

Features

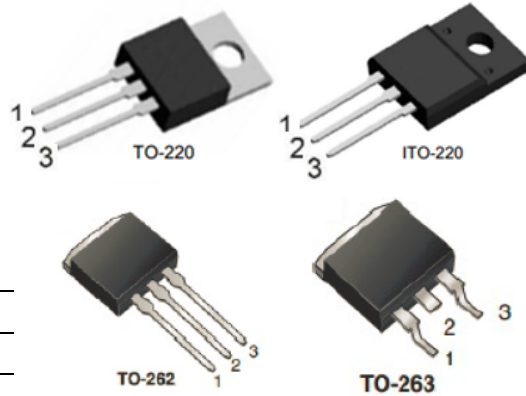
- $R_{DS(ON)} < 0.9 \Omega @ V_{GS} = 10V$
- Fast switching capability
- Low gate charge
- Lead free in compliance with EU RoHS directive.
- Green molding compound

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)
600	0.9 @ $V_{GS} = 10V$	10

Pin Definition:

1. Gate
2. Drain
3. Source



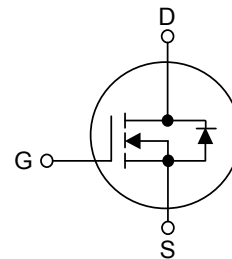
Mechanical Data

- Case: TO-220, ITO-220, TO-262, TO-263 Package

Ordering Information

Part No.	Package	Packing
DMT10N60-TU	TO-220	50pcs / Tube
DMF10N60-TU	ITO-220	50pcs / Tube
DMK10N60-TU	TO-262	50pcs / Tube
DMG10N60-TU	TO-263	50pcs / Tube
DMG10N60-TR	TO-263	800pcs / 13" Reel

Block Diagram



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	600	V	
Gate-Source Voltage	V_{GSS}	± 30	V	
Continuous Drain Current	I_D	10	A	
Pulsed Drain Current (Note 2)	I_{DM}	38	A	
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	700	mJ
Power Dissipation	TO-220/TO-262/TO-263	P_D	156	W
	ITO-220		50	W
Junction Temperature	T_J	+150	$^\circ C$	
Operating Temperature	T_{OPR}	-55 ~ +150	$^\circ C$	
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ C$	

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating : Pulse width limited by T_J

3. $L = 30mH$, $I_{AS} = 6.4A$, $V_{DD} = 50V$, $R_G = 25 \Omega$, Starting $T_J = 25^\circ C$

THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220/ITO-220	θ_{JA}	62.5	°C/W
	TO-262/TO-263			
Junction to Case	TO-220	θ_{JC}	0.85	°C/W
	ITO-220		2.6	

