

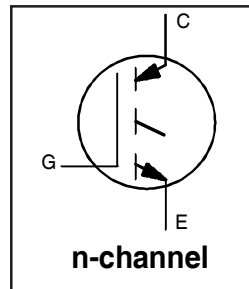
IRG4MC30F

INSULATED GATE BIPOLAR TRANSISTOR

Fast Speed IGBT

Features

- Electrically Isolated and Hermetically Sealed
- Simple Drive Requirements
- Latch-proof
- Fast Speed Operation 3 kHz - 8 kHz
- High Operating Frequency
- Switching-loss Rating includes all "tail" losses
- Ceramic Eyelets

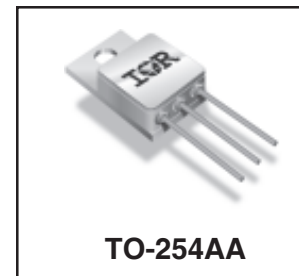


$V_{CES} = 600V$
$V_{CE(on) max} = 1.7V$
@ $V_{GE} = 15V, I_C = 15A$

Benefits

- Generation 4 IGBT's offer highest efficiency available
- IGBT's optimized for specified application conditions
- Designed to be a "drop-in" replacement for equivalent IR Hi-Rel Generation 3 IGBT's

Insulated Gate Bipolar Transistors (IGBTs) from International Rectifier have higher usable current densities than comparable bipolar transistors, while at the same time having simpler gate-drive requirements of the familiar power MOSFET. They provide substantial benefits to a host of high-voltage, high-current applications.



TO-254AA

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{CES}	Collector-to-Emitter Breakdown Voltage	600	V
$I_C @ T_C = 25^\circ C$	Continuous Collector Current	28	A
$I_C @ T_C = 100^\circ C$	Continuous Collector Current	15	
I_{CM}	Pulsed Collector Current ①	112	
I_{LM}	Clamped Inductive Load Current ②	112	
V_{GE}	Gate-to-Emitter Voltage	± 20	V
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	75	W
$P_D @ T_C = 100^\circ C$	Maximum Power Dissipation	30	
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	$^\circ C$
	Lead Temperature	300 (0.063in./1.6mm from case for 10s)	
	Weight	9.3 (typical)	

Thermal Resistance

	Parameter	Min	Typ	Max	Units	Test Conditions
R_{thJC}	Junction-to-Case	—	—	1.67	$^\circ C/W$	

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)CES}	Collector-to-Emitter Breakdown Voltage	600	—	—	V	V _{GE} = 0V, I _C = 1.0 mA
V _{(BR)ECS}	Emitter-to-Collector Breakdown Voltage ③	18	—	—	V	V _{GE} = 0V, I _C = 1.0 A
ΔV _{(BR)CES} /ΔT _J	Temperature Coeff. of Breakdown Voltage	—	0.63	—	V/°C	V _{GE} = 0V, I _C = 1.0 mA
V _{CE(ON)}	Collector-to-Emitter Saturation Voltage	—	—	1.7	V	I _C = 15A V _{GE} = 15V See Fig.2, 5
		—	—	2.2		
		—	—	2.7		
V _{GE(th)}	Gate Threshold Voltage	3.0	—	6.0		I _C = 15A, T _J = 125°C V _{CE} = V _{GE} , I _C = 1.0 mA
ΔV _{GE(th)} /ΔT _J	Temperature Coeff. of Threshold Voltage	—	-11	—	mV/°C	V _{CE} = V _{GE} , I _C = 250 μA
g _{fe}	Forward Transconductance ④	14	—	—	S	V _{CE} ≥ 15V, I _C = 15A
I _{CES}	Zero Gate Voltage Collector Current	—	—	50	μA	V _{GE} = 0V, V _{CE} = 480V
		—	—	1000		V _{GE} = 0V, V _{CE} = 480V, T _J = 125°C
I _{GES}	Gate-to-Emitter Leakage Current	—	—	±100	nA	V _{GE} = ±20V

