

TO-252 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-100V$
- $I_D=-35A$
- $R_{DS(on)}@V_{GS}=-10V < 52m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 63m\Omega$
- Fast Switching
- Low Gate Charge and R_{dson}
- Advanced Split Gate Trench Technology

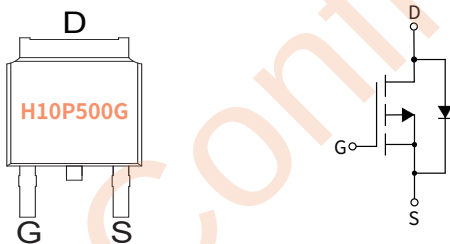
Applications

- Load switch
- PWM application
- Power management

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	25000	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	-35
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-140
Total Power Dissipation	P_D	W	104
Single pulse avalanche energy ⁽²⁾	EAS	mJ	110
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case ⁽³⁾	$R_{\theta JC}$	°C / W	1.2

Drain-source Voltage
-100V
Drain Current
-35 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 ⁽⁴⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	V	-1.4	-2	-2.6
Static Drain-Source On-Resistance ⁽⁴⁾	R _{DS(on)}	V _{GS} = -10V, I _D =-12A	mΩ	—	45	52
		V _{GS} = -4.5V, I _D =-8A		—	52	63

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, f=1MHz	pF	—	1288	—
Output Capacitance	C _{oss}			—	662	—
Reverse Transfer Capacitance	C _{rss}			—	60	—

