

BCR12LM-16LH

Triac
Medium Power Use

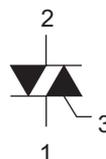
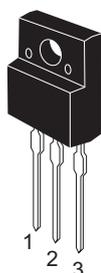
R07DS0415EJ0100
Rev.1.00
May 19, 2011

Features

- $I_{T(RMS)}$: 12 A
- V_{DRM} : 800 V
- I_{FGT} , I_{RGT} , $I_{RGT III}$: 50 mA or 35mA (I_{GT} item:1)
- High Commutation
- V_{iso} : 1800V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Type

Outline

RENESAS Package code: PRSS0003AF-A
(Package name: TO-220FL)



1. T₁ Terminal
2. T₂ Terminal
3. Gate Terminal

Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose AC power control applications

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		16	
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	960	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	12	A	Commercial frequency, sine full wave 360°conduction, $T_c = 93^\circ\text{C}$
Surge on-state current	I_{TSM}	120	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	60	A^2s	Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current
Peak gate power dissipation	P_{GM}	5	W	
Average gate power dissipation	$P_{G(AV)}$	0.5	W	
Peak gate voltage	V_{GM}	10	V	
Peak gate current	I_{GM}	2	A	
Junction Temperature	T_j	-40 to +150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$	
Mass	—	1.5	g	Typical value
Isolation voltage	V_{iso}	1800	V	$T_a = 25^\circ\text{C}$, AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

Electrical Characteristics

Parameter	Symbol	BCR12LM-16LH-1 (I_{GT} item : 1)			BCR12LM-16LH			Unit	Test conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
Repetitive peak off-state current	I_{DRM}	—	—	2.0	—	—	2.0	mA	$T_j = 150^\circ\text{C}$ V_{DRM} applied	
On-state voltage	V_{TM}	—	—	1.5	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 20$ A instantaneous measurement	
Gate trigger voltage ^{Note2}	I	V_{FGTI}	—	—	1.5	—	—	1.5	V	$T_j = 25^\circ\text{C}$, $V_D = 6$ V $R_L = 6 \Omega$, $R_G = 330 \Omega$
	II	V_{RGTI}	—	—	1.5	—	—	1.5	V	
	III	V_{RGTIII}	—	—	1.5	—	—	1.5	V	
Gate trigger current ^{Note2}	I	I_{FGTI}	—	—	35	—	—	50	mA	$T_j = 25^\circ\text{C}$, $V_D = 6$ V $R_L = 6 \Omega$, $R_G = 330 \Omega$
	II	I_{RGTI}	—	—	35	—	—	50	mA	
	III	I_{RGTIII}	—	—	35	—	—	50	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	0.2	—	—	V	$T_j = 125^\circ\text{C}$ $V_D = 1/2 V_{DRM}$	
		0.1	—	—	0.1	—	—	V	$T_j = 150^\circ\text{C}$ $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	4.0	—	—	4.0	$^\circ\text{C}/\text{W}$	Junction to case ^{Note3}	
Critical-rate of decay of on-state commutating current ^{Note4}	$(di/dt)_c$	7	—	—	13	—	—	A/ms	$T_j = 125^\circ\text{C}$ $(dv/dt)_c < 100$ V/ μs	

