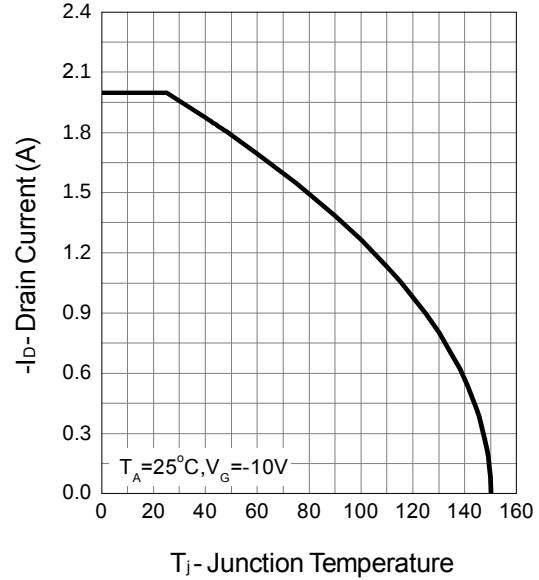
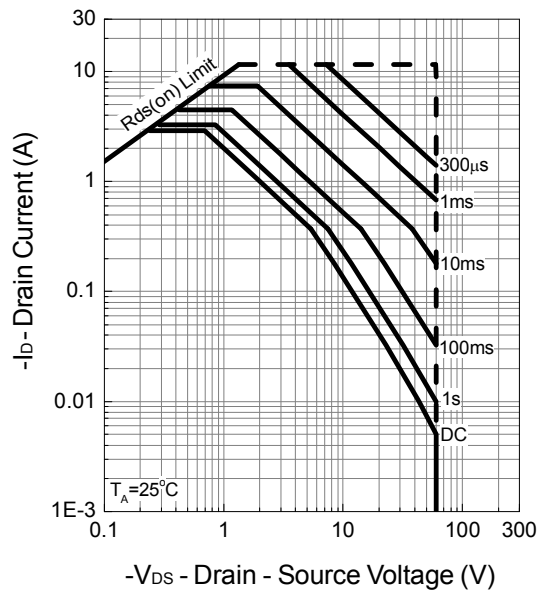
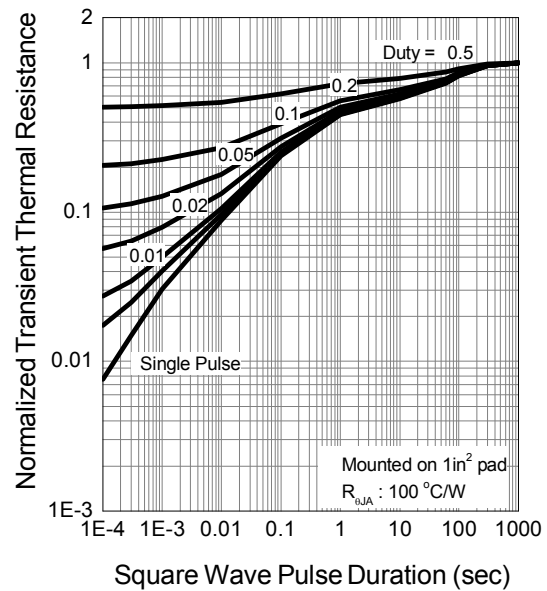
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

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	-1	-	-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} = -2.9A	-	130	170	mΩ
		V _{GS} =-4.5V, I _{DS} = -2.5A	-	180	230	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-0.5	-0.8	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-2.9A,	-	20	-	ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt=100A/μs	-	19	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	11	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	430	560	pF
C _{oss}	Output Capacitance		-	41	-	
C _{rss}	Reverse Transfer Capacitance		-	25	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =-30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	8.5	16	ns
t _r	Turn-on Rise Time		-	5.8	11	
t _{d(OFF)}	Turn-off Delay Time		-	36	65	
t _f	Turn-off Fall Time		-	24	44	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-4.5V, I _{DS} =-2.9A	-	5.4	-	nC
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-2.9A	-	11	15.4	
Q _{gs}	Gate-Source Charge		-	1.4	-	
Q _{gd}	Gate-Drain Charge		-	2.4	-	

