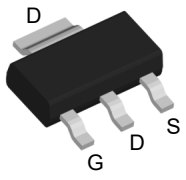
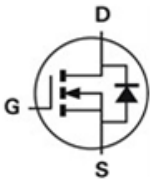
N-Channel Enhancement Mode MOSFET

Features

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant
- 100% UIS and Rg Tested

Pin Description

SOT223	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	600	V
$R_{DS(ON)-Typ}$	4	Ω
I_D	2	A

Absolute Maximum Ratings(T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	600	V
V_{GSS}	Gate-Source Voltage	±30	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
E_{AS}	Single Pulse Avalanche Energy[3]	115	mJ
I_{DM} ①	Pulse Drain Current Tested	8	A
I_D	Continuous Drain Current	2	A
P_D	Maximum Power Dissipation	44	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient[1]	110	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	2.8	℃/W

Note ①：Max. current is limited by bonding wire.

Note ②：UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③：Surface Mounted on 1in^2 FR-4 board with 1oz.

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Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	600	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=600V, V_{GS}=0V	---	---	10	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	2.0	---	4.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±30V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_D=1A	---	4	5	Ω
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, Freq.=1MHz	---	300	---	pF
C_{oss}	Output Capacitance		---	45	---	
C_{rss}	Reverse Transfer Capacitance		---	2	---	
$T_{d(on)}$	Turn-on Delay Time	V_{GS}=10V,V_{DD}=300V ,R_G=25Ω,I_D=2A	---	10	---	nS
T_r	Turn-on Rise Time		---	25	---	
$T_{d(off)}$	Turn-off Delay Time		---	20	---	
T_f	Turn-off Fall Time		---	25	---	
Q_g	Total Gate Charge	V_{GS}=10V,V_{DS}=480V , I_D=2A	---	5.7	---	nC
Q_{gs}	Gate-Source Charge		---	1.8	---	
Q_{gd}	Gate-Drain Charge		---	2	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=2A, V_{GS}=0V	---	---	1.4	V

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤ : Guaranteed by design, not subject to production testing.

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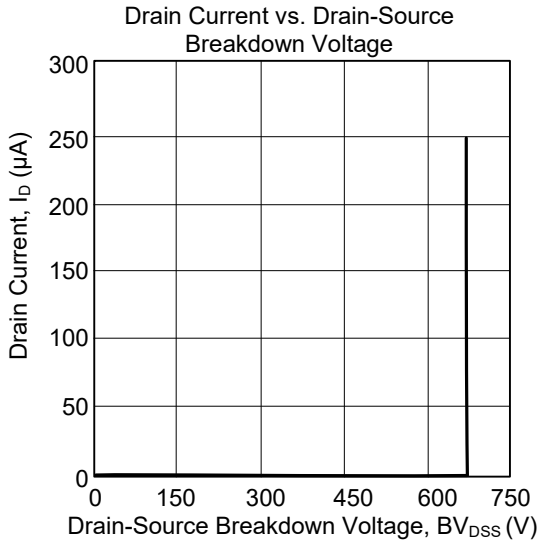
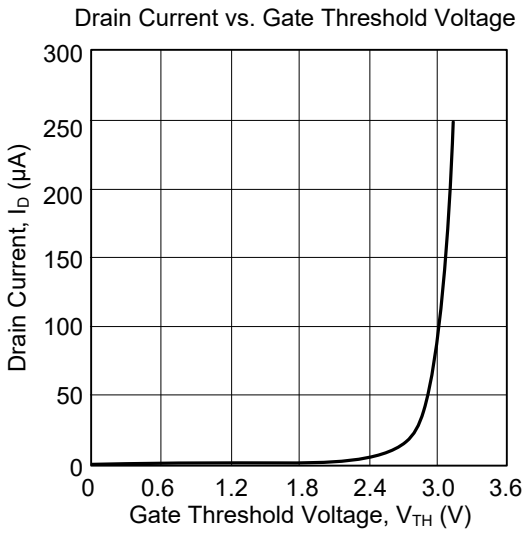
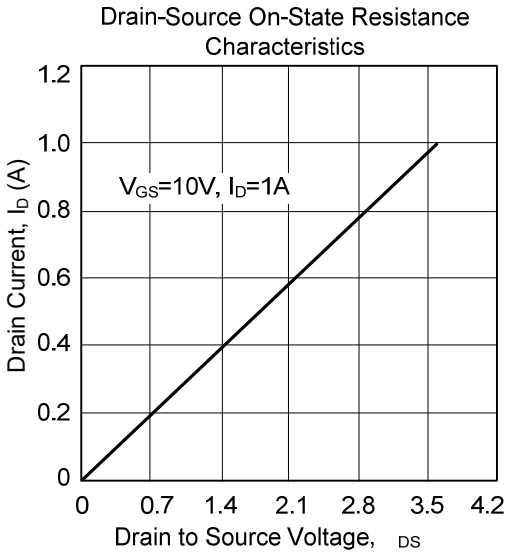
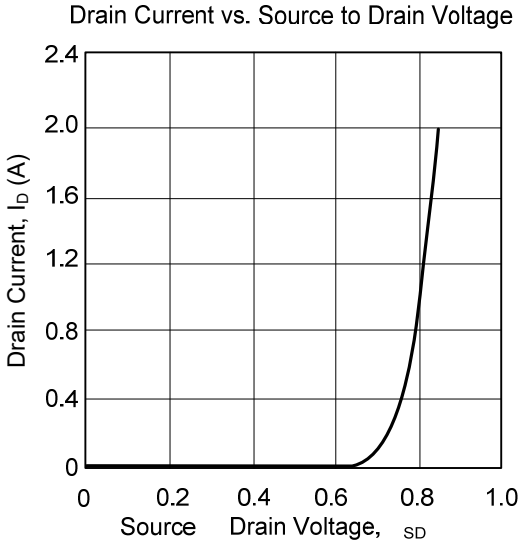
Typical Characteristics









