

# BCR1AM-12

Triac

Low Power Use

REJ03G0344-0100

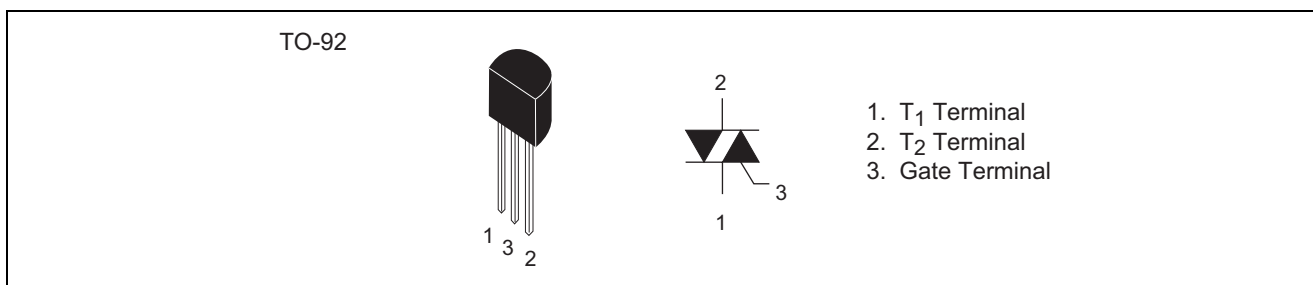
Rev.1.00

Aug.20.2004

## Features

- $I_{T(RMS)}$  : 1 A
- $V_{DRM}$  : 600 V
- $I_{FGTI}$ ,  $I_{RGTI}$ ,  $I_{RGTIII}$  : 5 mA (3 mA)<sup>Note5</sup>
- $I_{FGTIII}$  : 10 mA
- Non-Insulated Type
- Glass Passivation Type

## Outline



## Applications

Contactless AC switch, fan motor, rice-cooker, electric pot, air cleaner, heater, refrigerator, washing machine, electric fan, vending machine, trigger circuit for low and medium triac, and other general purpose control applications

## Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	720	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T$ (RMS)	1.0	A	Commercial frequency, sine full wave 360° conduction, $T_c = 56^\circ\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	10	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	0.41	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	1	W	
Average gate power dissipation	$P_{G(AV)}$	0.1	W	
Peak gate voltage	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.5	A	
Junction temperature	$T_j$	-40 to +125	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-40 to +125	$^\circ\text{C}$	
Mass	—	0.23	g	Typical value

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	Rated value			Unit	Test conditions	
		Min.	Typ.	Max.			
Repetitive peak off-state current	$I_{DRM}$	—	—	0.5	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	1.6	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 1.5\text{ A}$ , Instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGTI}$	—	—	2.0	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGTI}$	—	—	2.0	V	
	III	$V_{RGTIII}$	—	—	2.0	V	
	IV	$V_{FGTIII}$	—	—	2.0	V	
Gate trigger current <sup>Note2</sup>	I	$I_{FGTI}$	—	—	5	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGTI}$	—	—	5 <sup>Note5</sup>	mA	
	III	$I_{RGTIII}$	—	—	5 <sup>Note5</sup>	mA	
	IV	$I_{FGTIII}$	—	—	10	mA	
Gate non-trigger voltage	$V_{GD}$	0.1	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	50	$^\circ\text{C/W}$	Junction to case <sup>Note3</sup>	
Critical-rate of rise of off-state commutating voltage <sup>Note4</sup>	$(dv/dt)_c$	2	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

