

SOT-23 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-40V$
- $I_D=-3A$
- $R_{DS(on)}@V_{GS}=-10V < 85m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 100m\Omega$
- Trench Technology Power MOSFET
- Low Gate Resistance
- Excellent package for good heat dissipation

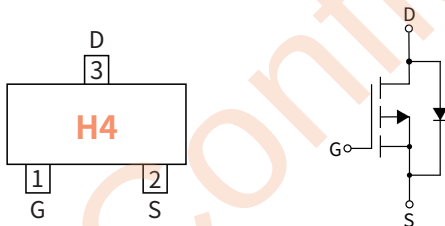
Applications

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

Mechanical Data

- Case: SOT-23
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



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

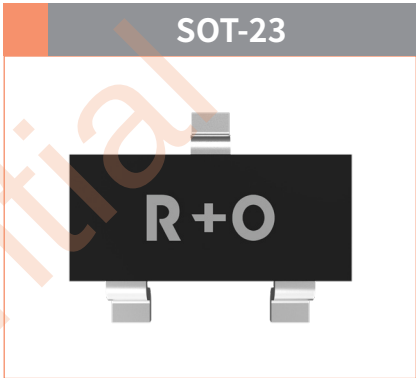
PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-40
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-3
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-12
Total Power Dissipation	P_D	W	0.35
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	357

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	45000	180000	7"

Drain-source Voltage
-40 V

Drain Current
-3Ampere



● 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	-40	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, 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	-1.6	-2.5
Static Drain-Source On-Resistance ⁽²⁾	R _{DS(ON)}	V _{GS} = -10V, I _D =-3A	mΩ	—	63	85
		V _{GS} = -4.5V, I _D =-2A		—	75	100

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHZ	pF	—	620	—
Output Capacitance	C _{oss}			—	65	—
Reverse Transfer Capacitance	C _{rss}			—	53	—