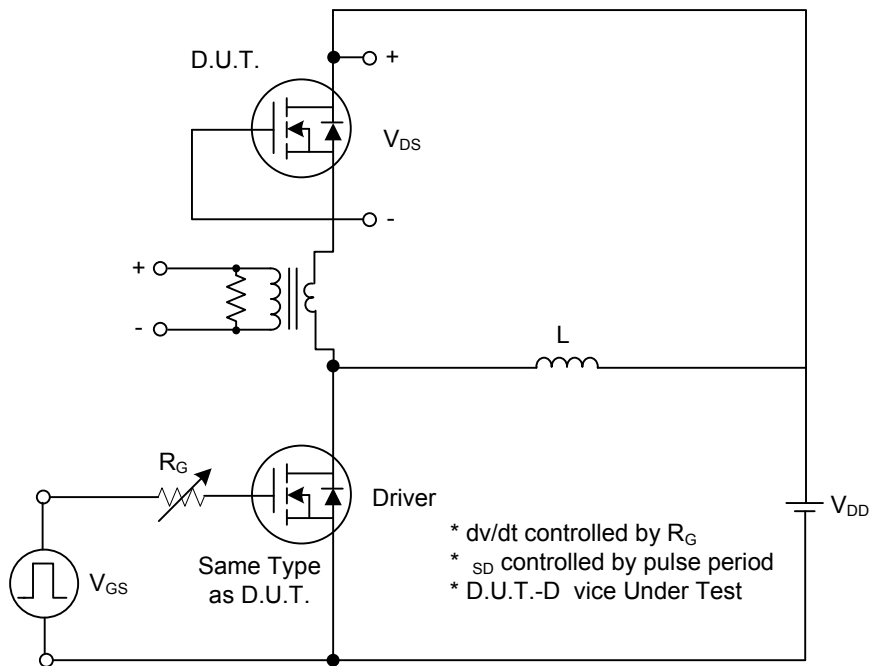
ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	600			V	
Drain-Source Leakage Current		I _{DSS}	V _{DS} =600V, V _{GS} =0V			1	μA	
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =30V, V _{DS} =0V			100	nA	
	Reverse		V _{GS} =-30V, V _{DS} =0V			-100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V	
Static Drain-Source On-State Resistance		R _{DS(ON)}	X _{GS} =10V, I _D =5A		0.76	0.9	Ω	
DYNAMIC CHARACTERISTICS								
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0 MHz		1570		pF	
Output Capacitance		C _{OSS}				166		pF
Reverse Transfer Capacitance		C _{RSS}				18		pF
SWITCHING CHARACTERISTICS								
Turn-On Delay Time		t _{D(ON)}	V _{DD} =300V, I _D =10A, R _G =25Ω (Note 1, 2)		23		ns	
Turn-On Rise Time		t _R				69		ns
Turn-Off Delay Time		t _{D(OFF)}				144		ns
Turn-Off Fall Time		t _F				77		ns
Total Gate Charge		Q _G	V _{DS} =480V, I _D =10A, V _{GS} =10V (Note 1, 2)		44		nC	
Gate-Source Charge		Q _{GS}				6.7		nC
Gate-Drain Charge		Q _{GD}				18.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS								
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0 V, I _S =10A			1.4	V	
Maximum Continuous Drain-Source Diode Forward Current		I _S				10	A	
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				40	A	
Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =10A, dI _F /dt =100 A/μs (Note 1)		450		ns	
Reverse Recovery Charge		Q _{RR}				4.2		μC

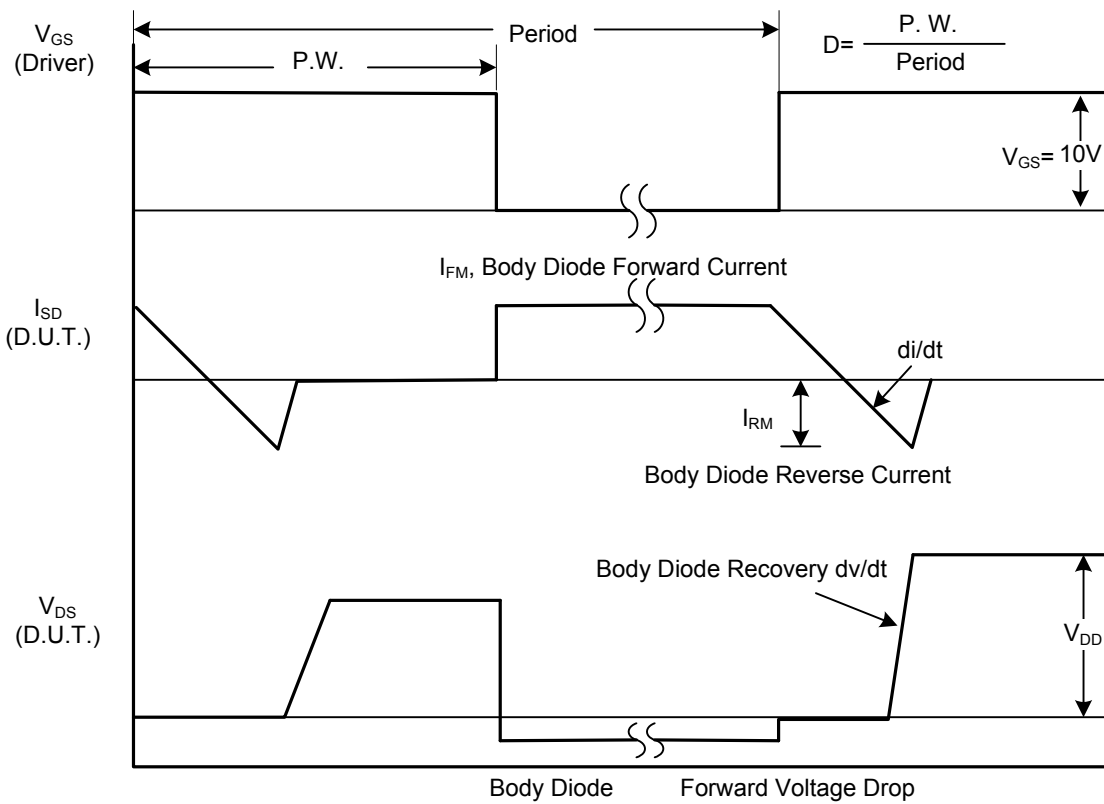
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

