

TO-252 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=60V$
- $I_D=110A$
- $R_{DS(on)}@V_{GS}=10V < 4.7m\Omega$
- $R_{DS(on)}@V_{GS}=4.5V < 6.2m\Omega$
- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- Advanced Split Gate Trench Technology

Drain-source Voltage

60 V

Drain Current

110 Ampere

Applications

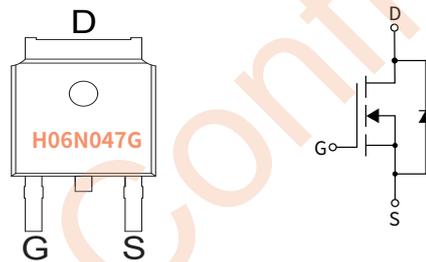
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Mechanical Data

- Case: TO-252
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
TO-252	R3	0.305	2500	5000	40000	13"

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	60
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	110
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	440
Total Power Dissipation	P_D	W	110
Single pulse avalanche energy ⁽²⁾	EAS	mJ	248
Junction temperature	T_J	°C	-55 ~ +150
Storage temperature	T_{stg}	°C	-55 ~ +150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	1.14

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

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	V	60	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	V	1.0	1.7	2.5
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	m Ω	—	3.7	4.7
		$V_{GS}=4.5V, I_D=10A$		—	4.6	6.2

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$	pF	—	5045	—
Output Capacitance	C_{oss}			—	1057	—
Reverse Transfer Capacitance	C_{rss}			—	47	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=30V, I_D=20A, R_{GEN}=3\Omega$	nS	—	16	—
Turn-on Rise Time	t_r		nS	—	114	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	47.5	—
Turn-off fall Time	t_f		nS	—	136.5	—
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=20A, V_{GS}=10V$	nC	—	50	—
Gate-Source Charge	Q_{gs}		nC	—	14	—
Gate-Drain Charge	Q_{gd}		nC	—	12	—

● Drain-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=110A, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	110

