

SOT-223 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=100V$
- $I_D=3A$
- $R_{DS(on)}@V_{GS}=10V < 200m\Omega$
- $R_{DS(on)}@V_{GS}=4.5V < 220m\Omega$
- High power and current handing capability
- Voltage controlled small signal switch
- Fast Switching Speedze

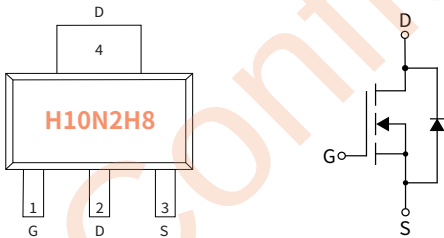
Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Mechanical Data

- Case: SOT-223
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



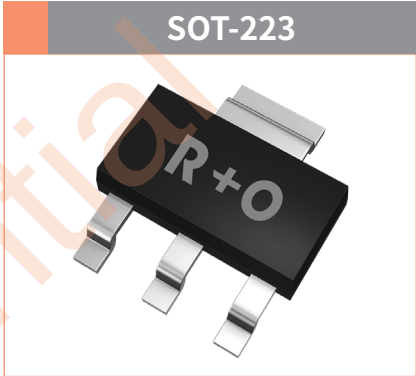
Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-223	R3	0.125	2500	5000	40000	13"

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	100
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	3
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	18
Single Pulse Avalanche Energy ⁽²⁾	EAS	mJ	3.7
Total Power Dissipation	P_D	W	2.5
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	°C / W	50

Drain-source Voltage
100 V
Drain Current
3 Ampere



● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	V	100	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	μA	—	—	1.0
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	V	1.0	1.5	2.0
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =3A	mΩ	—	140	200
		V _{GS} =4.5V, I _D =3A		—	150	220
Forward Transconductance	G _{FS}	V _{DS} =5V, I _D =3A	S	—	5	—

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHZ	pF	—	650	—
Output Capacitance	C _{oss}			—	24	—
Reverse Transfer Capacitance	C _{rss}			—	20	—