● Switching Parameters

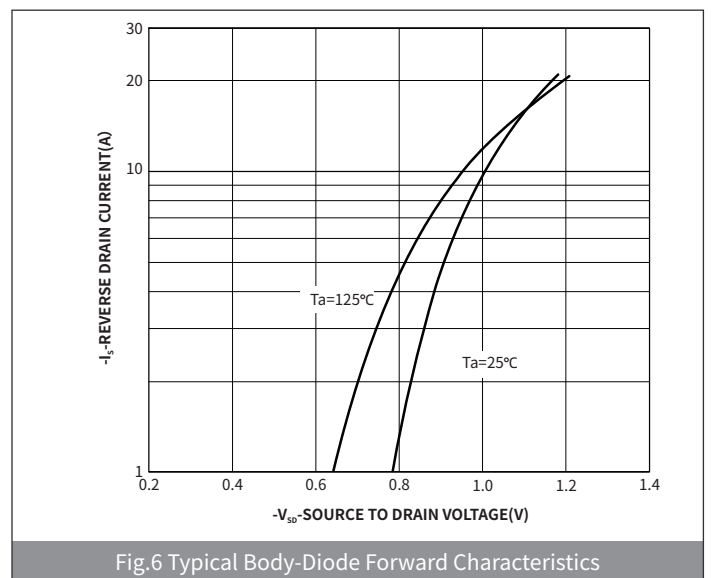
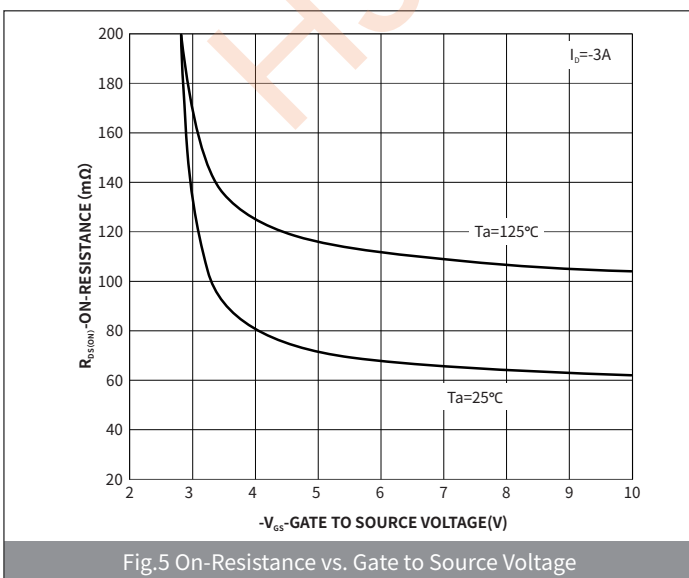
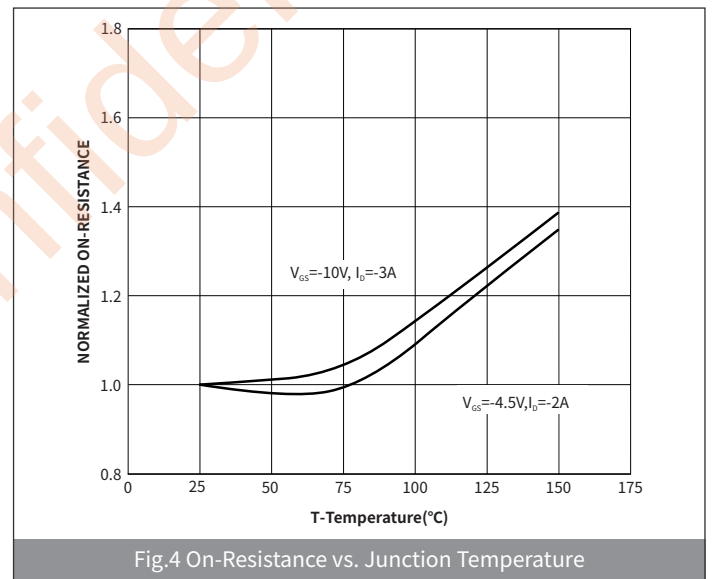
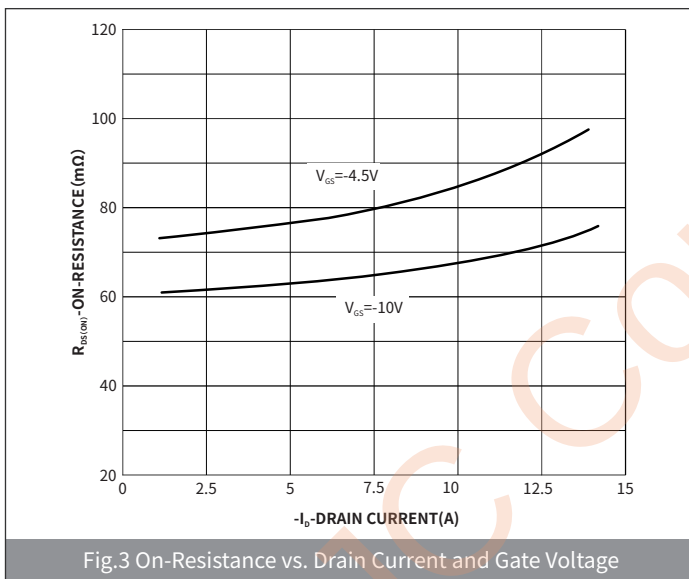
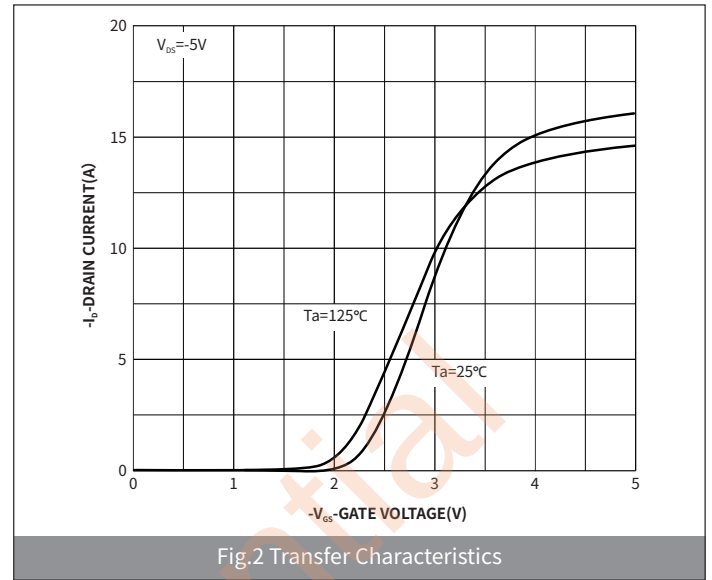
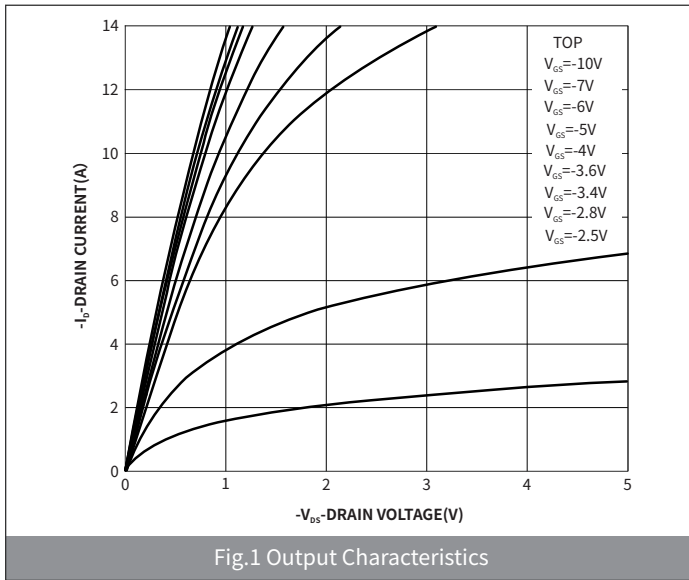
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DD} =-20V, I _D =-3A ,R _{GEN} =3.3Ω	nS	—	4.2	—
Turn-on Rise Time	t _r		nS	—	23	—
Turn-off Delay Time	t _{D(off)}		nS	—	26.8	—
Turn-off fall Time	t _f		nS	—	20.6	—
Total Gate Charge	Q _g	V _{DS} =-32V, I _D =-3A V _{GS} =-4.5V	nC	—	6.4	—
Gate-Source Charge	Q _{gs}		nC	—	2.1	—
Gate-Drain Charge	Q _{gd}		nC	—	2.5	—

