

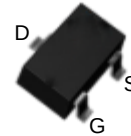
Features

- 40V/5A,
 $R_{DS(ON)} = 19m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 25m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

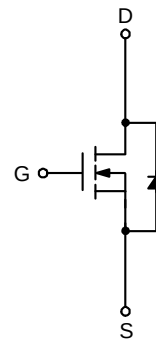
Applications

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

Pin Description



Top View of SOT-23



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 20	
I_D	Continuous Drain Current	$T_A = 25^\circ\text{C}$	5	A
		$T_A = 70^\circ\text{C}$	3.8	
I_{DM}	Pulsed Drain Current	$V_{GS} = 10\text{V}$	15	
I_S	Diode Continuous Forward Current		5	A
T_J	Maximum Junction Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 150	
P_D^*	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	1.05	W
		$T_A = 70^\circ\text{C}$	0.67	
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{sec}$	65	$^\circ\text{C/W}$
		Steady state *	120	
I_{AS}	Avalanche Current, Single pulse	$L = 0.1\text{mH}$	12	A
E_{AS}	Avalanche Energy, Single pulse	$L = 0.1\text{mH}$	7.2	mJ

Note *: Surface Mounted on 1in^2 pad area, steady state = 999sec.

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

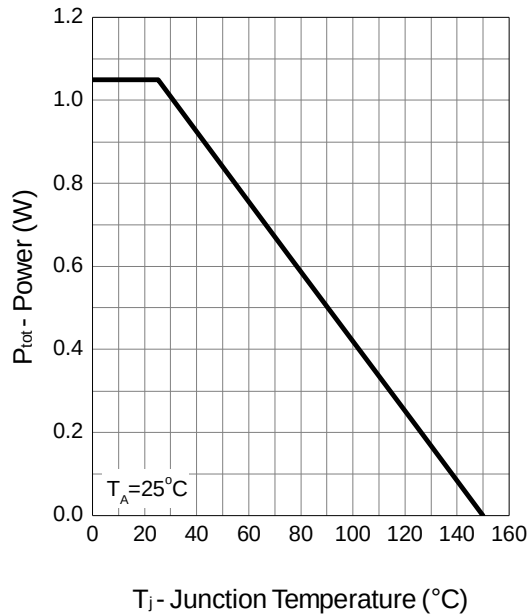
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V T _J =85°C	-	-	1 30	μA	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	1.8	2.5	V	
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA	
R _{DS(ON)} ^a	Drain-Source On-State Resistance	V _{GS} =10V, I _{DS} =8A V _{GS} =4.5V, I _{DS} =5A	- -	19 25	22.5 28.5	mΩ	
Diode Characteristics							
V _{SD} ^a	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.1	V	
t _{rr}	Reverse Recovery Time	I _{SD} =8A, dI _{SD} /dt=100A/μs	-	12.8	-	ns	
Q _{rr}	Reverse Recovery Charge		-	3.8	-	nC	
Dynamic Characteristics ^b							
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.5	-	Ω	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	410	-	pF	
C _{oss}	Output Capacitance		-	70	-		
C _{rss}	Reverse Transfer Capacitance		-	41	-		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	6	10	ns	
T _r	Turn-on Rise Time		-	9	13		
t _{d(OFF)}	Turn-off Delay Time		-	14	20		
T _f	Turn-off Fall Time		-	3.2	5		
Gate Charge Characteristics ^b							
Q _g	Total Gate Charge	V _{DS} =30V, I _{DS} =8A	V _{GS} =4.5V,	-	4	-	nC
			V _{GS} =10V	-	8	-	
Q _{gs}	Gate-Source Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =8A	-	1.5	-		
Q _{gd}	Gate-Drain Charge		-	1.5	-		
Q _{gth}	Threshold Gate Charge		-	0.75	-		

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

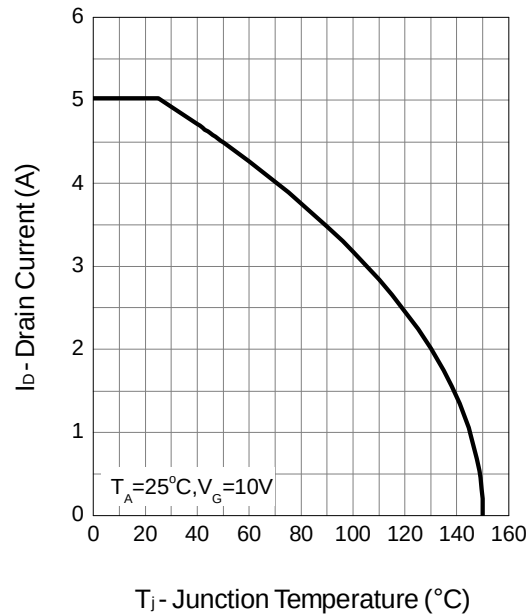
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

