

Features

- 30V/9.2A,
 $R_{DS(ON)} = 19m\Omega$ (typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 25m\Omega$ (typ.) @ $V_{GS}=4.5V$
- 100% UIS+Rg tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

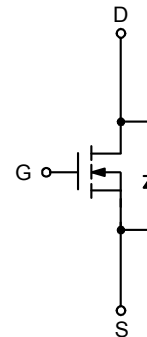
Applications

- Switching Regulators.
- Switching Converters.

Pin Description



Top View SOT-223



N-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		30	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	1.5	A
I _D	Continuous Drain Current	T _A =25°C	9.2	
		T _A =70°C	7.4	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	30	
P _D	Maximum Power Dissipation	T _A =25°C	1.9	W
		T _A =70°C	1.2	
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	30	°C/W
		Steady State	65	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	13	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	42	mJ

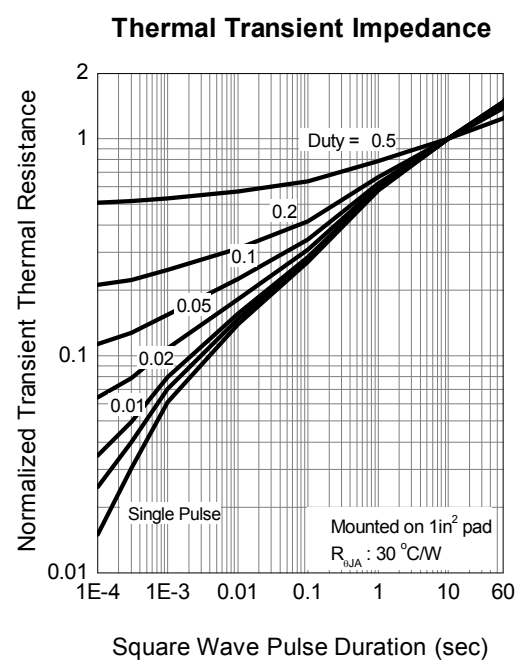
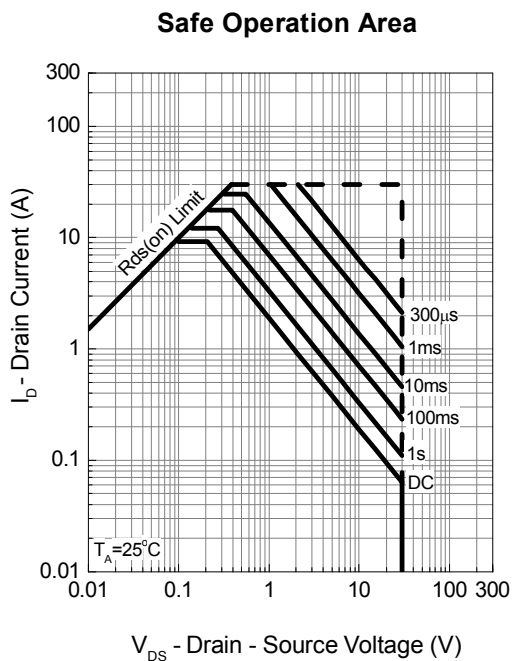
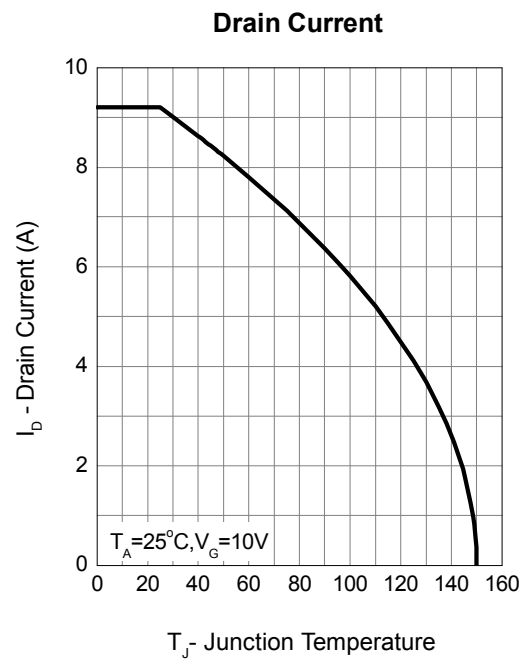
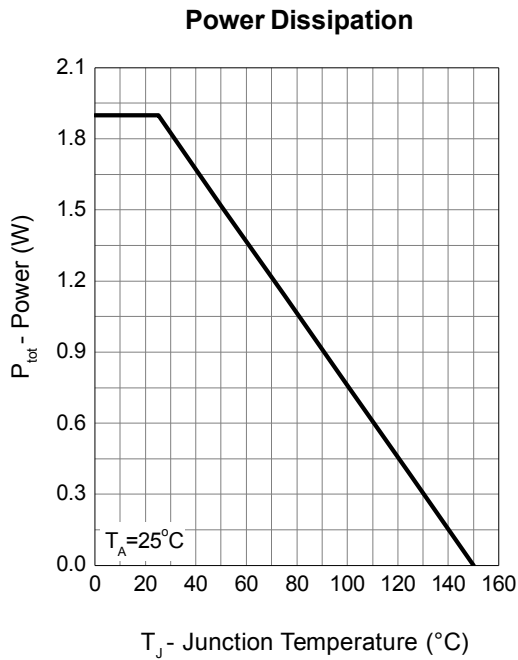
Note a : Pulse width limited by max. junction temperature.