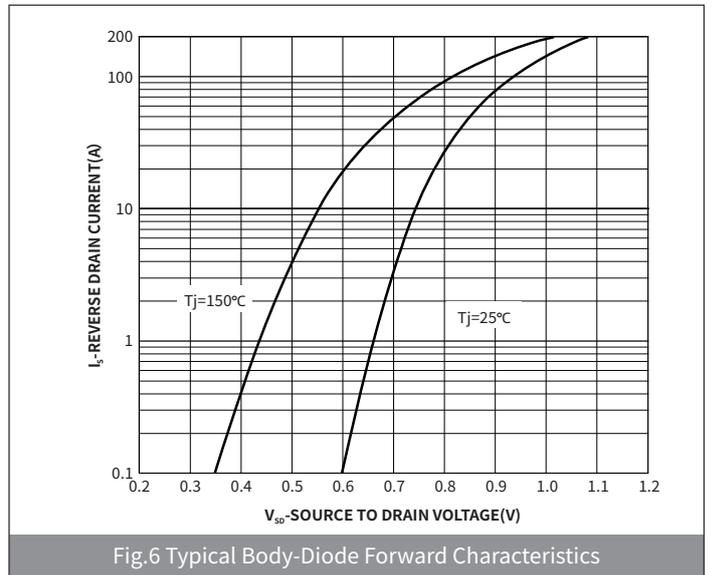
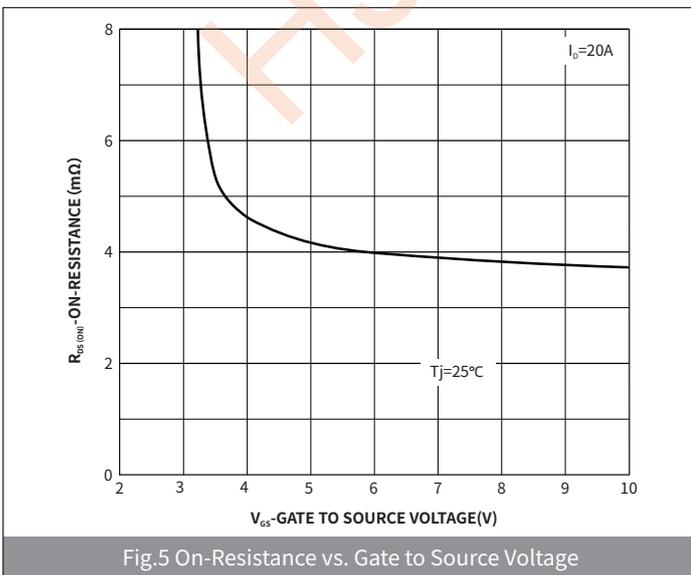
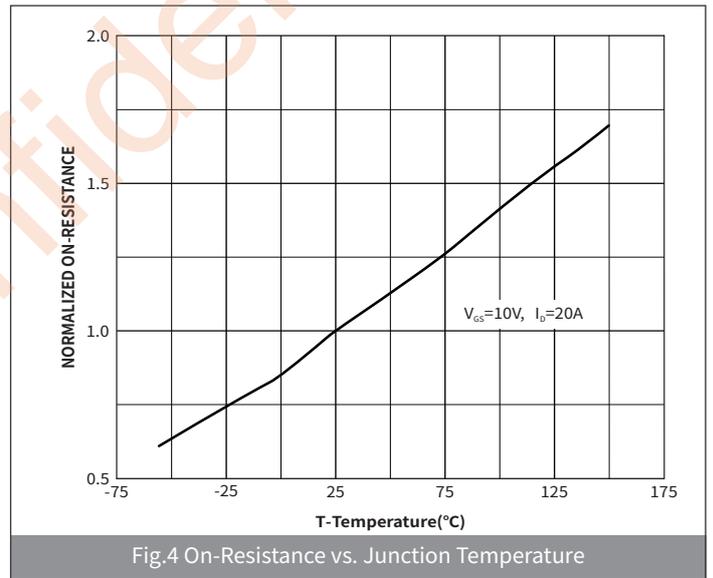