● Switching Parameters

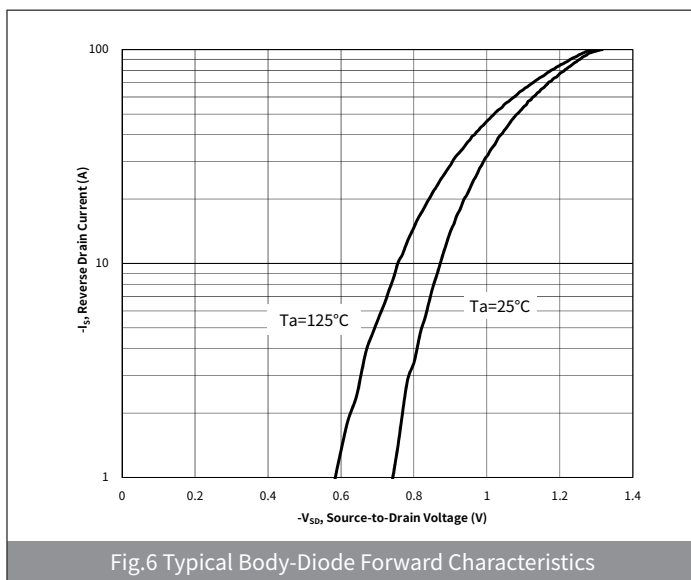
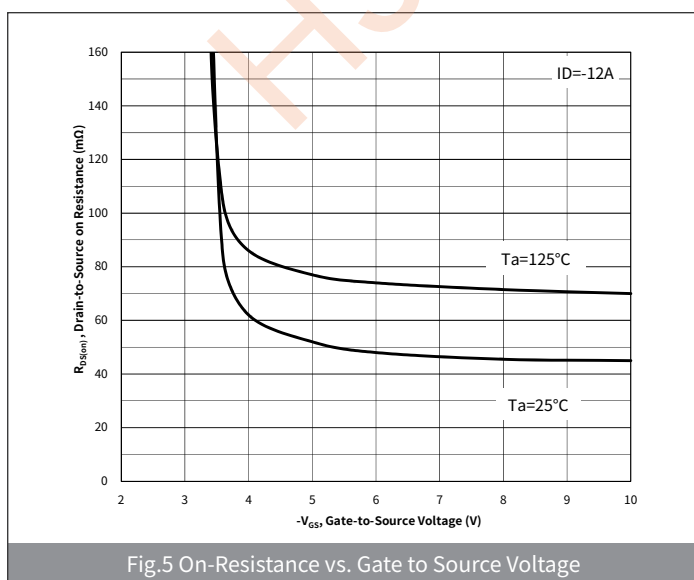
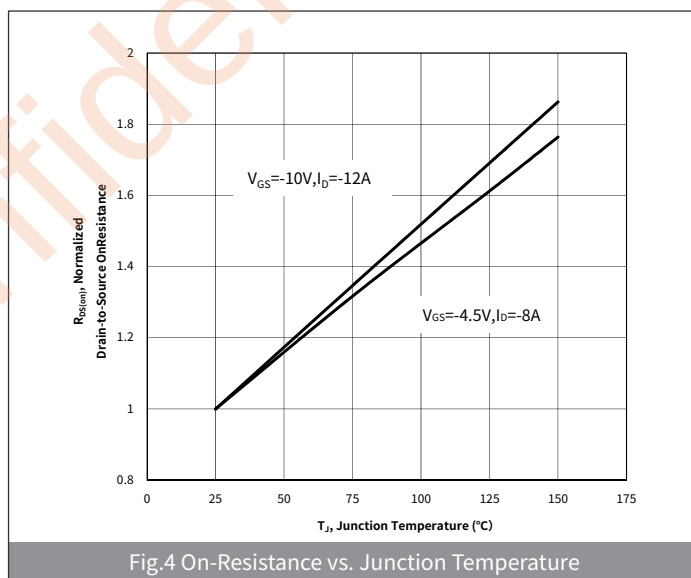
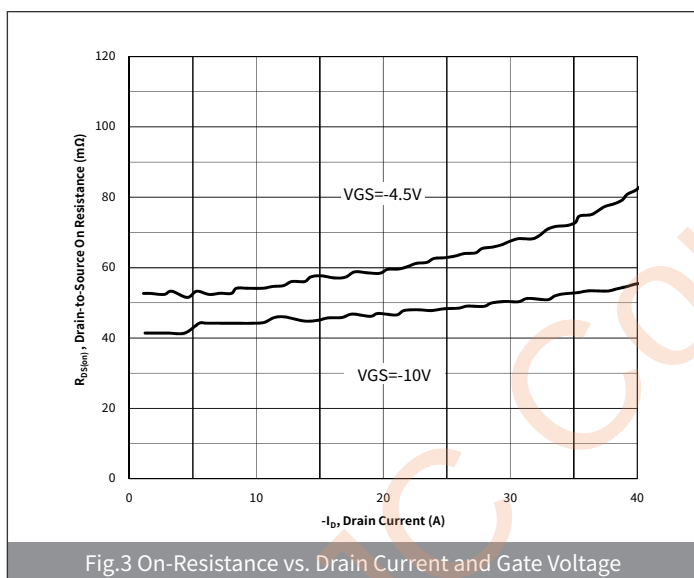
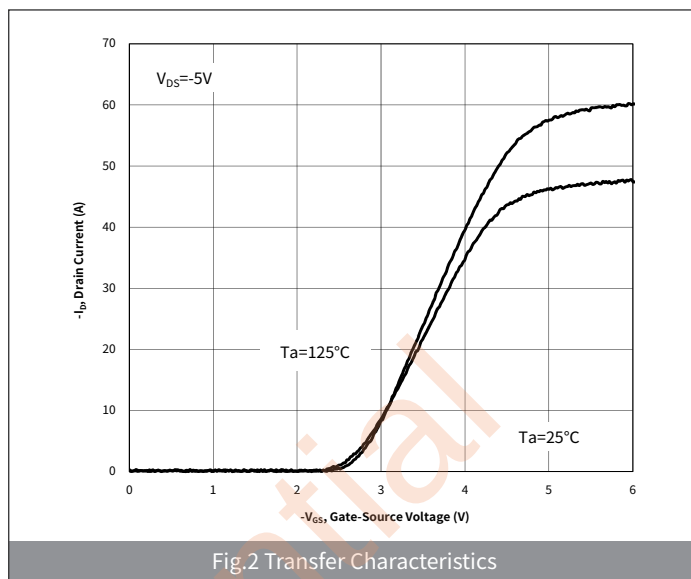
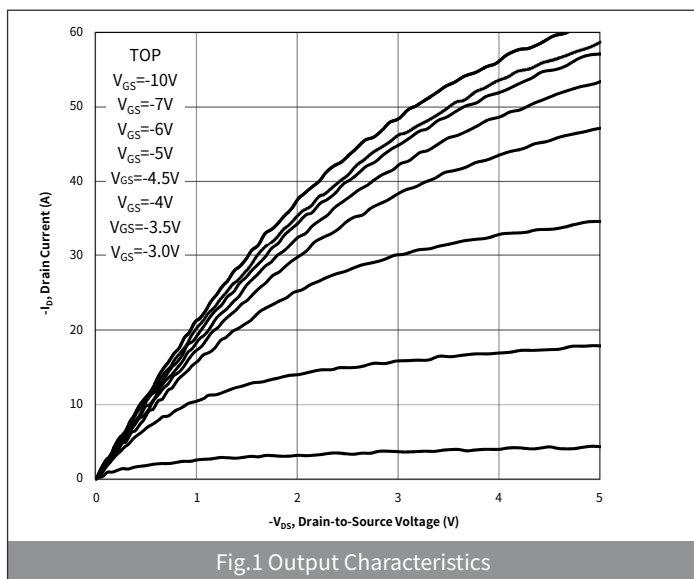
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-50V, I _D =-15A, R _{GEN} =6Ω	nS	—	12	—
Turn-on Rise Time	t _r		nS	—	55	—
Turn-off Delay Time	t _{D(off)}		nS	—	40	—
Turn-off fall Time	t _f		nS	—	75	—
Total Gate Charge	Q _g	V _{DS} =-50V, I _D =-15A V _{GS} =-10V	nC	—	19	—
Gate-Source Charge	Q _{gs}		nC	—	7	—
Gate-Drain Charge	Q _{gd}		nC	—	4	—

