

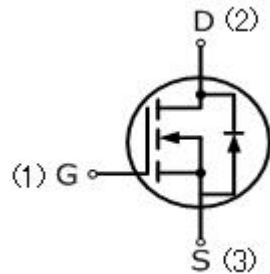


MIC-IRFB4110

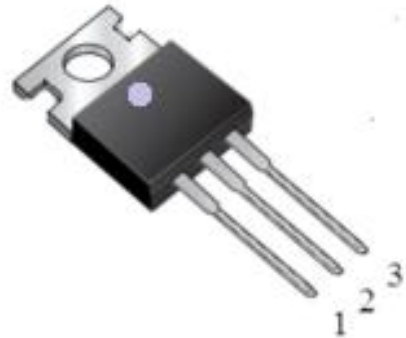
120 Amps, 100 Volts N-CHANNEL MOSFET

FEATURE

- 120A, 100V, $R_{DS(ON)MAX}=4.5m\Omega$, $V_{GS}=10V/20A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



TO-220CB



Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	MIC-IRFB4110	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	
Continuous Drain Current	I_D	120	A
Pulsed Drain Current (Note 1)	I_{DM}	480	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	256	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	260	$^\circ C$

Thermal Characteristics

Parameter	Symbol	MAX	Units
Thermal resistance, Channel to Case	$R_{th(ch-c)}$	0.55	$^\circ C/W$
Maximum Power Dissipation	P_D	227	W



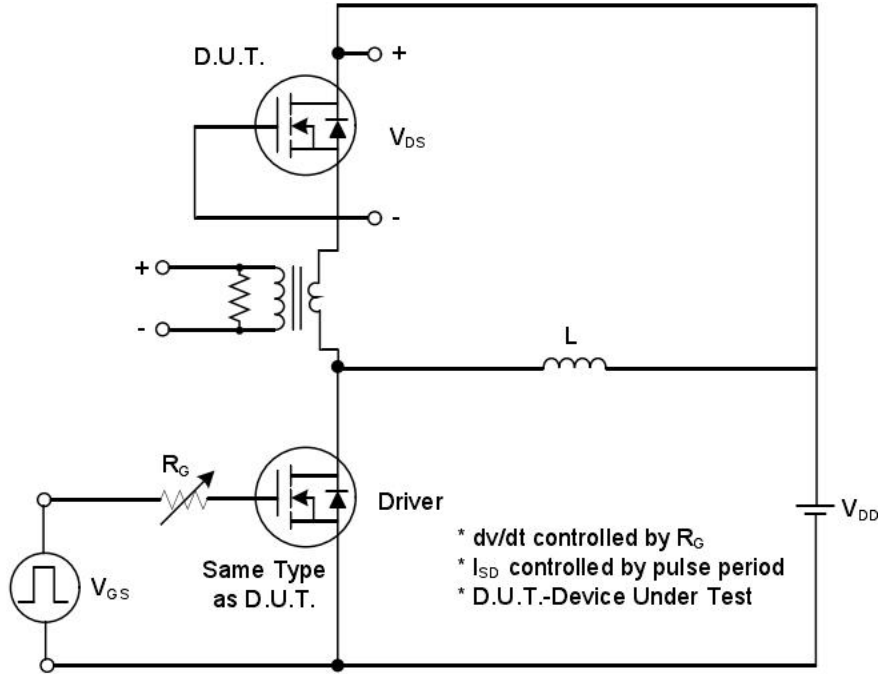
Electrical Characteristics (T _c =25°C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100	—	—	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	—	—	1	μA
Gate-Body Leakage Current, Forward	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	—	—	±100	nA
On Characteristics						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	—	4	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	—	3.6	4.5	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1.0MHZ	—	6772	—	pF
Output Capacitance	C _{oss}		—	952	—	pF
Reverse Transfer Capacitance	C _{rss}		—	33	—	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, I _D =10A, R _G =3Ω V _{GS} =10V (Note3,4)	—	28	—	ns
Turn-On Rise Time	t _r		—	32	—	ns
Turn-Off Delay Time	t _{d(off)}		—	48	—	ns
Turn-Off Fall Time	t _f		—	27	—	ns
Total Gate Charge	Q _g	V _{DS} =50V, I _D =20A, V _{GS} =10V, (Note3,4)	—	90	—	nC
Gate-Source Charge	Q _{gs}		—	28	—	nC
Gate-Drain Charge	Q _{gd}		—	19	—	nC
Drain-Source Body Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	—	—	1.2	V
Reverse Recovery Time	t _{rr}	I _F =50A, dI _F /dt=100A/us	—	80	—	ns
Reverse Recovery Charge	Q _{rr}		—	190	—	nC