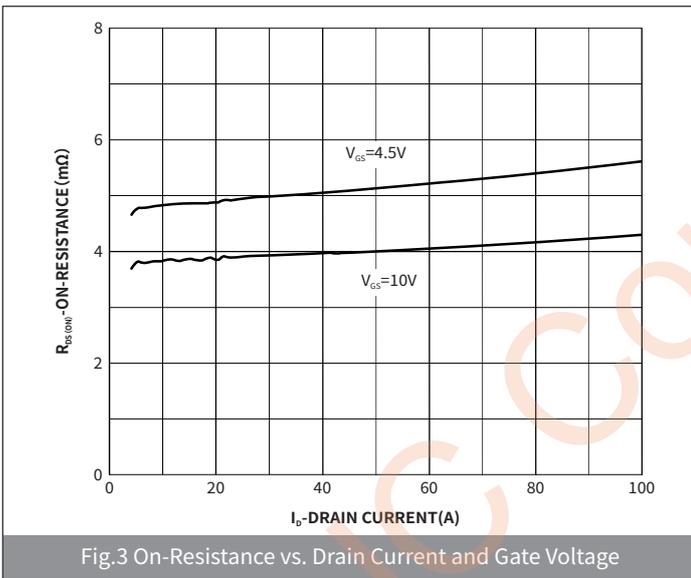
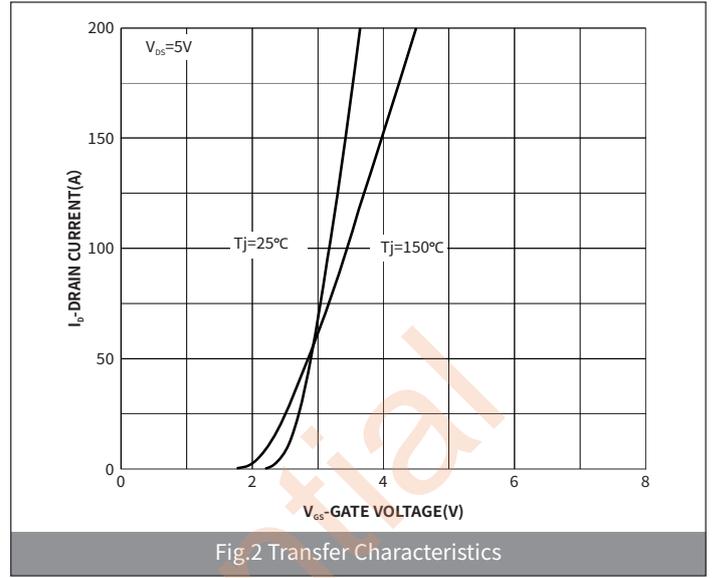
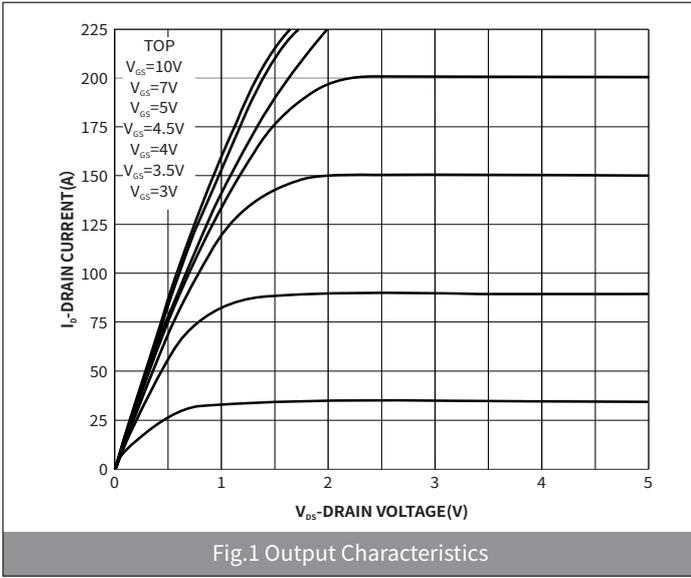
Note :

