

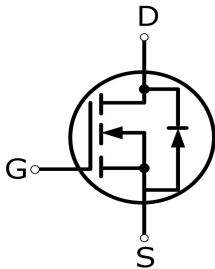


MIC-IRLB8743

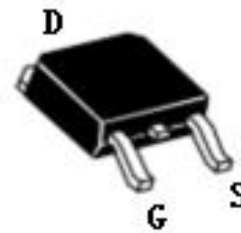
150 Amps, 30 Volts N-CHANNEL MOSFET

Features

- 150A, 30V, $R_{DS(ON)MAX}=4.0m\ \Omega @V_{GS}=10V/20A$
 $R_{DS(ON)MAX}=5.0m\ \Omega @V_{GS}=4.5V/10A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



TO-252



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

Parameter	Symbol	MIC-IRLB8743	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	
Continuous Drain Current	I_D	150	A
Pulsed Drain Current (Note 1)	I_{DM}	600	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	150	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	TO-252	Units
Thermal resistance, Junction to Case	$R_{th(j-c)}$	1.05	$^\circ C/W$
Maximum Power Dissipation	P_D	120	W



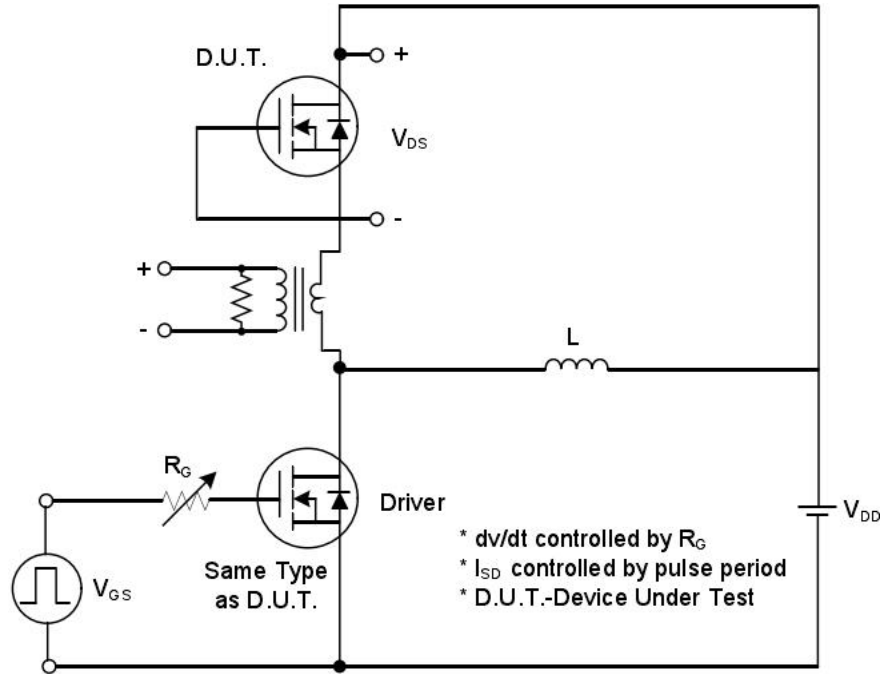
Electrical Characteristics (T _c =25°C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	—	—	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	—	—	1	uA
Gate-Body 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 =250uA	0.5	—	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	—	3.1	4.0	m Ω
		V _{GS} =4.5V, I _D =10A		4.0	5.0	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHZ	—	5075	—	pF
Output Capacitance	C _{oss}		—	1140	—	pF
Reverse Transfer Capacitance	C _{rss}		—	565	—	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, I _D =2A R _G =2.5 Ω, R _L =15 Ω	—	26	—	ns
Turn-On Rise Time	t _r		—	29	—	ns
Turn-Off Delay Time	t _{d(off)}	V _{GS} =10V (Note3,4)	—	95	—	ns
Turn-Off Fall Time	t _f		—	38	—	ns
Total Gate Charge	Q _g	V _{DS} =15V, I _D =30A, V _{GS} =10V, (Note3,4)	—	38.4	—	nC
Gate-Source Charge	Q _{gs}		—	9.03	—	nC
Gate-Drain Charge	Q _{gd}		—	13.2	—	nC
Drain-Source Body Diode Characteristics and Maximum Ratings						
Continuous Diode Forward Current	I _S		—	—	150	A
Pulsed Diode Forward Current	I _{SM}		—	—	600	A
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V	—	—	1.2	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =40A, dI _F /dt=100A/us, (Note3)	—	42	—	ns
Reverse Recovery Charge	Q _{rr}		—	37	—	nC