Notes

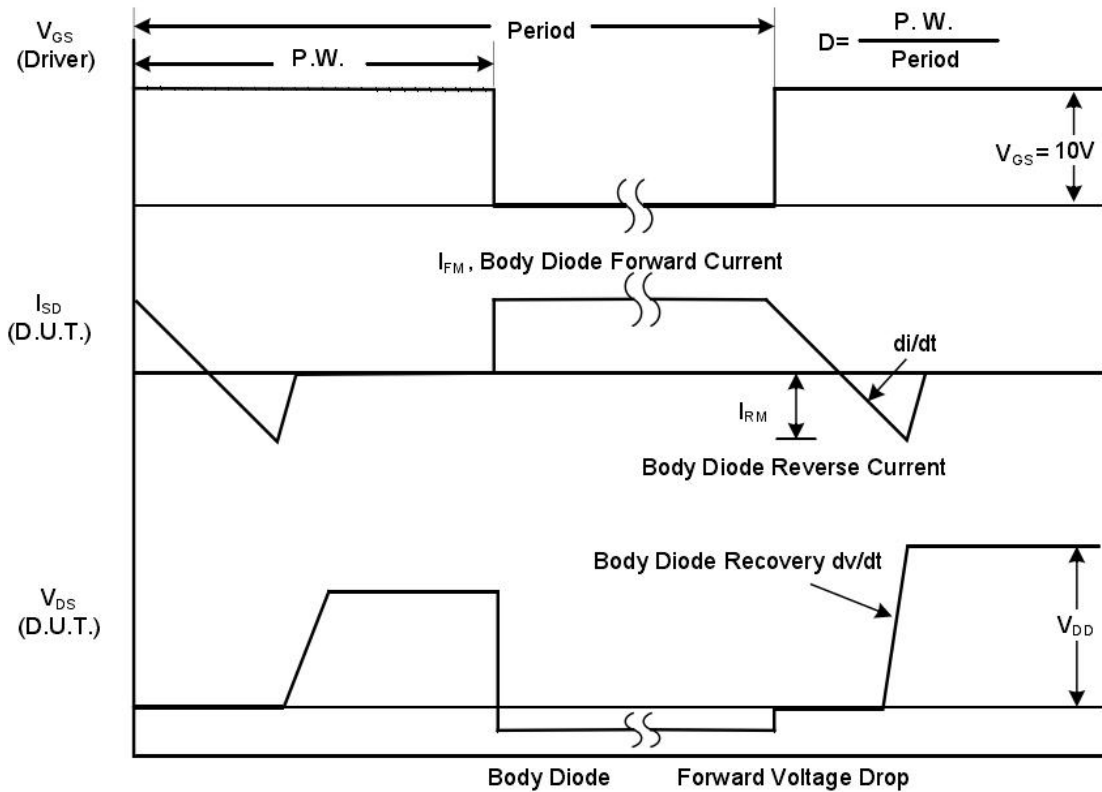
1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. L=0.5mH, starting T_j=25°C.
3. dI/dt=200A/us, starting T_j=25°C, Pulse width≤300us; duty cycle≤2%.
4. Repetitive rating; pulse width limited by maximum junction temperature.



