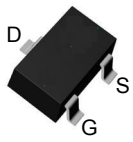
Features

- -20V/-7A,
  $R_{DS(ON)}$ = 24mΩ(typ.) @ V_{GS} =-4.5V
  $R_{DS(ON)}$ = 30mΩ(typ.) @ V_{GS} =-2.5V
  $R_{DS(ON)}$ = 40mΩ(typ.) @ V_{GS} =-1.8V
- 100% UIS+R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
  (RoHS Compliant)

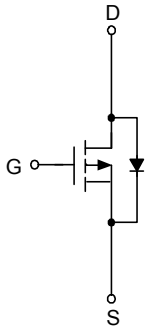
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



Top View of SOT-23



P-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	
I_D [a]	Continuous Drain Current (V_{GS}=-4.5V)	T_A=25°C	-7	A
		T_A=70°C	-5.2	
I_{DM} [a]	Pulsed Drain Current (V_{GS}=-4.5V)		-21	
I_S [a]	Diode Continuous Forward Current		-7	
T_J	Maximum Junction Temperature		150	°C
I_{AS} [b]	Avalanche Current, Single pulse	L=0.1mH	-18	A
E_{AS} [b]	Avalanche Energy, Single pulse	L=0.1mH	16	mJ
T_{STG}	Storage Temperature Range		-55 to 150	°C
P_D [a]	Maximum Power Dissipation	T_A=25°C	1.6	W
		T_A=70°C	1	
$R_{\theta JA}$ [a]	Thermal Resistance-Junction to Ambient	t ≤ 10s	80	°C/W
		Steady State	100	

Note a：Surface Mounted on 1in^2 pad area, t ≤ 10sec.
Note b：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).

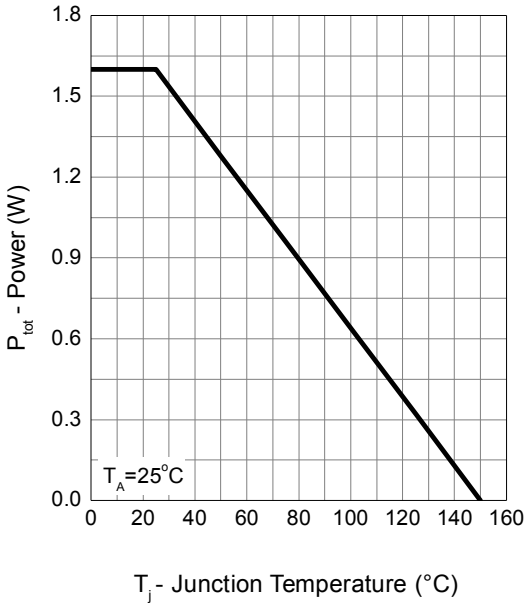
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.5	-0.7	-1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [c]	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-5.5A	-	24	28	mΩ
		V_{GS}=-2.5V, I_{DS}=-3.5A	-	30	38	
		V_{GS}=-1.8V, I_{DS}=-1A	-	40	55	
Diode Characteristics						
V_{SD} [c]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr} [d]	Reverse Recovery Time	I_{SD}=-5.5A, dI_{SD}/dt=100A/μs	-	26	-	ns
Q_{rr} [d]	Reverse Recovery Charge		-	9	-	nC
Dynamic Characteristics [d]						
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	3.2	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz	-	832	-	pF
C_{oss}	Output Capacitance		-	184	-	
C_{rss}	Reverse Transfer Capacitance		-	148	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-10V, R_L=10Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	8	-	ns
t_r	Turn-on Rise Time		-	14	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	38	-	
t_f	Turn-off Fall Time		-	36	-	
Gate Charge Characteristics [d]						
Q_g	Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-5.5A	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	
Q_{gd}	Gate-Drain Charge		-	4.5	-	