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

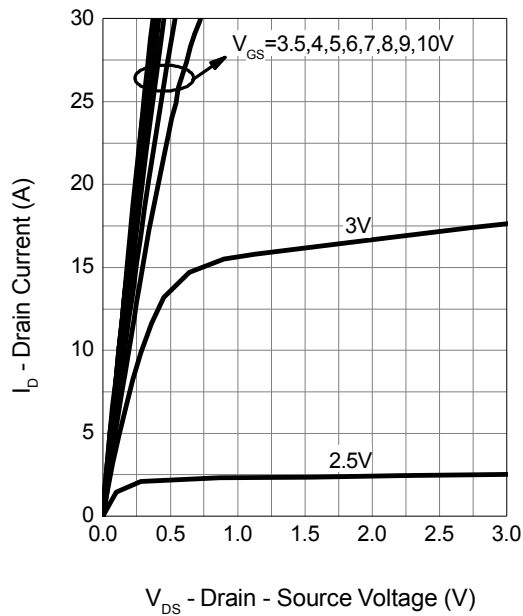
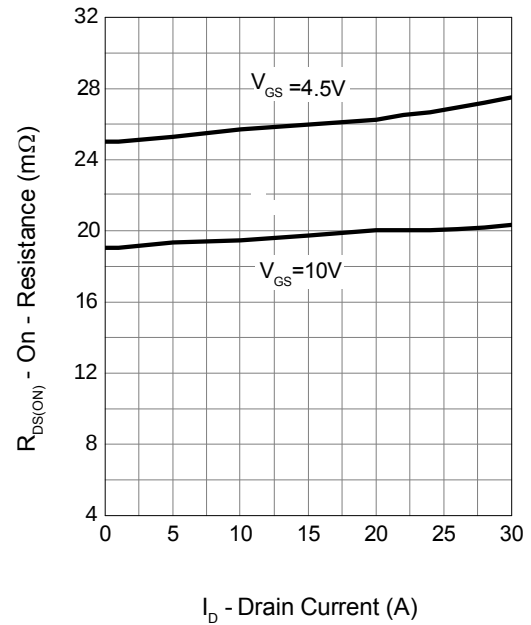
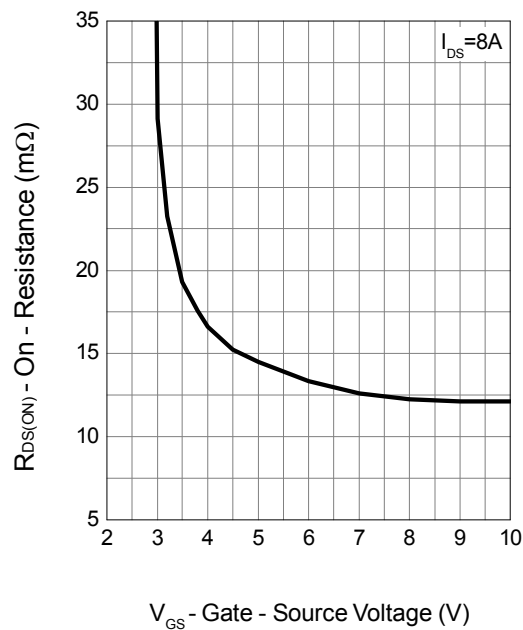
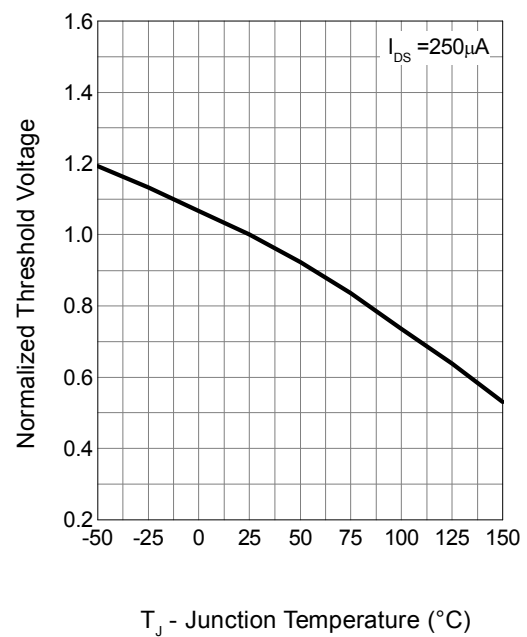
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
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} =±20V, V _{DS} =0V		-	±100	nA
R _{DS(ON)}	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =8A V _{GS} =4.5V, I _{DS} =5A	-	19 25	25 35	mΩ
Gfs	Forward Transconductance	V _{DS} =7.6, I _D =8A	-	24	-	S
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} =1.5A, V _{GS} =0V	-	0.73	1.1	V
t _{rr}	Reverse Recovery Time	I _{sd} =8A, dI _{SD} /dt=100A/μs	-	12	-	ns
Q _{rr}	Reverse Recovery Charge		-	6	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	0.78	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	1075	-	pF
C _{oss}	Output Capacitance		-	145	-	
C _{rss}	Reverse Transfer Capacitance		-	100	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	9.8	-	ns
t _r	Turn-on Rise Time		-	9.8	-	
t _{d(OFF)}	Turn-off Delay Time		-	26	-	
t _f	Turn-off Fall Time		-	5.6	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =8A	-	19.5	26	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =8A	-	9	-	
Q _{gs}	Gate-Source Charge		-	3.6	-	
Q _{gd}	Gate-Drain Charge		-	3	-	
Q _{gth}	Threshold Gate Charge		-	2	-	

