

TO-220CB Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=100V$
- $I_D=120A$
- $R_{DS(on)}@V_{GS}=10V < 5m\Omega$
- Avalanche energy tested
- Fast Switching Speedze
- Improved dv/dt capability, high ruggedness

Drain-source Voltage
100V
Drain Current
120 Ampere

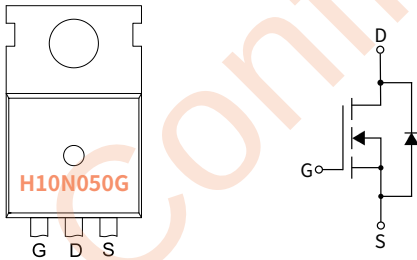
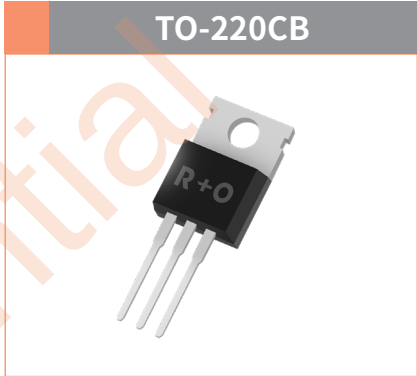
Applications

- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Mechanical Data

- Case: TO-220CB
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	UNIT WEIGHT(g)	TUBE(pcs)	BOX(pcs)
TO-220CB	2.04	50	1000

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	120
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	480
Total Power Dissipation	P_D	W	208
Single pulse avalanche energy ⁽²⁾	EAS	mJ	204.8
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	0.60

● 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	2.0	3.0	4.0
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} = 10V, I _D =50A	mΩ	—	4.3	5

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHZ	pF	—	5368	—
Output Capacitance	C _{oss}			—	730	—
Reverse Transfer Capacitance	C _{rss}			—	50	—