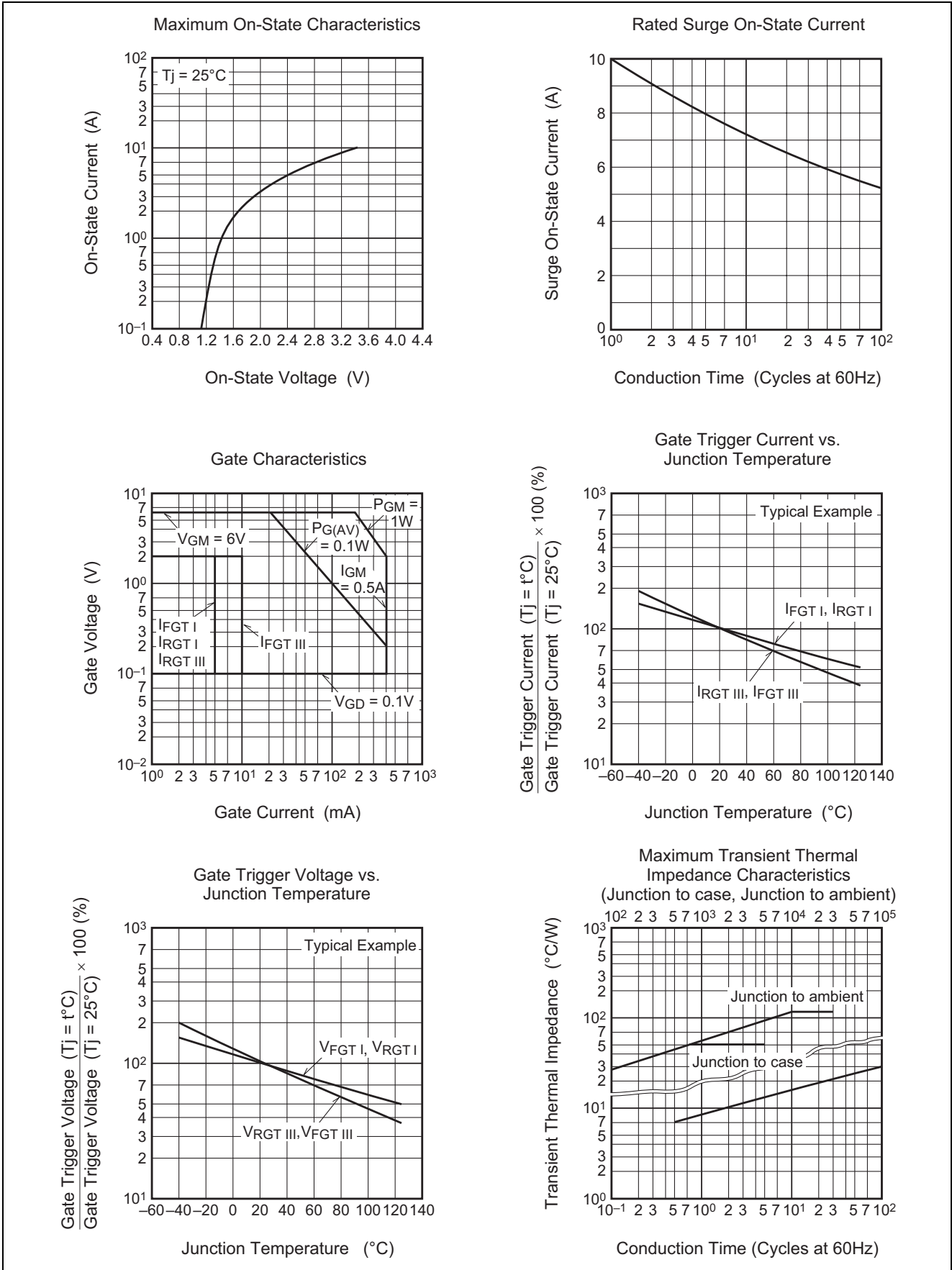
3. Case temperature is measured at the  $T_2$  terminal 1.5 mm away from the molded case.

