

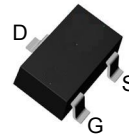
Features

- -60V/-0.18A,
 $R_{DS(ON)} = 3.3\Omega(\text{typ.}) @ V_{GS} = -10V$
 $R_{DS(ON)} = 4.2\Omega(\text{typ.}) @ V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- ESD Protection : HBM=(+/-)1600V
MM=(+/-)100V

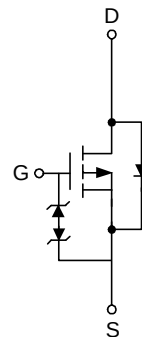
Applications

- Load Switch.
- DC/DC Converter.

Pin Description



Top View of SOT-23



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±30	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current		-0.18	A
I _{DM} [*]	Pulsed Drain Current	T _C =25°C	-0.54	
		T _C =100°C	-0.4	
I _D	Continuous Drain Current	T _C =25°C	-0.18	
		T _C =100°C	-0.135	
P _D	Maximum Power Dissipation	T _C =25°C	0.35	W
		T _C =100°C	0.13	
R _{θJA} [*]	Thermal Resistance-Junction to Ambient	t ≤ 10sec.	357	°C/W
		Steady state	360	

Note: *Surface Mounted on 1in^2 pad area, $t \leq 10\text{sec.}$

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

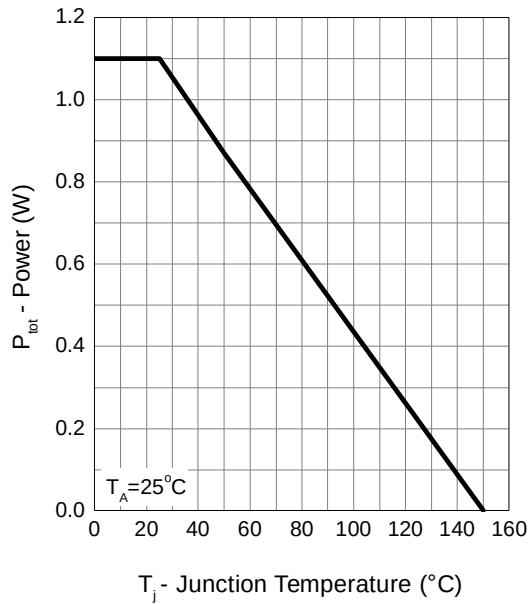
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V	-	-	-1	μA
		T _j =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.1	-1.5	-2.2	V
I _{GSS}	Gate Leakage Current	V _{GS} =±30V, V _{DS} =0V	-	-	±10	uA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-0.15A	-	3.3	4	Ω
		V _{GS} =-4.5V, I _{DS} =-0.1A	-	4.2	5.1	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.8	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-3A, dI _{SD} /dt=100A/μs	-	18	-	ns
Q _{rr}	Reverse Recovery Charge		-	11	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz	-	23	-	pF
C _{oss}	Output Capacitance		-	3.6	-	
C _{rss}	Reverse Transfer Capacitance		-	2	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =20Ω, I _{DS} =-0.1A, V _{GEN} =-10V, R _G =3Ω	-	18.5	-	ns
t _r	Turn-on Rise Time		-	15	-	
t _{d(OFF)}	Turn-off Delay Time		-	105	-	
t _f	Turn-off Fall Time		-	38	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-0.1A	-	0.85	-	nC
Q _{gs}	Gate-Source Charge		-	0.12	-	
Q _{gd}	Gate-Drain Charge		-	0.1	-	

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

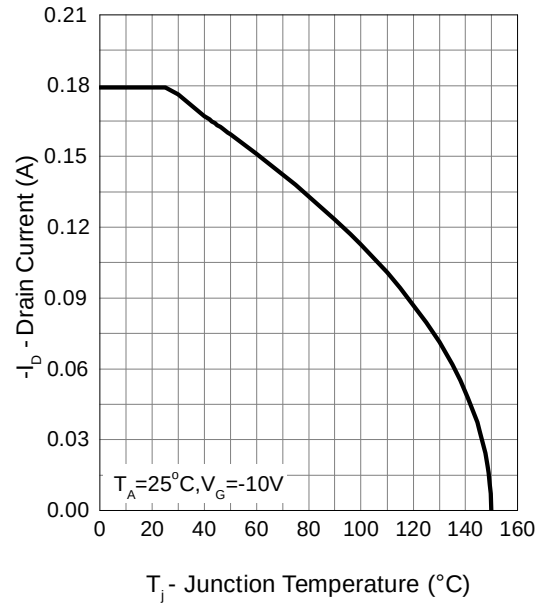
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