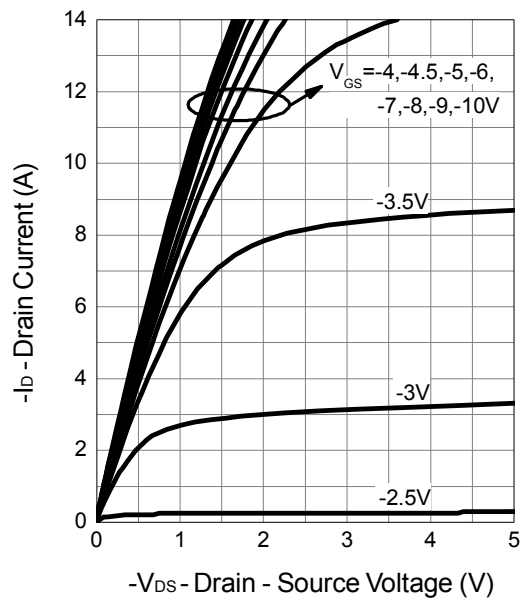
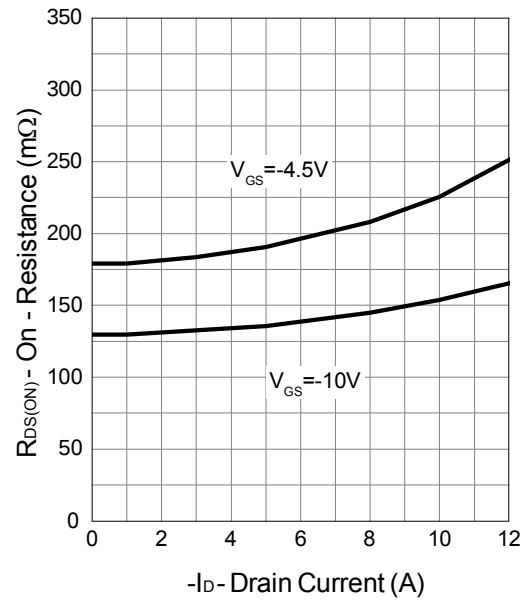
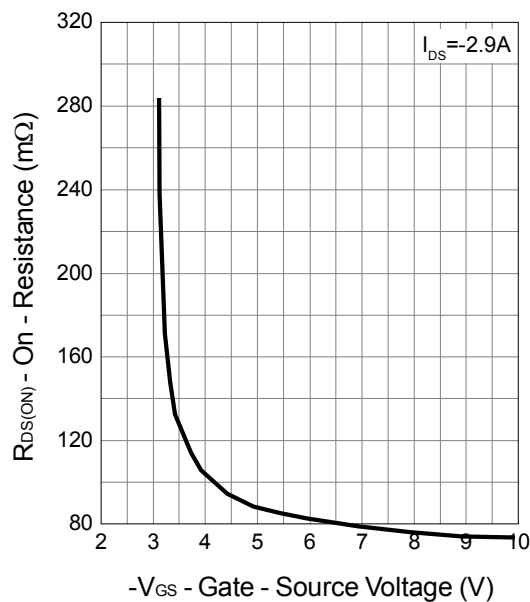
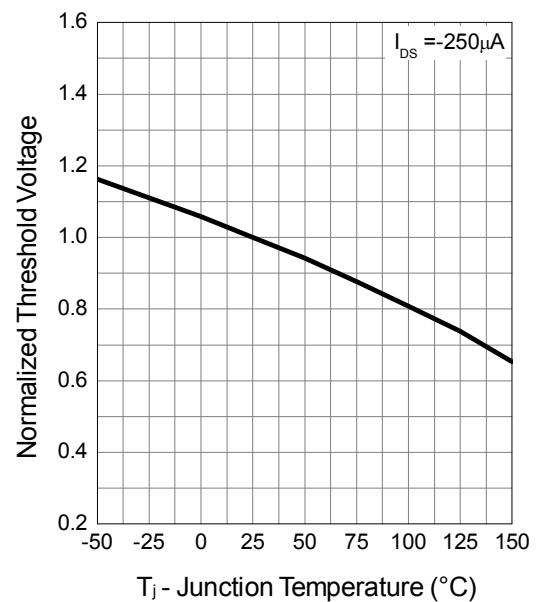
Note d : Pulse test; pulse width≤300μs, duty cycle≤2%.

Note e : Guaranteed by design, not subject to production testing.