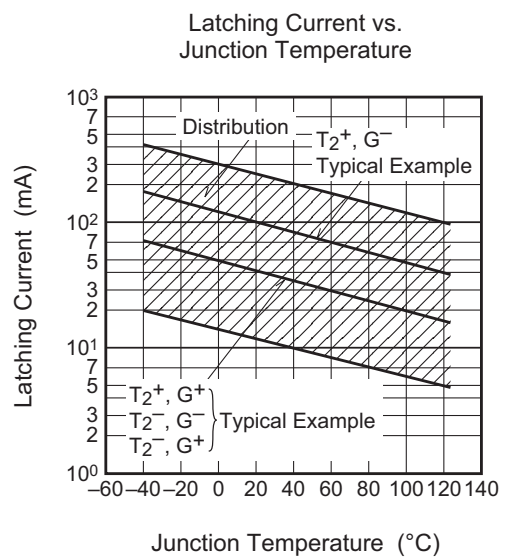
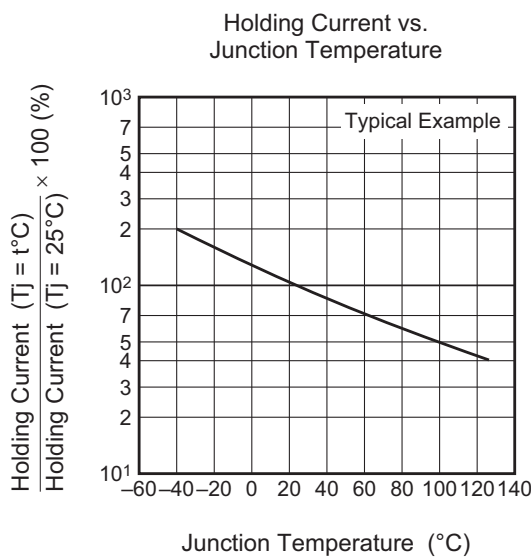
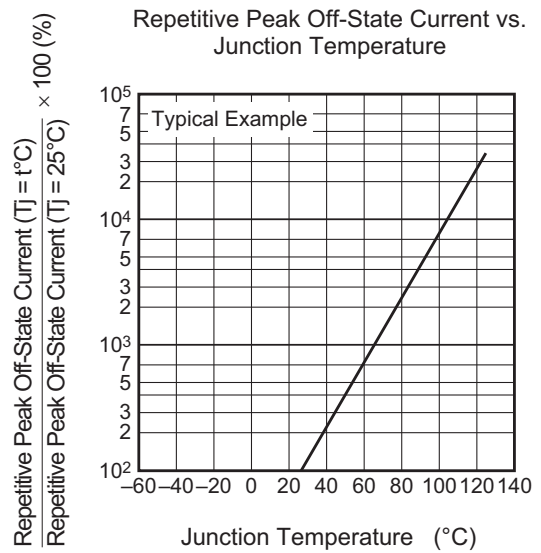
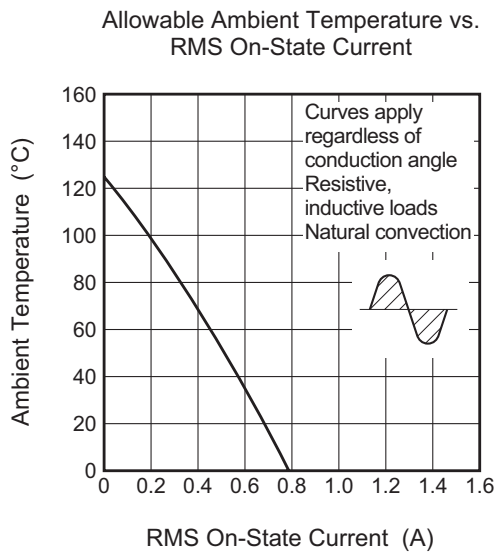
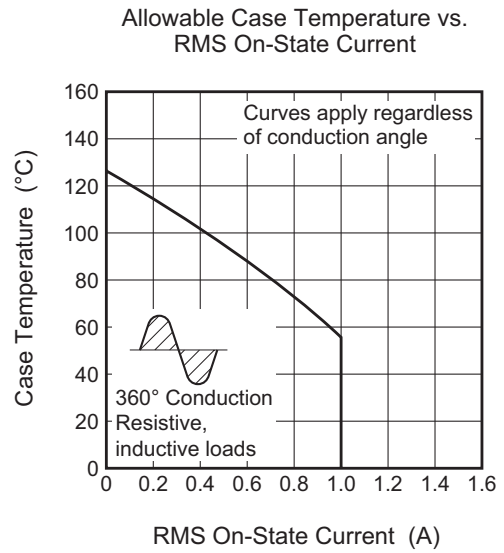
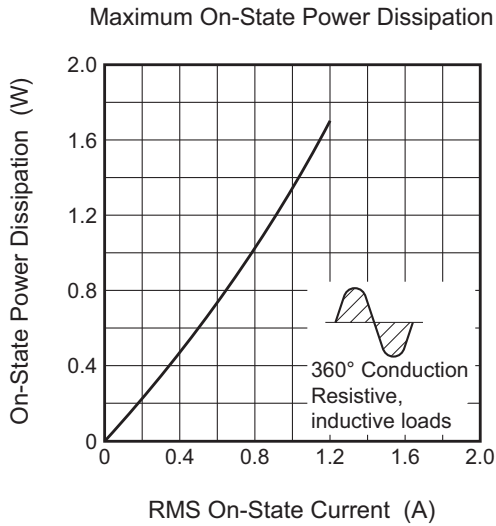
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