● Drian-Source Diode Characteristics

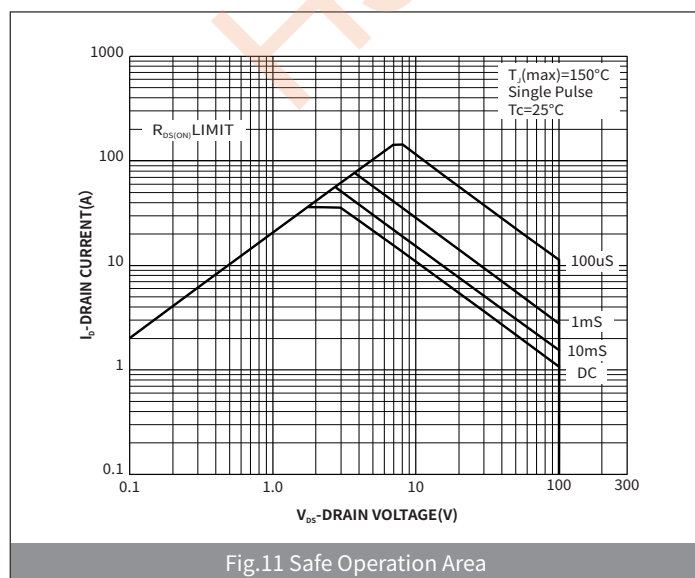
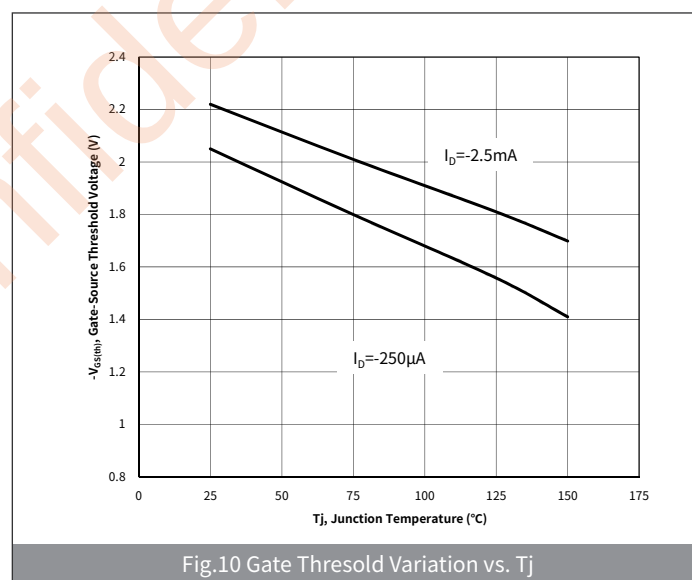
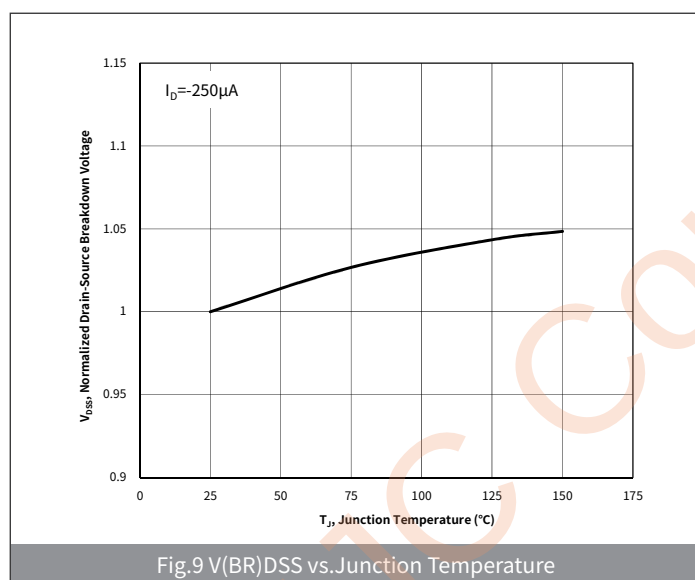
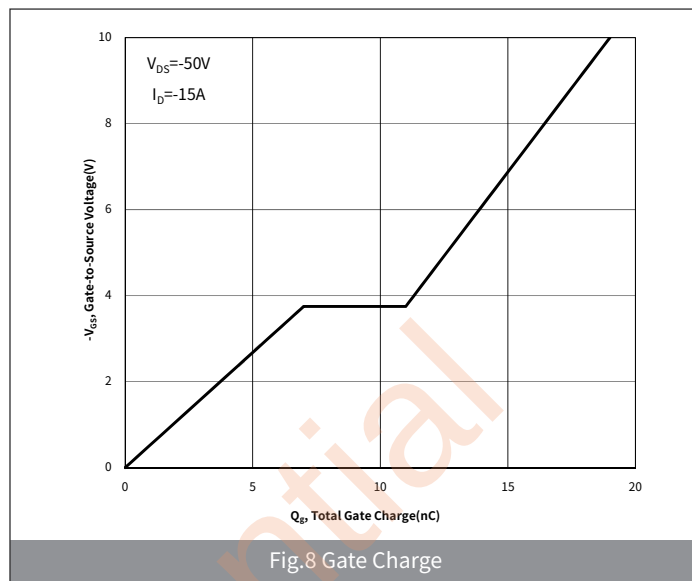
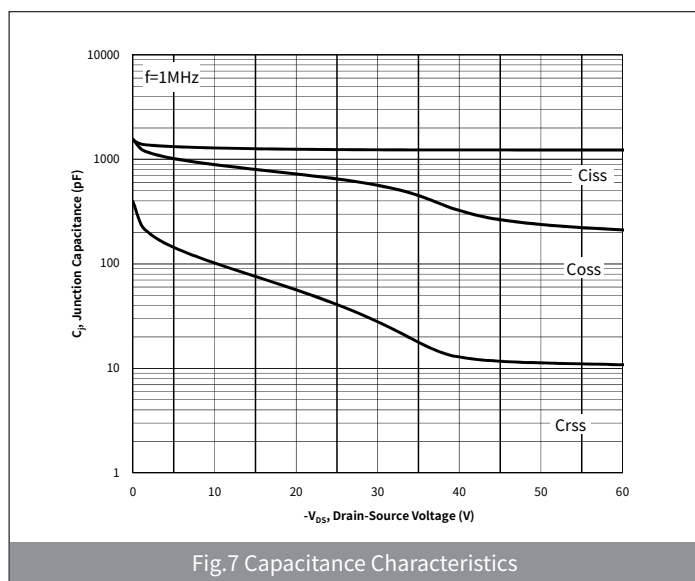
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage ⁽⁴⁾	V _{SD}	I _S =-35A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	-35
Reverse Recovery Time	t _{rr}	I _F =-15A, di/dt=-100A/μS	nS	—	50	—
Reverse Recovery Charge	Q _{rr}		nC	—	125	—