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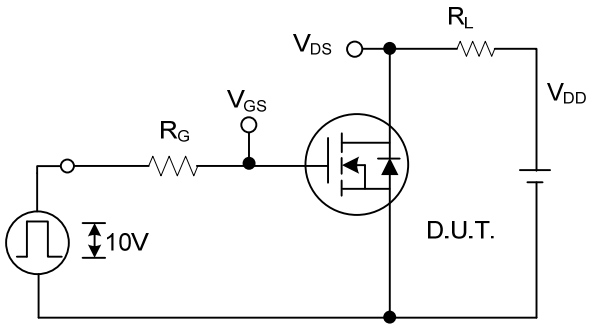
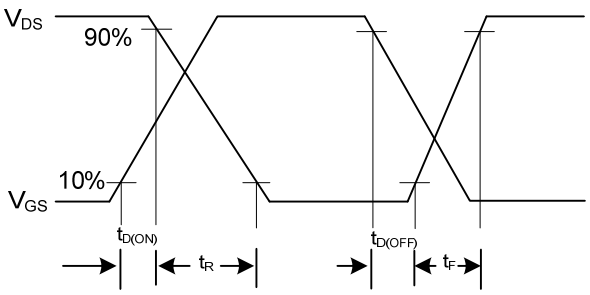
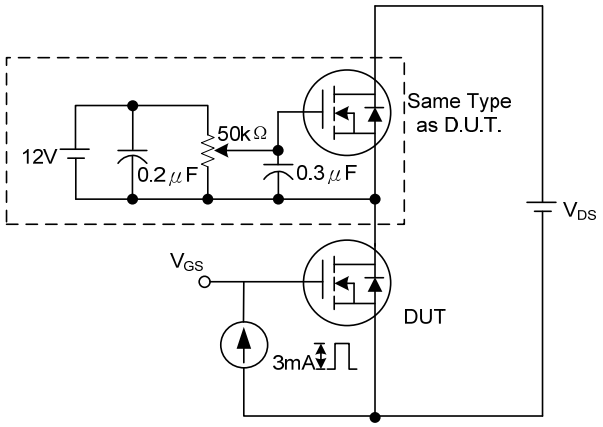