● Switching Parameters

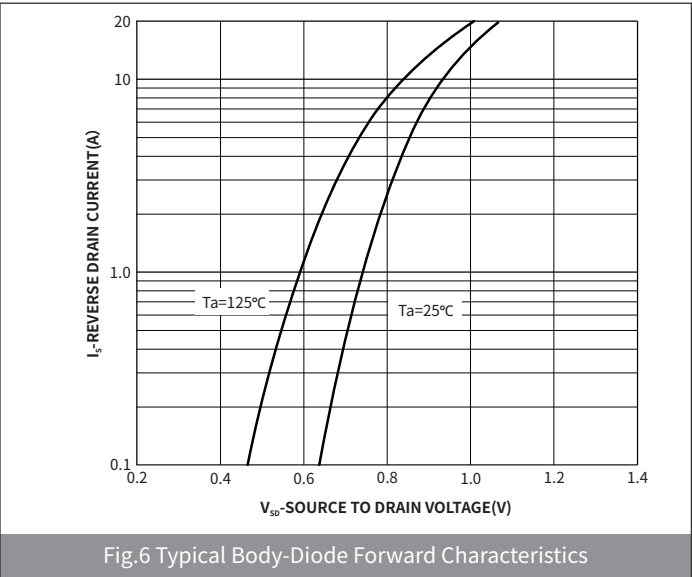
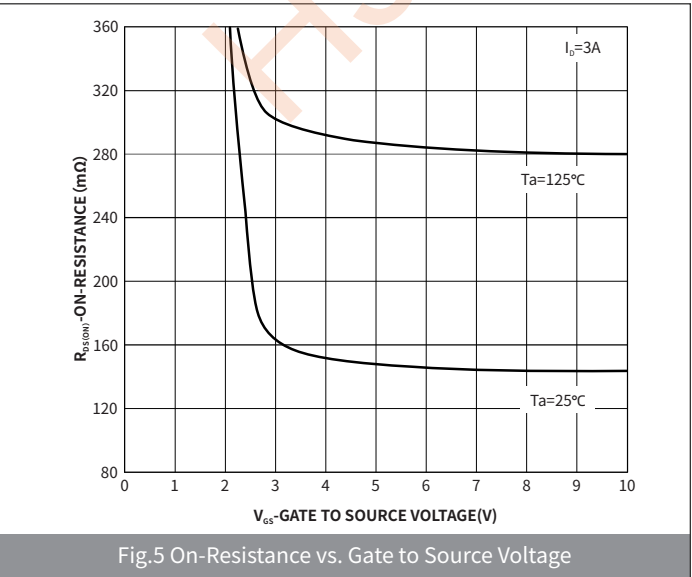
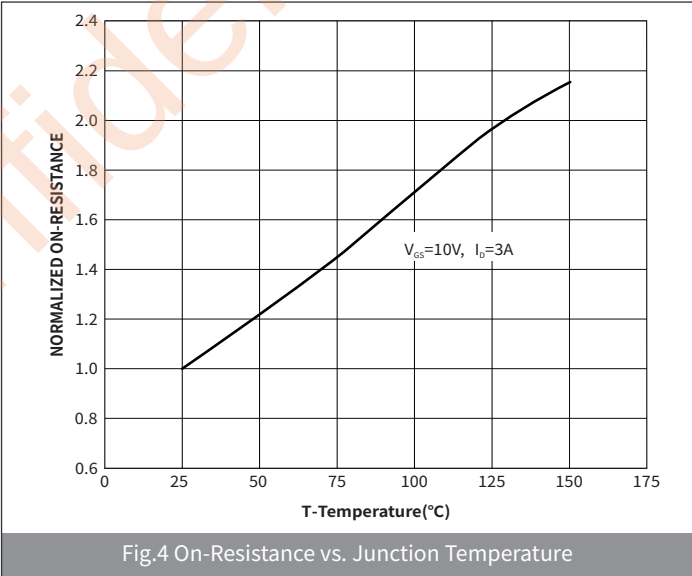
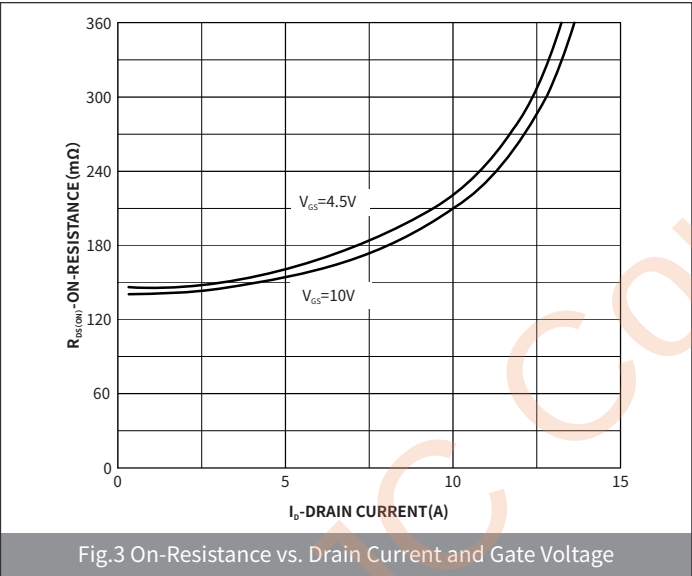
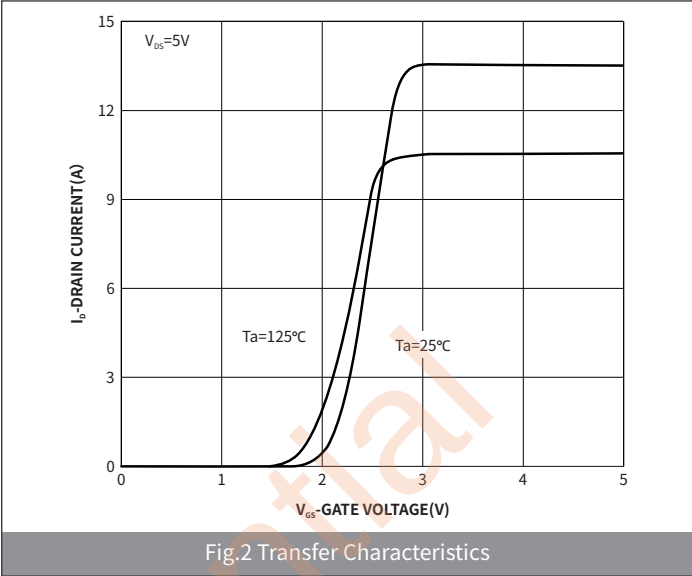
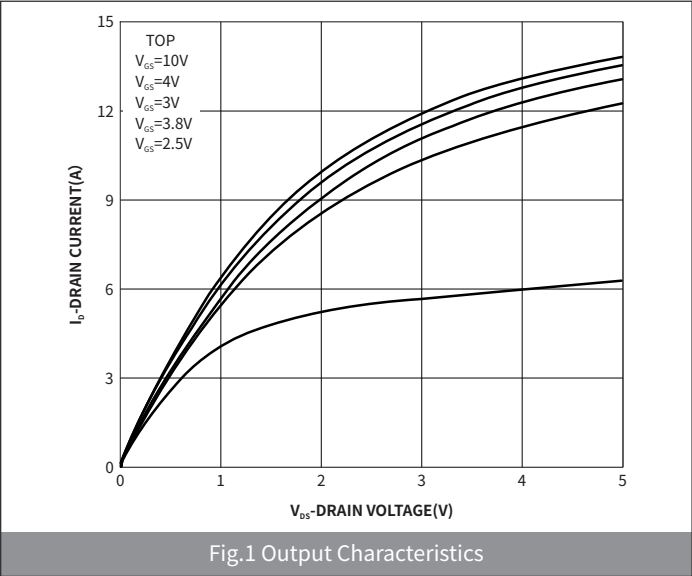
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =3A ,R _{GEN} =3Ω	nS	—	6	—
Turn-on Rise Time	t _r		nS	—	4	—
Turn-off Delay Time	t _{D(off)}		nS	—	20	—
Turn-off fall Time	t _f		nS	—	4	—
Total Gate Charge	Q _g	V _{DS} =50V, I _D =3A V _{GS} =10V	nC	—	20	—
Gate-Source Charge	Q _{gs}		nC	—	2.1	—
Gate-Drain Charge	Q _{gd}		nC	—	3.3	—