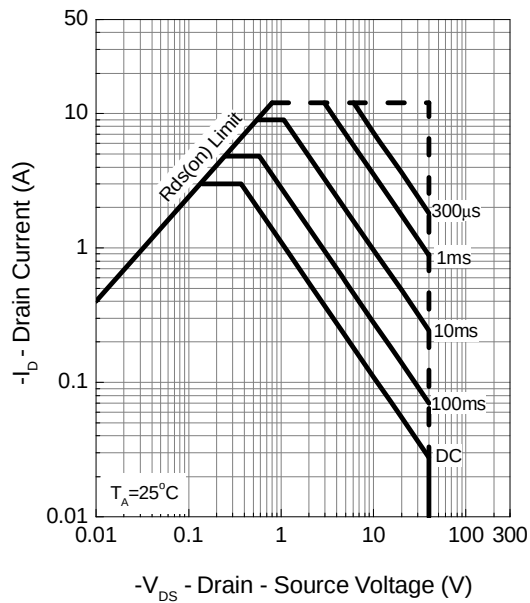
Power Dissipation



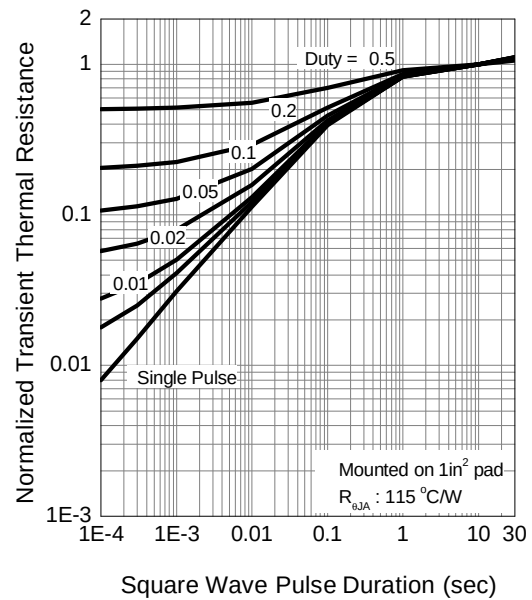
Drain Current



Safe Operation Area

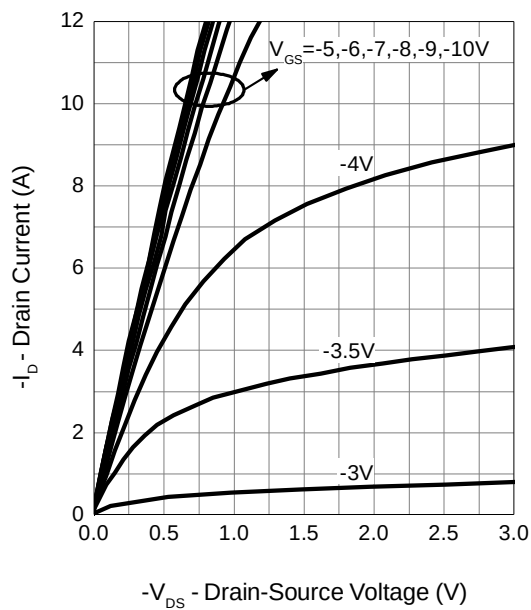


Thermal Transient Impedance

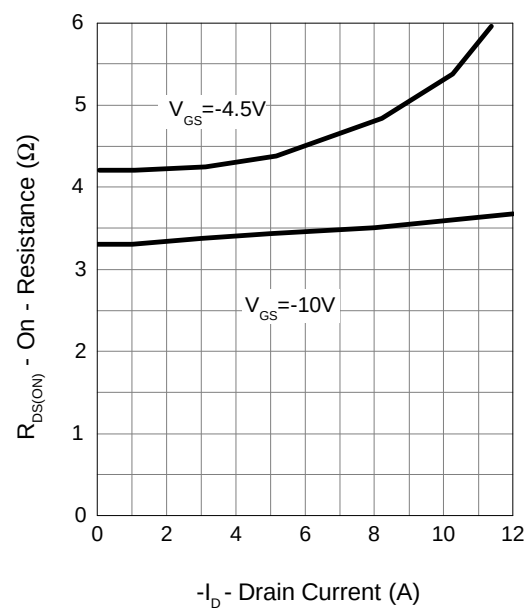


Typical Operating Characteristics (Cont.)

