

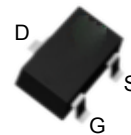
Features

- -20V/-5A,
 $R_{DS(ON)} = 24m\Omega$ (typ.) @ $V_{GS} = -4.5V$
 $R_{DS(ON)} = 29m\Omega$ (typ.) @ $V_{GS} = -2.5V$
 $R_{DS(ON)} = 34m\Omega$ (typ.) @ $V_{GS} = -1.8V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- ESD Protection

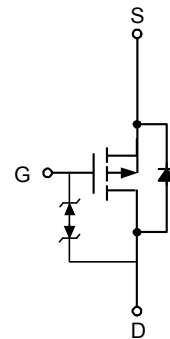
Applications

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

Pin Description



Top View of SOT-23



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Rating	Unit
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±10	
I _D [*]	Continuous Drain Current	V _{GS} =-4.5V	-5	A
I _{DM} [*]	Pulsed Drain Current		-15	
I _S [*]	Diode Continuous Forward Current		-5	A
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
P _D [*]	Maximum Power Dissipation	T _A =25°C	0.83	W
		T _A =100°C	0.3	
R _{θJA} [*]	Thermal Resistance-Junction to Ambient		150	°C/W

Note : *Surface Mounted on 1in² pad area, $t \leq 10\text{sec}$.

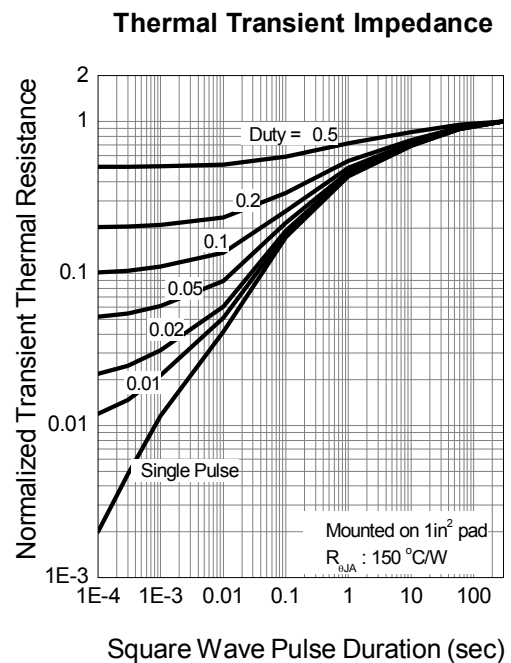
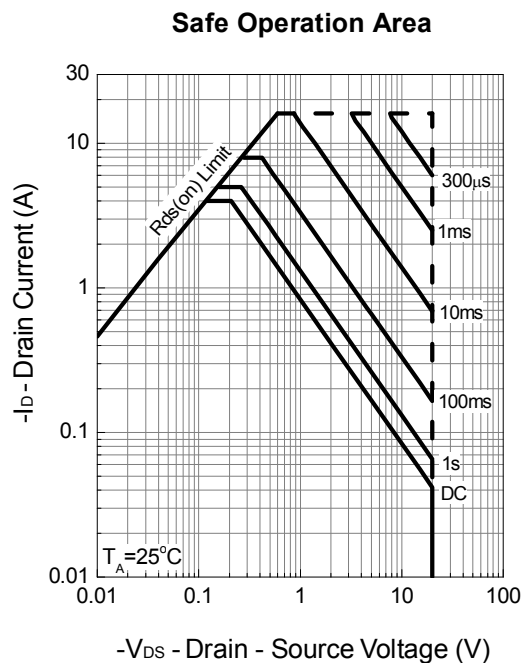
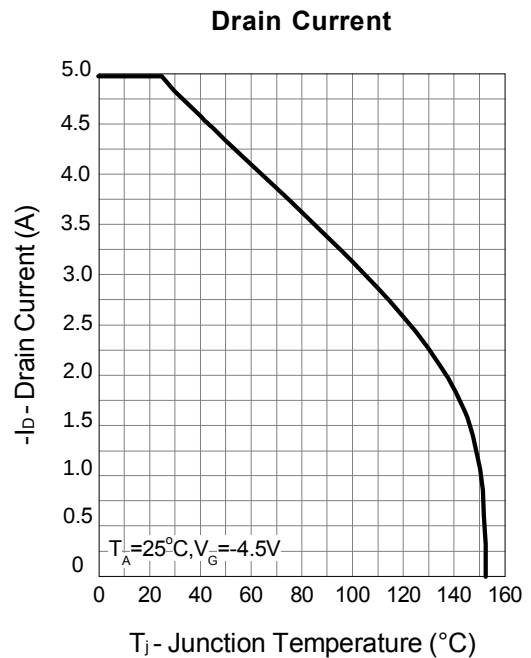
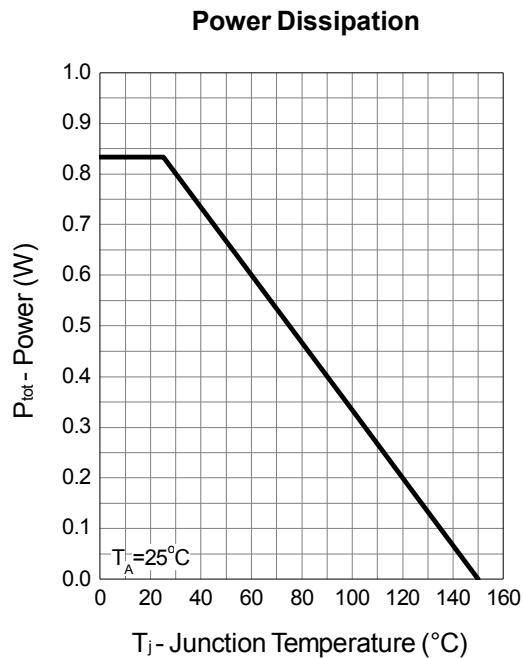
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions				Unit
			Min.	Typ.	Max.	
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	-0.6	-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V	-	-	±10	uA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-6A	-	24	27	mΩ
		V _{GS} =-2.5V, I _{DS} =-4.5A	-	29	33	
		V _{GS} =-1.8V, I _{DS} =-3A	-	34	40	
V _{SD} ^a	Diode Forward Voltage	I _{SD} =-0.5A, V _{GS} =0V	-	-0.75	-1.3	V
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-4A	-	12	16	nC
Q _{gs}	Gate-Source Charge		-	2.1	-	
Q _{gd}	Gate-Drain Charge		-	2.9	-	
Dynamic Characteristics ^b						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	339	-	Ω
C _{iSS}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	840	-	pF
C _{oSS}	Output Capacitance		-	92	-	
C _{rSS}	Reverse Transfer Capacitance		-	55	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-4.5V, R _G =6Ω	-	6	12	ns
T _r	Turn-on Rise Time		-	7	14	
t _{d(OFF)}	Turn-off Delay Time		-	72	131	
T _f	Turn-off Fall Time		-	45	82	