● Switching Parameters

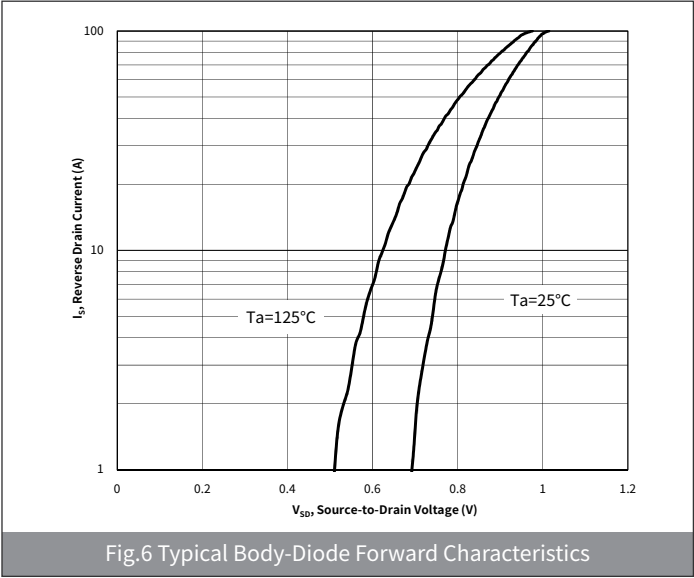
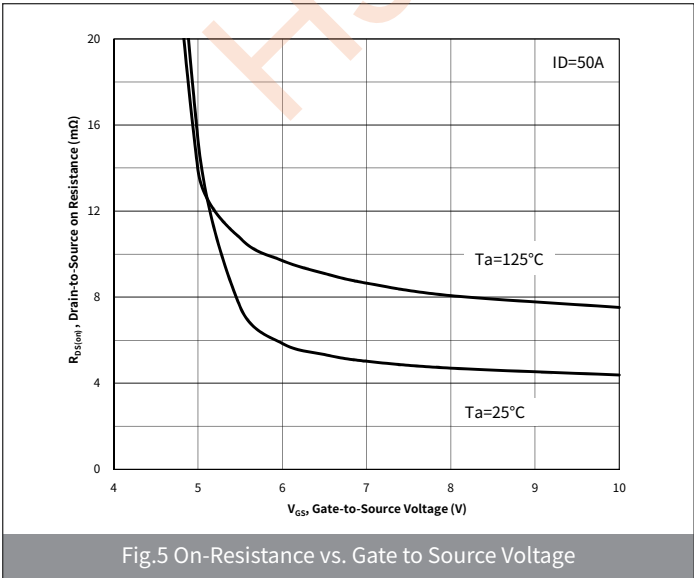
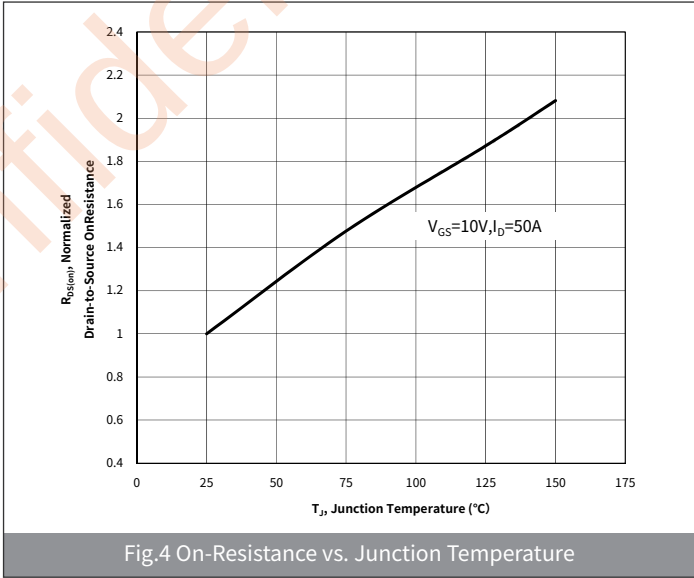
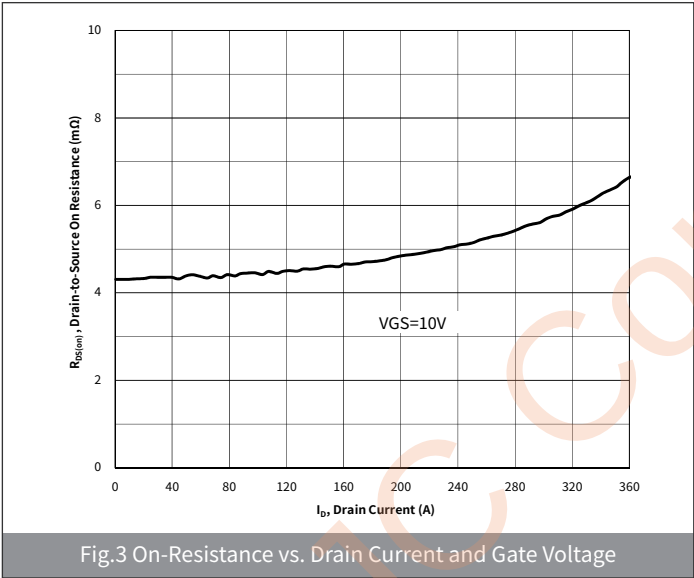
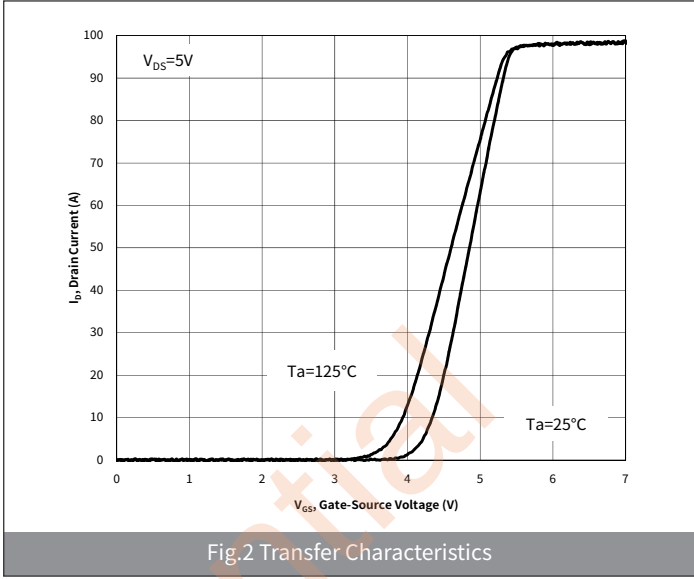
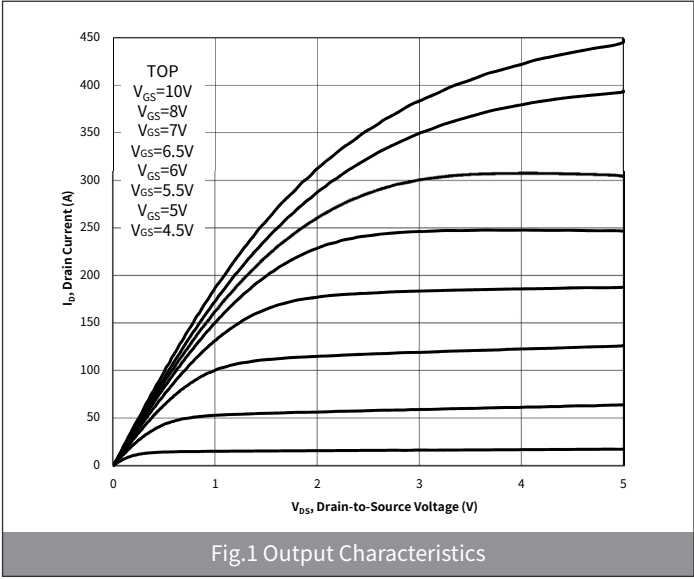
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =20A ,R _{GEN} =3.9Ω	nS	—	21	—
Turn-on Rise Time	t _r		nS	—	67	—
Turn-off Delay Time	t _{D(off)}		nS	—	97	—
Turn-off fall Time	t _f		nS	—	29	—
Total Gate Charge	Q _g	V _{DS} =80V, I _D =50A V _{GS} =10V	nC	—	86.9	—
Gate-Source Charge	Q _{gs}		nC	—	19	—
Gate-Drain Charge	Q _{gd}		nC	—	23	—