Notes

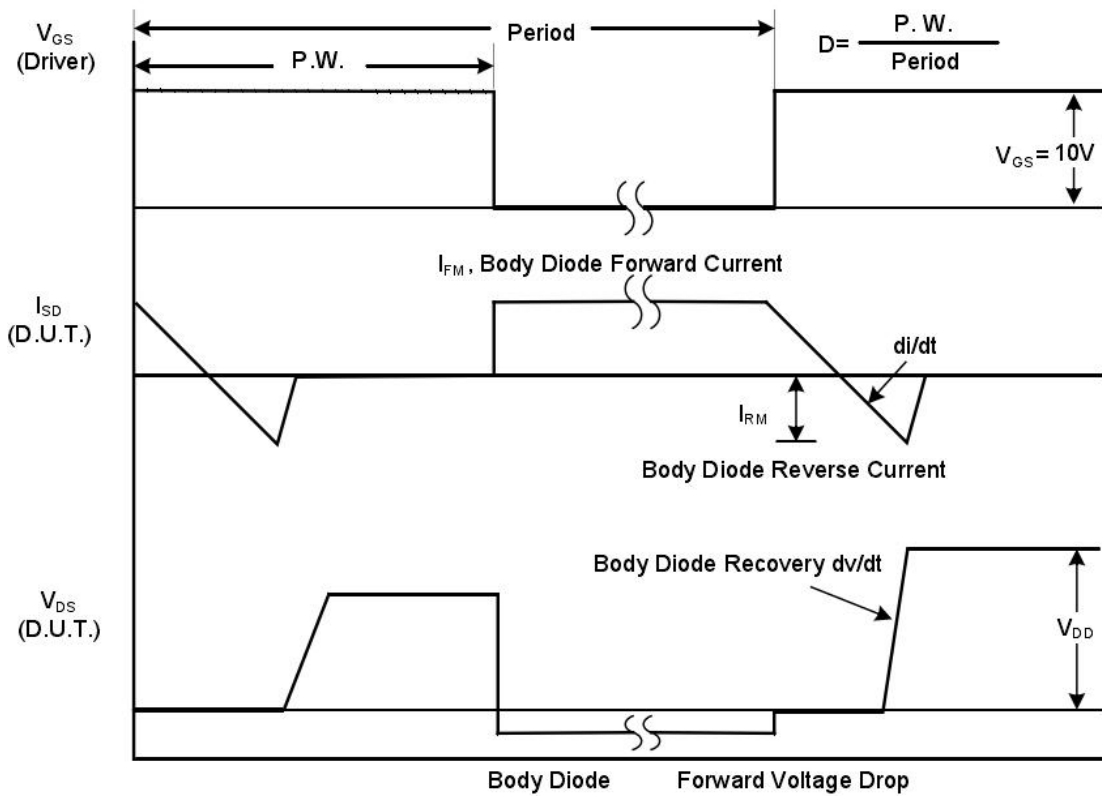
1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. L=3.5mH, R_g=25 Ω, I_{AS}=30A, starting T_J=25°C.
3. dI/dt=200A/us, starting T_J=25°C. Pulse width ≤ 300us; duty cycle ≤ 2%.
4. Repetitive rating; pulse width limited by maximum junction temperature.