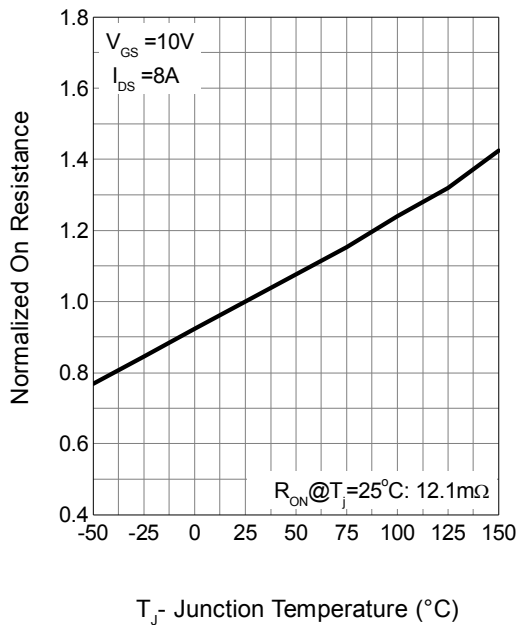
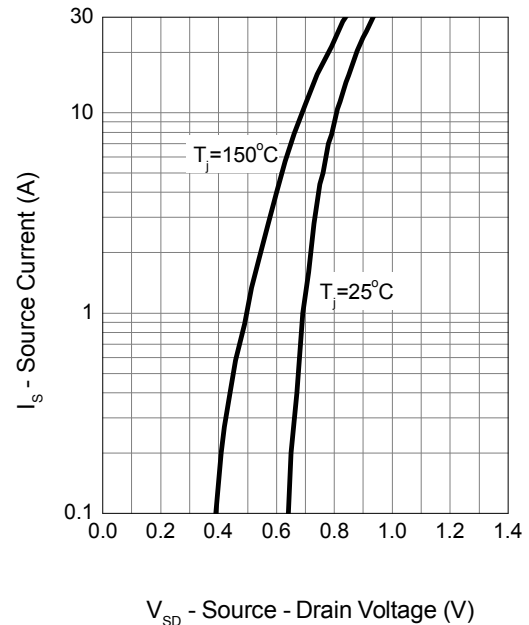
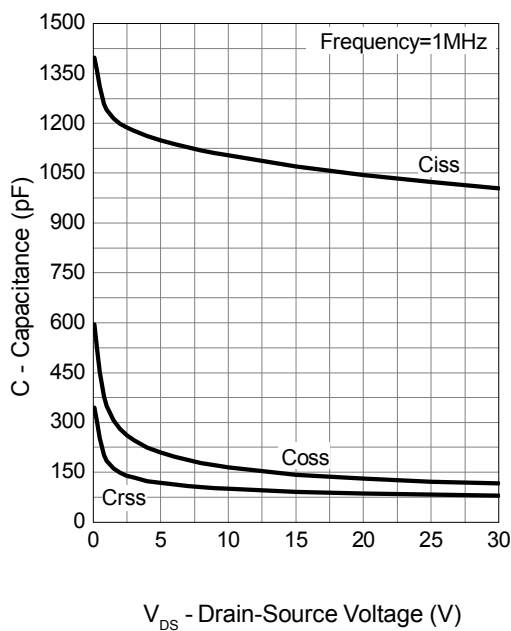
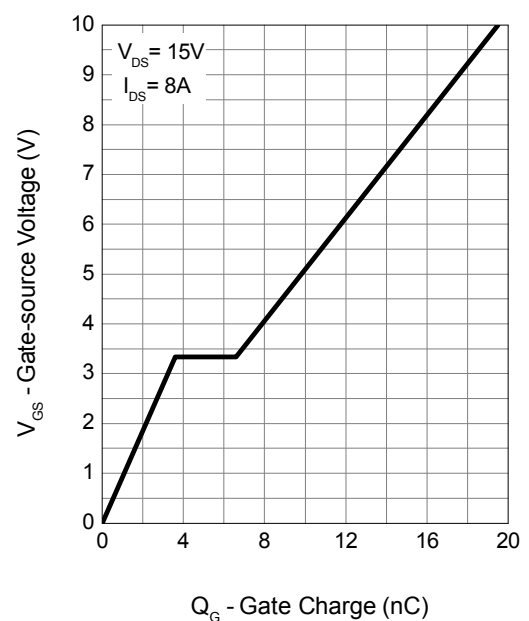
Typical Operating Characteristics