● Drian-Source Diode Characteristics

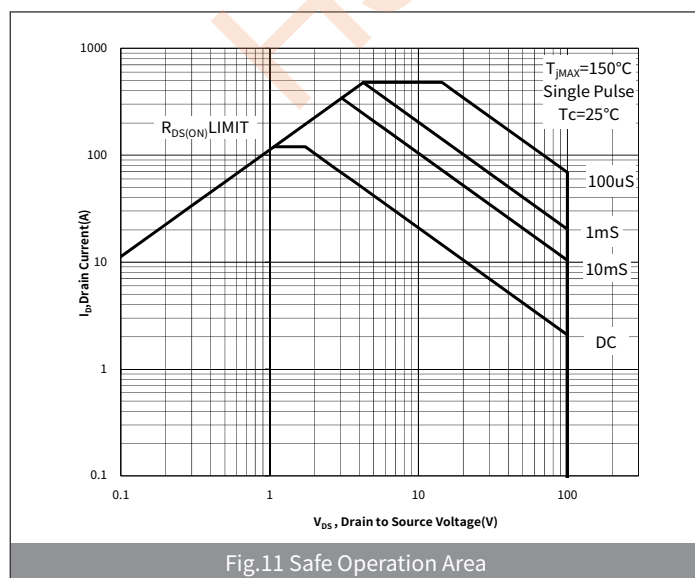
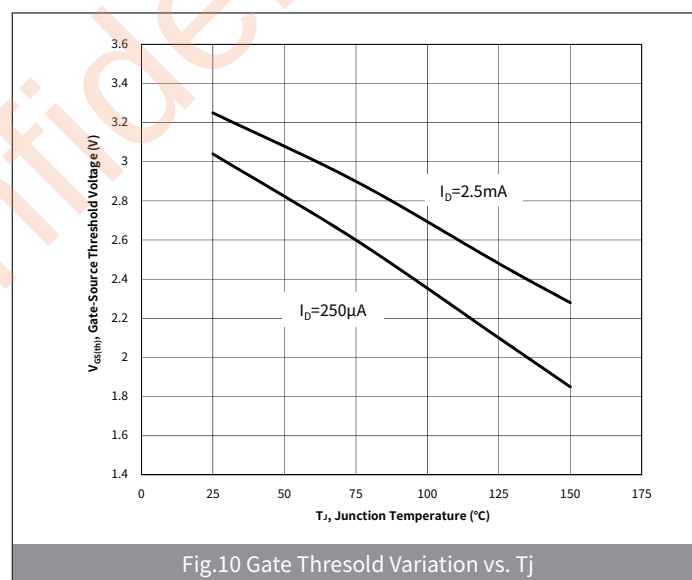
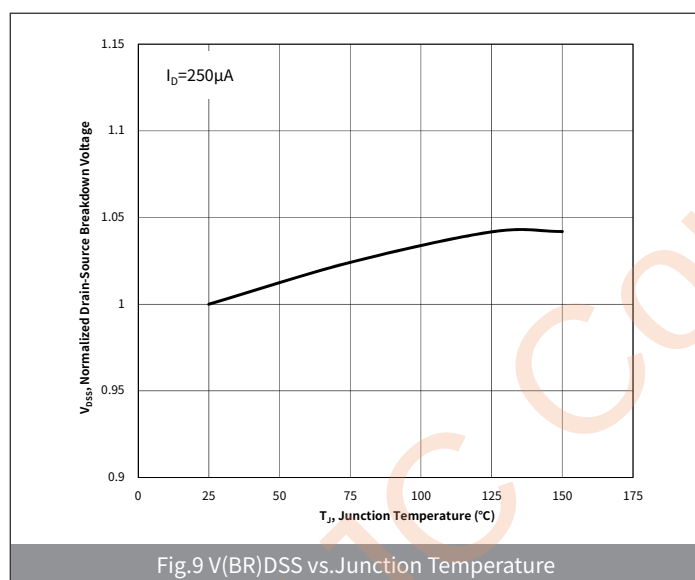
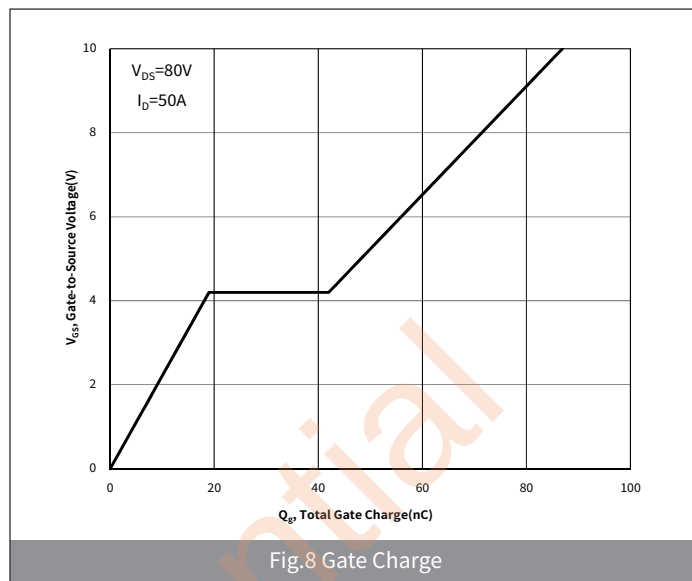
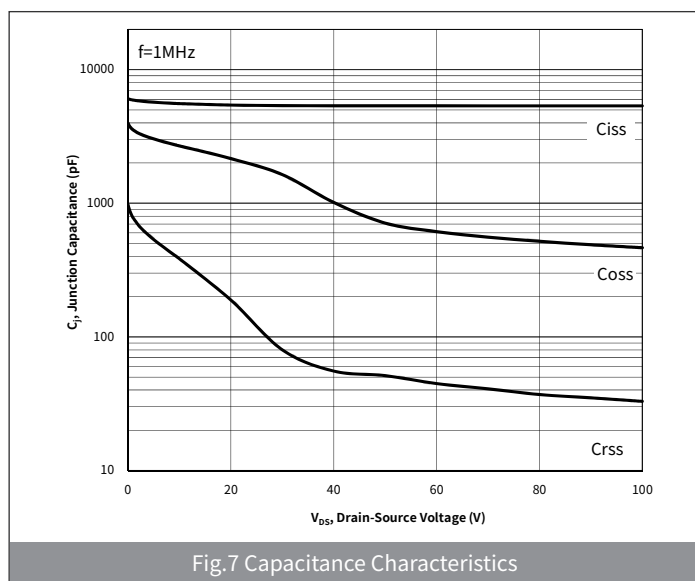
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =120A, V _{GS} =0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	120
Reverse Recovery Time	T _{rr}	I _S =120A, di/dt=100A/us, TJ=25°C	nS	—	45	—
Reverse Recovery Charge	Q _{rr}		nC	—	70	—