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

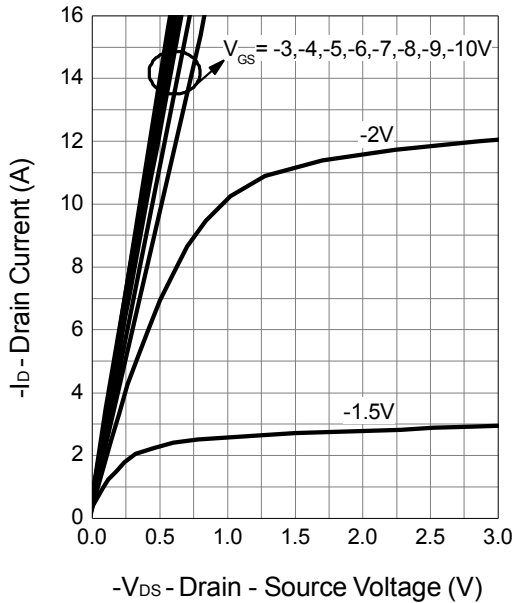
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

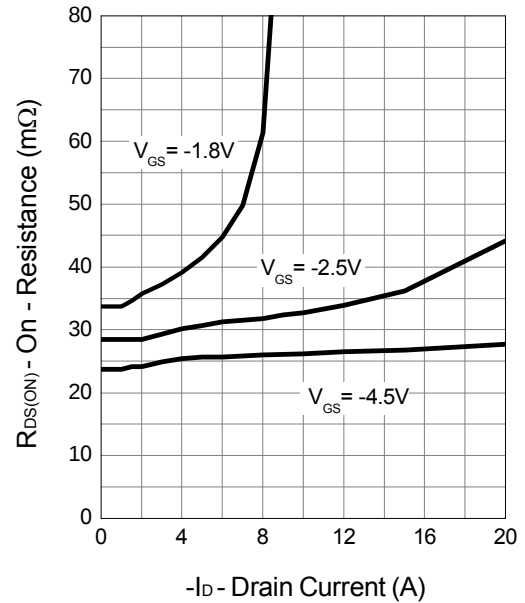


Typical Operating Characteristics (Cont.)

