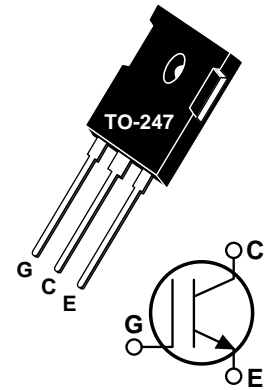


Fast IGBT

The Fast IGBT is a new generation of high voltage power IGBTs. Using Non-Punch Through Technology the Fast IGBT offers superior ruggedness, fast switching speed and low Collector-Emitter On voltage.

- Low Forward Voltage Drop
- Low Tail Current
- RBSOA and SCSOA Rated
- High Freq. Switching to 20KHz
- Ultra Low Leakage Current




MAXIMUM RATINGS (IGBT)

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	APT33GF120BR(G)	UNIT
V_{CES}	Collector-Emitter Voltage	1200	Volts
V_{CGR}	Collector-Gate Voltage ($R_{GE} = 20\text{K}\Omega$)	1200	
V_{GE}	Gate Emitter Voltage	± 20	
I_{C1}	Continuous Collector Current @ $T_C = 25^\circ\text{C}$	52	Amps
I_{C2}	Continuous Collector Current @ $T_C = 105^\circ\text{C}$	33	
I_{CM}	Pulsed Collector Current ^① @ $T_C = 25^\circ\text{C}$	104	
I_{LM}	RBSOA Clamped Inductive Load Current @ $R_g = 11\Omega$ $T_C = 125^\circ\text{C}$	66	
E_{AS}	Single Pule Avalanche Energy ^②	65	mJ
P_D	Total Power Dissipation	297	Watts
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Max. Lead Temp. for Soldering: 0.063" from Case for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS (IGBT)

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{CES}	Collector-Emitter Breakdown Voltage ($V_{GE} = 0\text{V}$, $I_C = 0.5\text{mA}$)	1200			Volts
$V_{GE(TH)}$	Gate Threshold Voltage ($V_{CE} = V_{GE}$, $I_C = 700\mu\text{A}$, $T_j = 25^\circ\text{C}$)	4.5	5.5	6.5	
$V_{CE(ON)}$	Collector-Emitter On Voltage ($V_{GE} = 15\text{V}$, $I_C = 25\text{A}$, $T_j = 25^\circ\text{C}$)		2.7	3.2	
	Collector-Emitter On Voltage ($V_{GE} = 15\text{V}$, $I_C = 25\text{A}$, $T_j = 125^\circ\text{C}$)		3.3	3.9	
I_{CES}	Collector Cut-off Current ($V_{CE} = V_{CES}$, $V_{GE} = 0\text{V}$, $T_j = 25^\circ\text{C}$)			0.5	mA
	Collector Cut-off Current ($V_{CE} = V_{CES}$, $V_{GE} = 0\text{V}$, $T_j = 125^\circ\text{C}$)			5.0	
I_{GES}	Gate-Emitter Leakage Current ($V_{GE} = \pm 20\text{V}$, $V_{CE} = 0\text{V}$)			± 100	nA

 **CAUTION:** These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

APT Website - <http://www.advancedpower.com>

DYNAMIC CHARACTERISTICS (IGBT)

APT33GF120BR(G)

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C _{ies}	Input Capacitance	Capacitance V _{GE} = 0V V _{CE} = 25V f = 1 MHz		1855		pF
C _{oes}	Output Capacitance			230		
C _{res}	Reverse Transfer Capacitance			110		
Q _g	Total Gate Charge ^③	Gate Charge V _{GE} = 15V V _{CC} = 0.5V _{CES} I _C = I _{C2}		170		nC
Q _{ge}	Gate-Emitter Charge			19		
Q _{gc}	Gate-Collector ("Miller") Charge			100		
t _{d(on)}	Turn-on Delay Time	Resistive Switching (25°C) V _{GE} = 15V V _{CC} = 0.8V _{CES} I _C = I _{C2} R _G = 10Ω		24		ns
t _r	Rise Time			85		
t _{d(off)}	Turn-off Delay Time			170		
t _f	Fall Time			125		
t _{d(on)}	Turn-on Delay Time	Inductive Switching (150°C) V _{CLAMP(Peak)} = 0.66V _{CES} V _{GE} = 15V I _C = I _{C2} R _G = 10Ω T _J = +150°C		25		ns
t _r	Rise Time			60		
t _{d(off)}	Turn-off Delay Time			210		
t _f	Fall Time			74		
E _{on}	Turn-on Switching Energy			2.8		
E _{off}	Turn-off Switching Energy		2.8			
E _{ts}	Total Switching Losses		5.6			
t _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{CLAMP(Peak)} = 0.66V _{CES} V _{GE} = 15V I _C = I _{C2} R _G = 10Ω T _J = +25°C		27		ns
t _r	Rise Time			65		
t _{d(off)}	Turn-off Delay Time			190		
t _f	Fall Time			70		
E _{ts}	Total Switching Losses			5.2		
g _{fe}	Forward Transconductance	V _{CE} = 20V, I _C = 25A	8.5	20		S