Switching Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
Q _g	Total Gate Charge (turn-on)	—	—	77	nC	I _C = 15A V _{CC} = 300V V _{GE} = 15V See Fig. 8
Q _{ge}	Gate - Emitter Charge (turn-on)	—	—	12		
Q _{gc}	Gate - Collector Charge (turn-on)	—	—	24		
t _{d(on)}	Turn-On Delay Time	—	—	42	ns	T _J = 25°C I _C = 15A, V _{CC} = 480V V _{GE} = 15V, R _G = 7.5Ω Energy losses include "tail"
t _r	Rise Time	—	—	30		
t _{d(off)}	Turn-Off Delay Time	—	—	300		
t _f	Fall Time	—	—	300		
E _{ts}	Total Switching Loss	—	—	2.0	mJ	See Fig. 10, 11, 13, 14
t _{d(on)}	Turn-On Delay Time	—	—	42	ns	T _J = 125°C, I _C = 15A, V _{CC} = 480V V _{GE} = 15V, R _G = 7.5Ω Energy losses include "tail"
t _r	Rise Time	—	—	20		
t _{d(off)}	Turn-Off Delay Time	—	—	450		
t _r	Rise Time	—	—	550		
E _{ts}	Total Switching Loss	—	—	3.0	mJ	See Fig. 13, 14
L _C + L _E	Total Inductance	—	6.8	—	nH	Measured from Collector lead (6mm/ 0.25in. from package) to Emitter lead (6mm / 0.25in. from package)
C _{ies}	Input Capacitance	—	1100	—	pF	V _{GE} = 0V V _{CC} = 30V f = 1.0MHz See Fig. 7
C _{oes}	Output Capacitance	—	74	—		
C _{res}	Reverse Transfer Capacitance	—	14	—		

Notes:

- ① Repetitive rating; V_{GE} = 20V, pulse width limited by max. junction temperature. (See Fig. 13b)
- ② V_{CC} = 80%(V_{CES}), V_{GE} = 20V, L = 100μH, R_G = 7.5Ω, (See Fig. 13a)
- ③ Pulse width ≤ 80μs; duty factor ≤ 0.1%.
- ④ Pulse width 5.0μs, single shot.