● Drian-Source Diode Characteristics

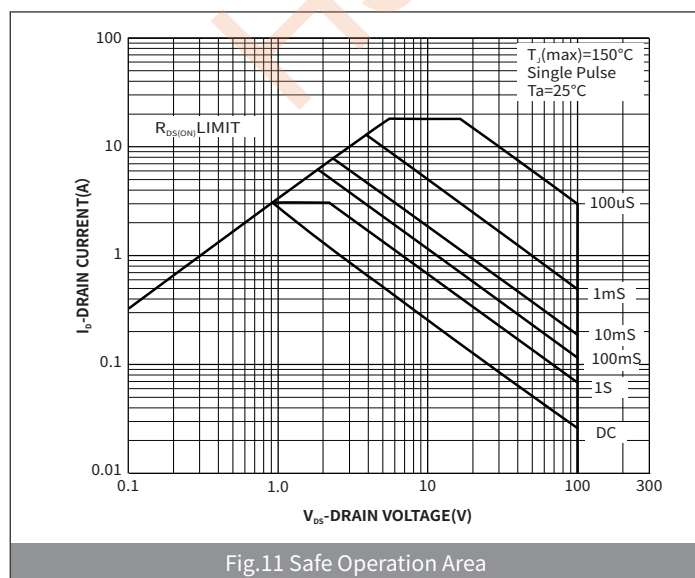
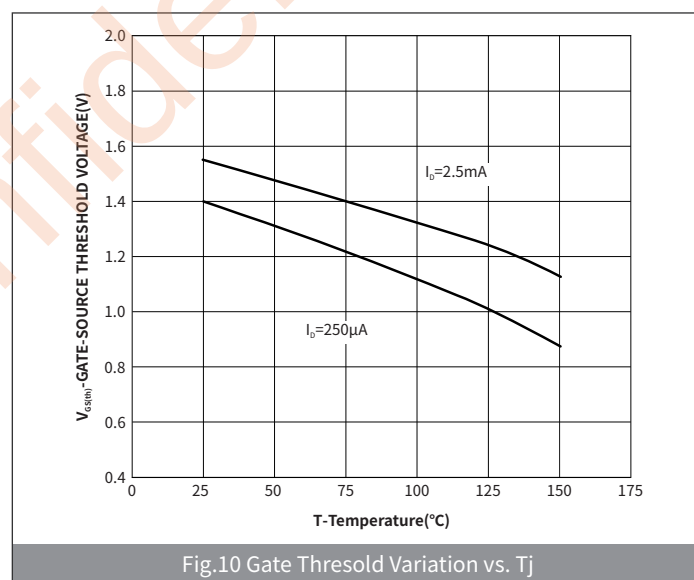
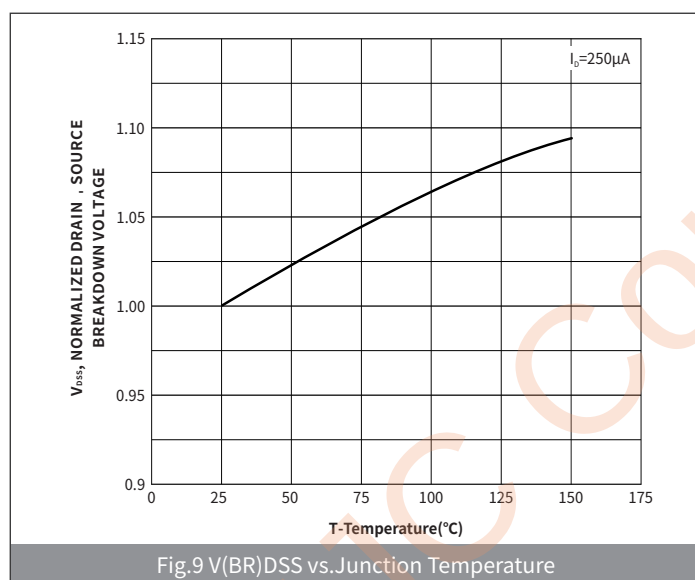
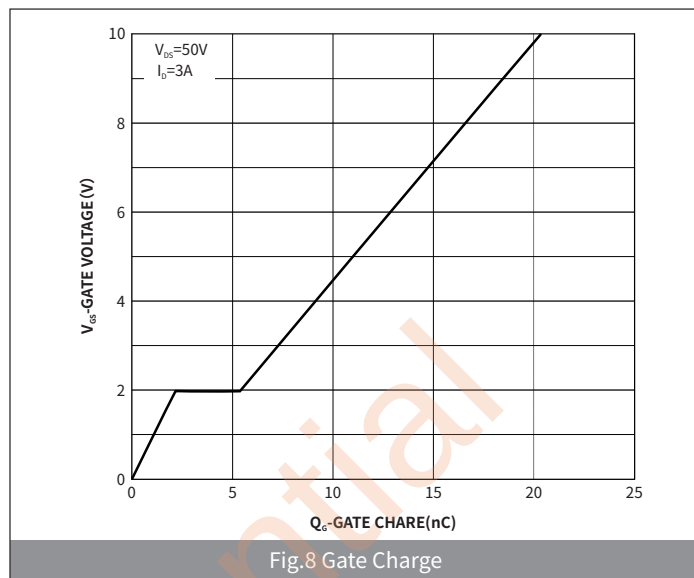
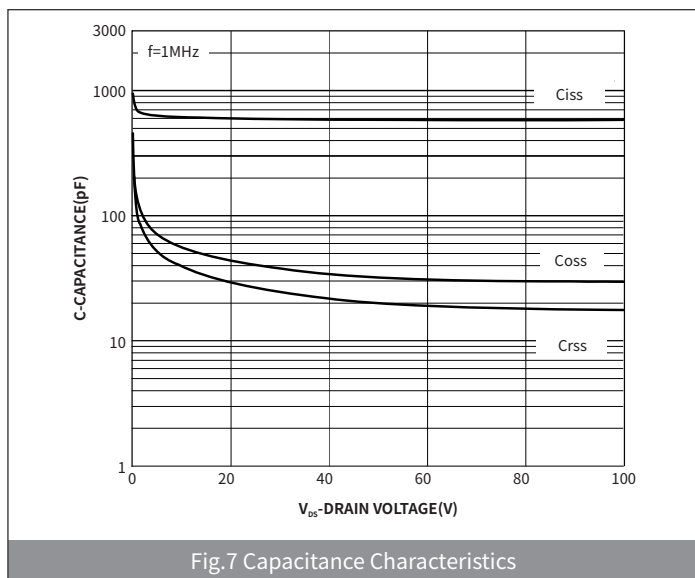
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	3