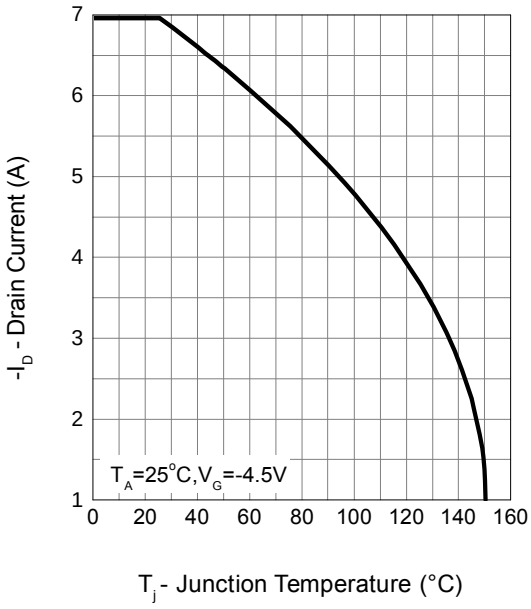
Note c：Pulse test; pulse width≤300μs, duty cycle≤2%.
Note d：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

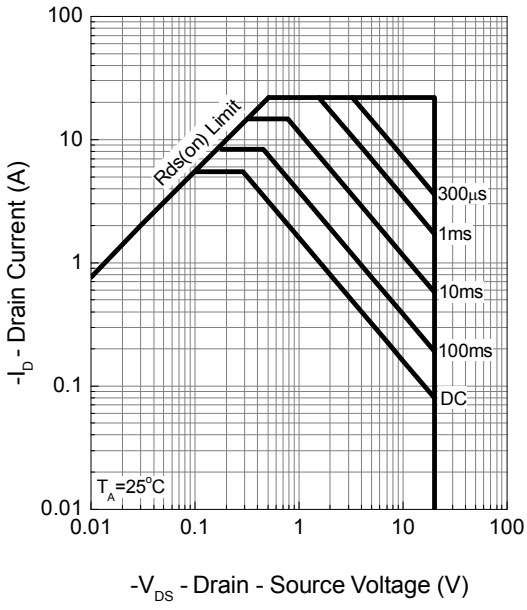
Power Dissipation



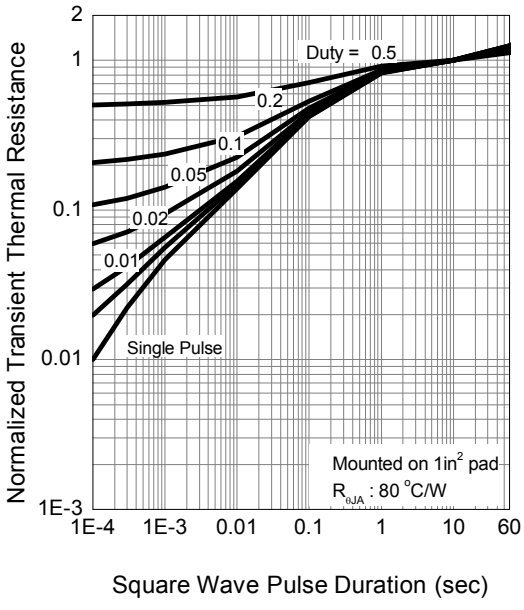
Drain Current



Safe Operation Area

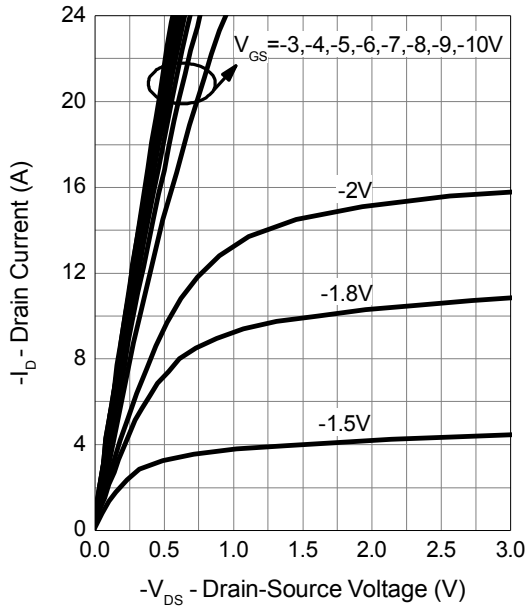


Thermal Transient Impedance

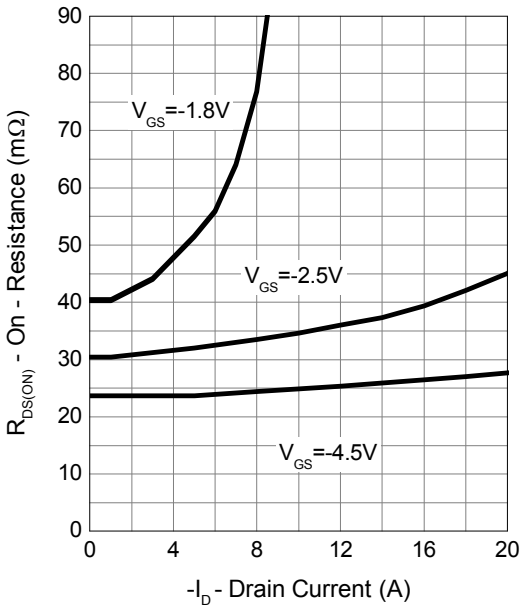


Typical Operating Characteristics (Cont.)