THERMAL AND MECHANICAL CHARACTERISTICS (IGBT and FRED)

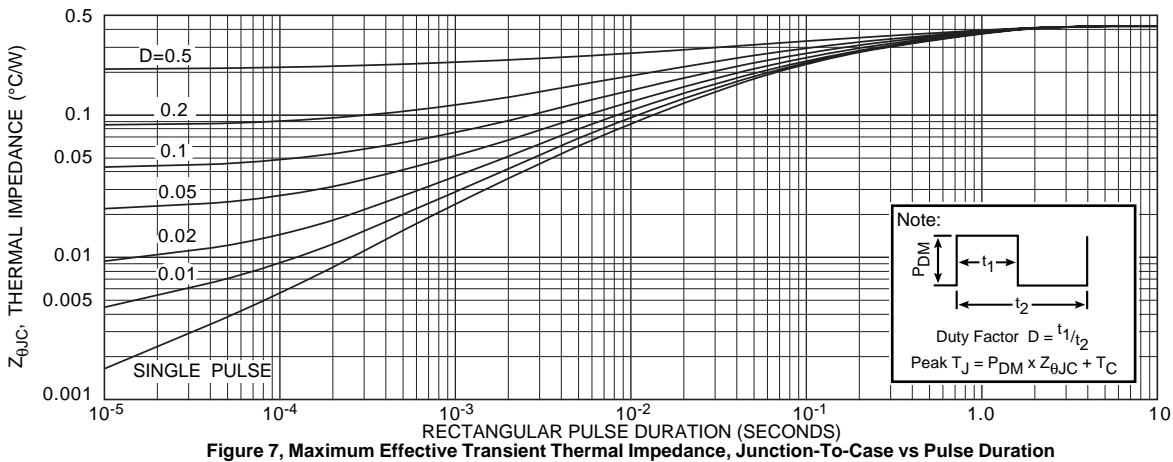
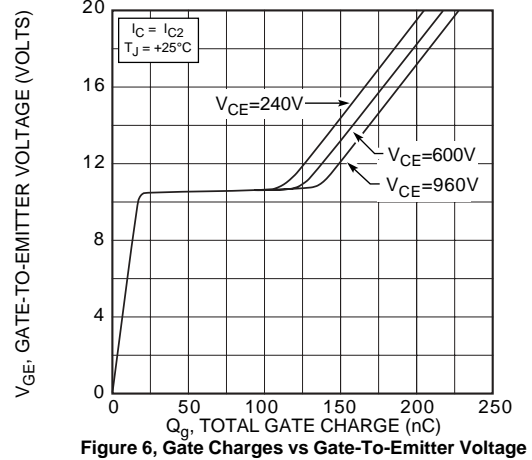
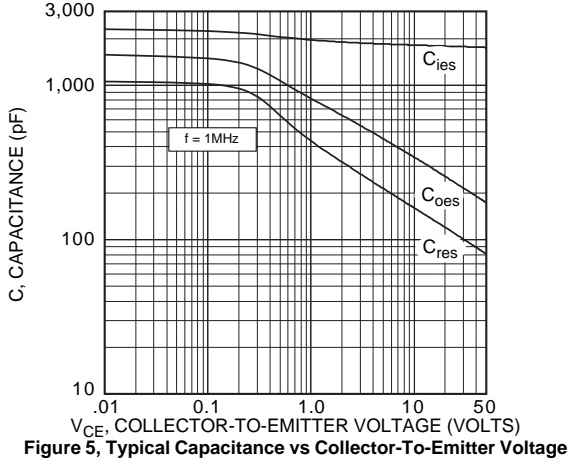
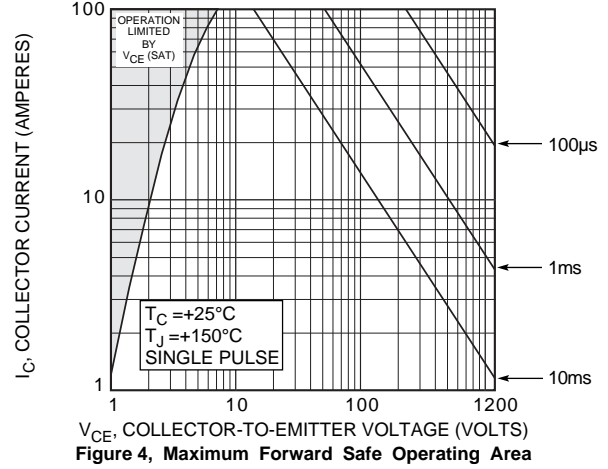
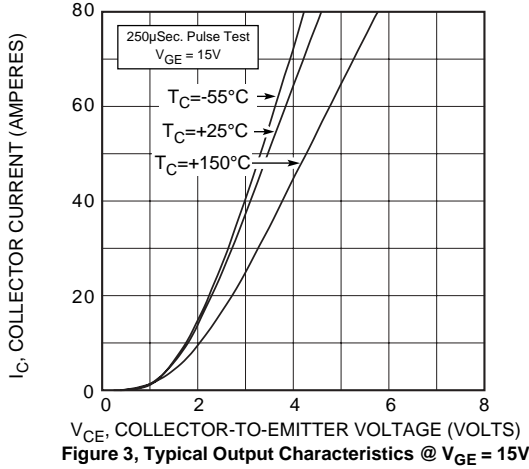
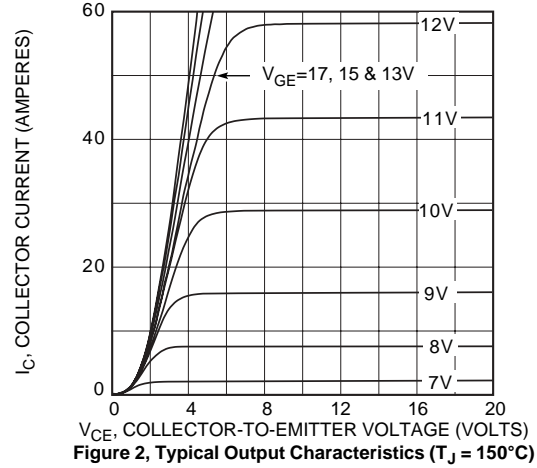
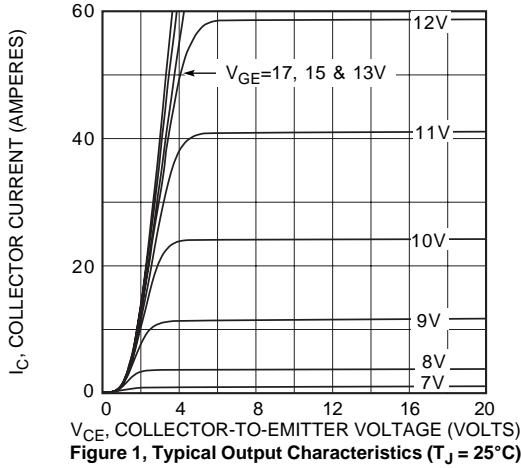
Symbol	Characteristic	MIN	TYP	MAX	UNIT
R _{θJC}	Junction to Case			0.42	°C/W
R _{θJA}	Junction to Ambient			40	
W _T	Package Weight		0.22		oz
			5.90		gm

① Repetitive Rating: Pulse width limited by maximum junction temperature.

② I_C = I_{C2}, V_{CC} = 50V, R_{GE} = 25Ω, L = 120μH, T_J = 25°C

③ See MIL-STD-750 Method 3471

APT Reserves the right to change, without notice, the specifications and information contained herein.