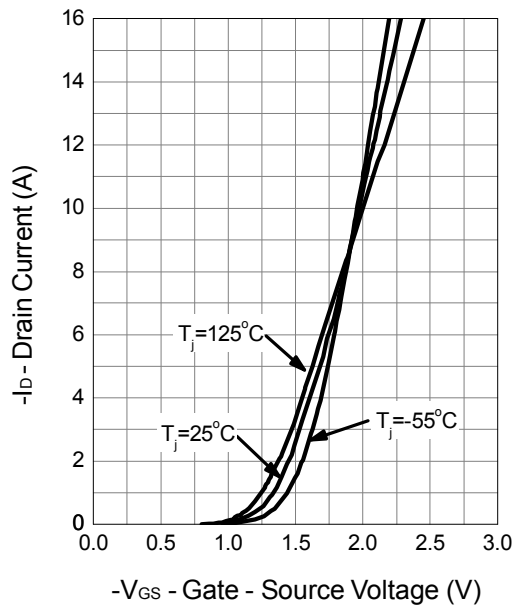
Output Characteristics



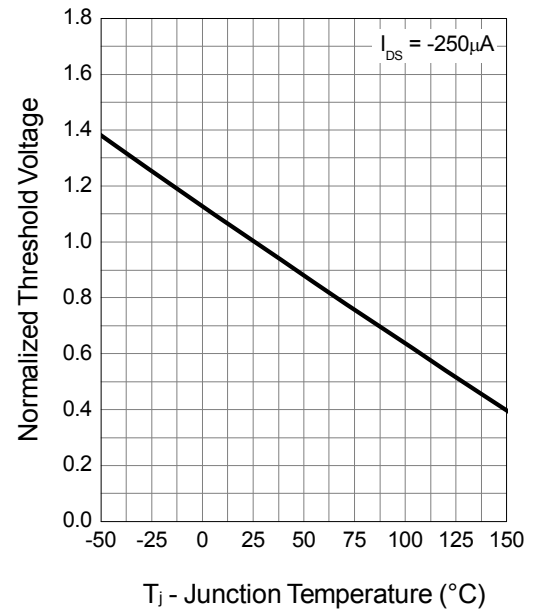
Drain-Source On Resistance



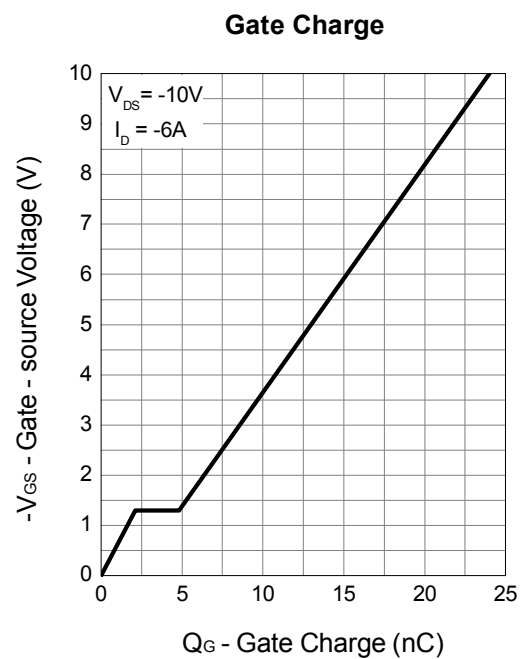
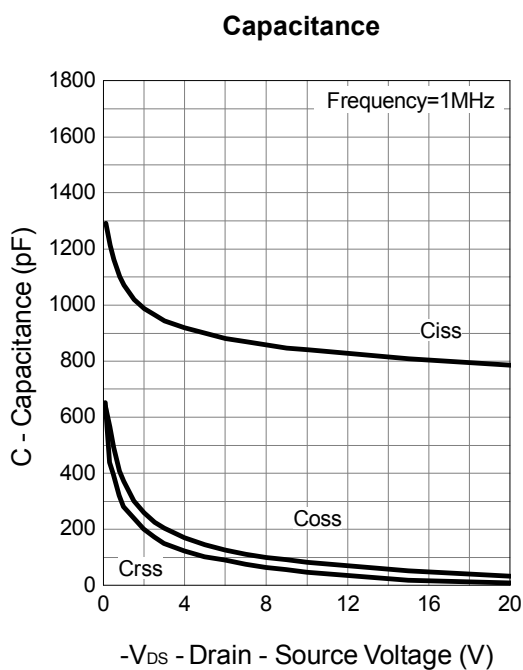