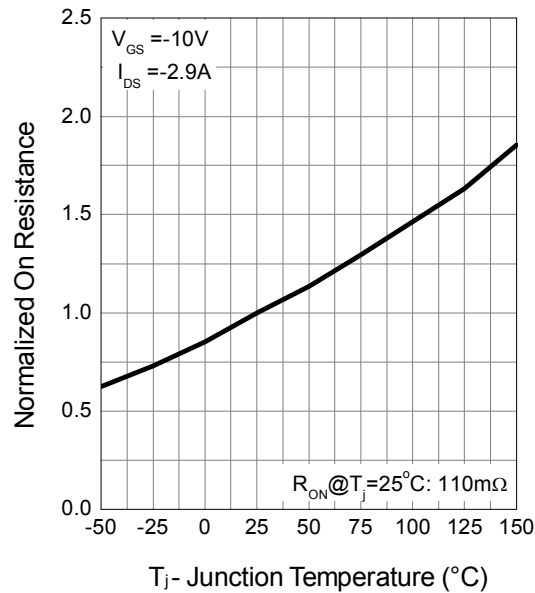
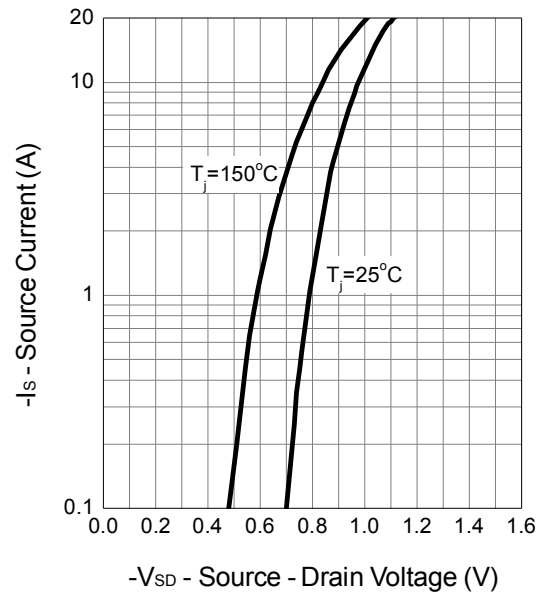
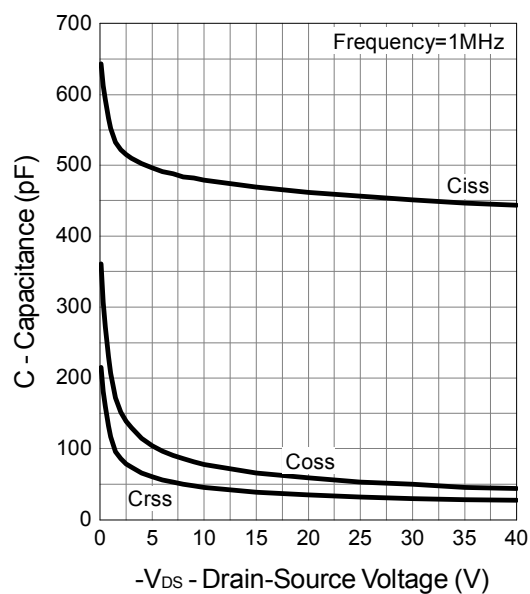
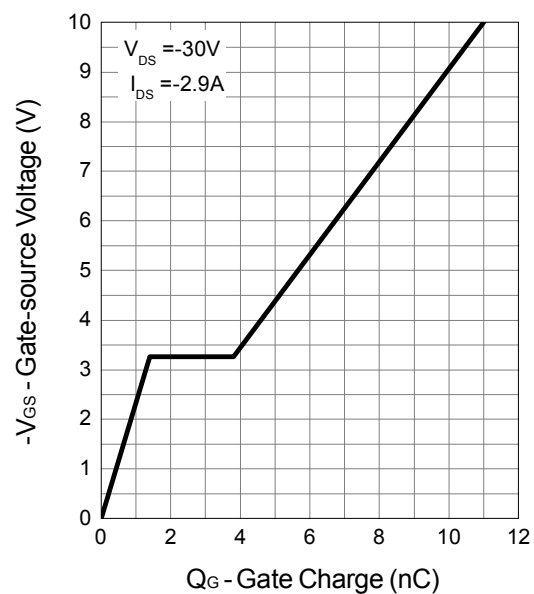
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