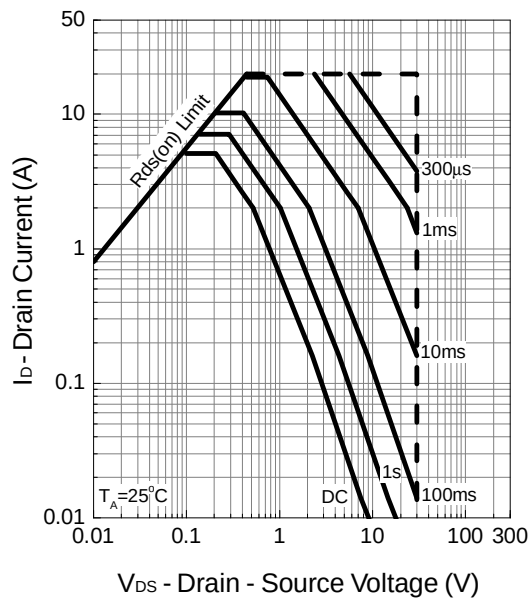
Power Dissipation



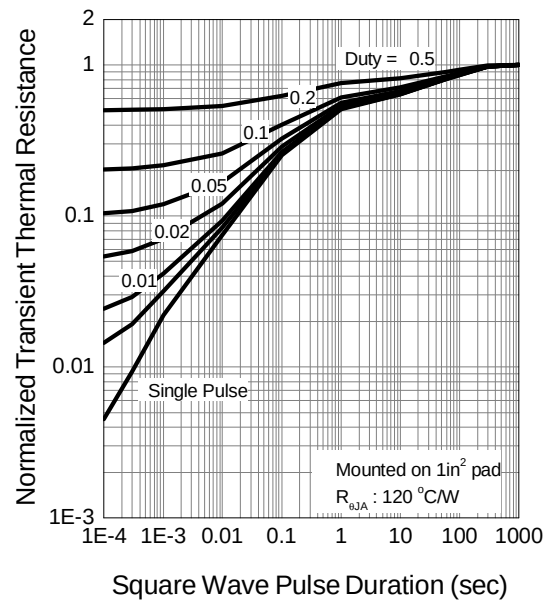
Drain Current



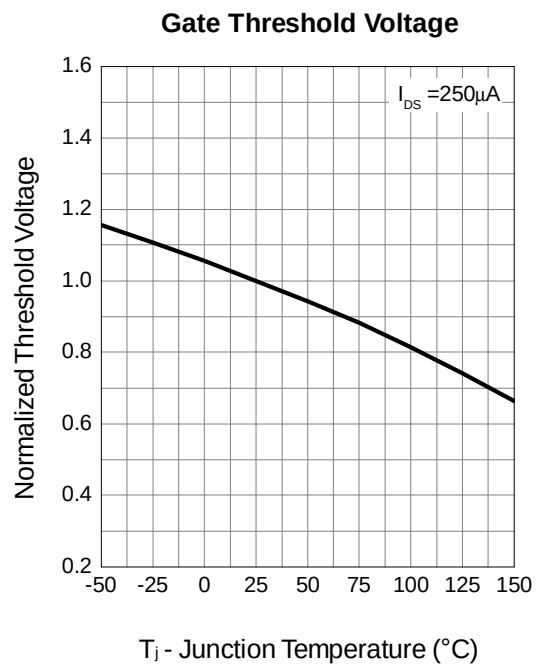