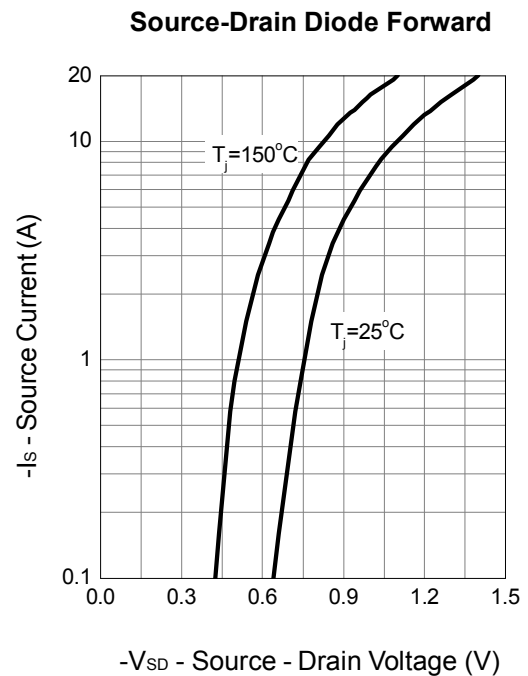
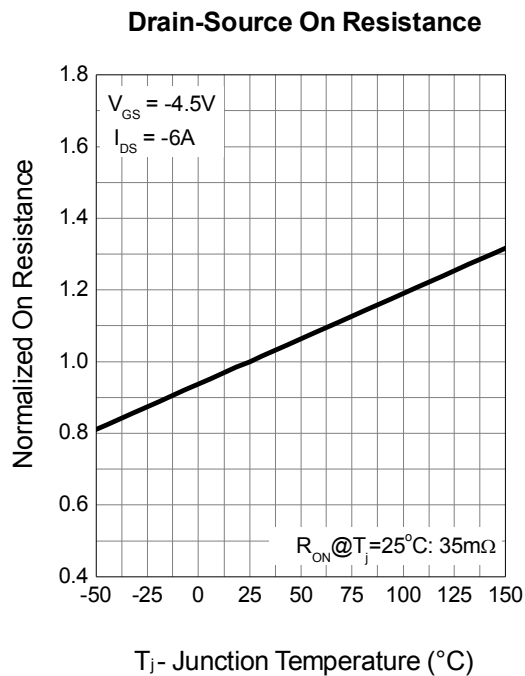
Transfer Characteristics



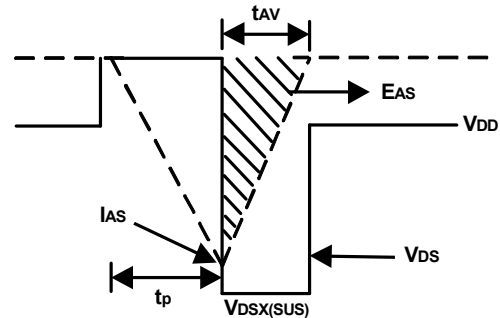
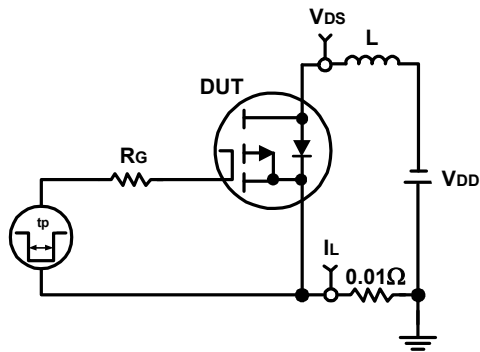
Gate Threshold Voltage