TEST CIRCUITS AND WAVEFORMS

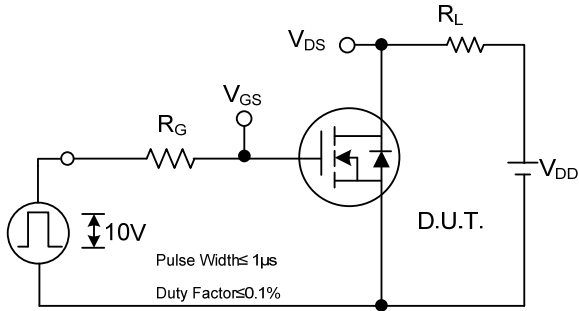


Peak Diode Recovery dv/dt Test Circuit

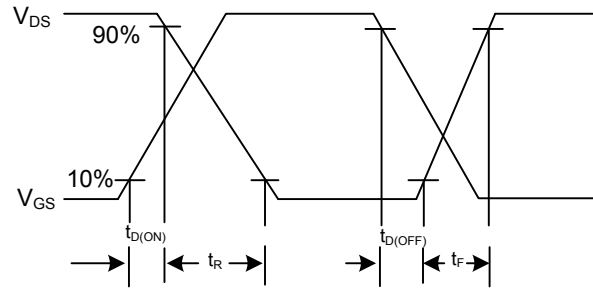


Peak Diode Recovery dv/dt Waveforms

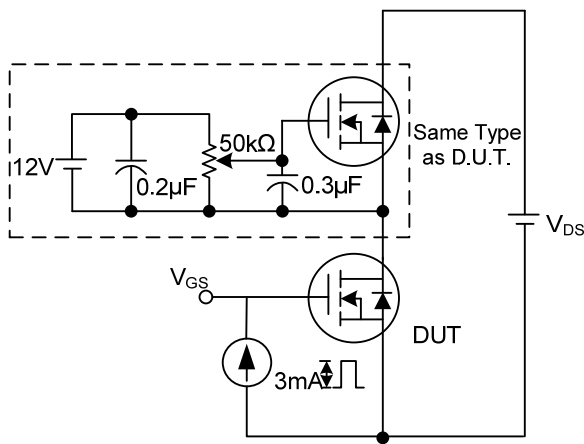
TEST CIRCUITS AND WAVEFORMS(Cont.)