(1) Repetitive Rating: Pulse width limited by maximum junction temperature.

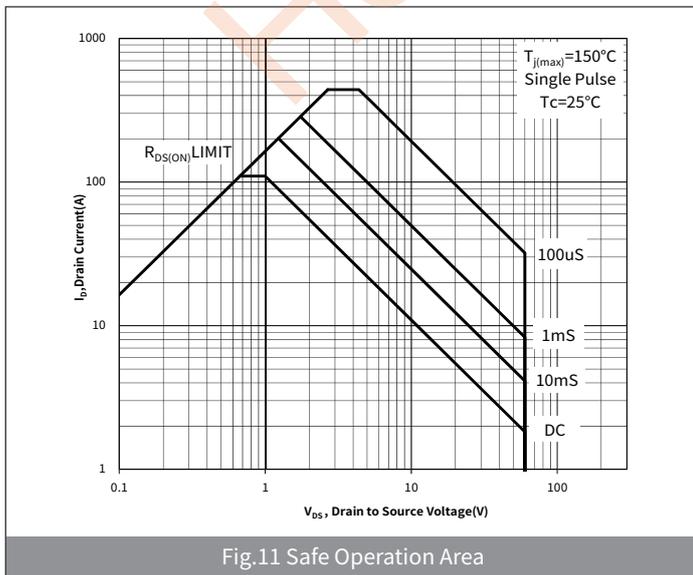
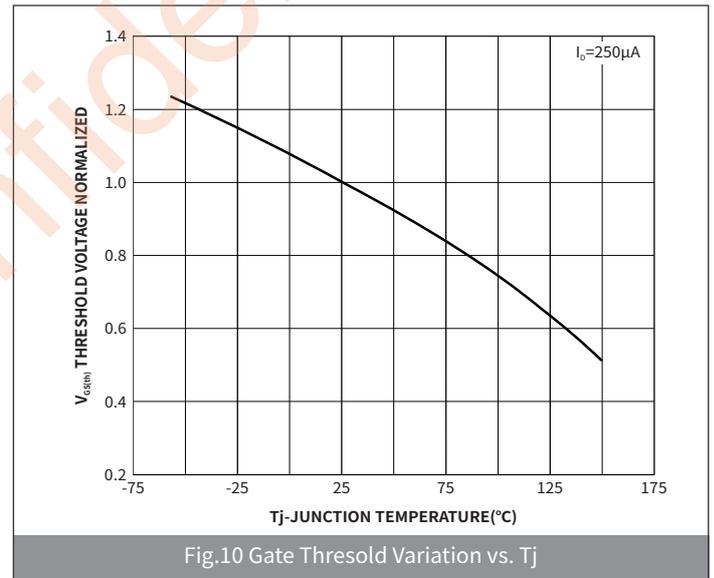
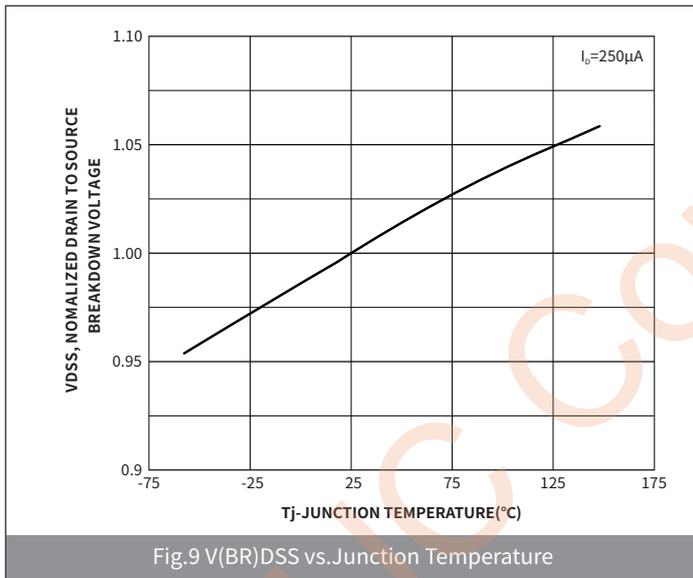
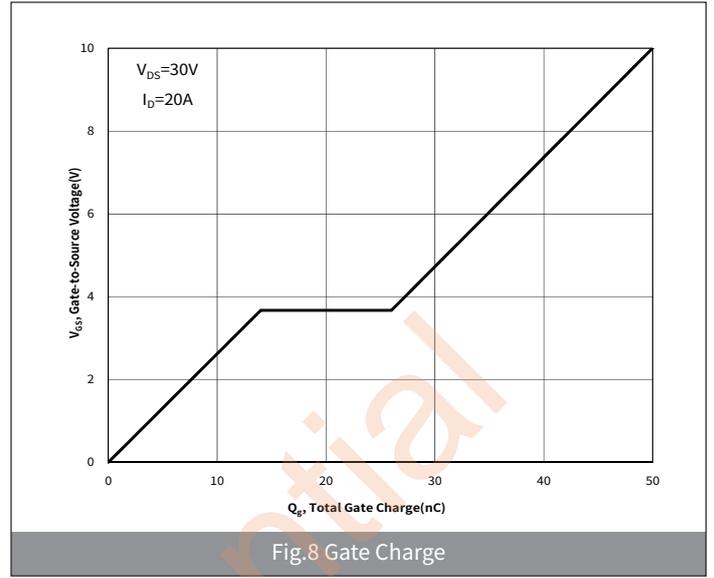
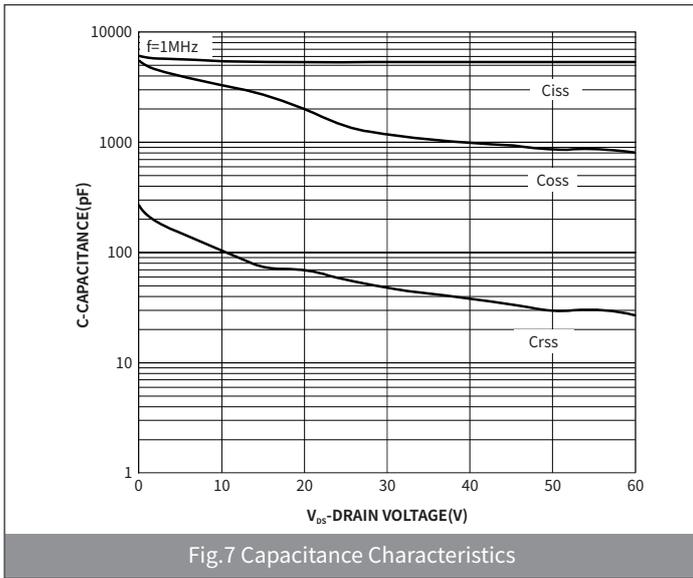
(2) EAS condition : Tj=25°C ,VDD=30V,VG=10V,L=0.5mH,IAS=31.5A,Rg=25 Ω .