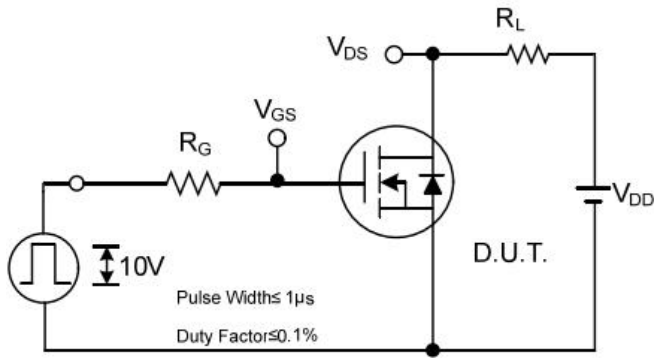
TEST CIRCUIT AND WAVEFORM



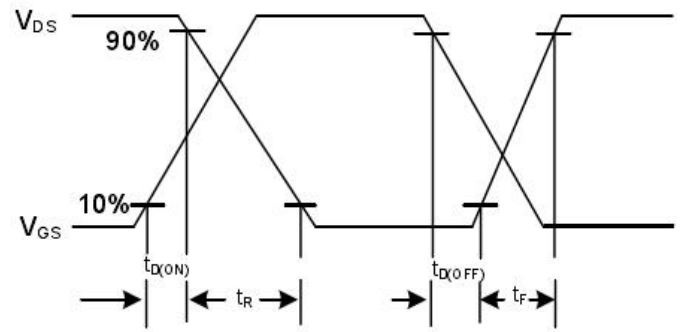
Peak Diode Recovery dv/dt Test Circuit



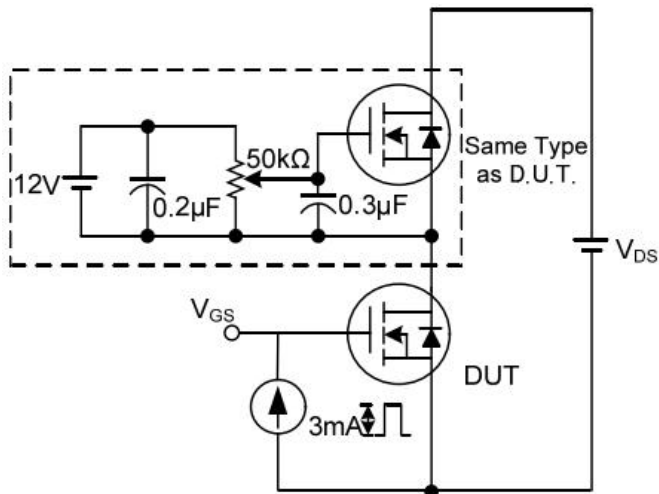
Peak Diode Recovery dv/dt Waveforms



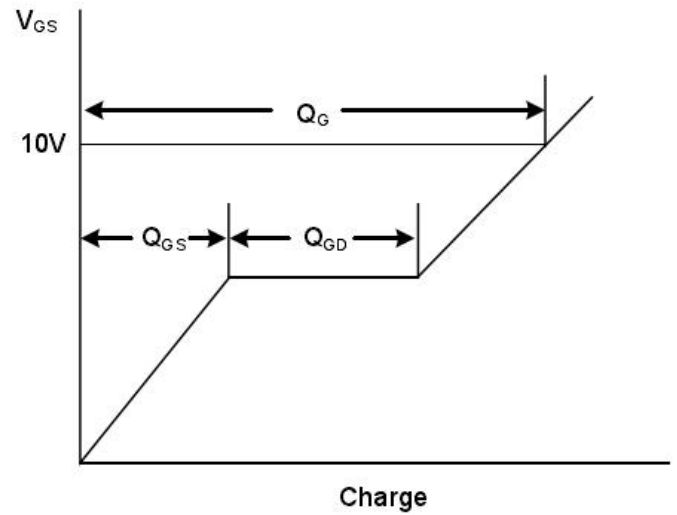
Switching Test Circuit



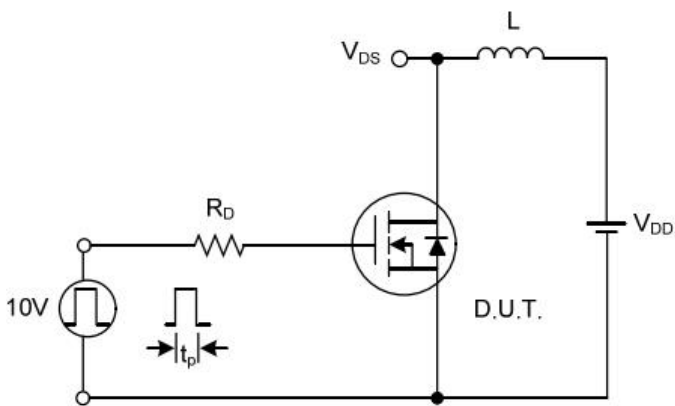
Switching Waveforms