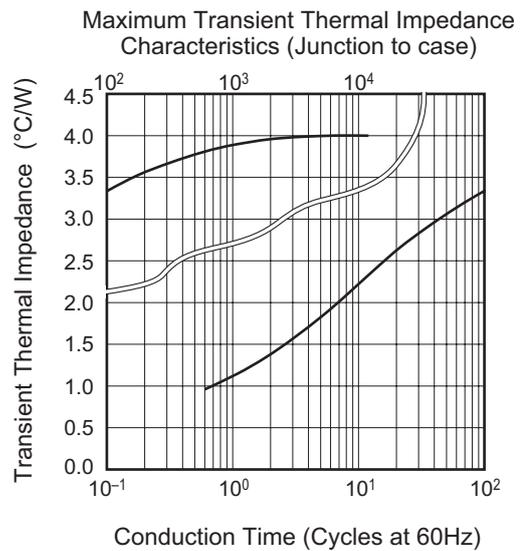
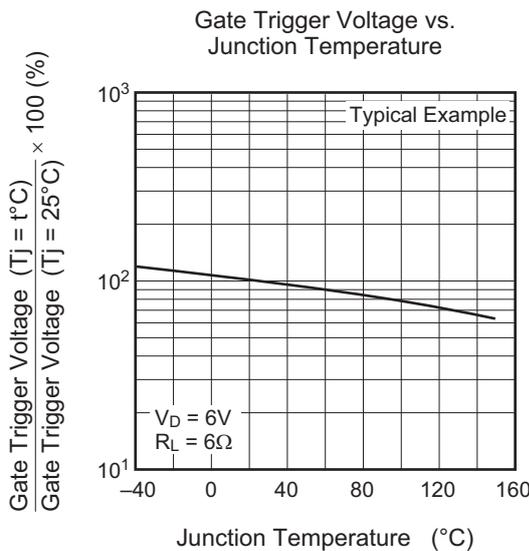
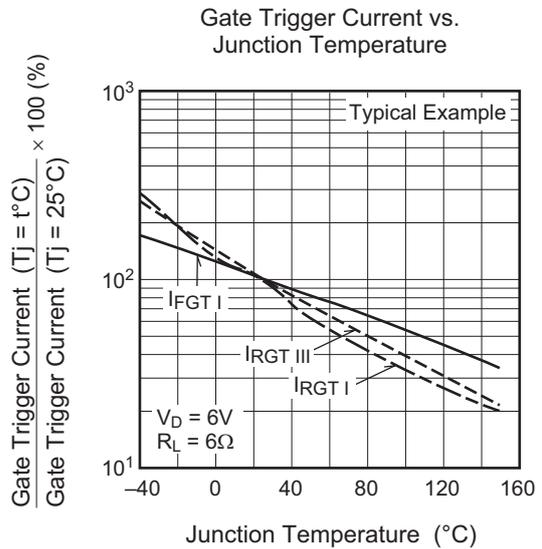
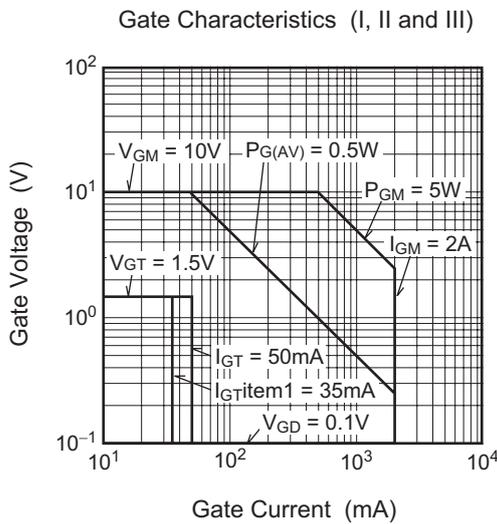
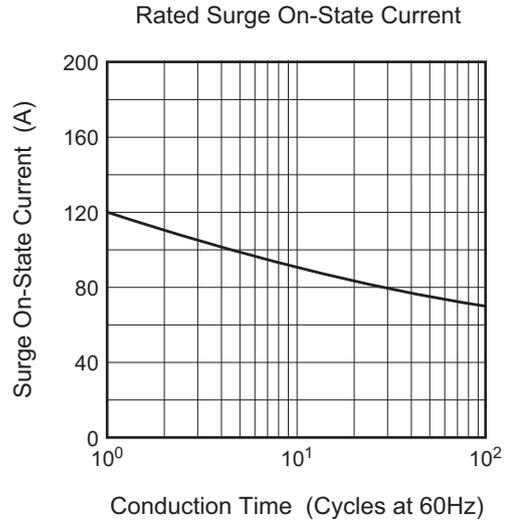
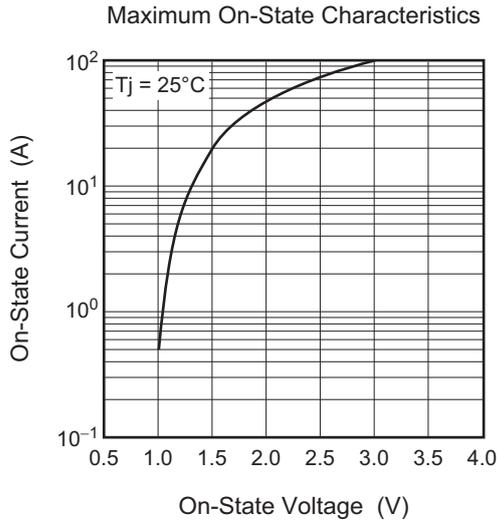
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