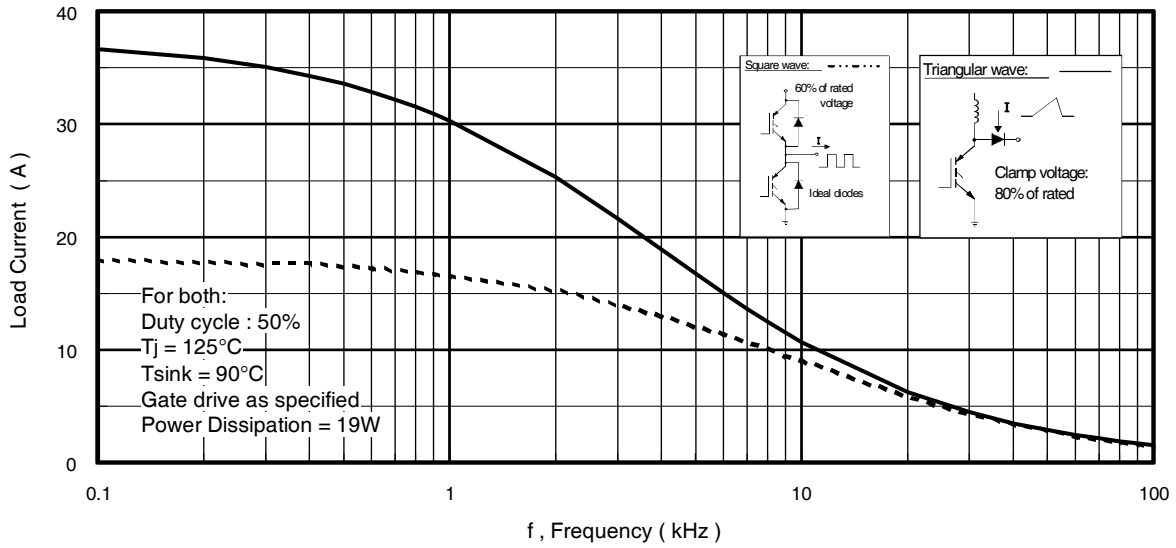


Fig. 1 - Typical Load Current vs. Frequency
(For square wave, $I = I_{RMS}$ of fundamental; for triangular wave, $I = I_{PK}$)