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=25V,VG=10V,L=0.5mH,IAS=3.85A,Rg=25Ω.
(3)Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.

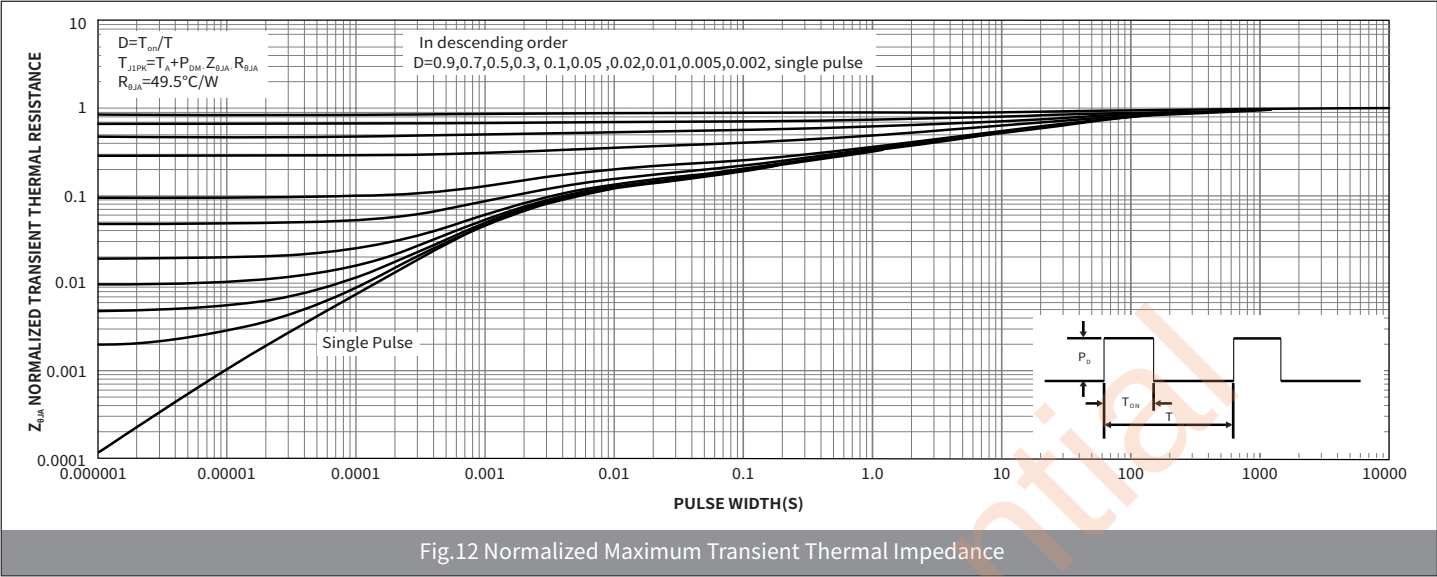
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