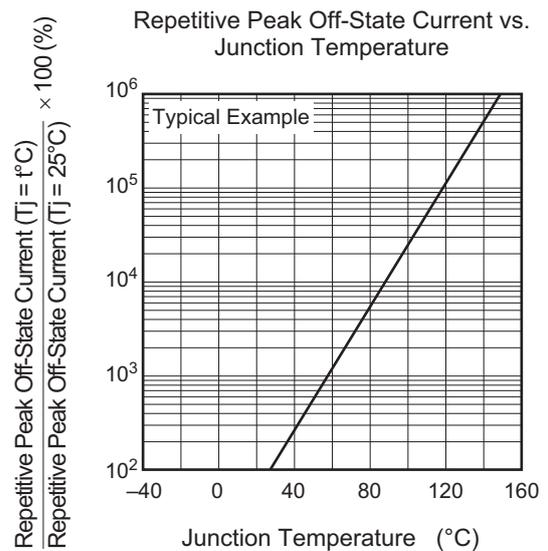
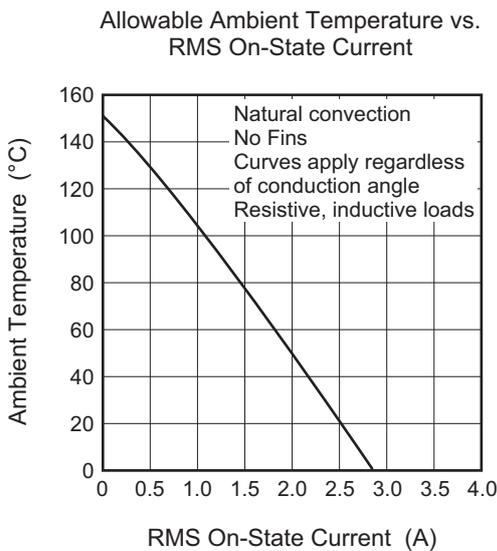
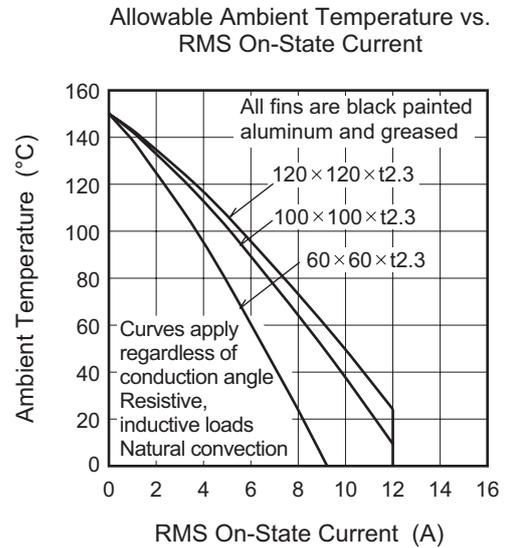
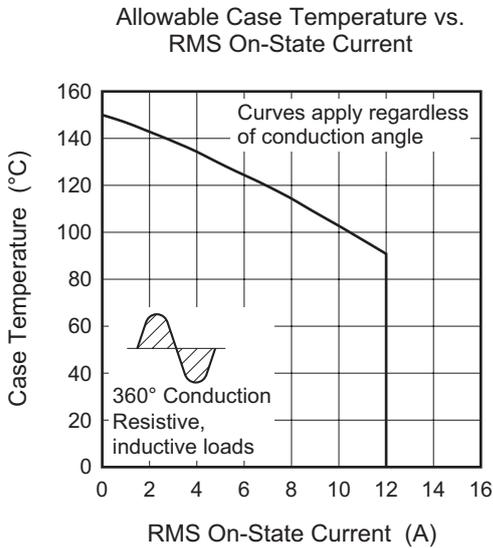
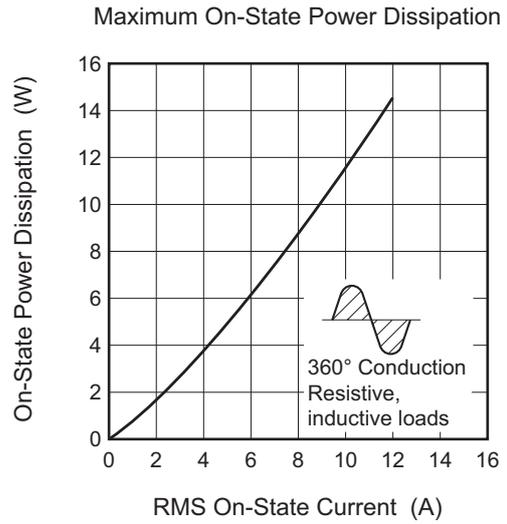
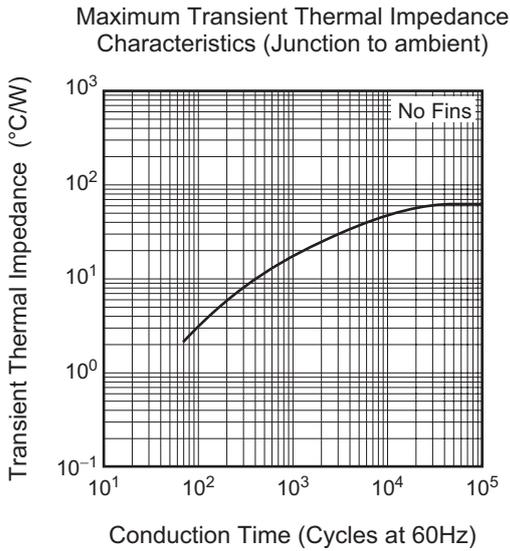
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