● Drian-Source Diode Characteristics

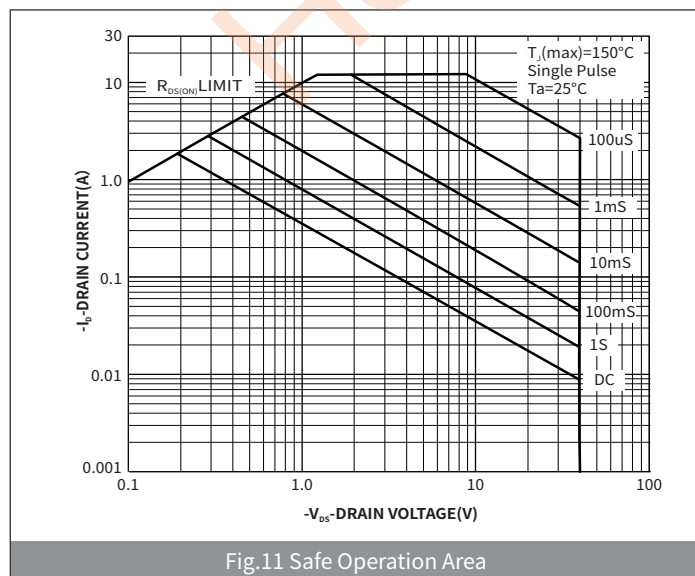
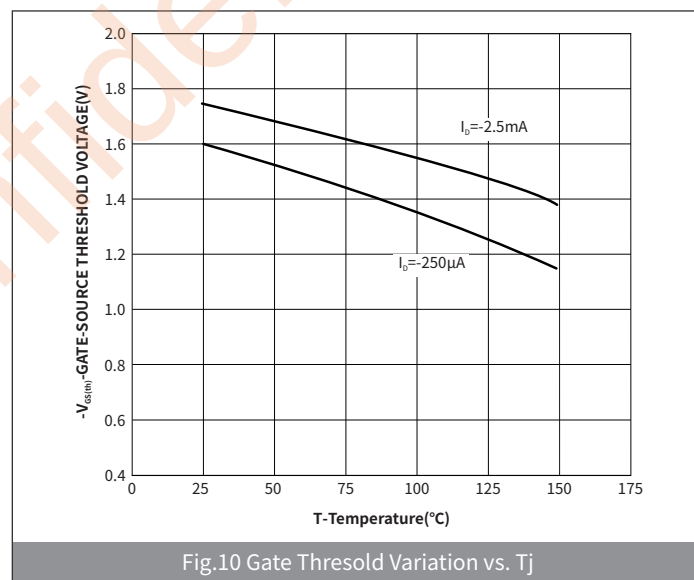
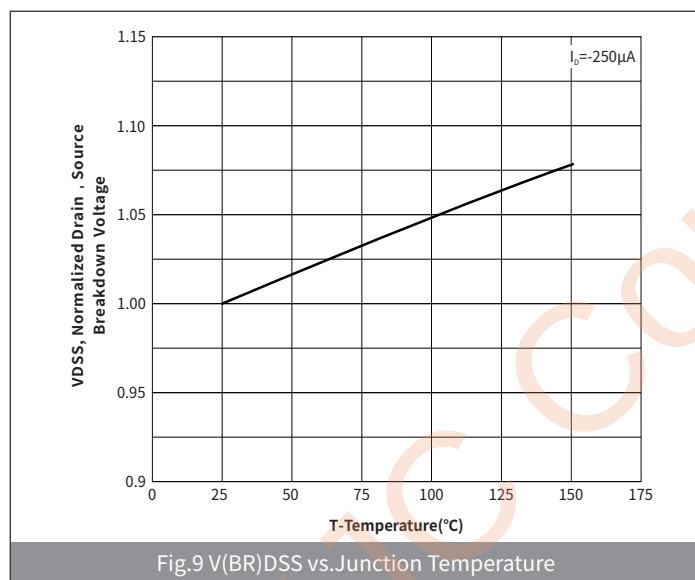
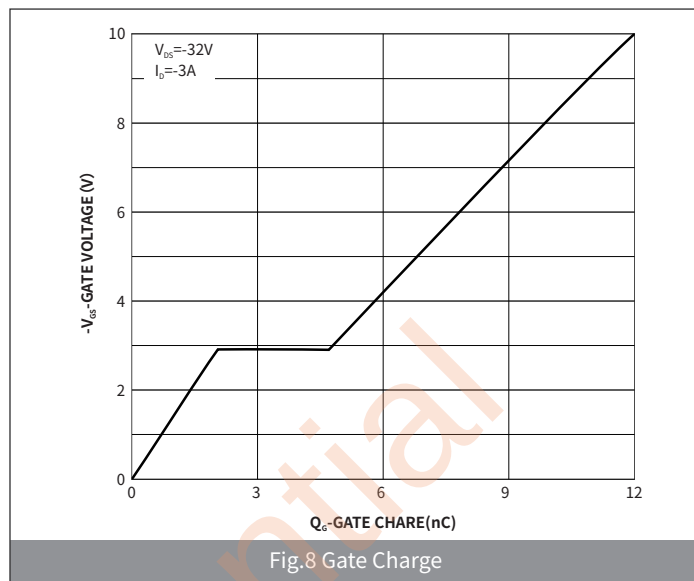
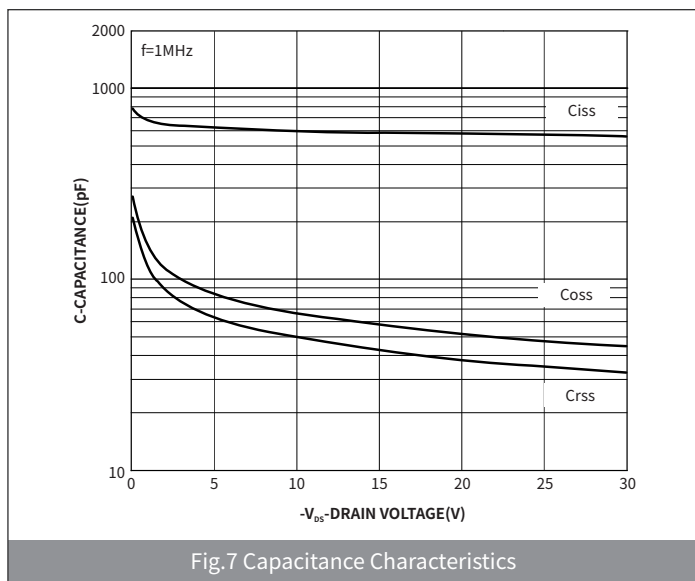
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =-1A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	-3