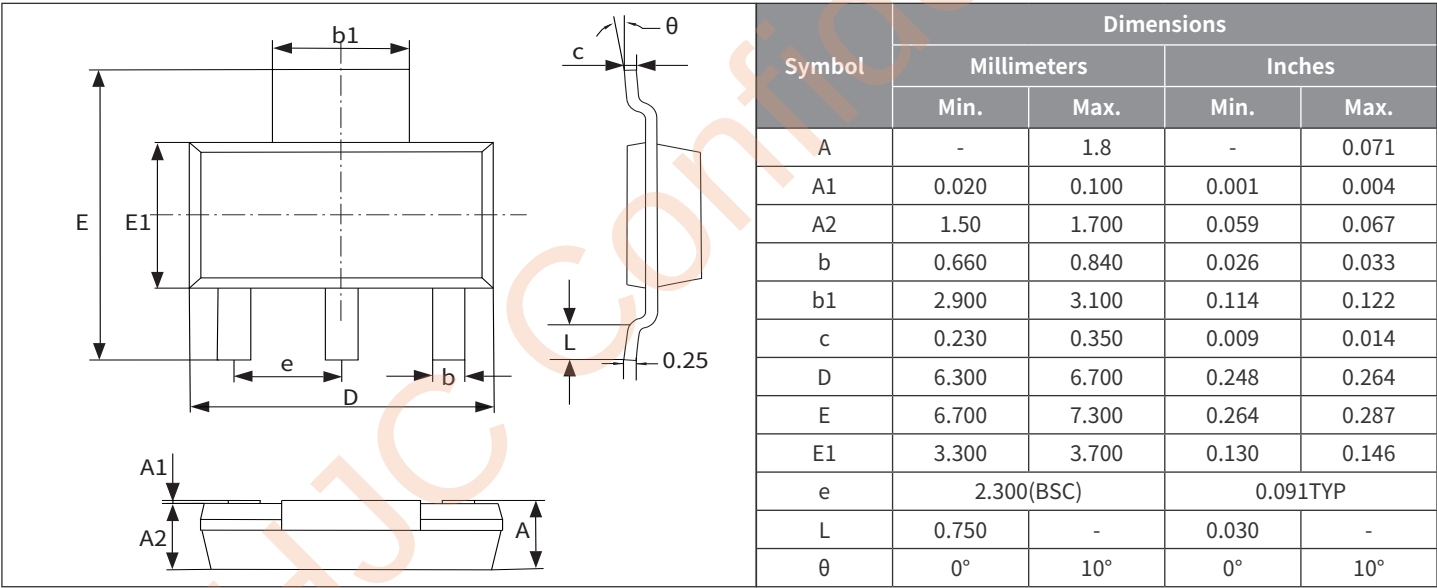
● **Ratings And Characteristics Curves** ($T_a=25^\circ\text{C}$ Unless otherwise specified)



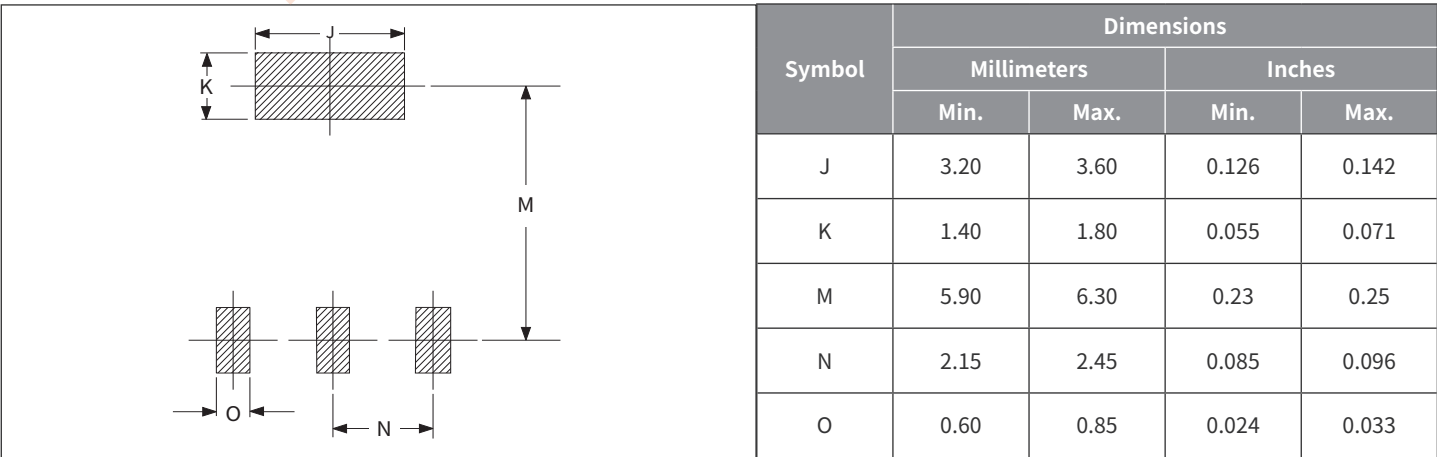
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