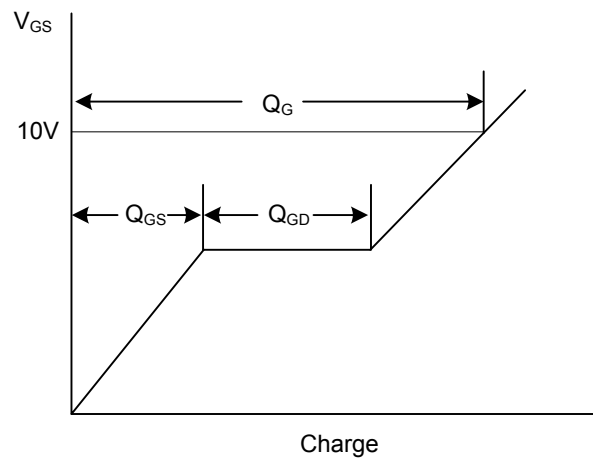
Switching Test Circuit



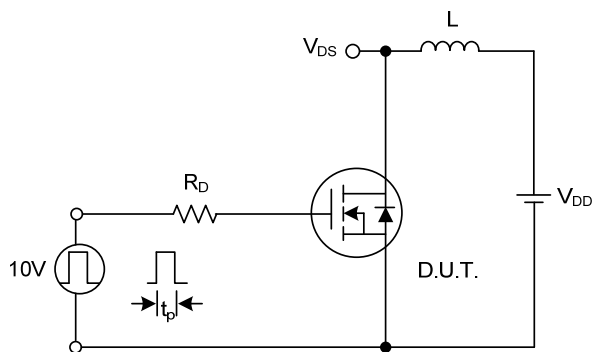
Switching Waveforms



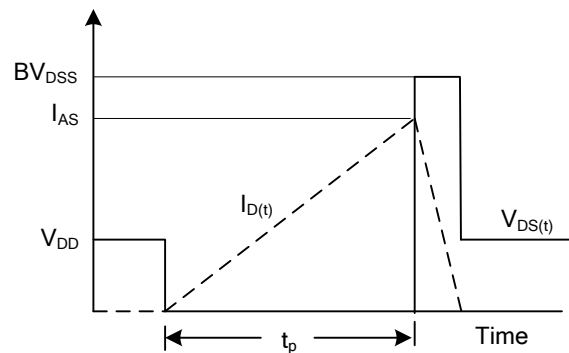
Gate Charge Test Circuit



Gate Charge Waveform



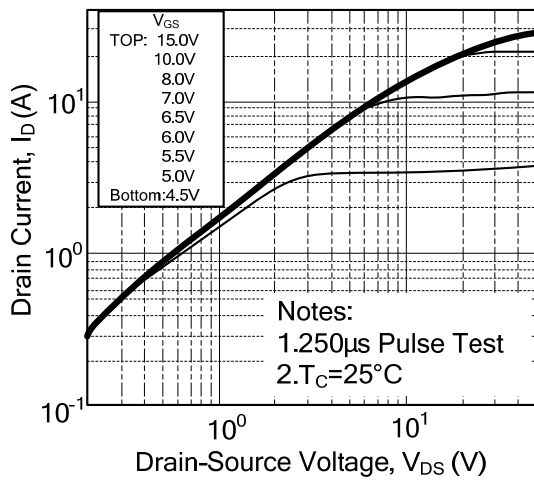
Unclamped Inductive Switching Test Circuit



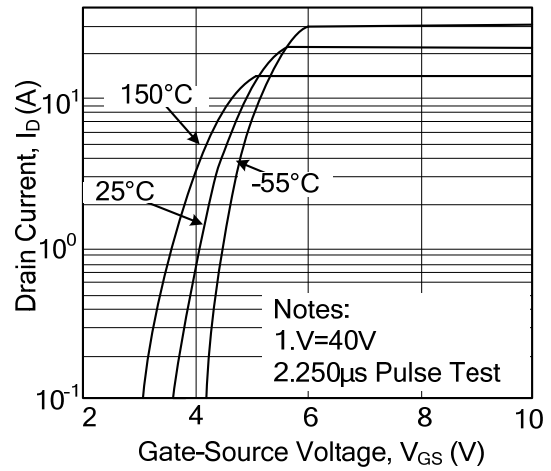
Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS