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

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



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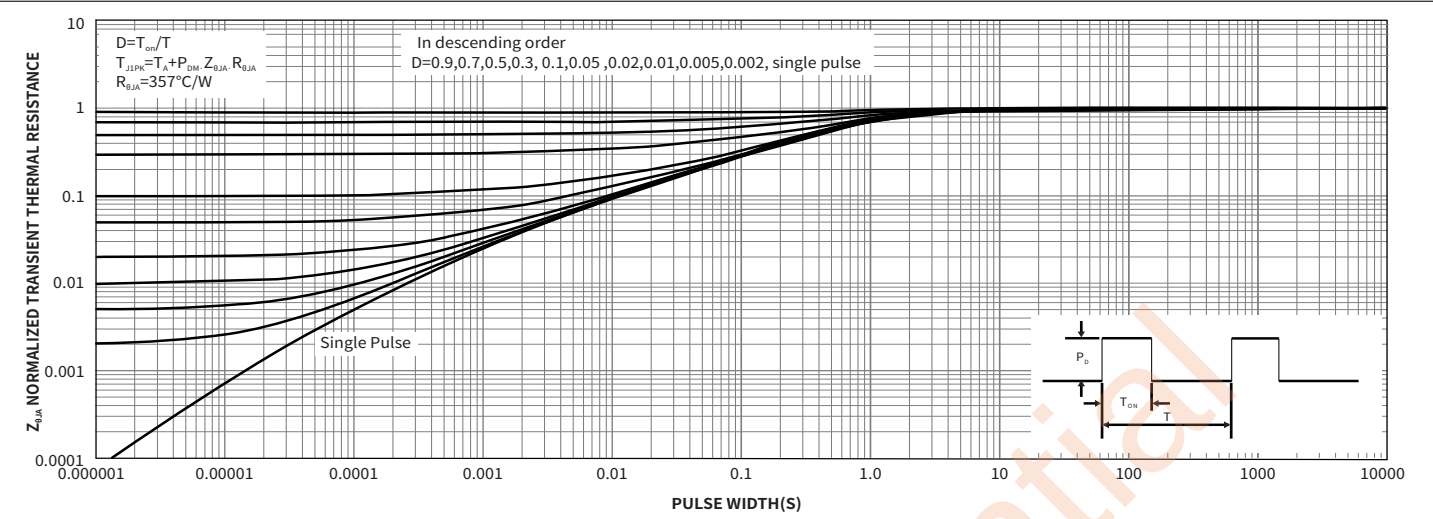
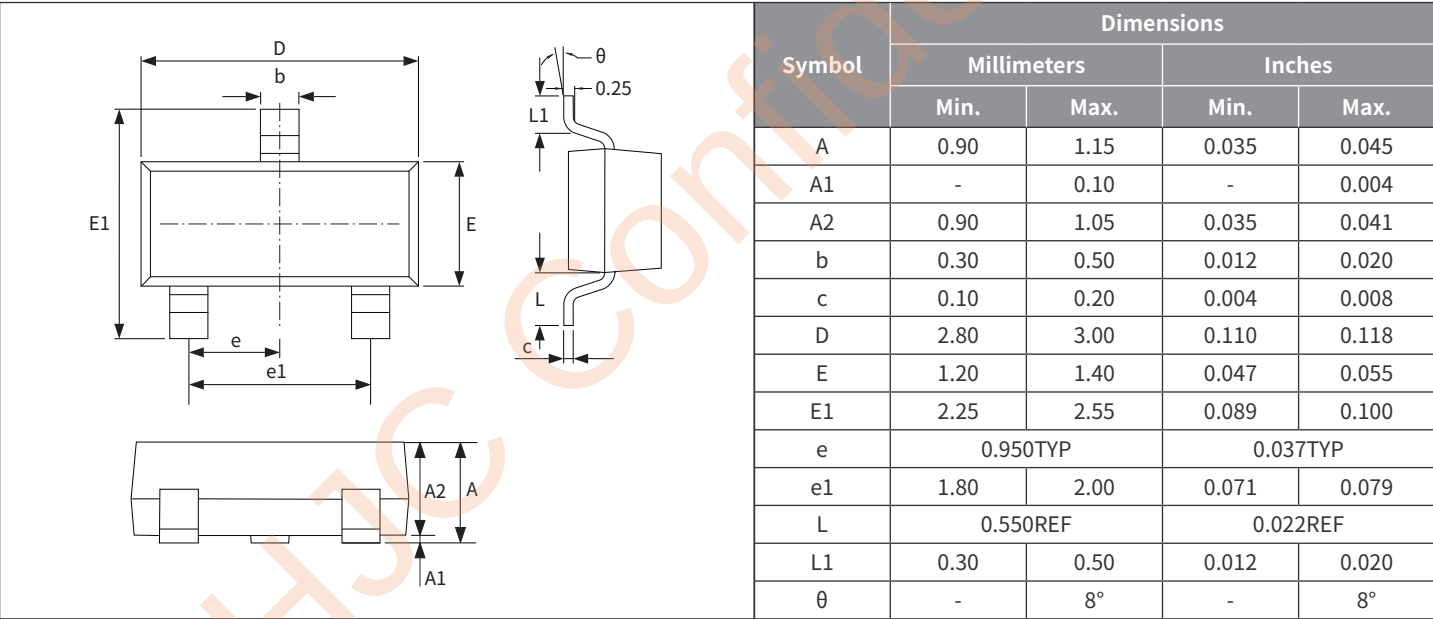
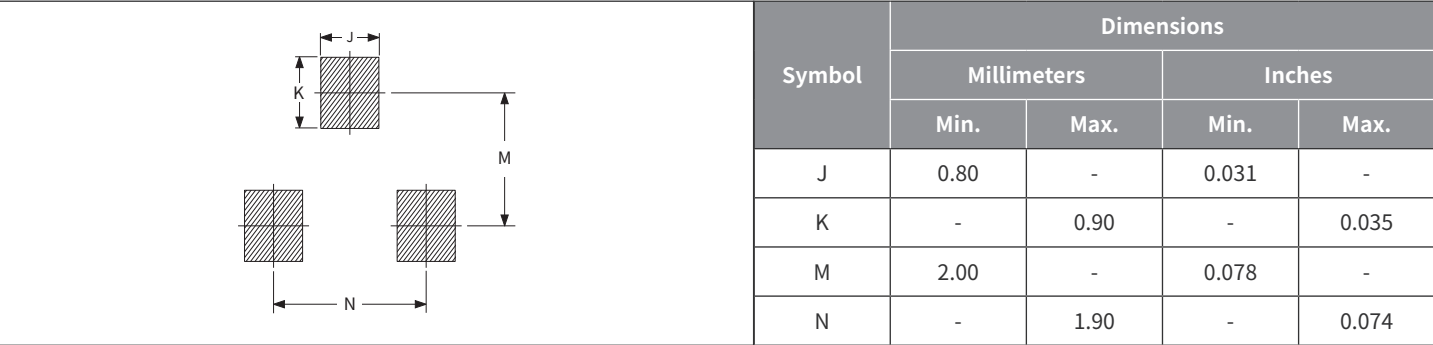