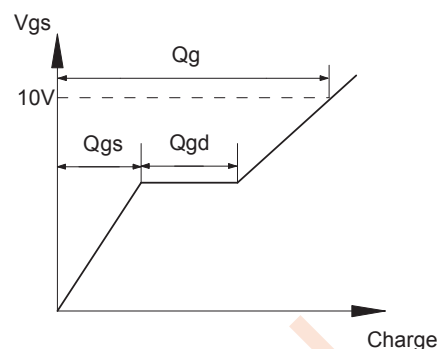
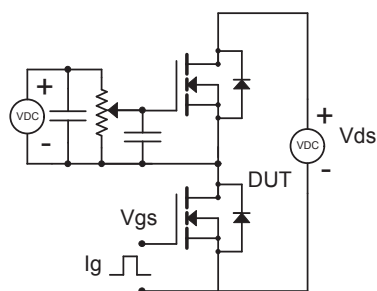
● Package Outline Dimensions (SOT-223)



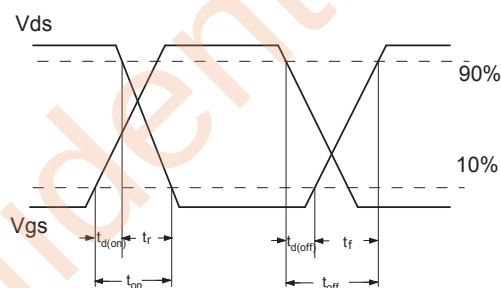
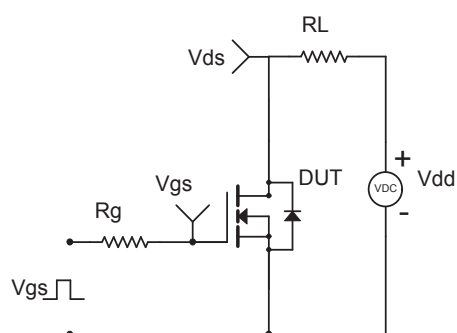
● Suggested Pad Layout



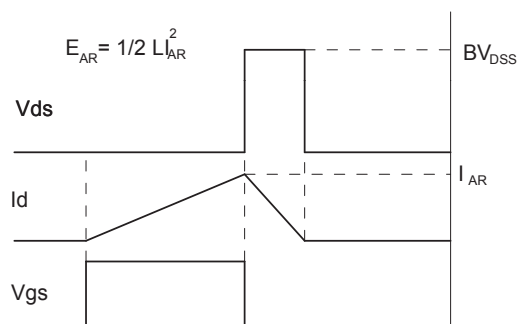
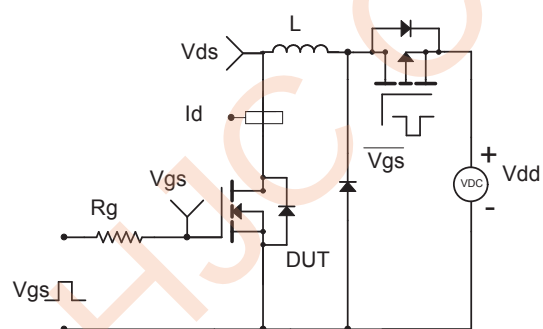
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4. Diode Recovery Test Circuit & Waveforms