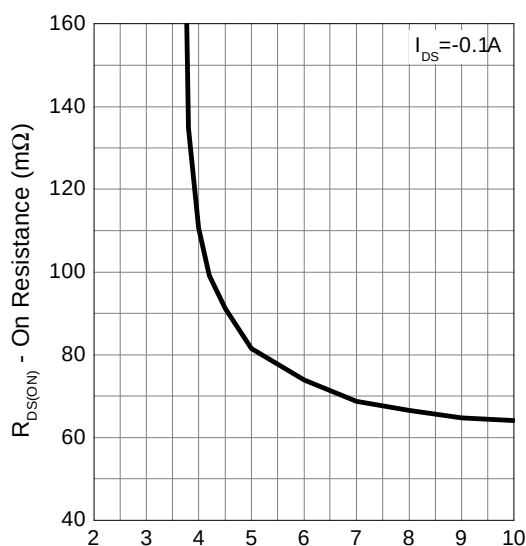
Output Characteristics



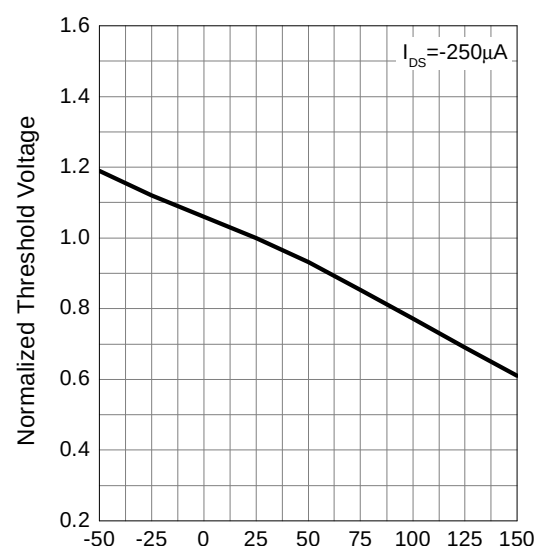
Drain-Source On Resistance



Gate-Source On Resistance

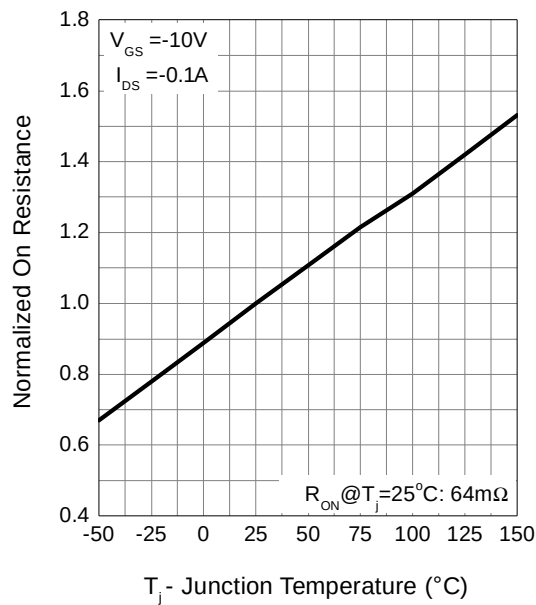


Gate Threshold Voltage

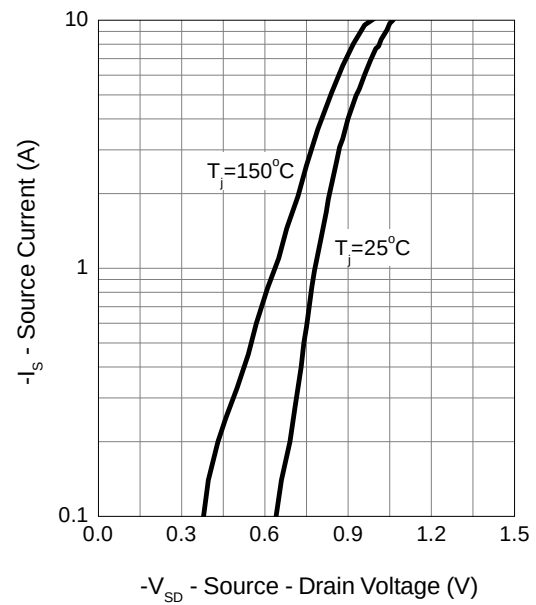