(3) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

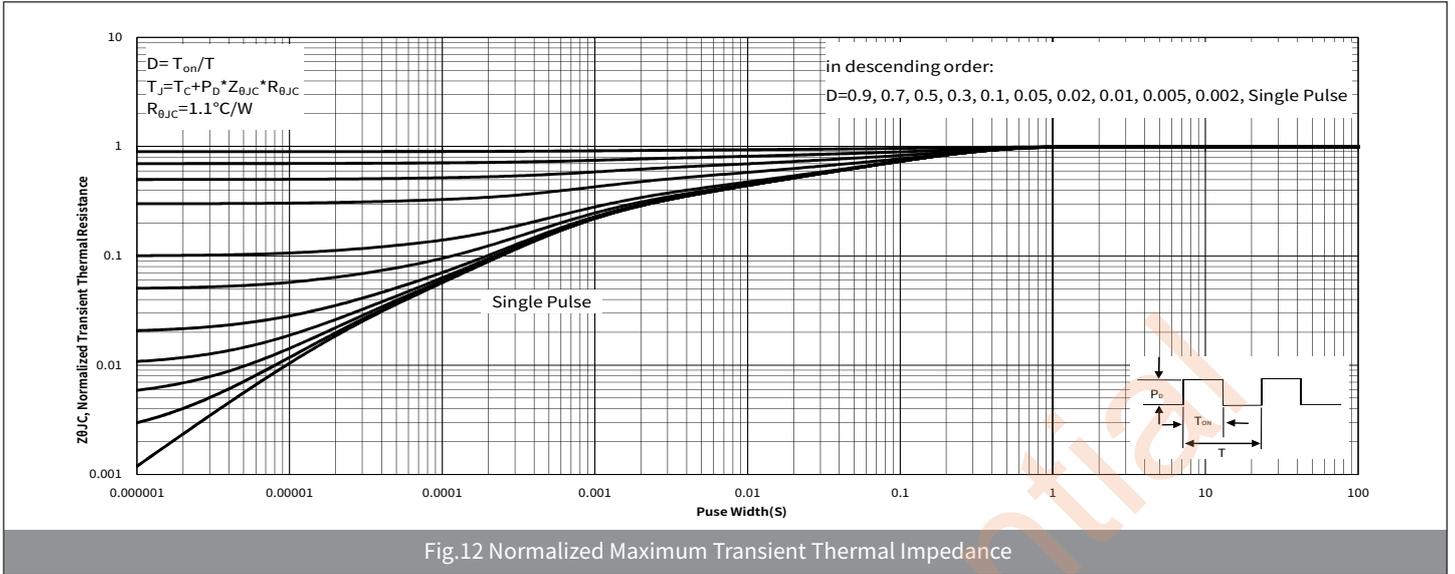
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