Note :
(1) Repetitive Rating: Pulse width limited by maximum junction temperature.
(2) EAS condition : Tj=25°C ,VDD=-50V,VG=-10V,L=0.5mH,IAS=-21A,Rg=25Ω.
(3) Surface mounted on 1inch² FR-4 board with 20Z copper.
(4) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

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



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



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

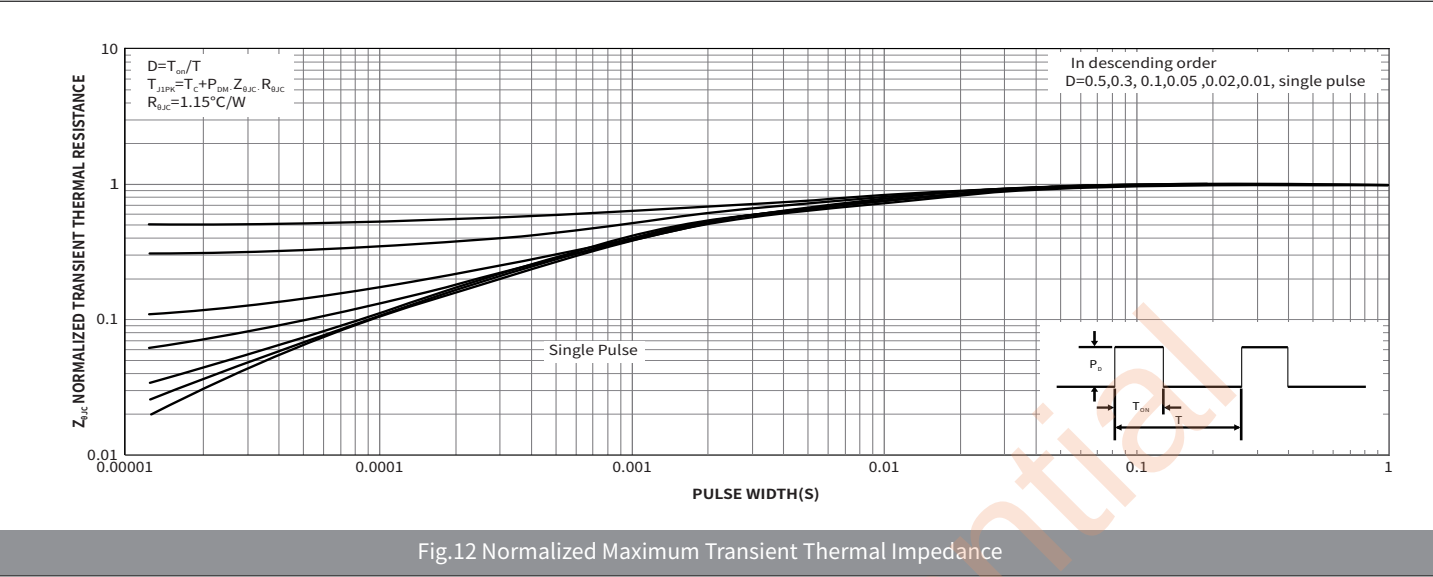
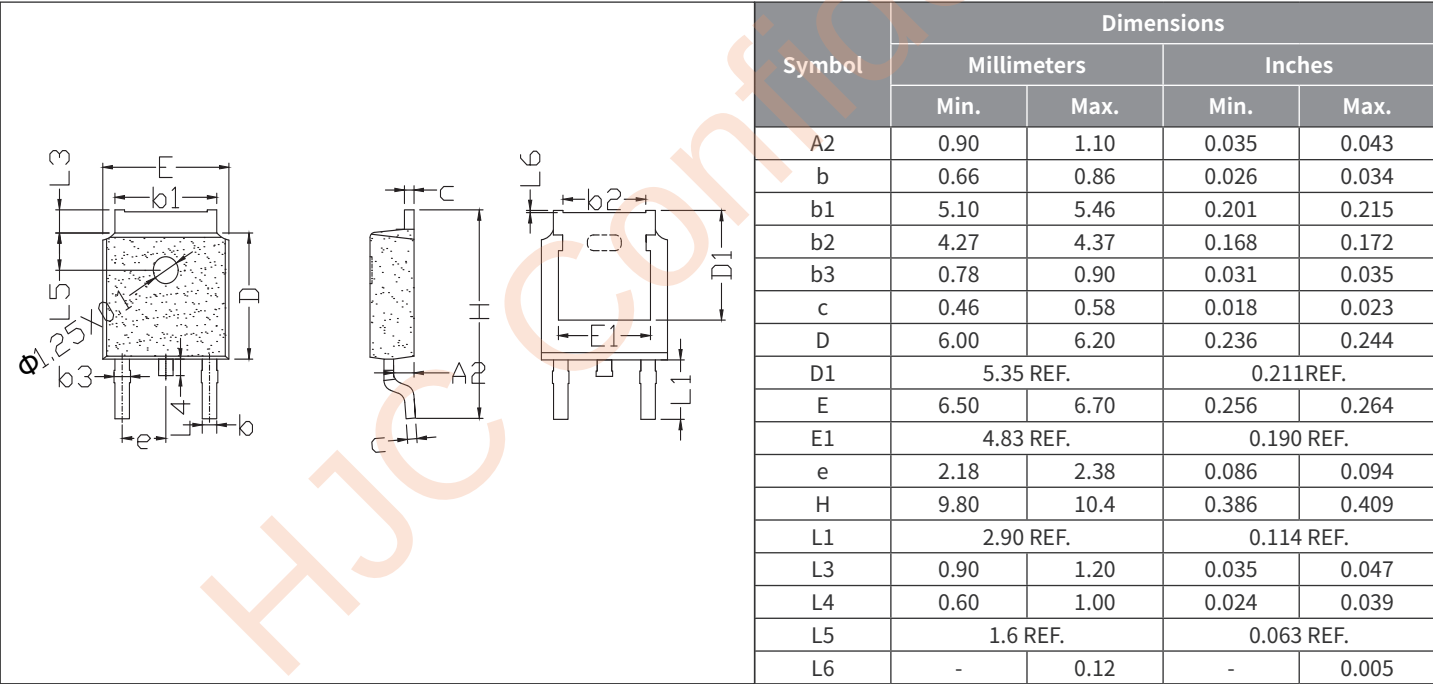
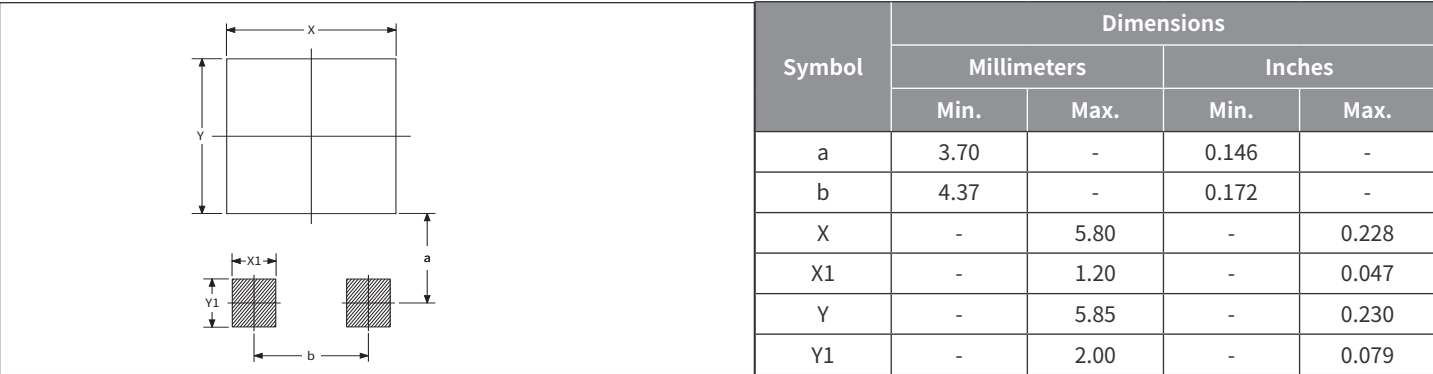