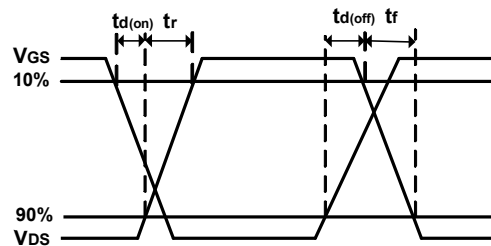
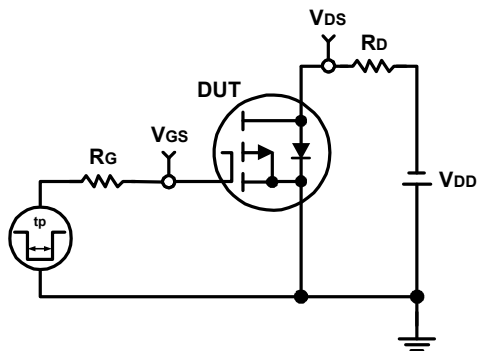
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms

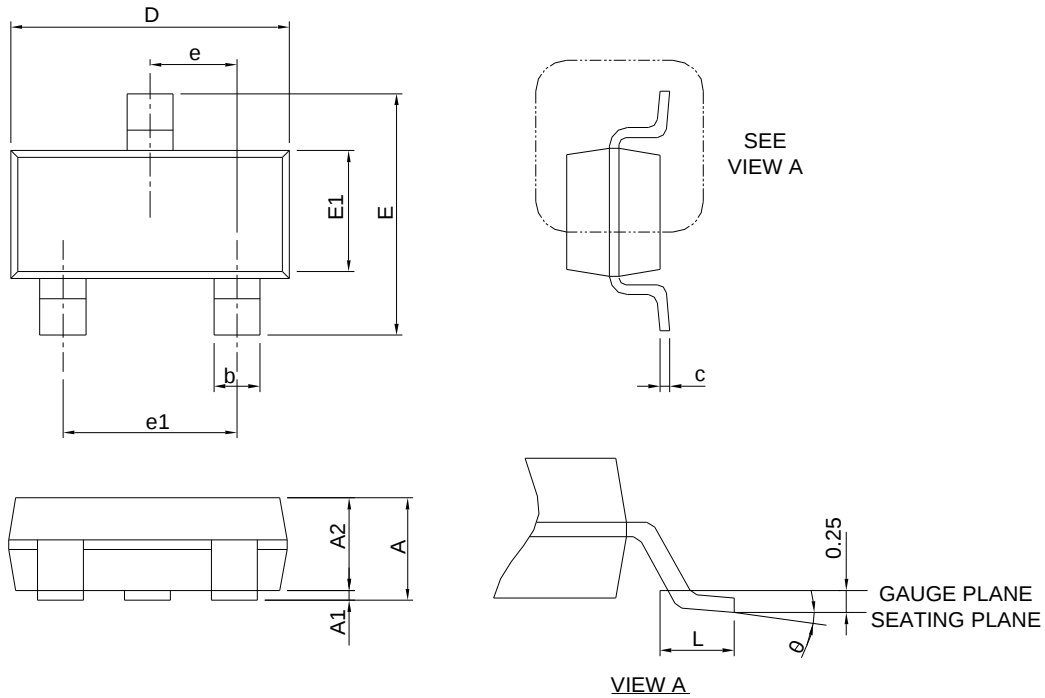


Switching Time Test Circuit and Waveforms



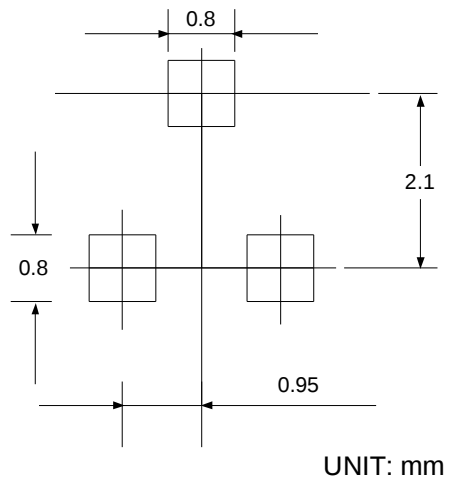
Package Information

SOT-23



SYMBOL	SOT-23			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.20	-	0.047
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.043
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	2.20	2.60	0.086	0.102
E1	1.20	1.40	0.047	0.055
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.