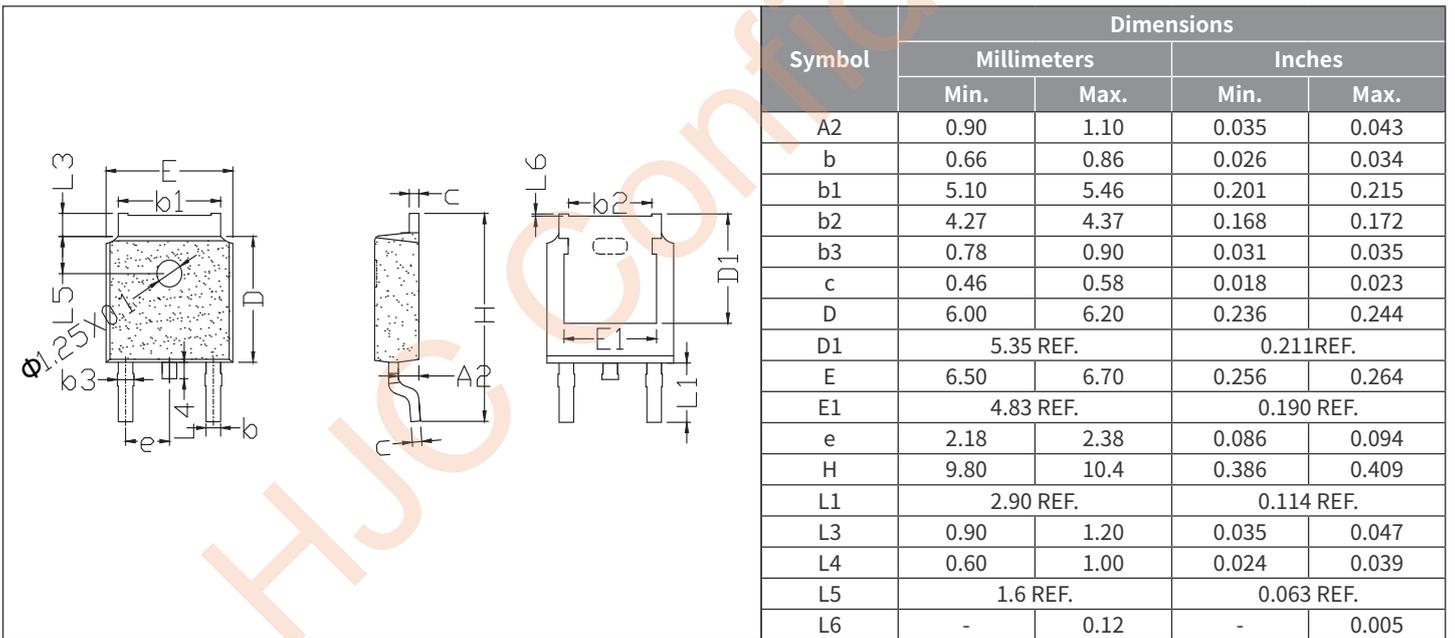
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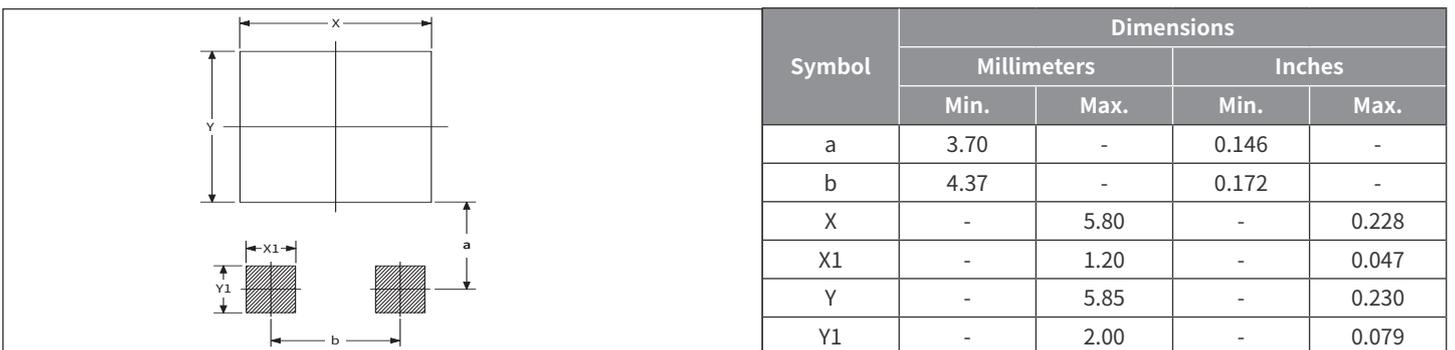
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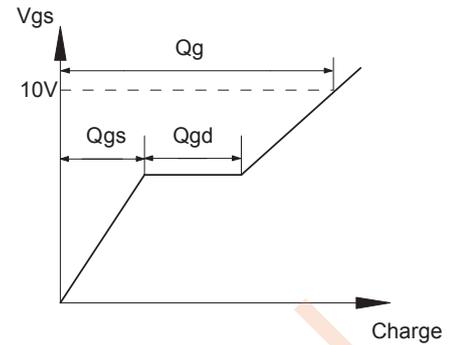
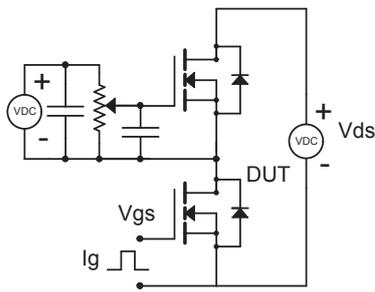
● Package Outline Dimensions (TO-252)