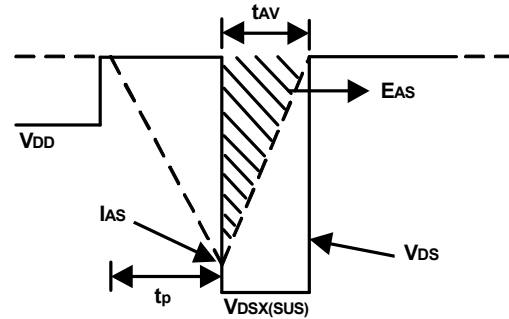
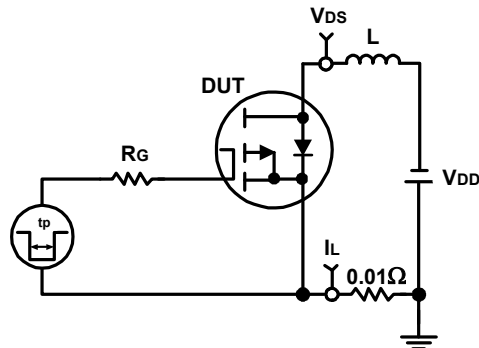
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


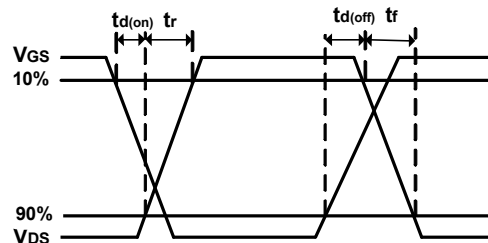
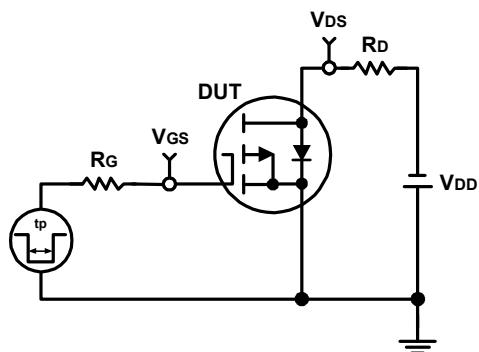
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

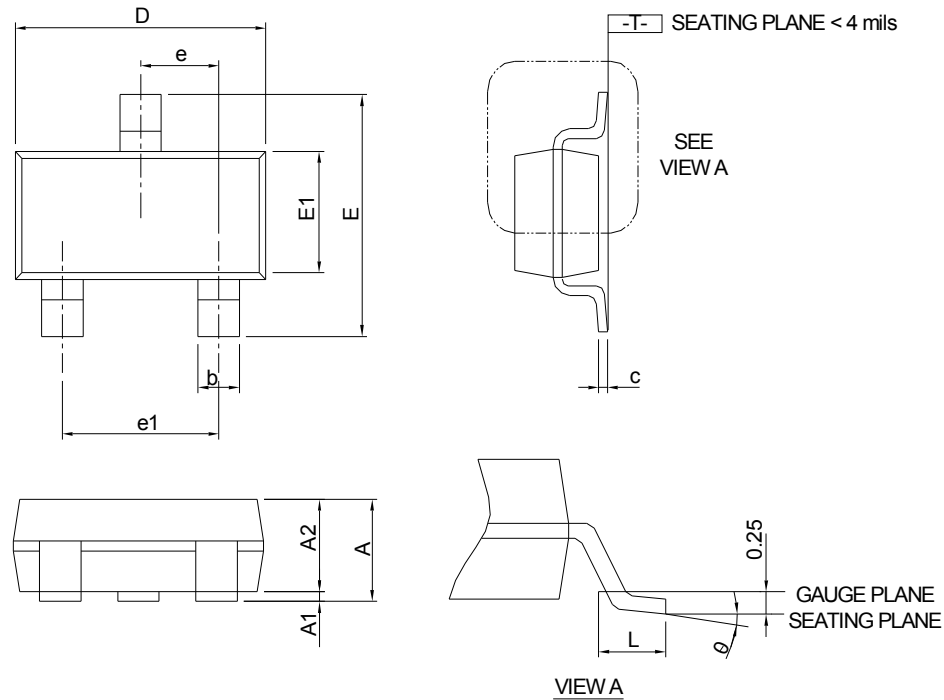


Switching Time Test Circuit and Waveforms



Package Information

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