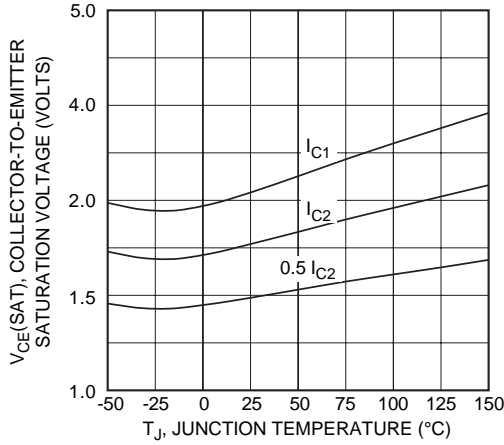


Figure 8, Typical $V_{CE(SAT)}$ Voltage vs Junction Temperature

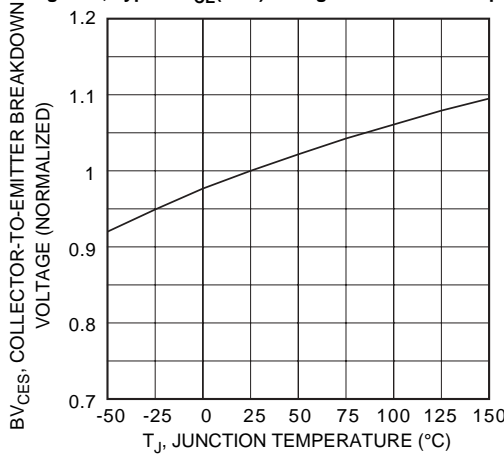


Figure 10, Breakdown Voltage vs Junction Temperature

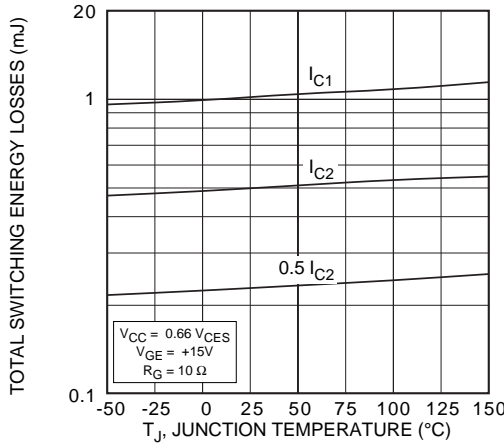


Figure 12, Typical Switching Energy Losses vs. Junction Temperature

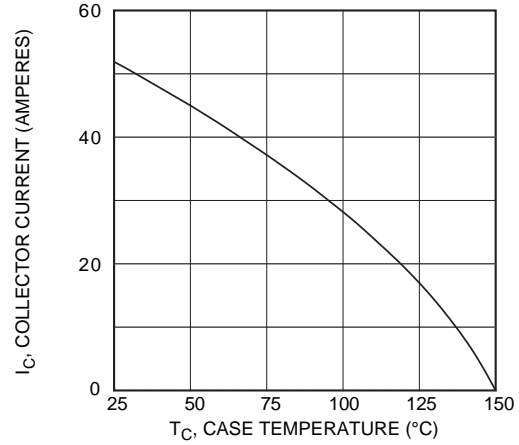