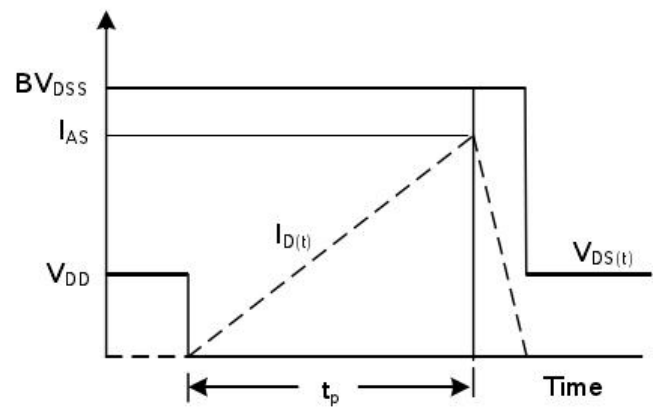
Gate Charge Test Circuit



Gate Charge Waveform



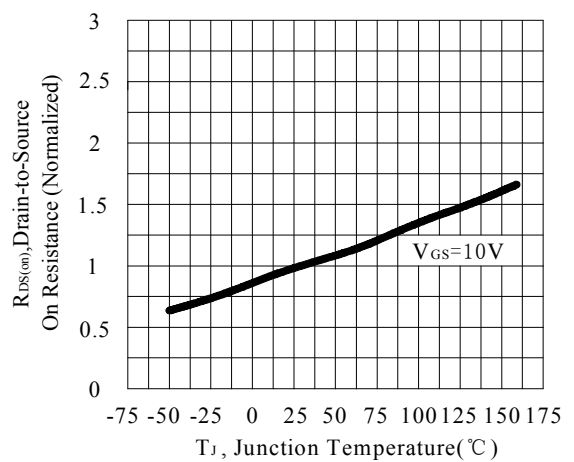
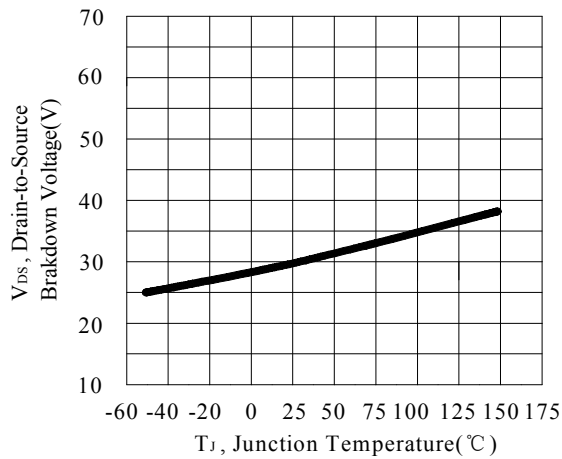
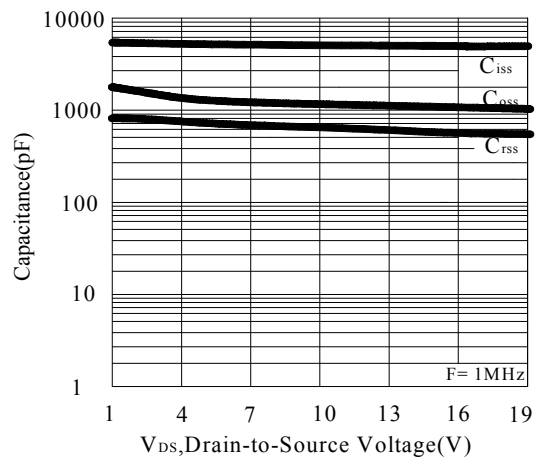
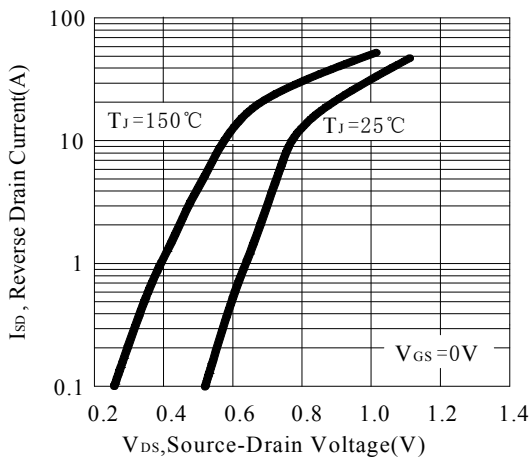
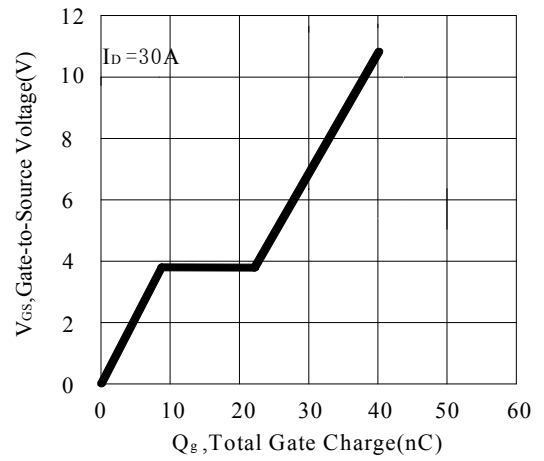
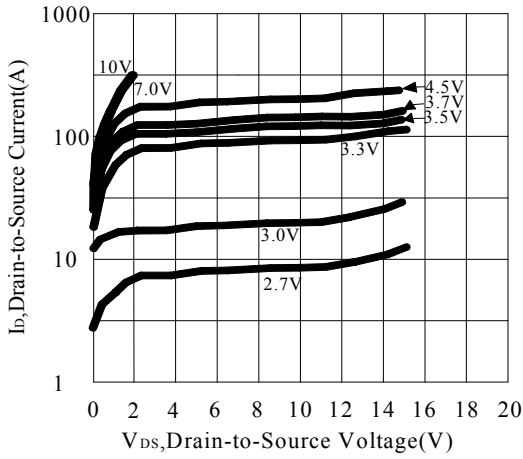
Unclamped Inductive Switching Test Circuit