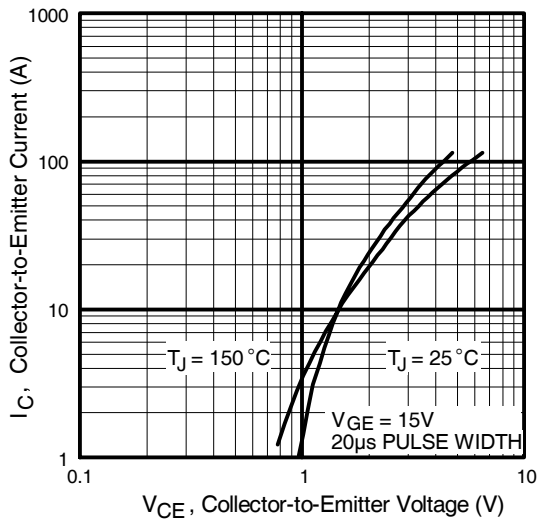


Fig. 2 - Typical Output Characteristics

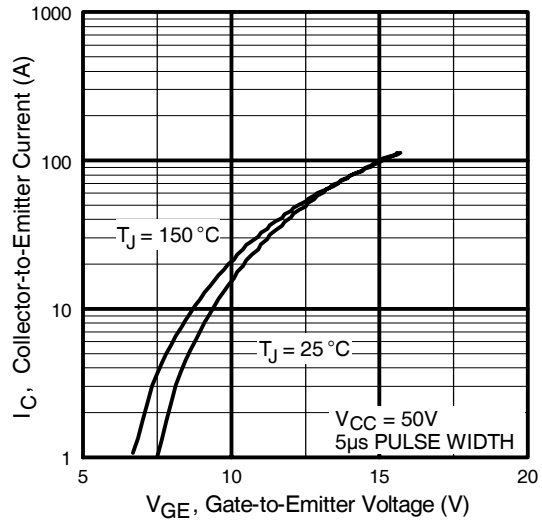


Fig. 3 - Typical Transfer Characteristics

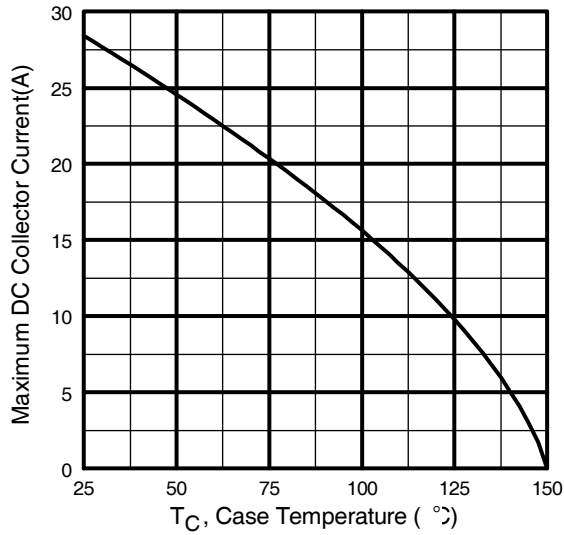


Fig. 4 - Maximum Collector Current vs. Case Temperature

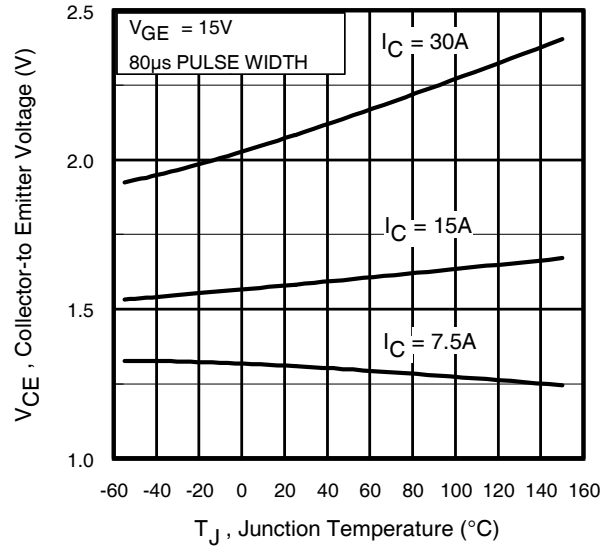


Fig. 5 - Collector-to-Emitter Voltage vs. Junction Temperature

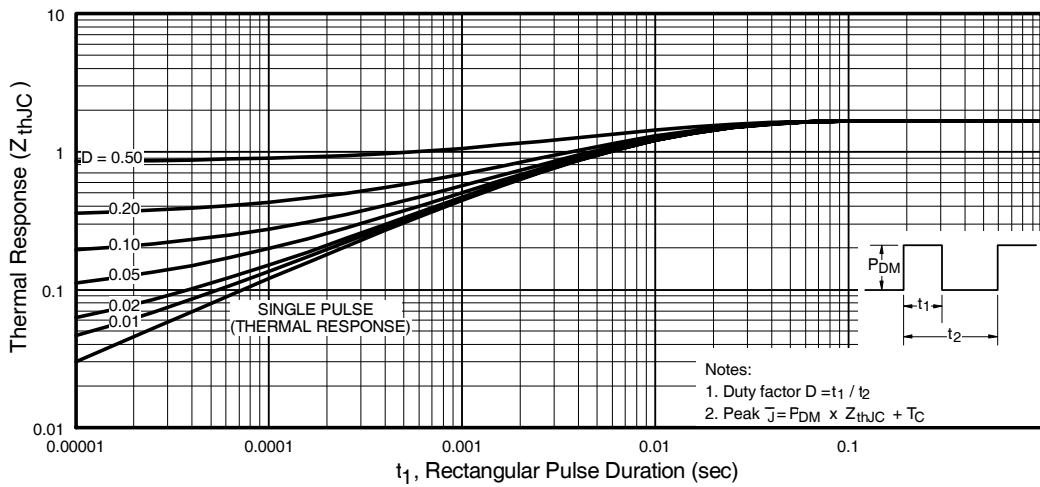


Fig. 6 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

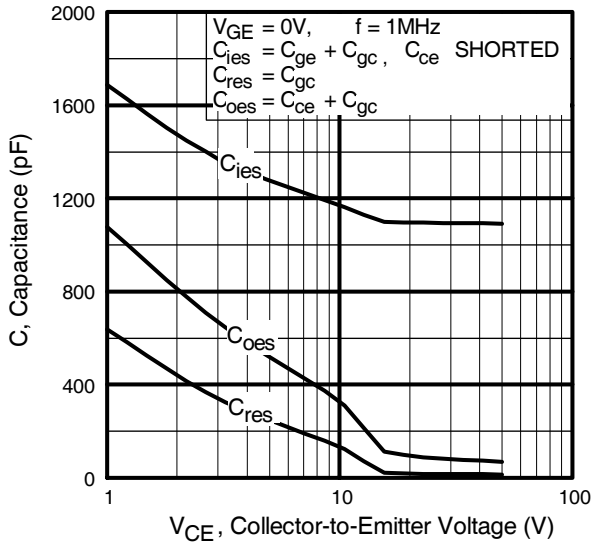