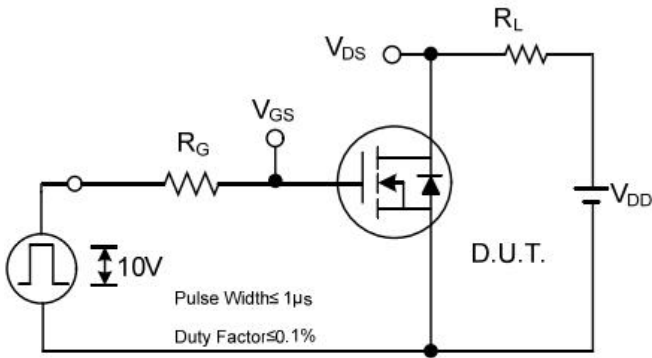
RATING AND CHARACTERISTIC CURVES



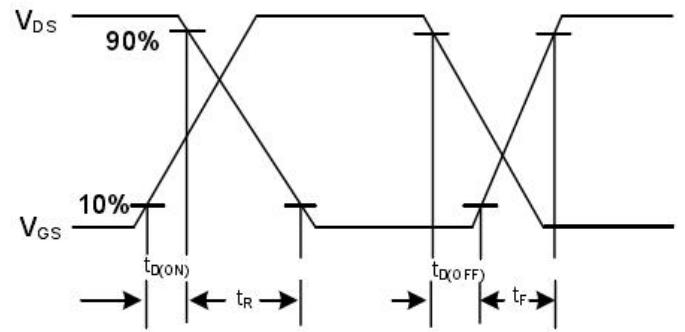
Peak Diode Recovery dv/dt Test Circuit



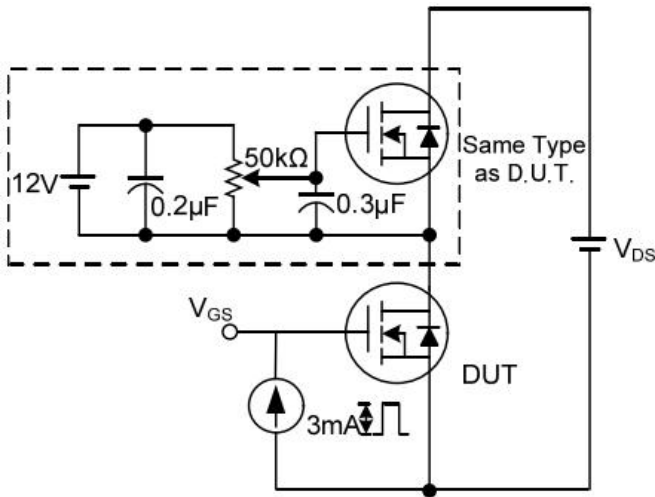
Peak Diode Recovery dv/dt Waveforms