5. High sensitivity ( $I_{GT} \leq 3\text{ mA}$ ) is also available. ( $I_{GT}$  item: 1)

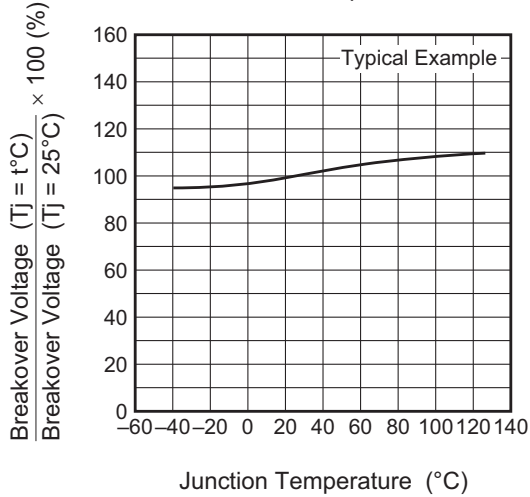
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -0.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

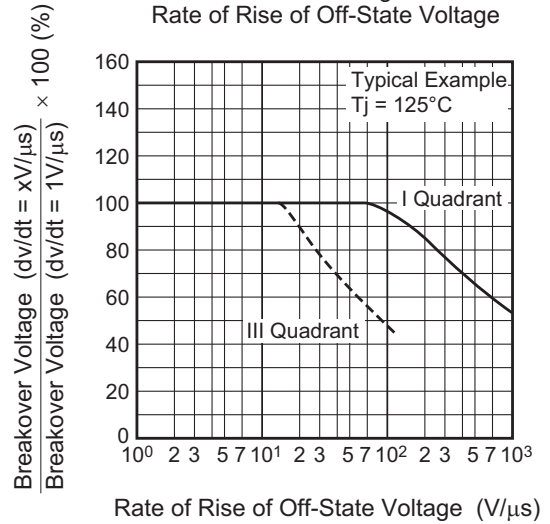




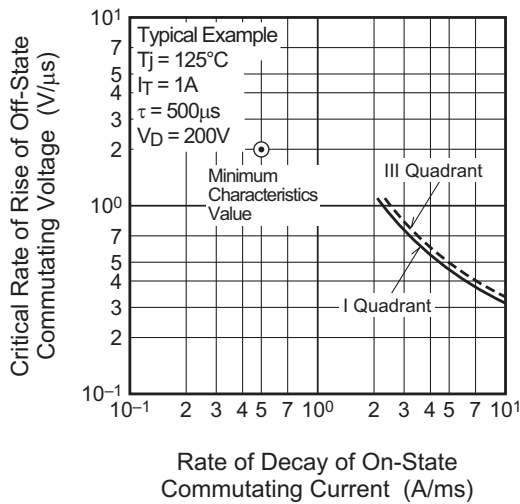
Breakover Voltage vs. Junction Temperature



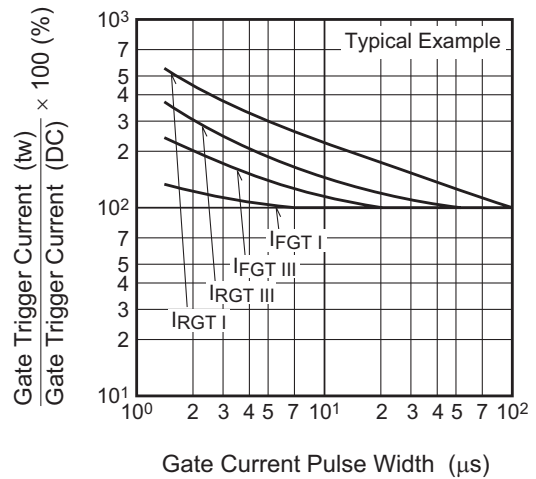
Breakover Voltage vs. Rate of Rise of Off-State Voltage