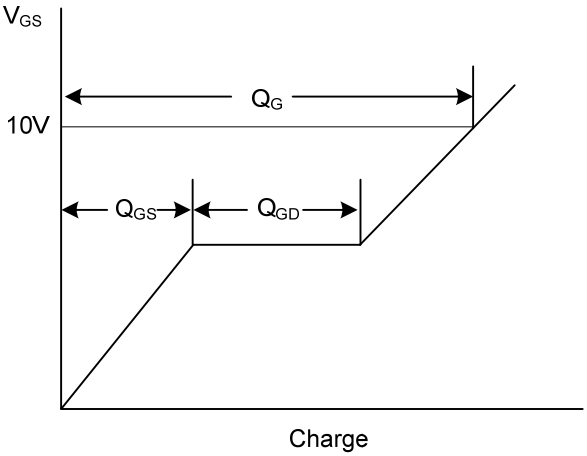
Switching Test Circuit



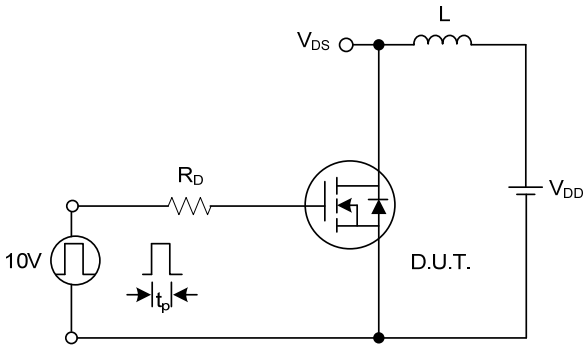
Switching Waveforms



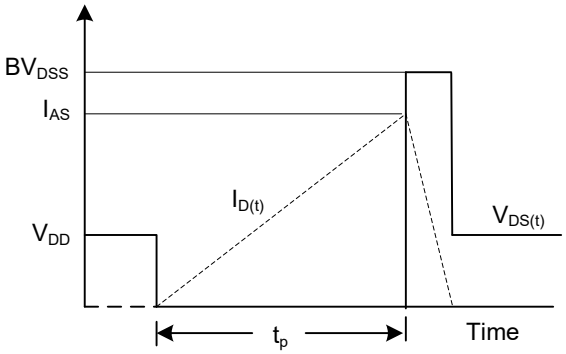
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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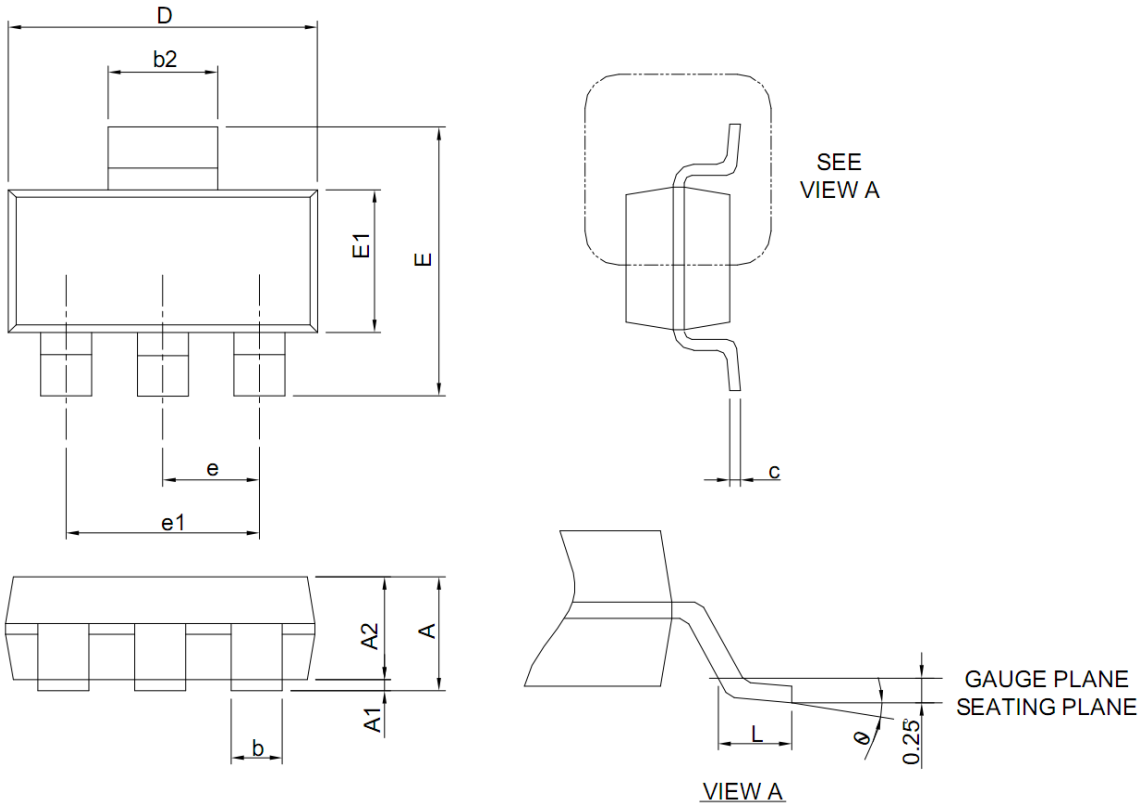
SOT223 Package Outline Data



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.50	1.65	1.80	**A1**	0.02	0.06	0.10
A2	1.50	1.60	1.70	**b**	0.66	0.72	0.80
b2	2.90	3.00	3.10	**c**	0.23	0.30	0.35
D	6.30	6.50	6.70	**E**	6.70	7.00	7.30
E1	3.30	3.50	3.70	**e**	2.30 REF		
e1	4.60 REF			**L**	0.75	--	1.15
θ	0°	--	10°				