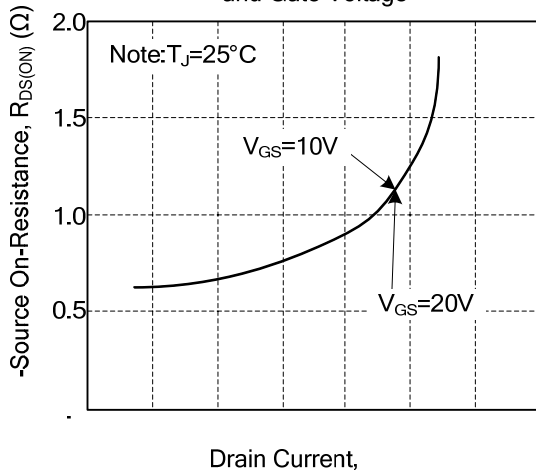
On-Region Characteristics



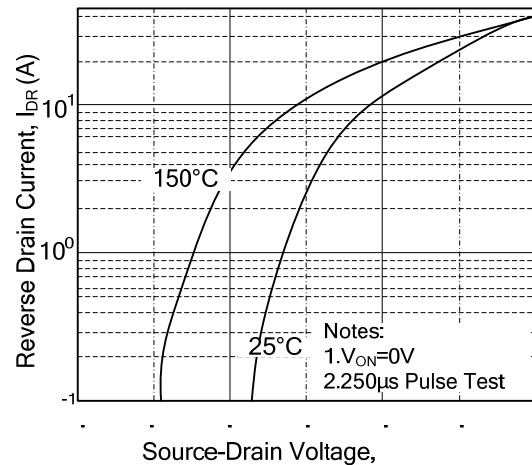
Transfer Characteristics



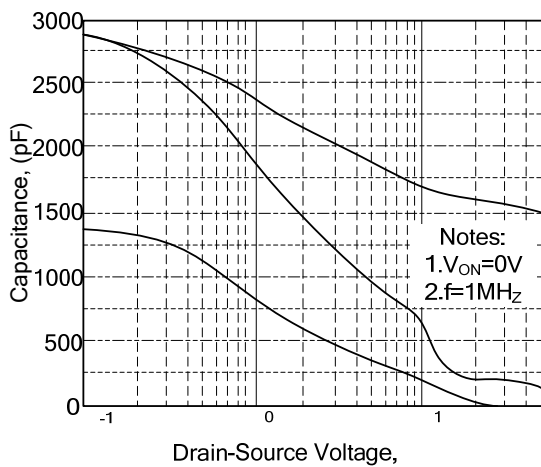
On-Resistance Variation vs. Drain Current and Gate Voltage



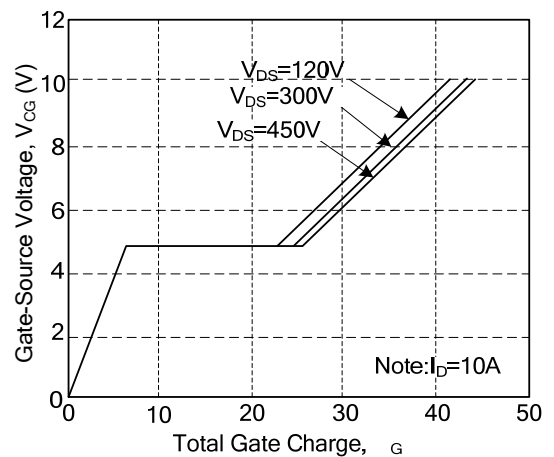
Body Diode Forward Voltage Variation with Source Current and Temperature