Fig.12 Normalized Maximum Transient Thermal Impedance

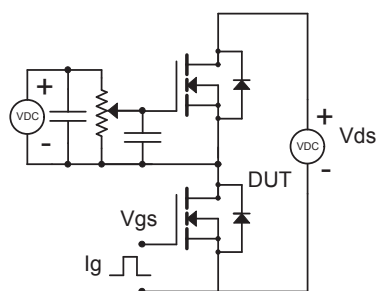
● Package Outline Dimensions (SOT-23)



● Suggested Pad Layout



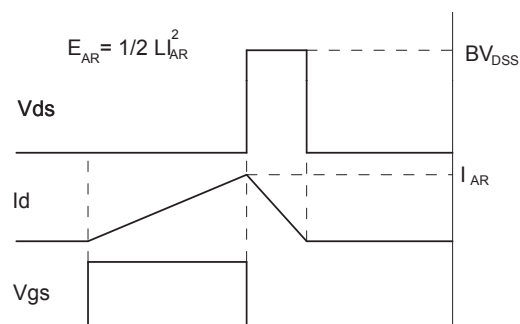
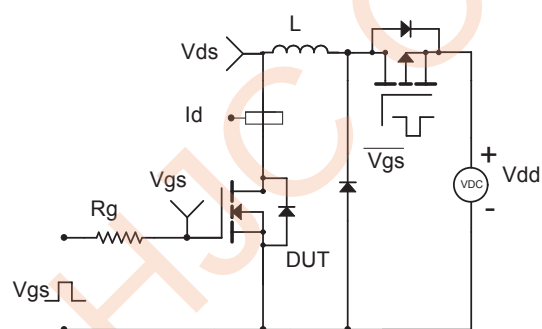
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