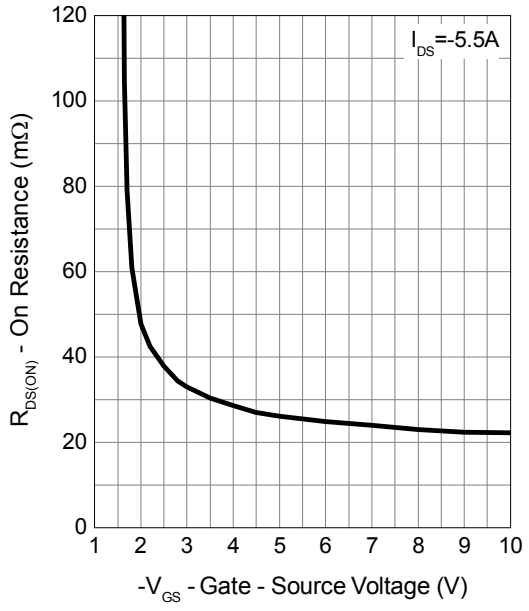
Output Characteristics



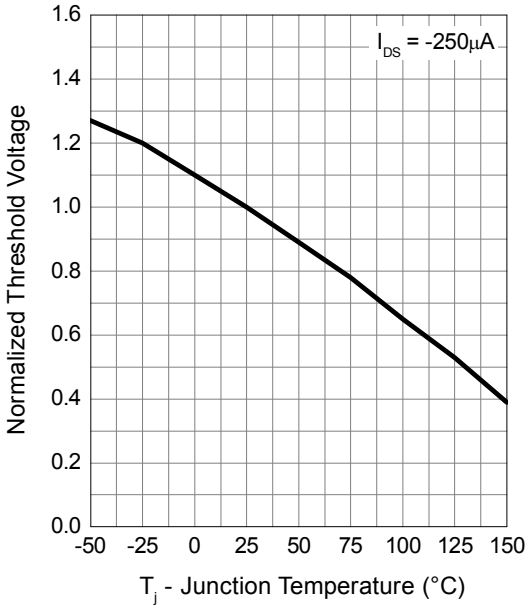
Drain-Source On Resistance



Gate-Source On Resistance

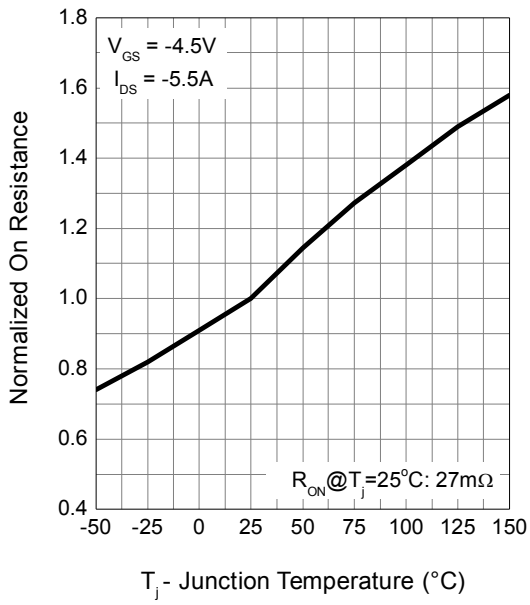


Gate Threshold Voltage

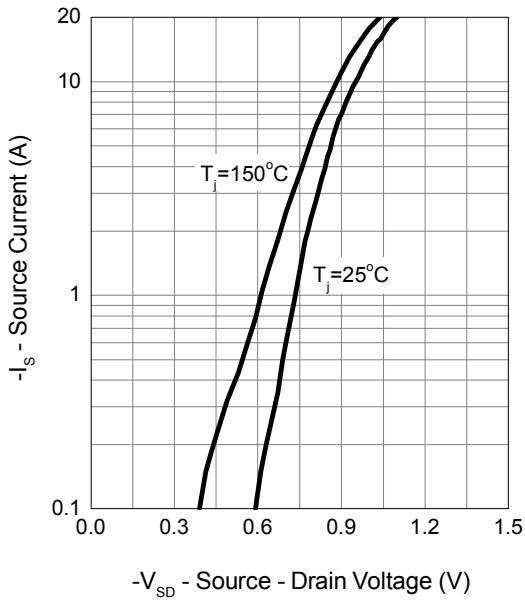


Typical Operating Characteristics (Cont.)