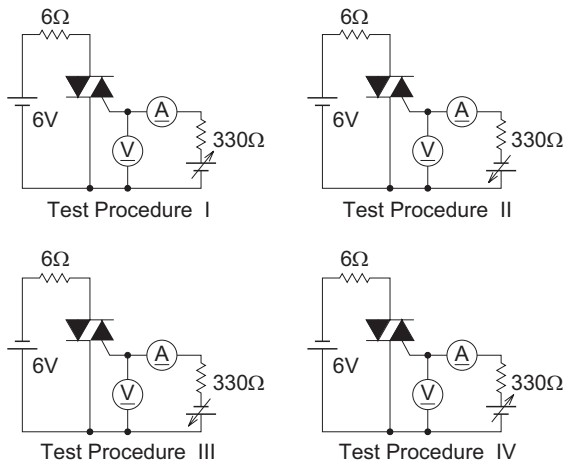
Commutation Characteristics



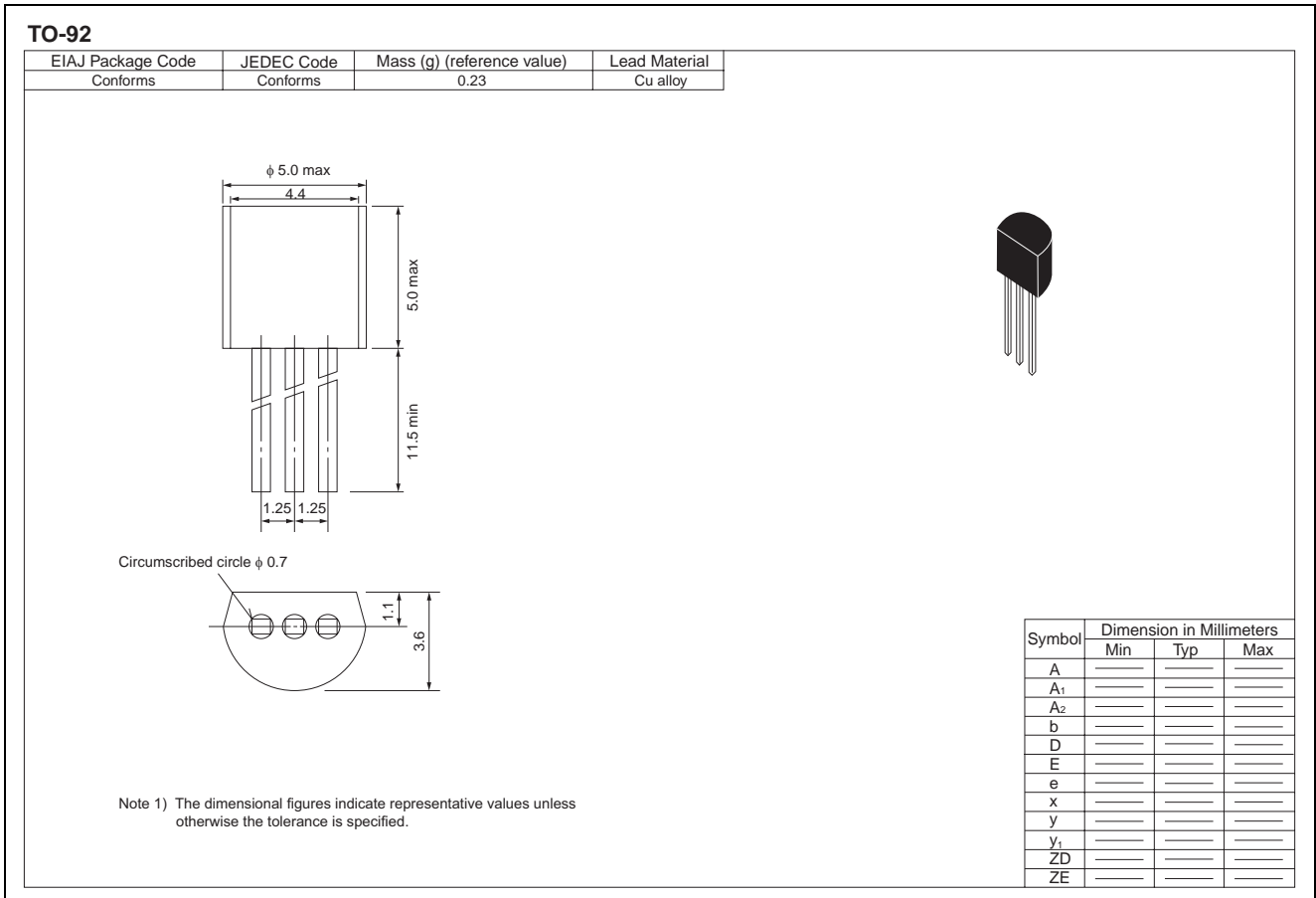
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



## Package Dimensions



## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	500	Type name	BCR1AM-12
Lead form	Vinyl sack	500	Type name – Lead forming code	BCR1AM-12-A6
Form A8	Taping	2000	Type name – TB	BCR1AM-12-TB

Note : Please confirm the specification about the shipping in detail.

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