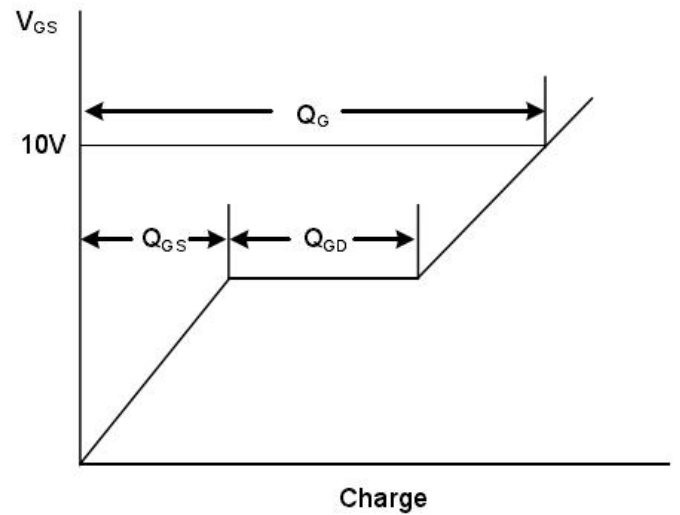
Switching Test Circuit



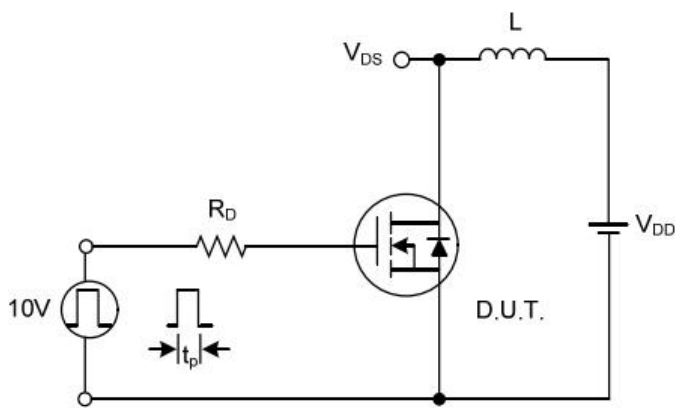
Switching Waveforms



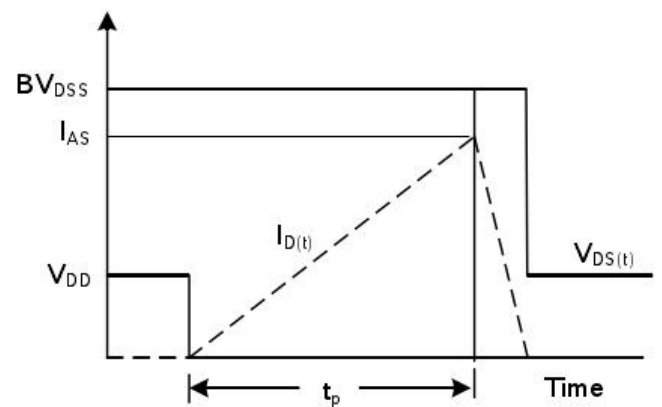
Gate Charge Test Circuit



Gate Charge Waveform



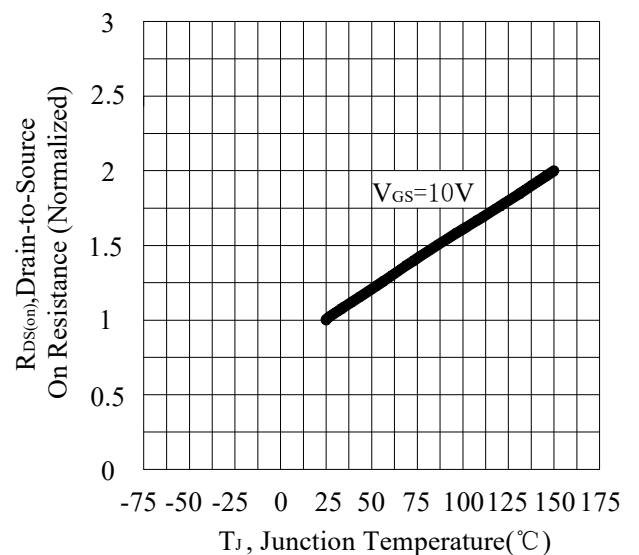