Fig. 7 - Typical Capacitance vs. Collector-to-Emitter Voltage

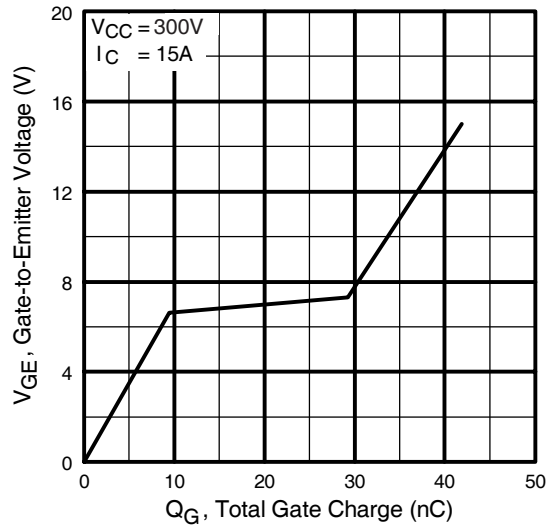


Fig. 8 - Typical Gate Charge vs. Gate-to-Emitter Voltage

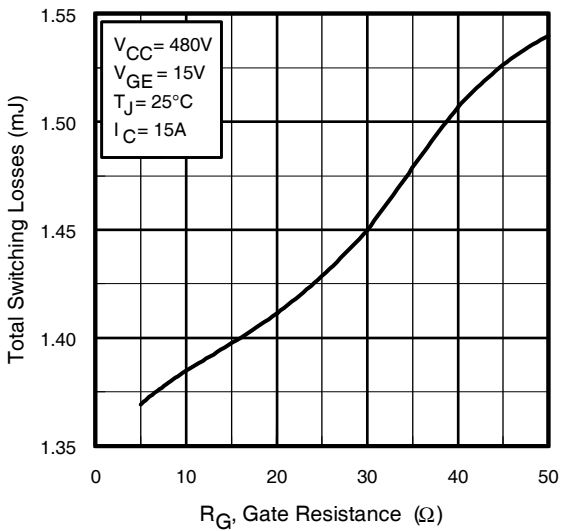


Fig. 9 - Typical Switching Losses vs. Gate Resistance

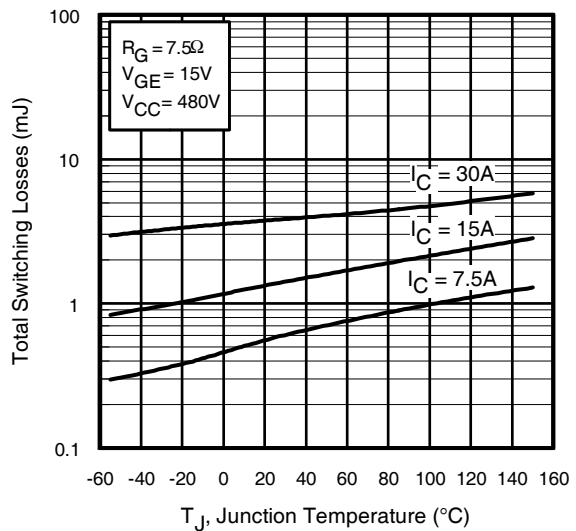


Fig. 10 - Typical Switching Losses vs. Junction Temperature

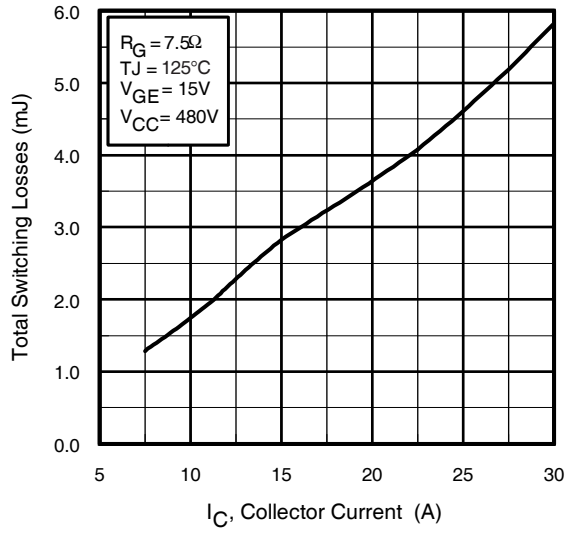


Fig. 11 - Typical Switching Losses vs. Collector-to-Emitter Current

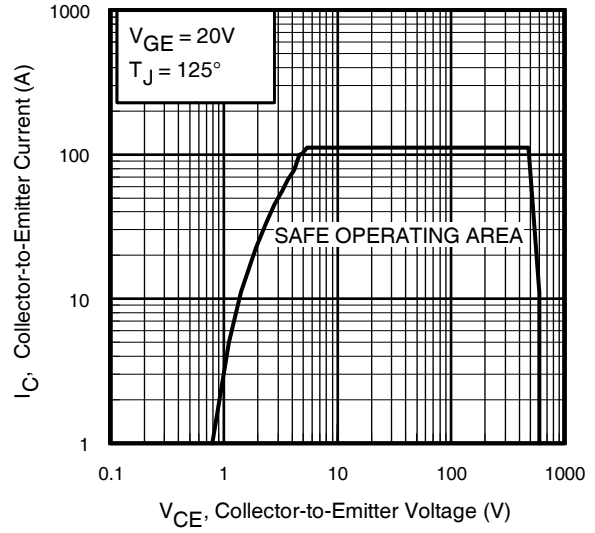


Fig. 12 - Turn-Off SOA