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=50V,VG=10V,L=0.1mH,IAS=64A,Rg=25Ω.
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

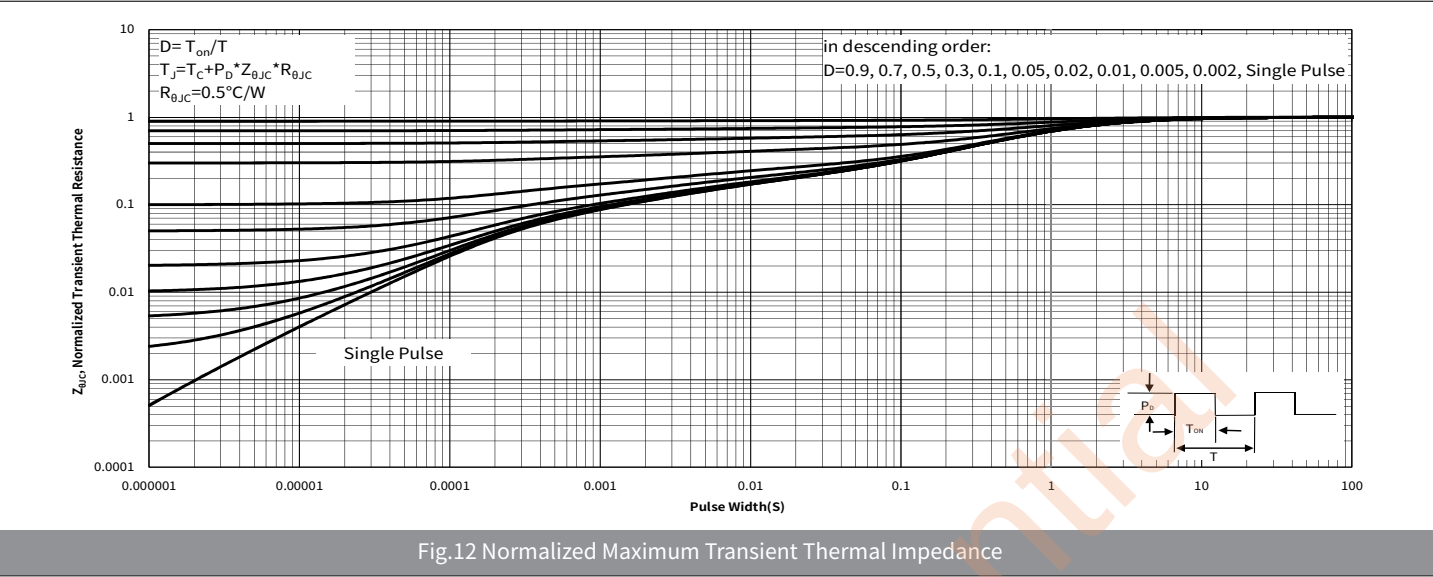
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