Figure 9, Maximum Collector Current vs Case Temperature

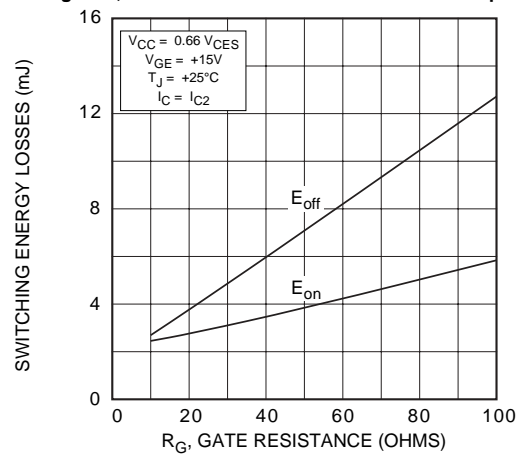


Figure 11, Typical Switching Energy Losses vs Gate Resistance

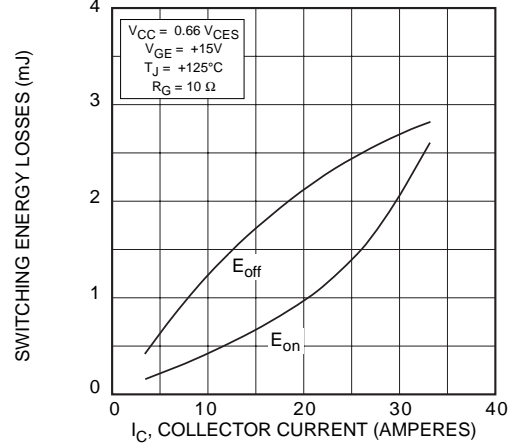


Figure 13, Typical Switching Energy Losses vs Collector Current

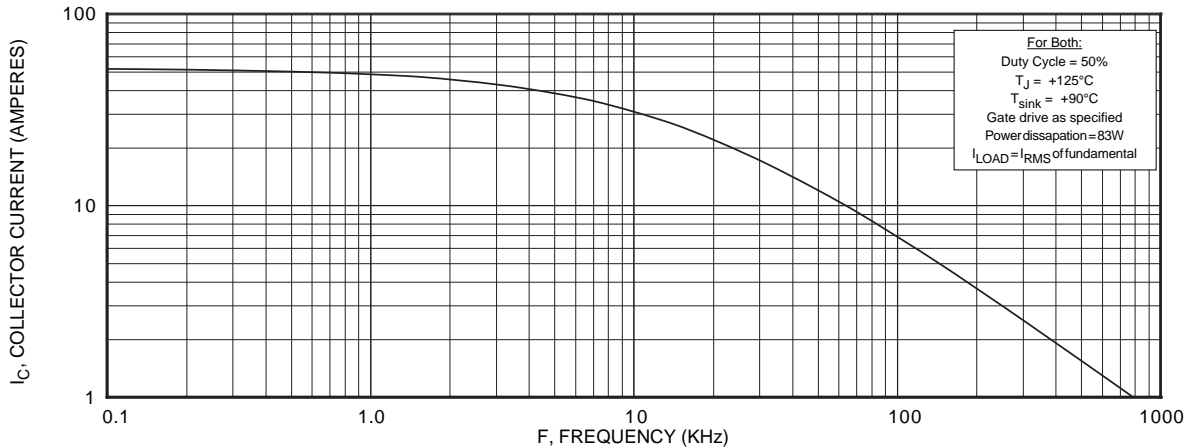


Figure 14, Typical Load Current vs Frequency