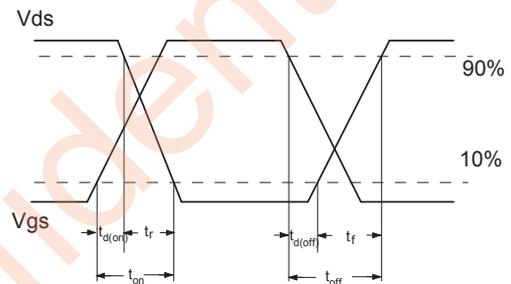
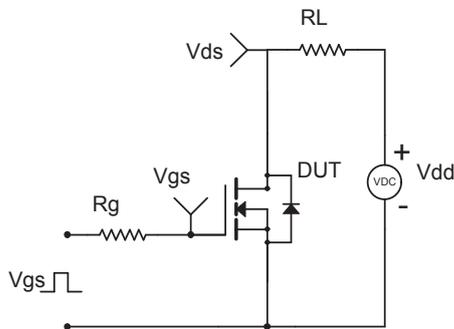
● Suggested Pad Layout



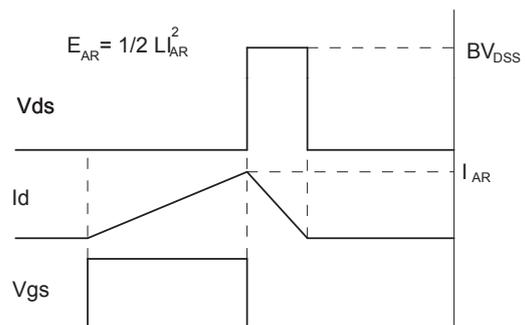
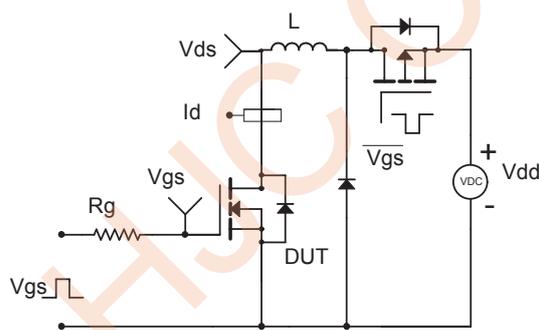
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