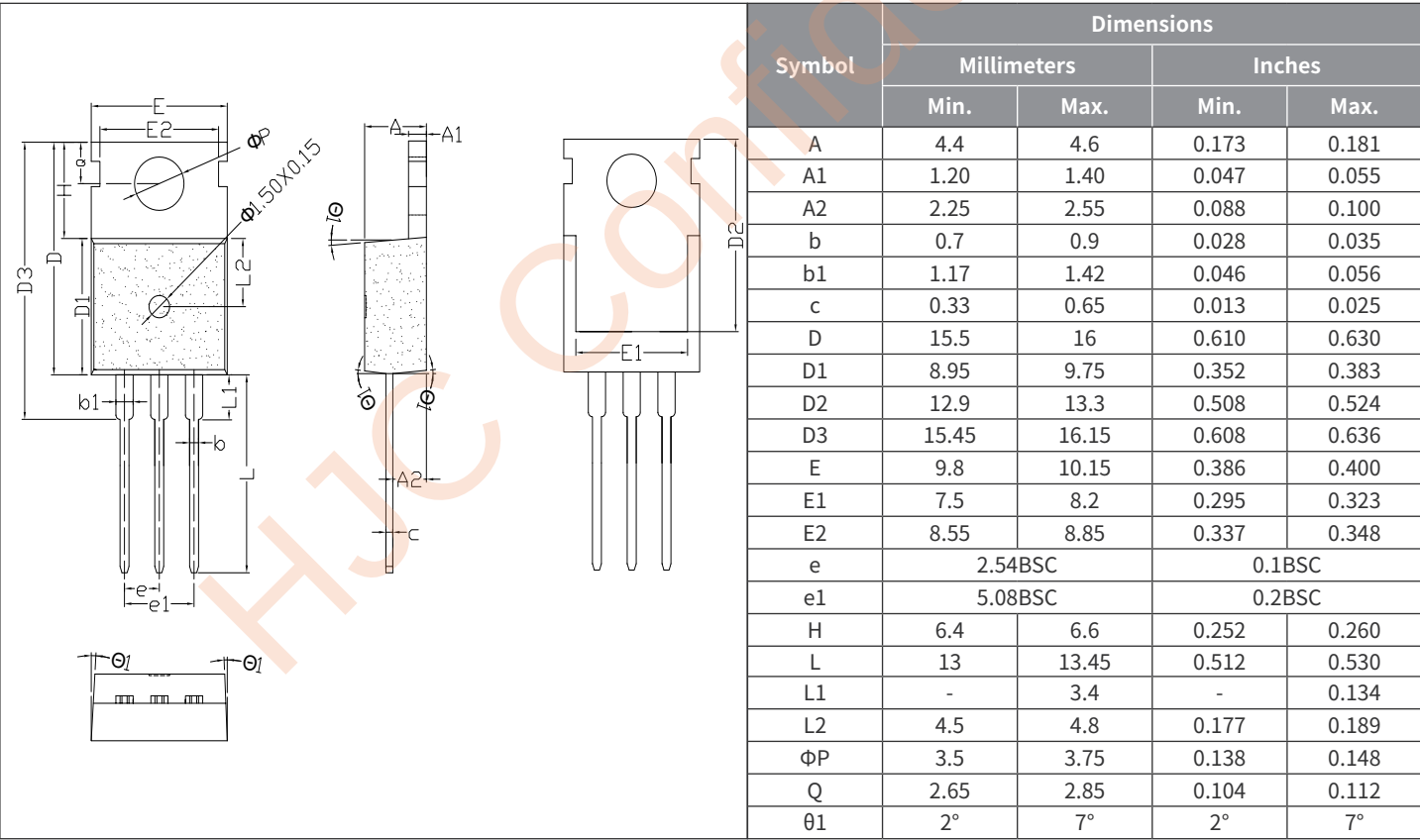
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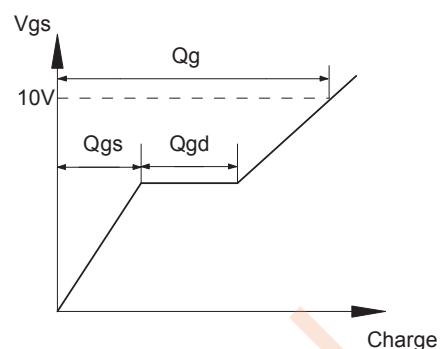
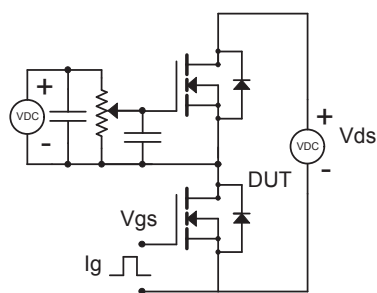
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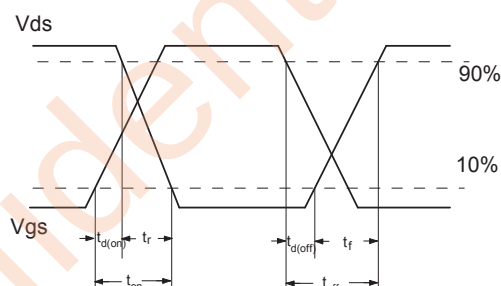