Capacitance Characteristics

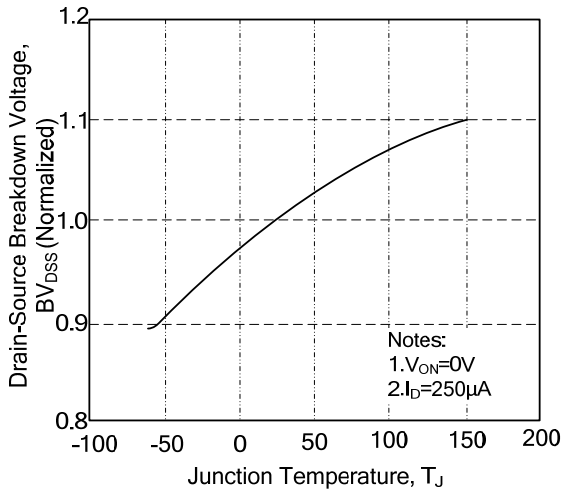


Gate Charge Characteristics

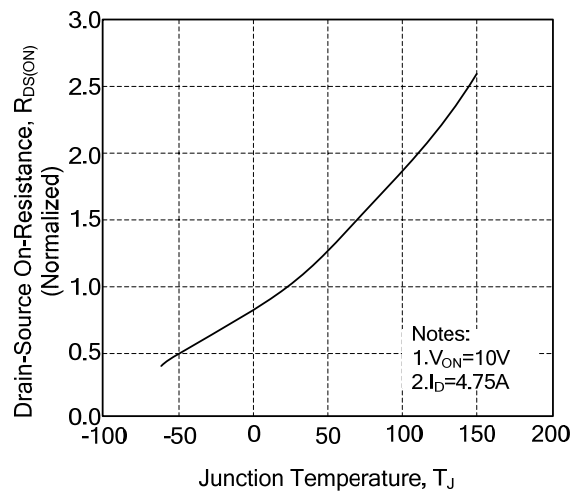


TYPICAL CHARACTERISTICS

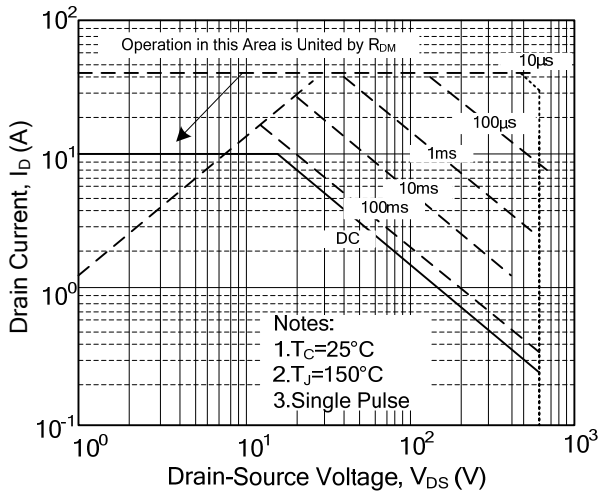
Breakdown Voltage Variation vs. Temperature