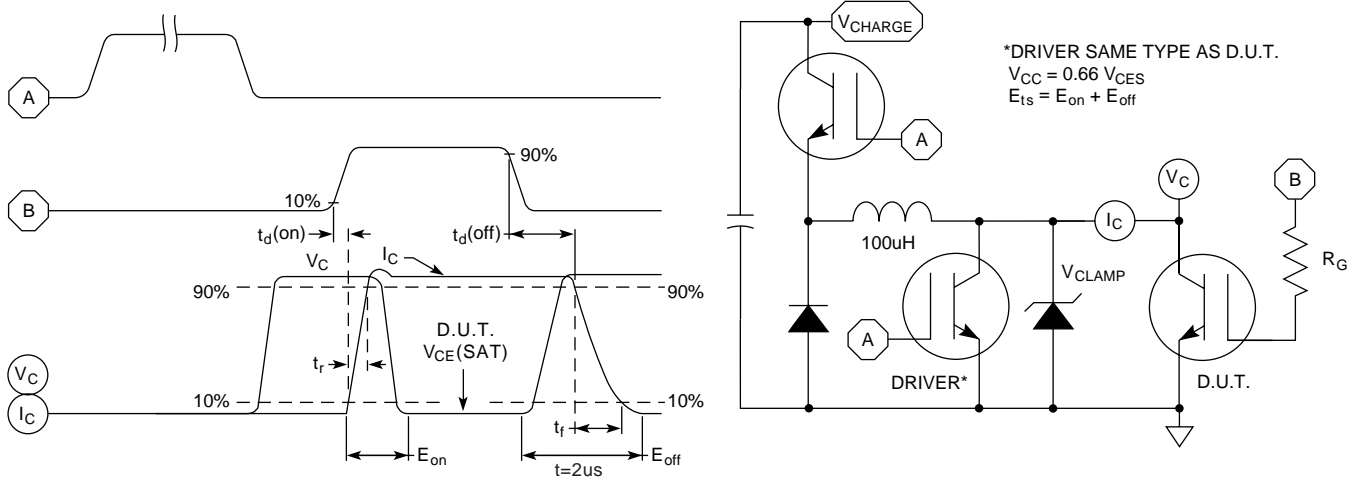


Figure 15, Switching Loss Test Circuit and Waveforms

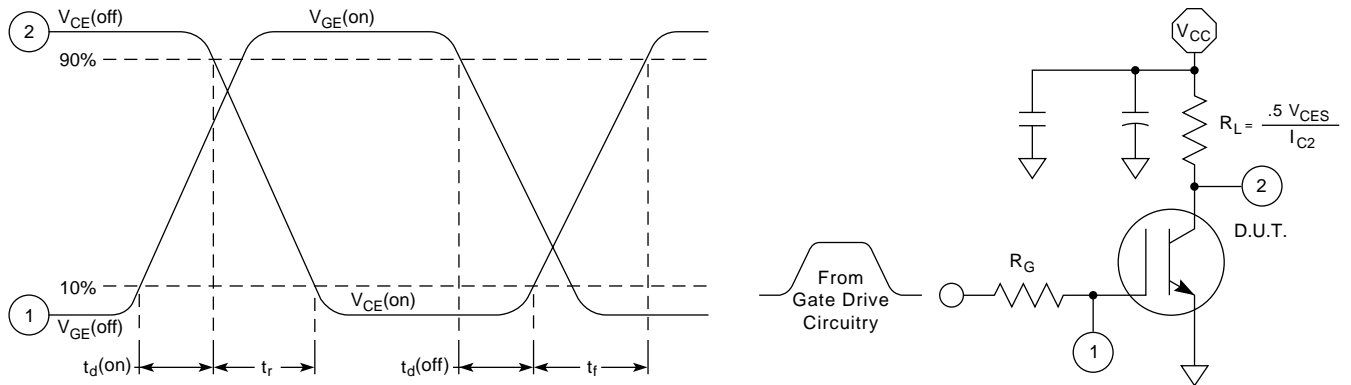
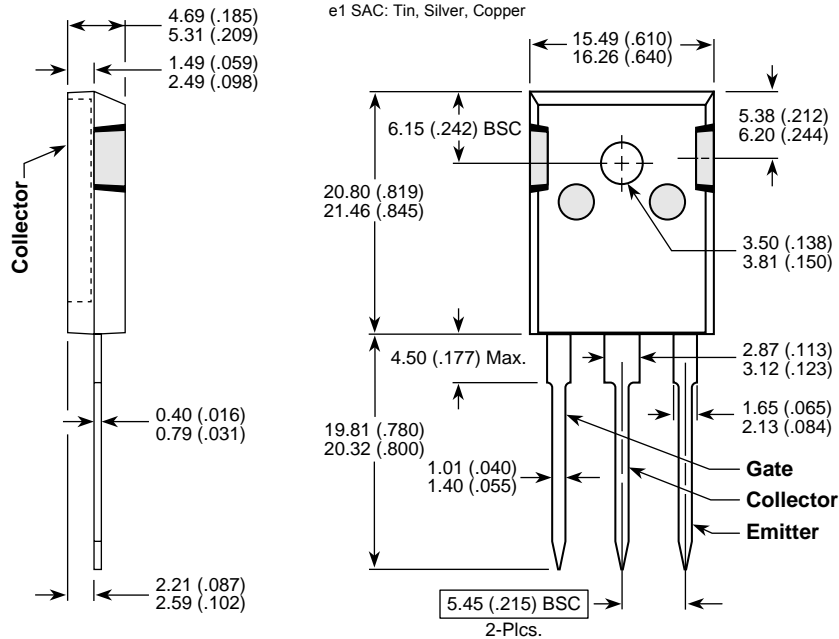


Figure 16, Resistive Switching Time Test Circuit and Waveforms

T0-247 Package Outline

e1 SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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