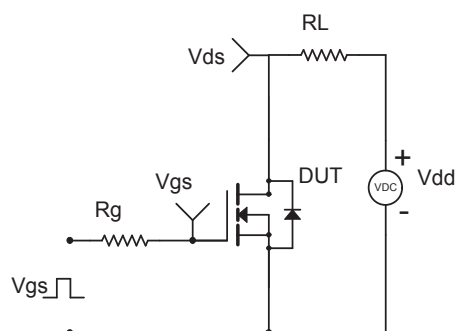
● Package Outline Dimensions (TO-220CB)



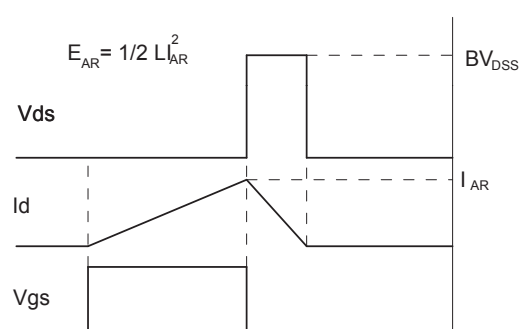
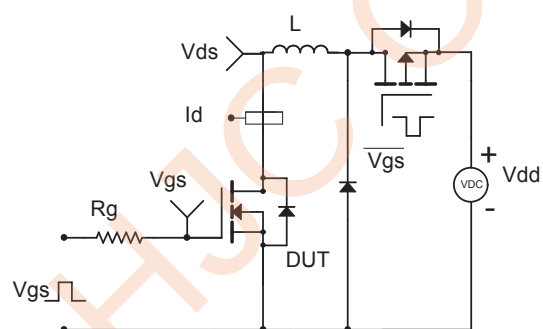
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