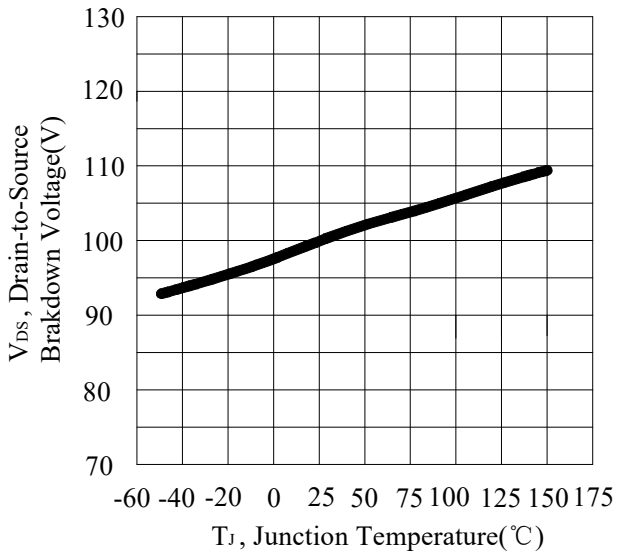
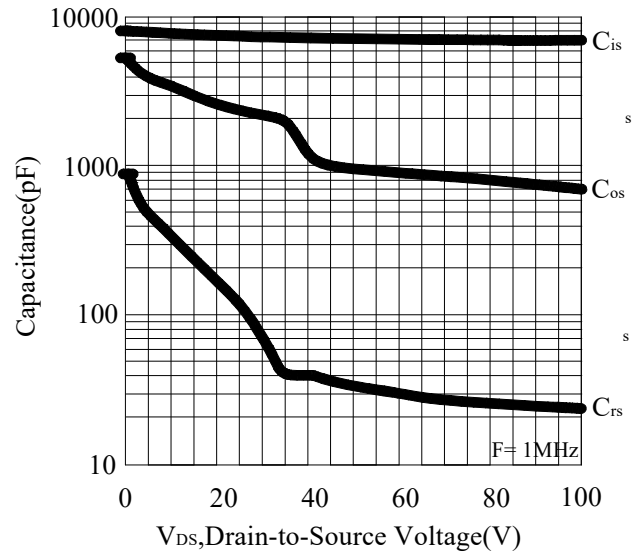
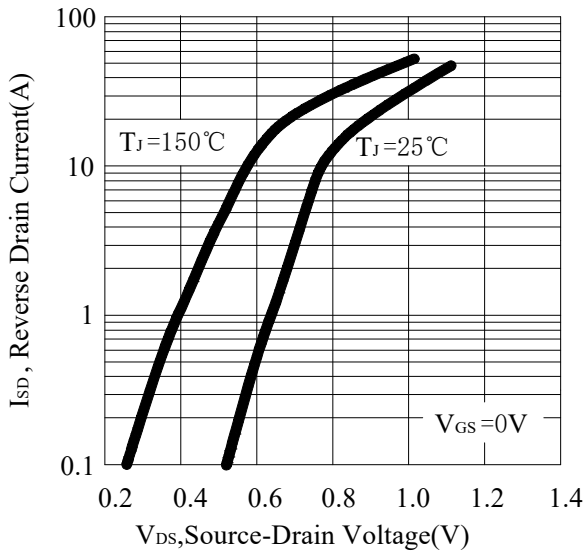
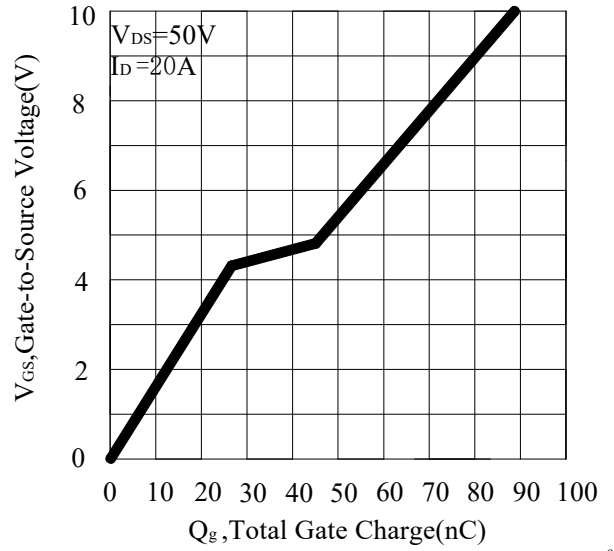
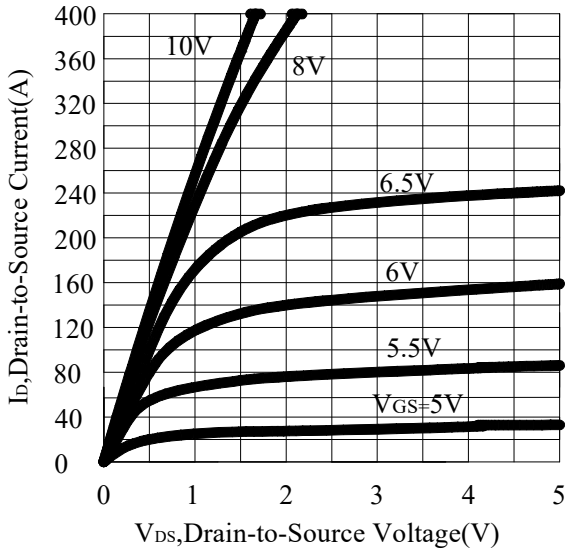
Unclamped Inductive Switching Test Circuit