Typical Operating Characteristics (Cont.)

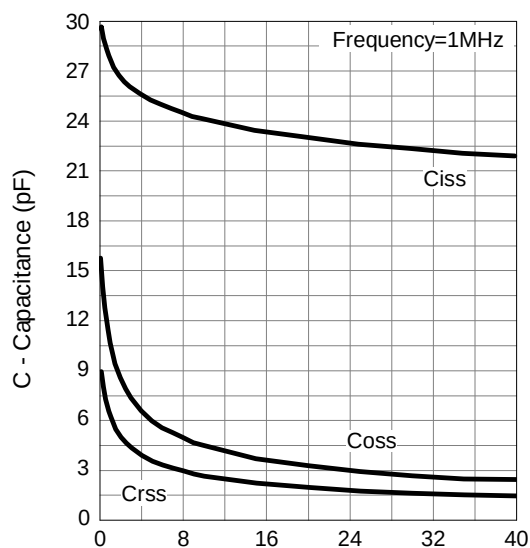
Drain-Source On Resistance



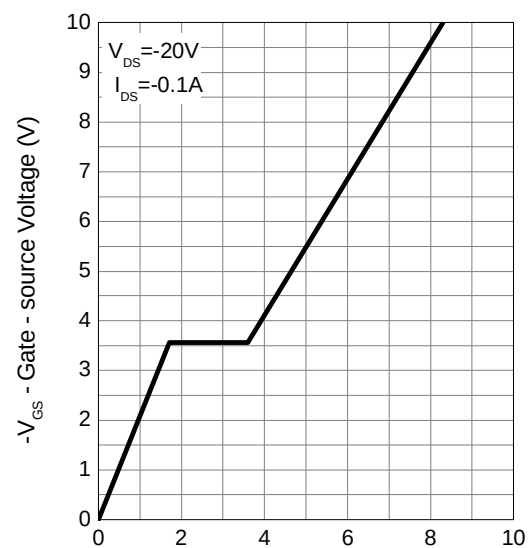
Source-Drain Diode Forward



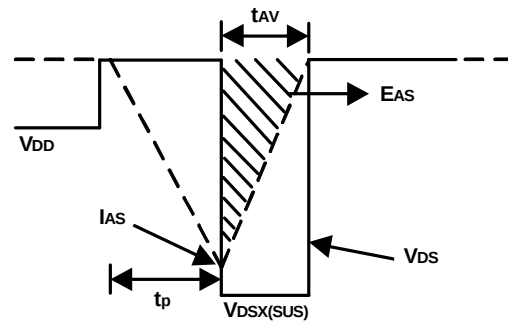
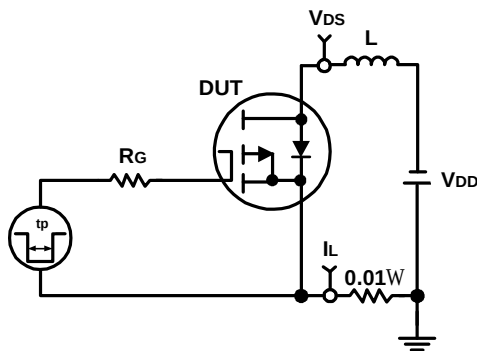
Capacitance