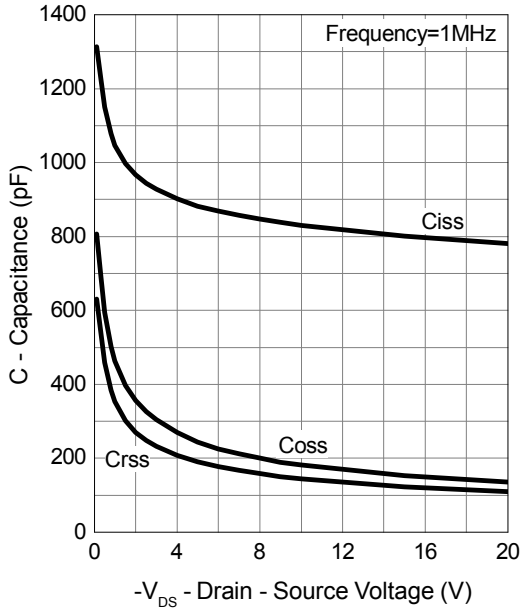
Drain-Source On Resistance



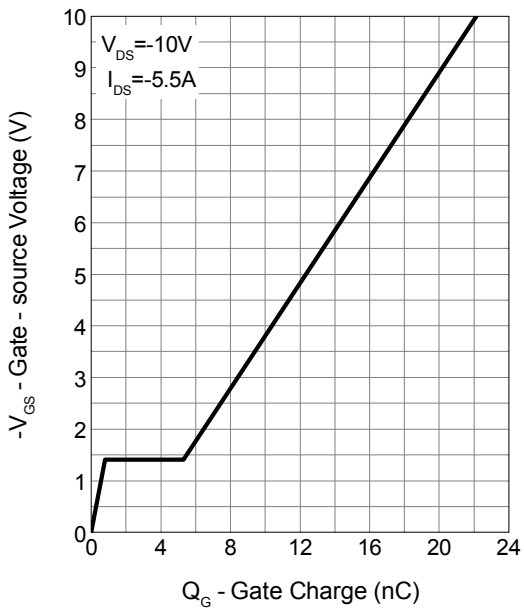
Source-Drain Diode Forward



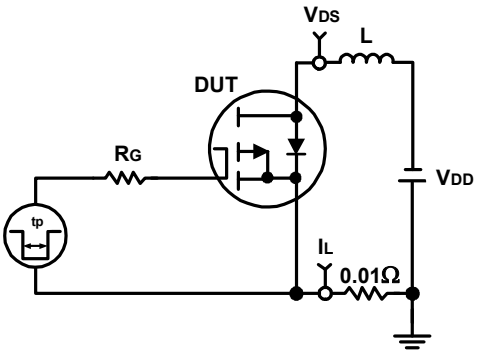
Capacitance

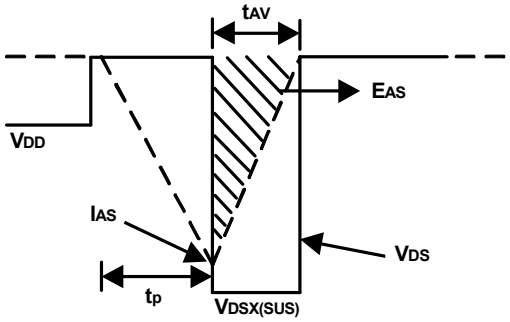


Gate Charge

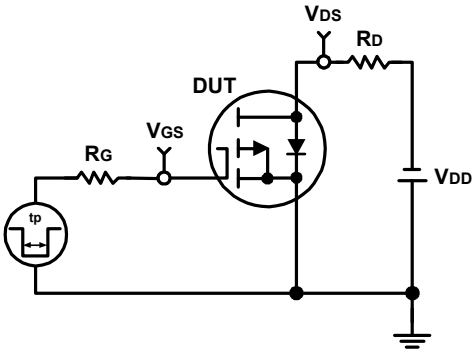


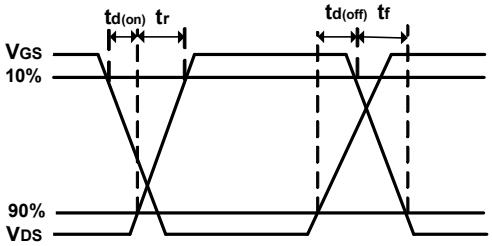