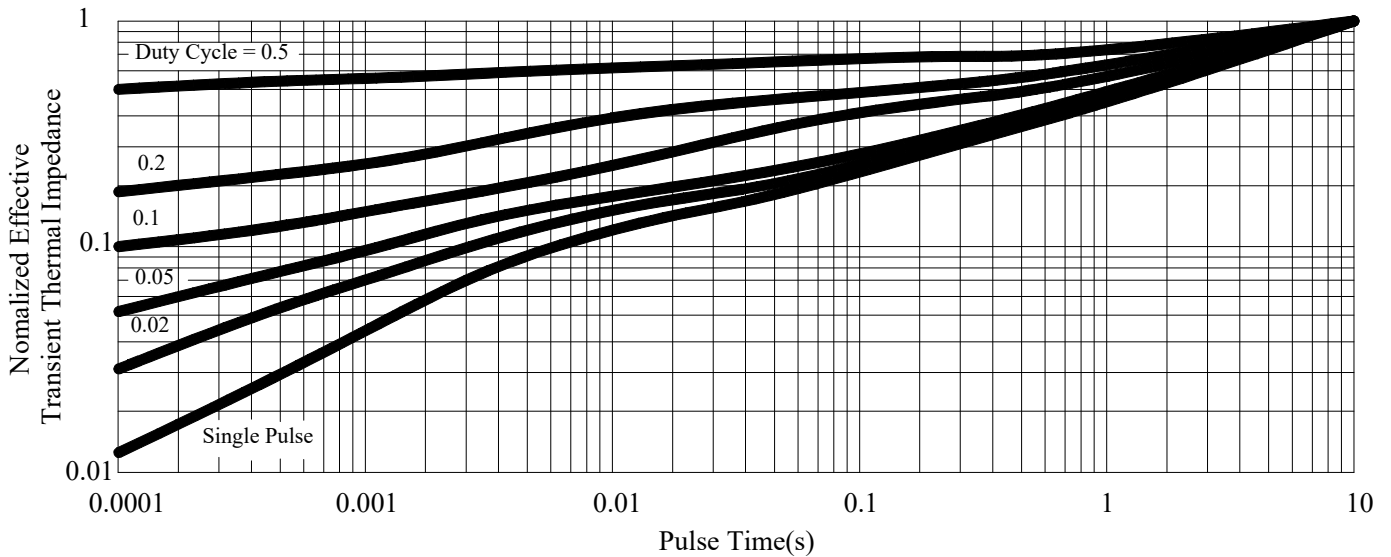
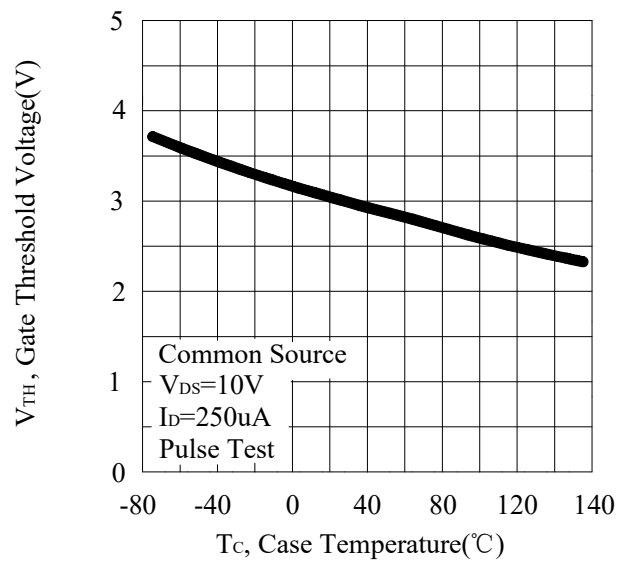
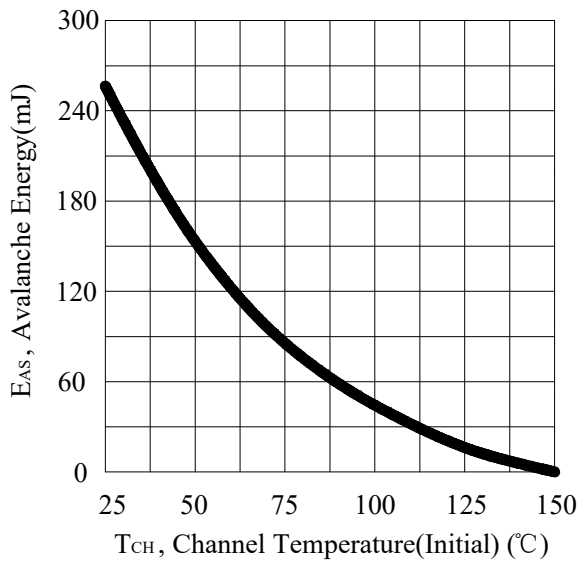
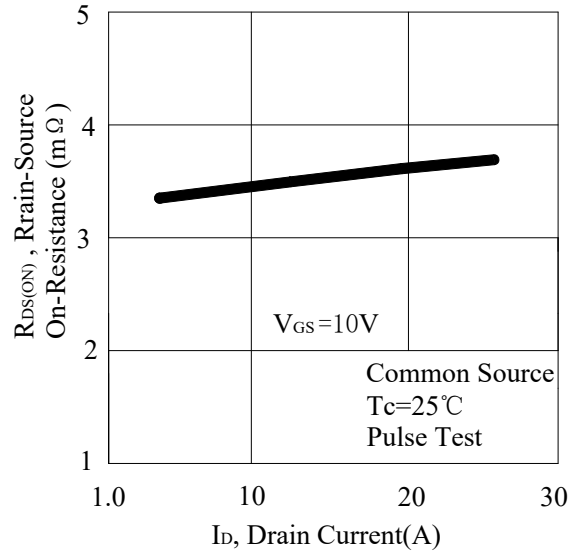
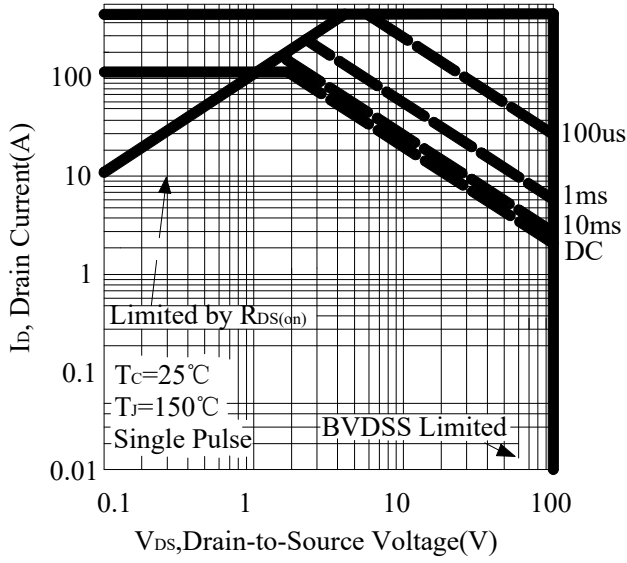