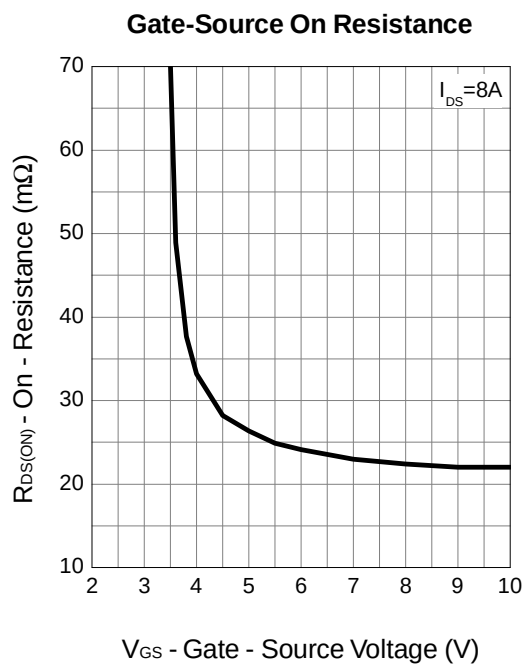
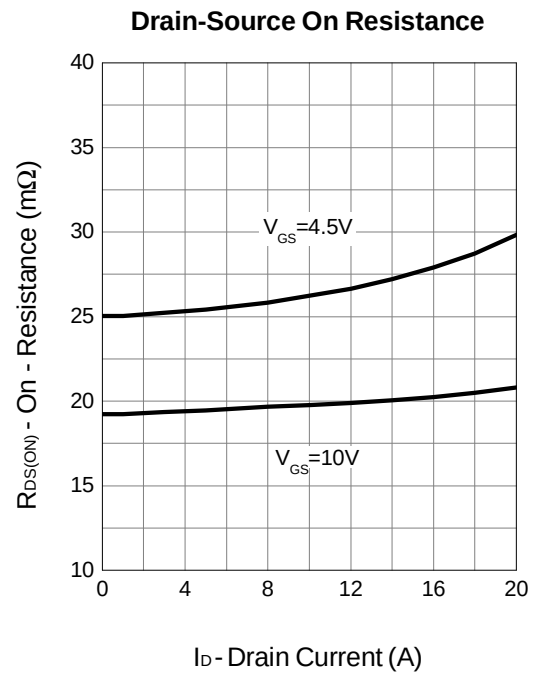
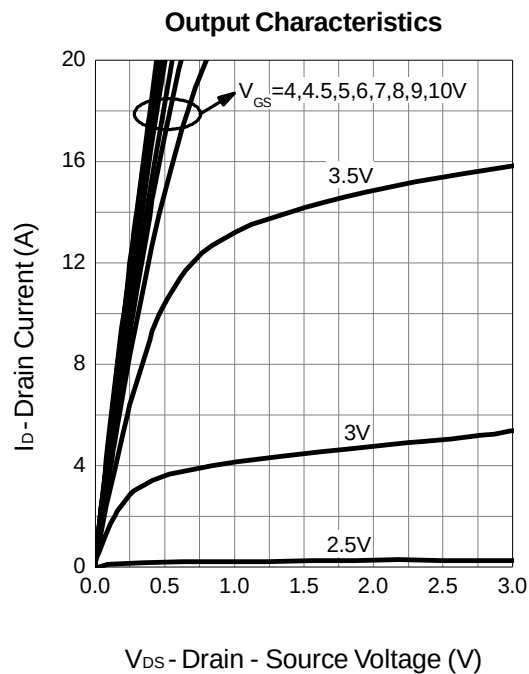
Safe Operation Area