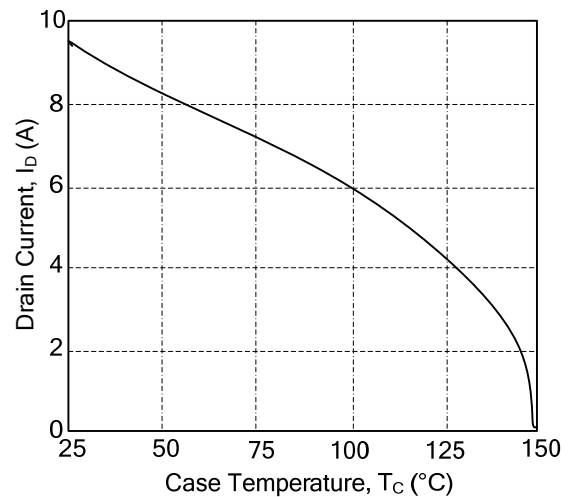
On-Resistance Variation vs. Temperature



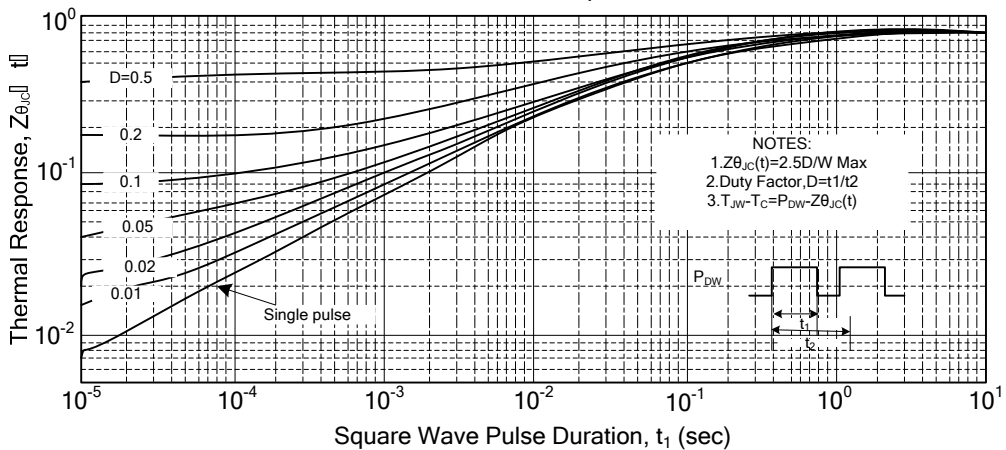
Maximum Safe Operating Area



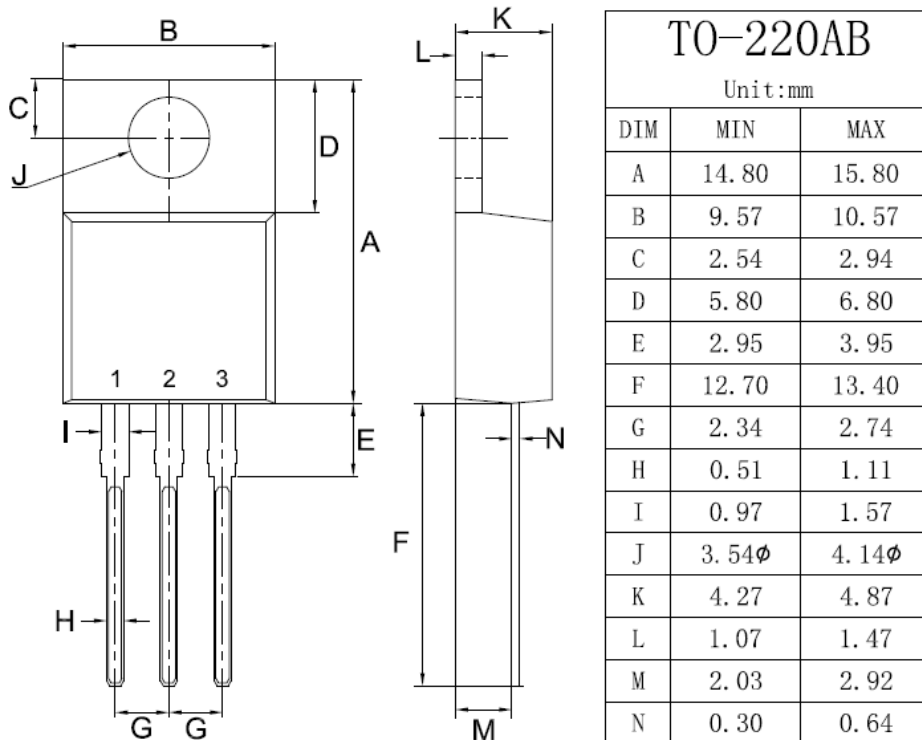
Maximum Drain Current vs. Case Temperature