Fig.12 Normalized Maximum Transient Thermal Impedance

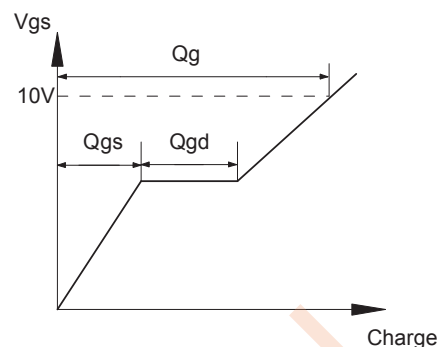
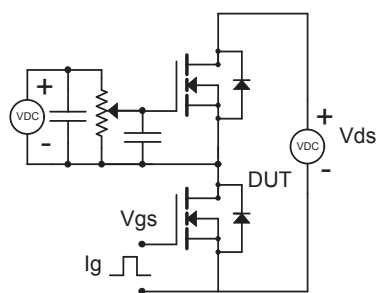
Package Outline Dimensions (TO-252)



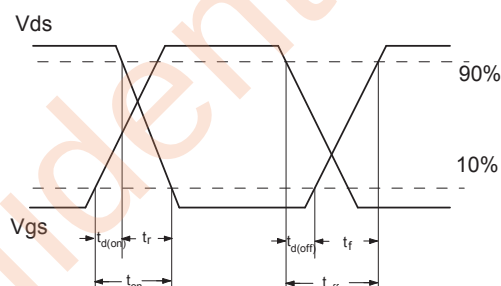
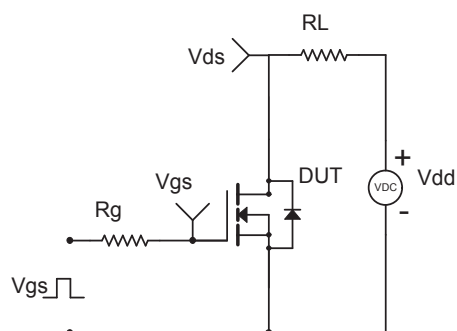
Suggested Pad Layout



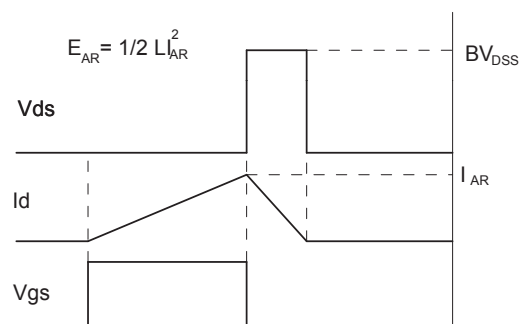
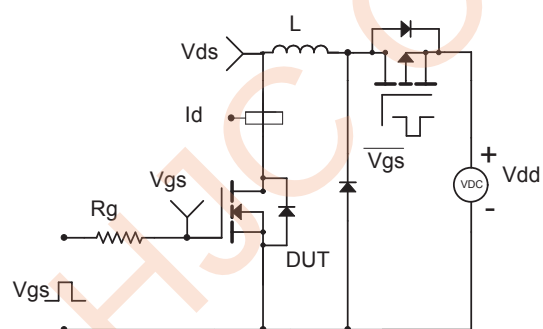
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