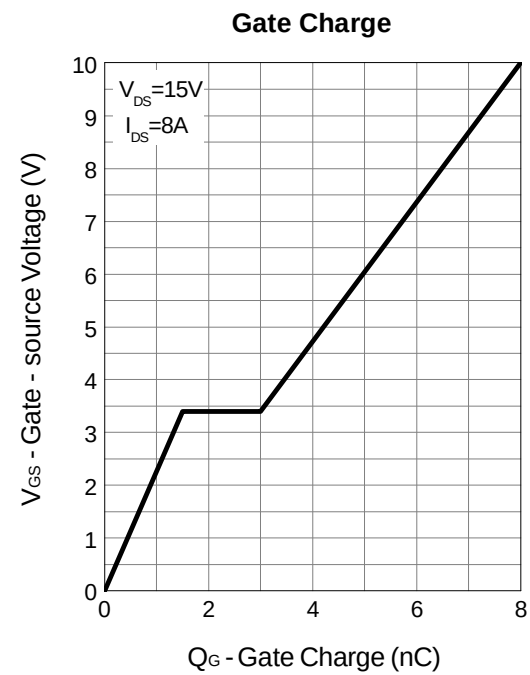
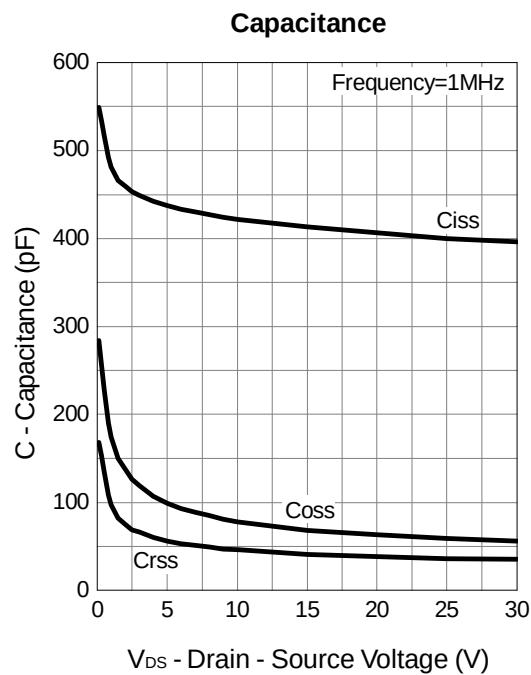
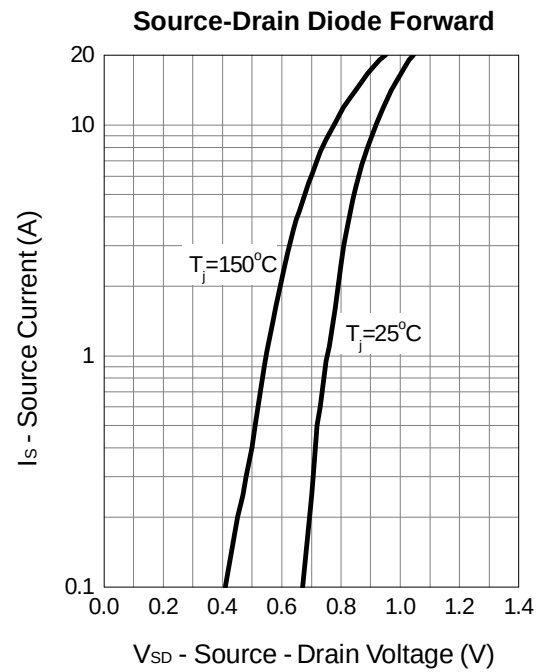
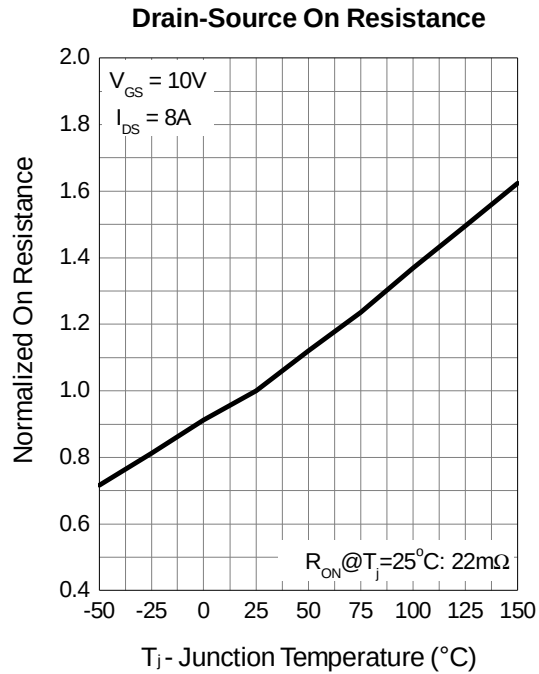
Thermal Transient Impedance



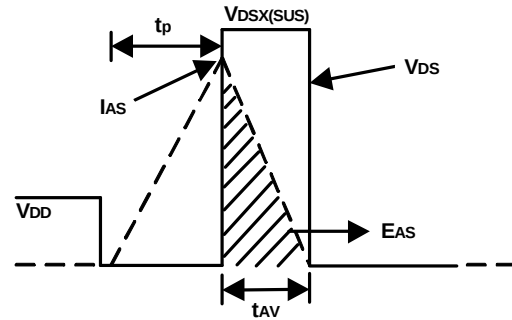
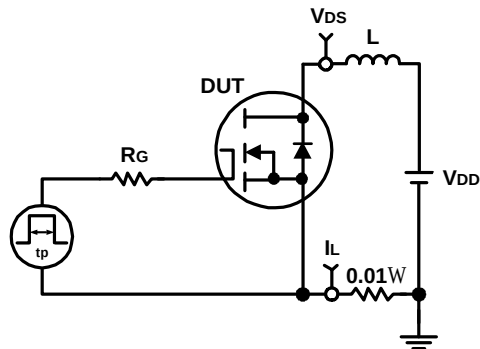
Typical Operating Characteristics (Cont.)