Avalanche Test Circuit and Waveforms





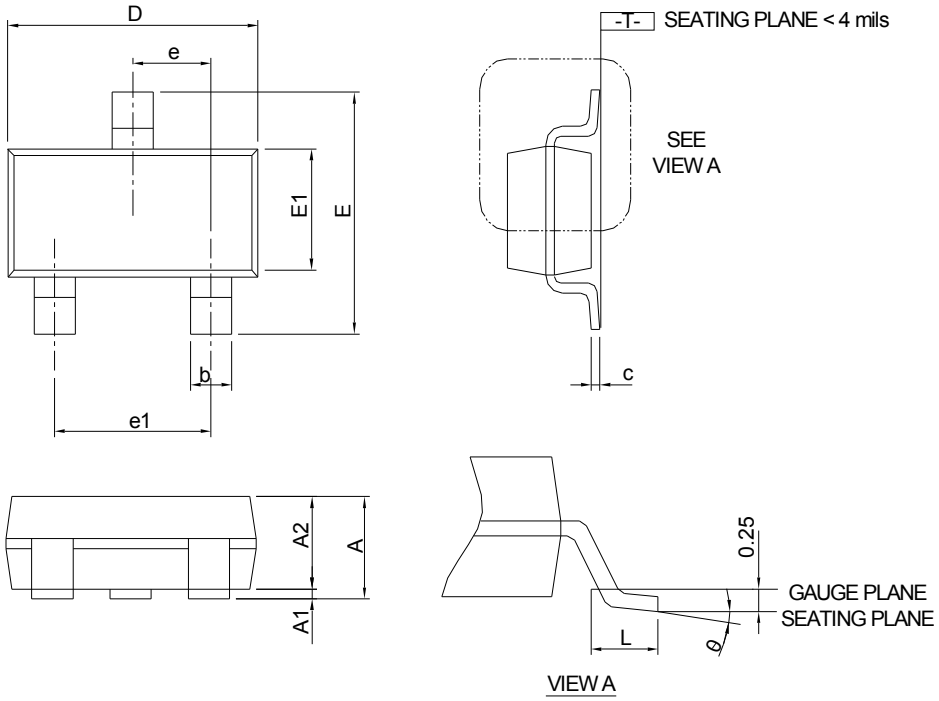
Switching Time Test Circuit and Waveforms





Package Information

SOT-23



SYMBOL	SOT-23			
	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	2.25	2.55	0.102	0.118
E1	1.20	1.40	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