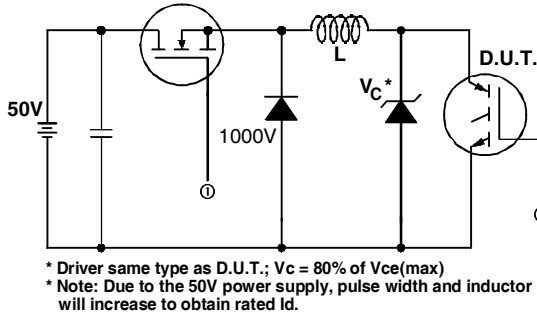


Fig. 13a - Clamped Inductive Load Test Circuit

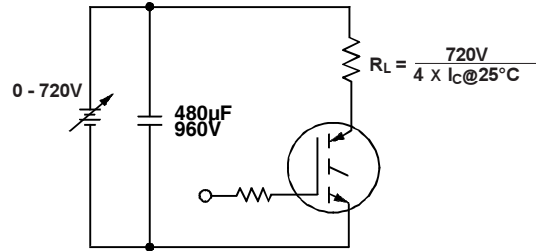


Fig. 13b - Pulsed Collector Current Test Circuit

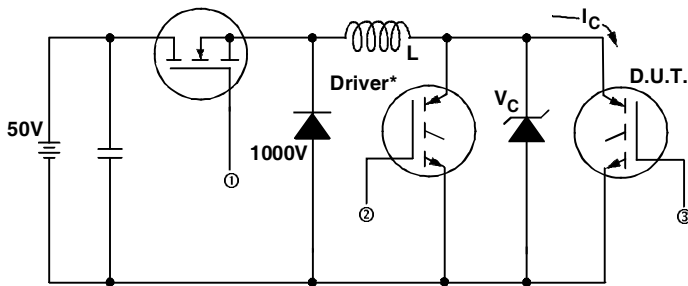


Fig. 14a - Switching Loss Test Circuit

* Driver same type as D.U.T., $V_c = 720V$

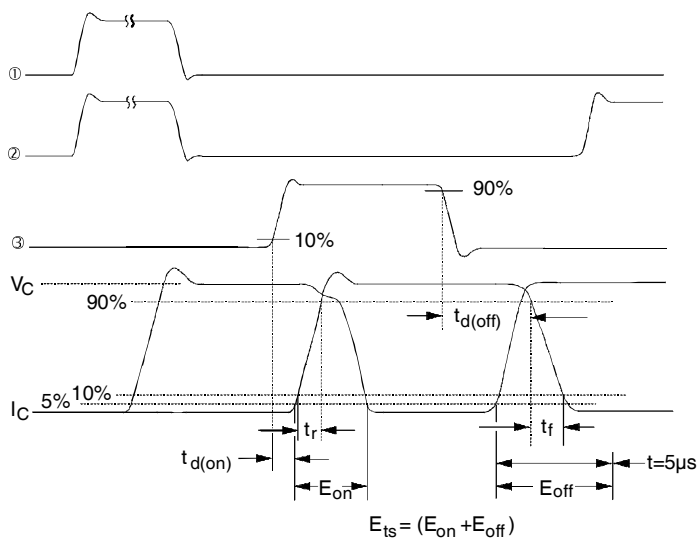
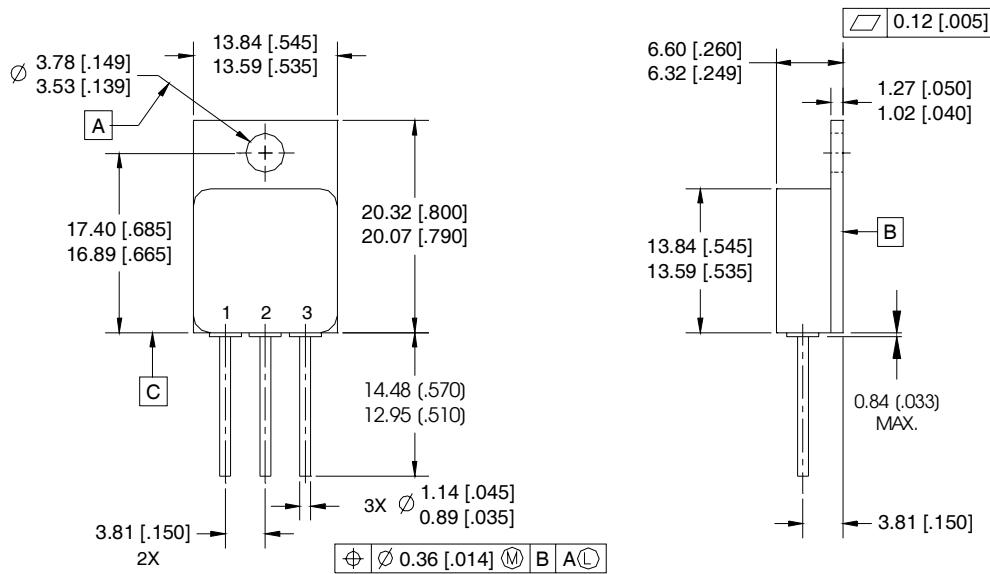


Fig. 14b - Switching Loss Waveforms

Case Outline and Dimensions — TO-254AA



NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. CONTROLLING DIMENSION: INCH.
4. CONFORMS TO JEDEC OUTLINE TO-254AA.

PIN ASSIGNMENTS

- 1 = COLLECTOR
- 2 = EMITTER
- 3 = GATE

CAUTION

BERYLLIA WARNING PER MIL-PRF-19500

Package containing beryllia shall not be ground, sandblasted, machined, or have other operations performed on them which will produce beryllia or beryllium dust. Furthermore, beryllium oxide packages shall not be placed in acids that will produce fumes containing beryllium.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Infineon Technologies\(英飞凌\)](#)