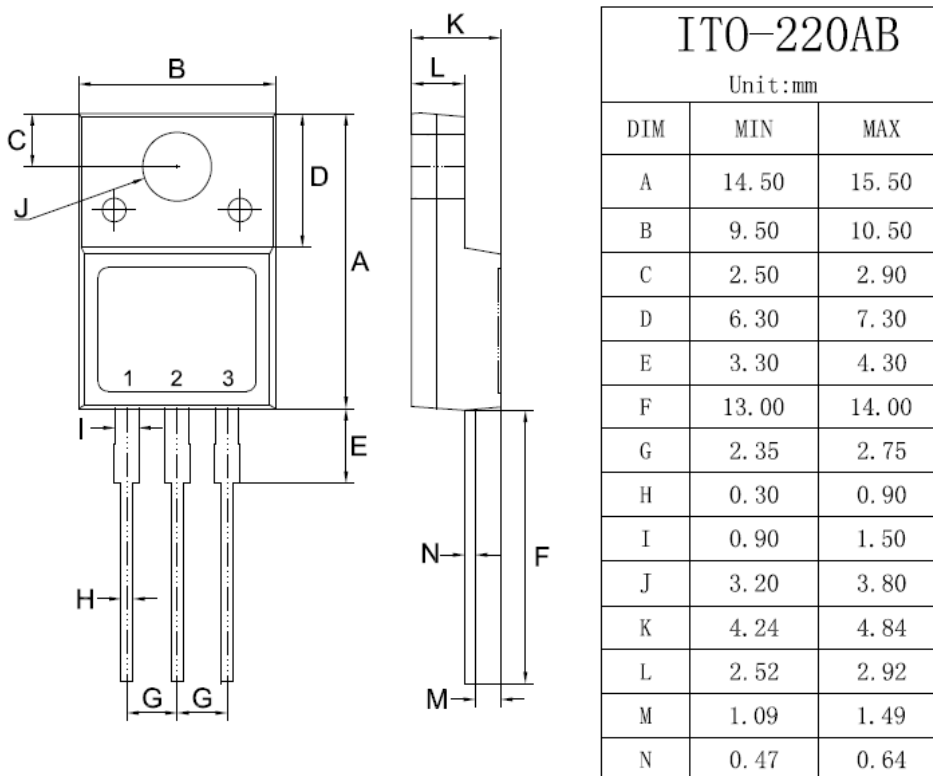
Transient Thermal Response Curve



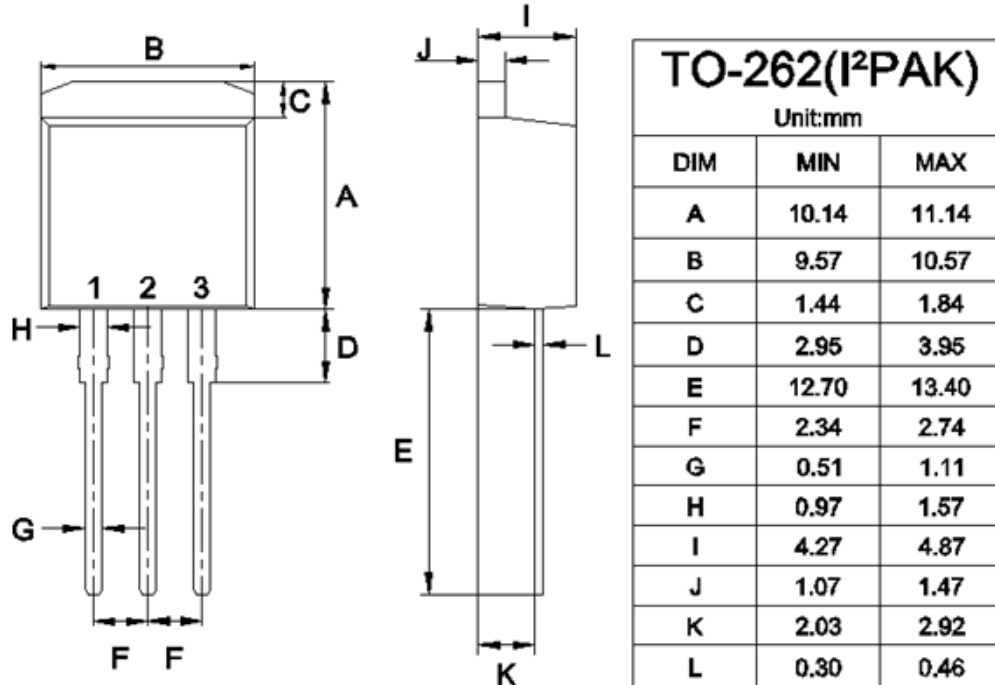
TO-220 Mechanical Drawing



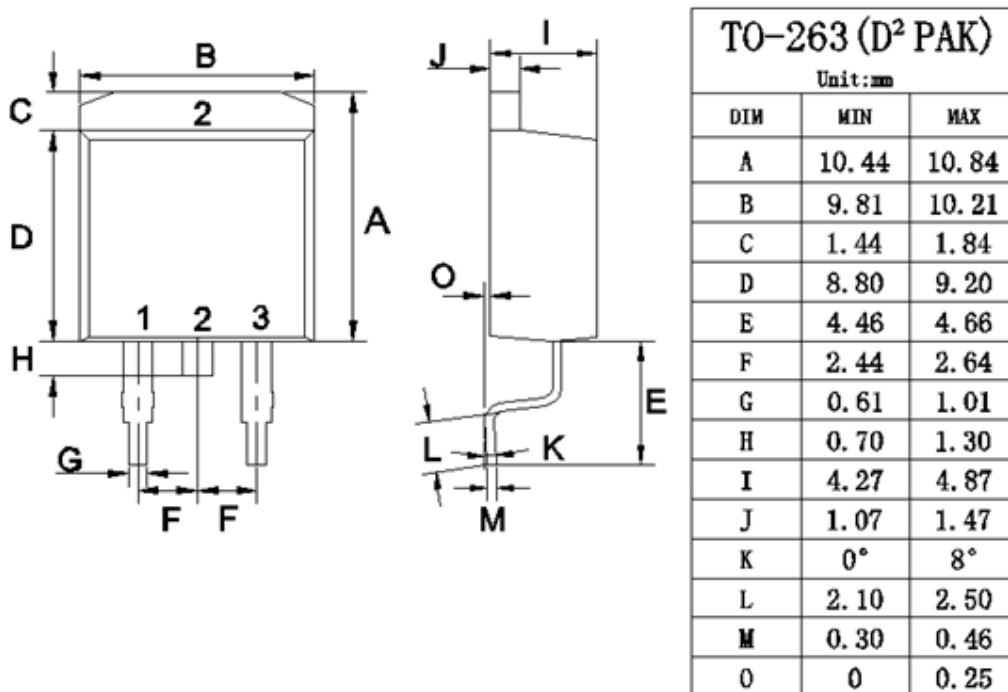
ITO-220 Mechanical Drawing



TO-262 Mechanical Drawing



TO-263 Mechanical Drawing



Notice

Specifications of the products displayed herein are subject to change without notice. DIYI or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in DIYI's terms and conditions of sale for such products, DIYI assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of DIYI products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify DIYI for any damages resulting from such improper use or sale.