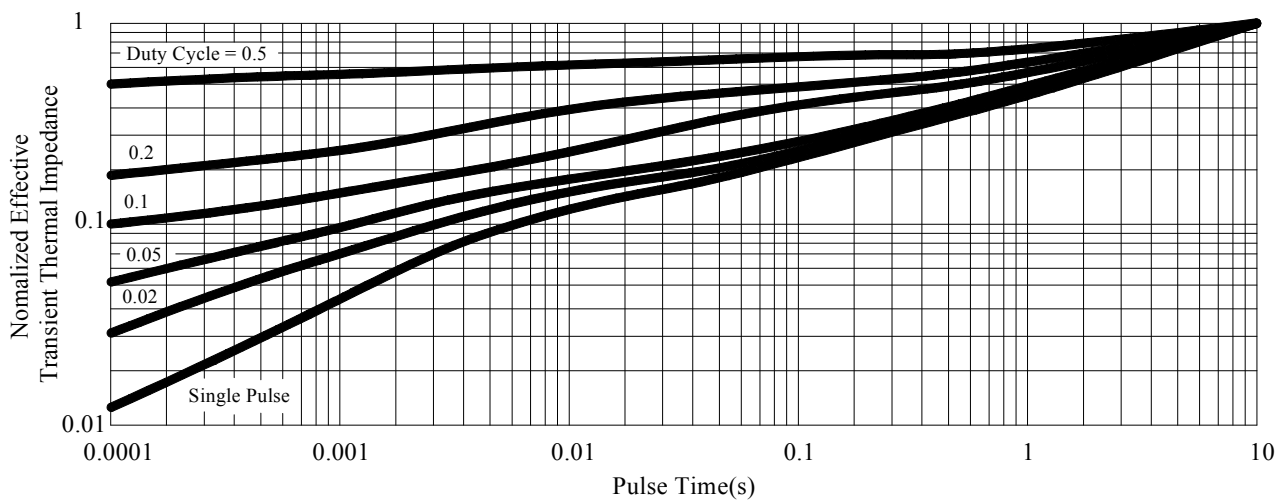
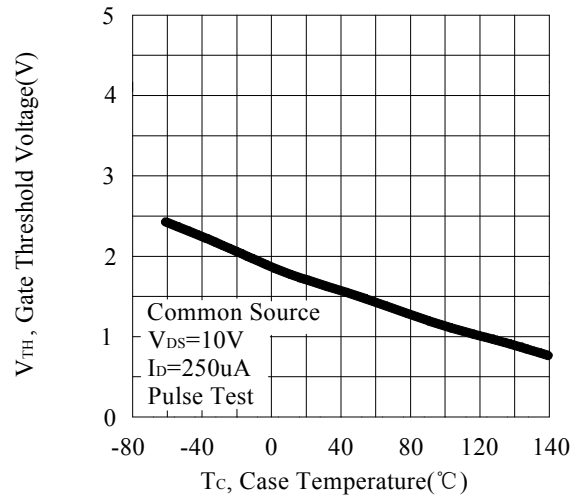
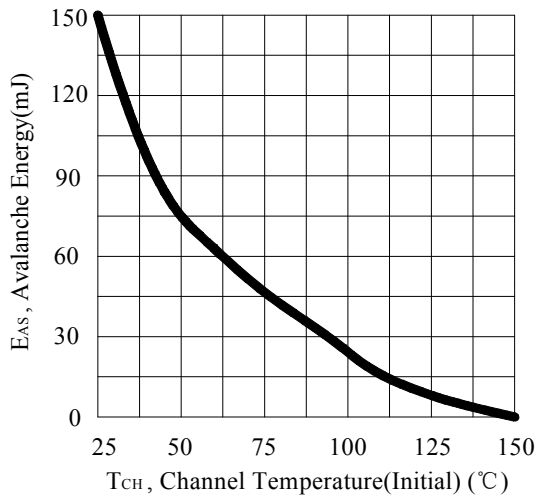
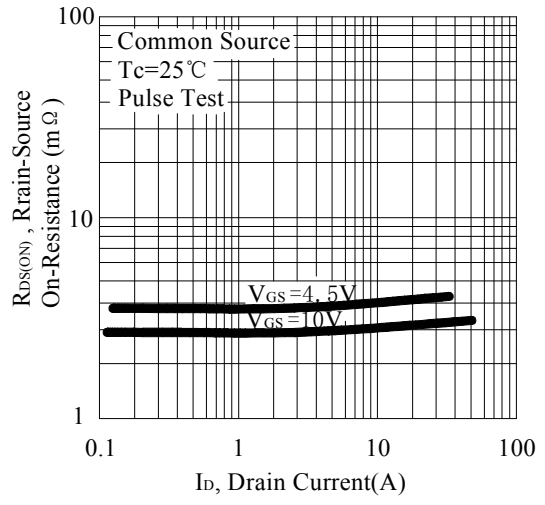
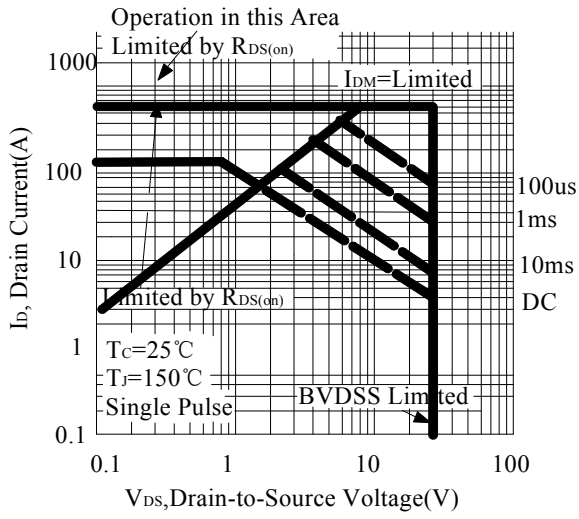