Unclamped Inductive Switching Waveforms



RATING AND CHARACTERISTIC CURVES

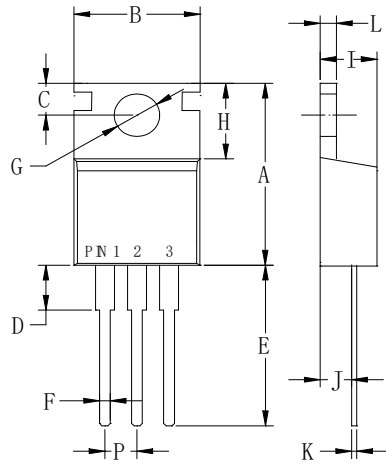






PACKAGE OUTLINE DIMENSIONS

TO-220CB



TO-220CB		
Dim	Min	Max
A	.590 (15.00)	.630 (16.00)
B	—	.412 (10.5)
C	.103 (2.62)	.113 (2.87)
D	.118 (3.0)	.142 (3.6)
E	.510 (13.0)	.560 (14.3)
F	.027 (0.68)	.037 (0.94)
G	.148 (3.50)	.154 (3.70)
H	.230 (5.84)	.270 (6.86)
I	.175 (4.44)	.185 (4.86)
J	.92 (2.34)	.102 (2.59)
K	.015 (0.40)	.026 (0.65)
L	.045 (1.2)	.055 (1.45)
P	.095 (2.41)	.105 (2.67)