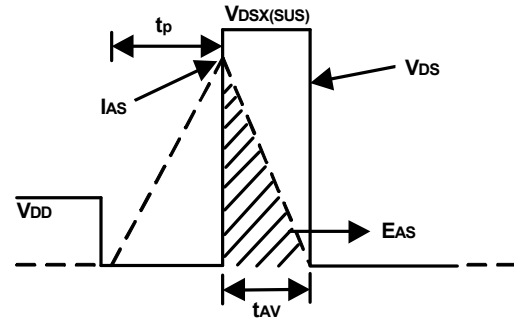
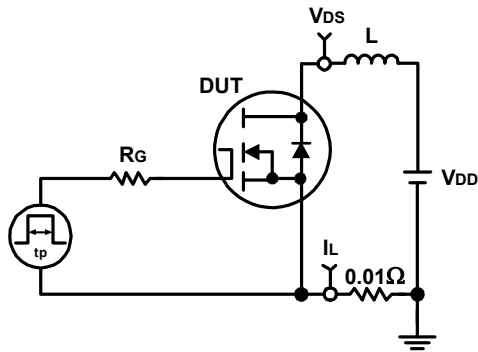
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Transfer Characteristics

Gate Threshold Voltage


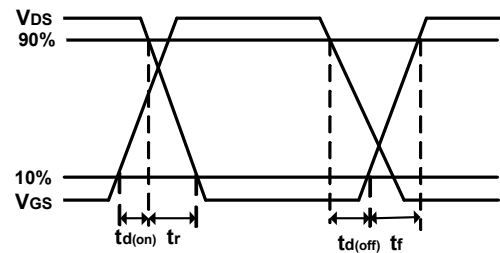
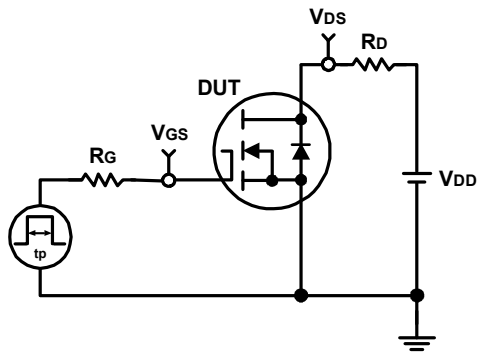
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

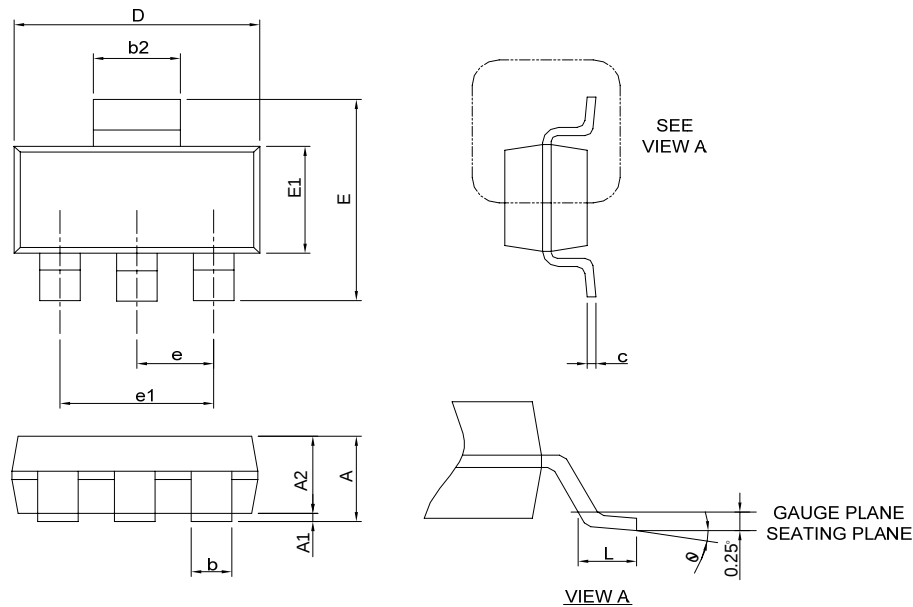


Switching Time Test Circuit and Waveforms



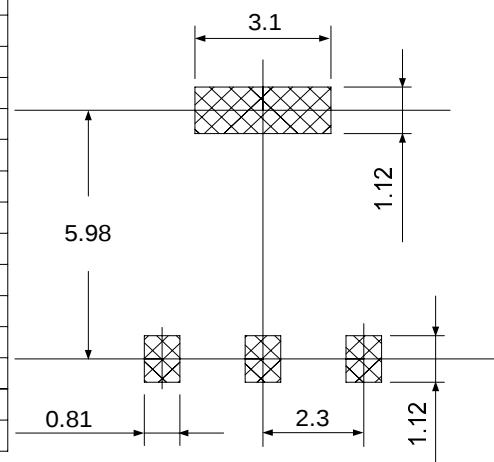
Package Information

SOT-223



SYMBOL	SOT-223			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.80	-	0.071
A1	0.02	0.10	0.001	0.004
A2	1.50	1.70	0.059	0.067
b	0.66	0.84	0.026	0.033
b2	2.90	3.10	0.114	0.122
c	0.23	0.33	0.009	0.013
D	6.30	6.70	0.248	0.264
E	6.70	7.30	0.264	0.287
E1	3.30	3.70	0.130	0.146
e	2.30 BSC		0.091 BSC	
e1	4.60 BSC		0.181 BSC	
L	0.75	-	0.030	-
θ	0°	10°	0°	10°

RECOMMENDED LAND PATTERN



UNIT: mm

Note : 1. Follow from JEDEC TO-261 AA.

2. Dimension D and E1 are determined at the outermost extremes of the plastic exclusive of mold flash, tie bar burrs, gate burrs, and interlead flash, but including any mismatch between the top and bottom of the plastic body