Unclamped Inductive Switching Waveforms



RATING AND CHARACTERISTIC CURVES

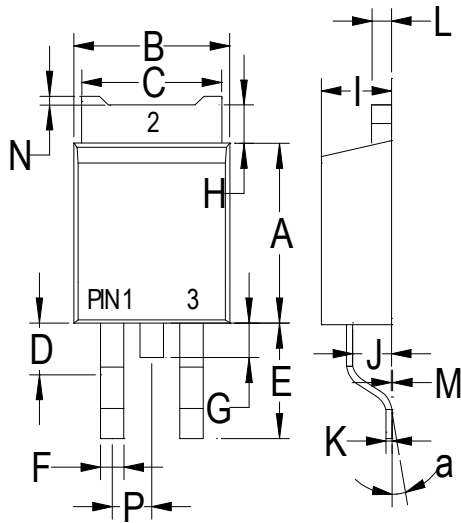






PACKAGE OUTLINE DIMENSIONS

TO-252



TO-252		
Dim	Min	Max
A	.230 (5.85)	.246 (6.25)
B	.250 (6.35)	.264 (6.75)
C	.207 (5.27)	.218 (5.54)
D	.037 (0.93)	.045 (1.14)
E	.106 (2.70)	.138 (3.50)
F	.028 (0.72)	.033 (0.84)
G	.024 (0.60)	.041 (1.05)
H	.028 (0.72)	.043 (1.10)
I	.085 (2.15)	.096 (2.45)
J	.037 (0.95)	.047 (1.20)
K	.018 (0.45)	.026 (0.65)
L	.018 (0.45)	.024 (0.60)
P	.081 (2.05)	.094 (2.40)
M	.000 (0.00)	.006 (0.15)
N	--	.008 (0.20)
a	0°	10°

Dimensions in inches and (millimeters)