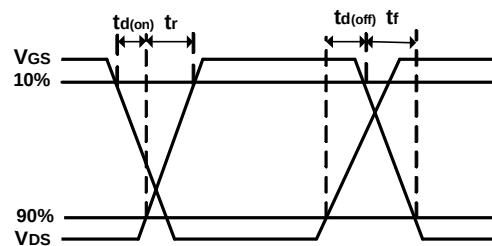
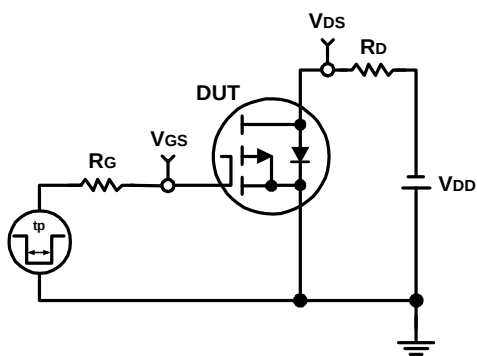
Gate Charge



Avalanche Test Circuit and Waveforms

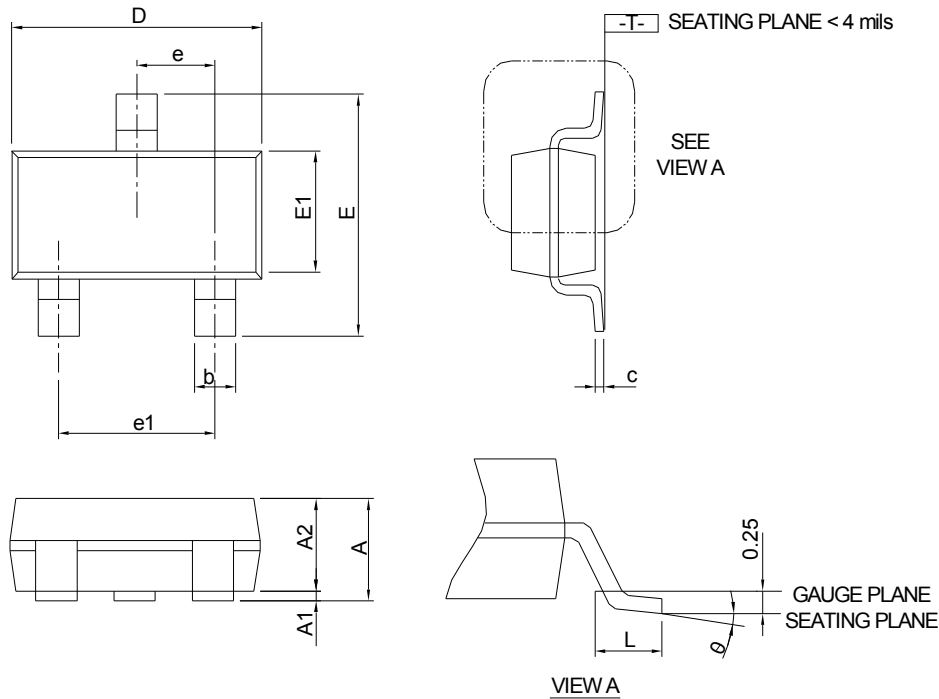


Switching Time Test Circuit and Waveforms



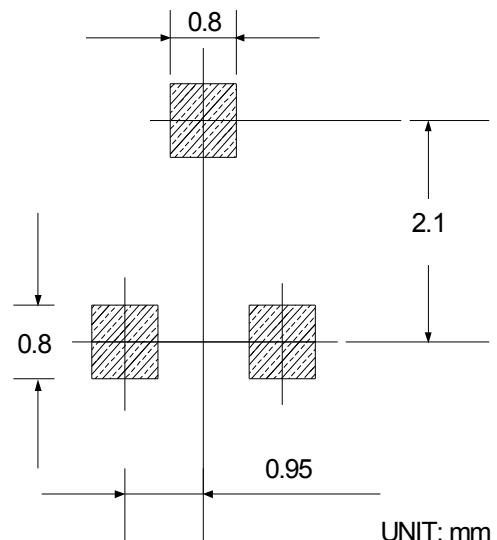
Package Information

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°

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.