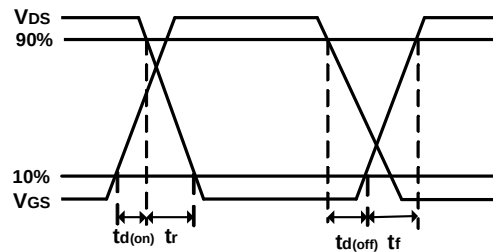
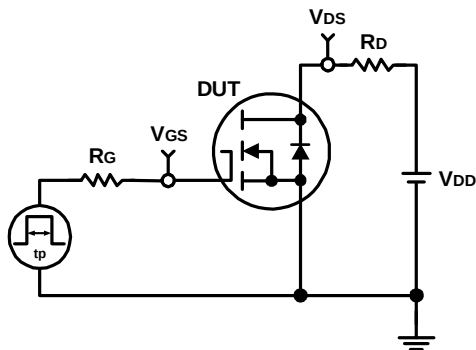
Typical Operating Characteristics (Cont.)



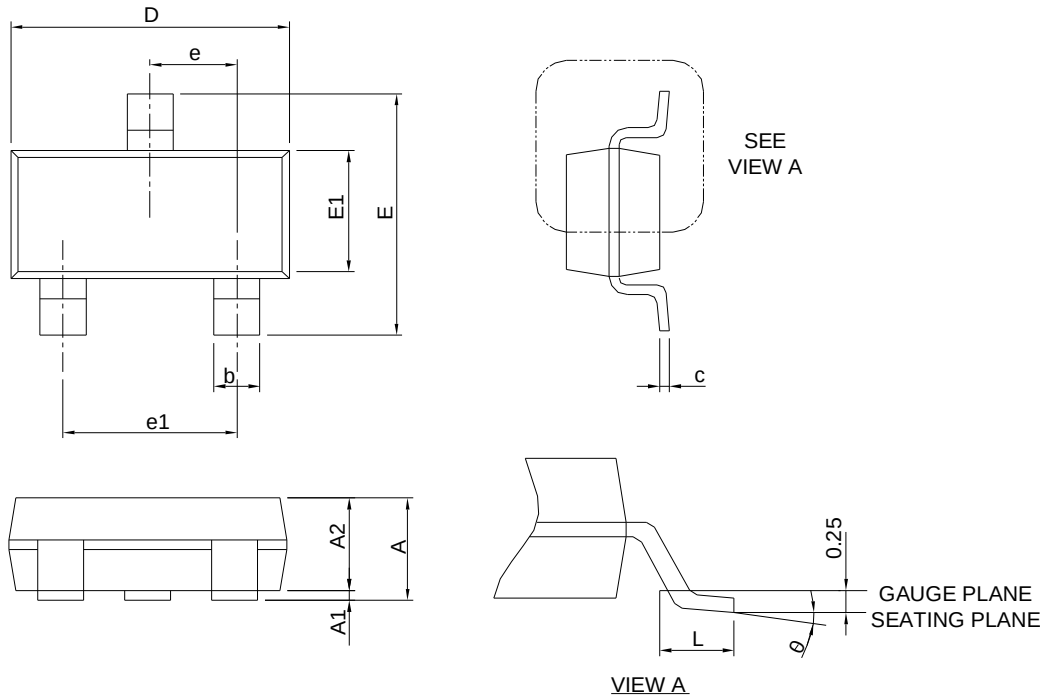
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

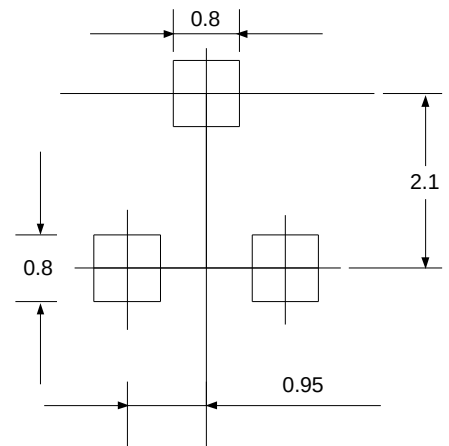


Package Information



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



UNIT: mm

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.