4. Test conditions of the critical-rate of decay of on-state commutation current are shown in the table below.

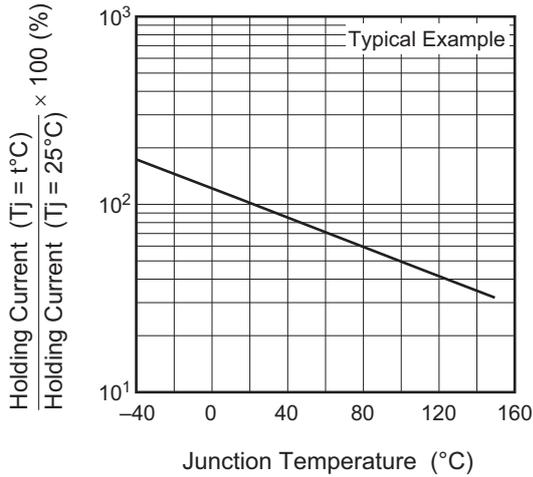
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Peak off-state voltage $V_D = 400$ V 2. Rate of rise of off-state commutating voltage $(dv/dt)_c < 100$ V/ μs	

Performance Curves

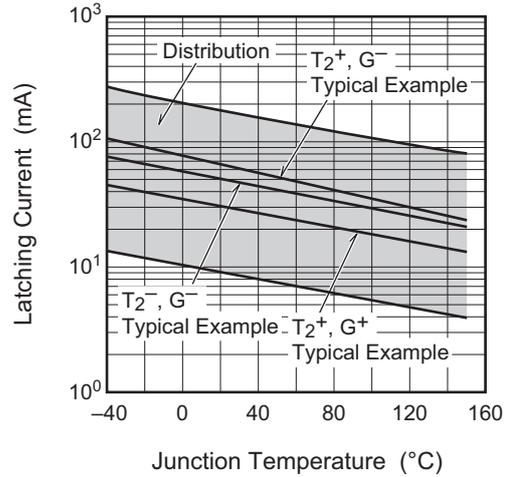




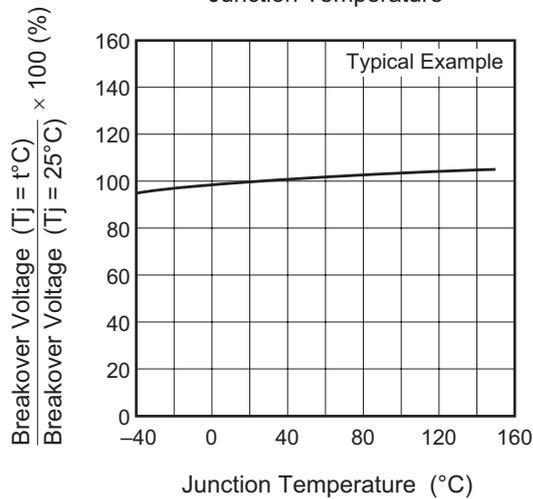
Holding Current vs. Junction Temperature



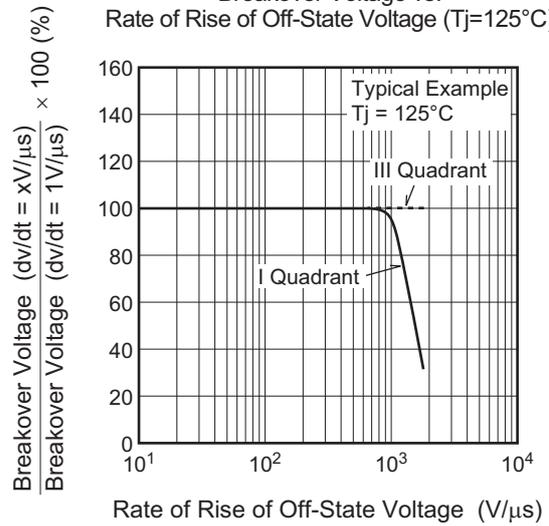
Latching Current vs. Junction Temperature



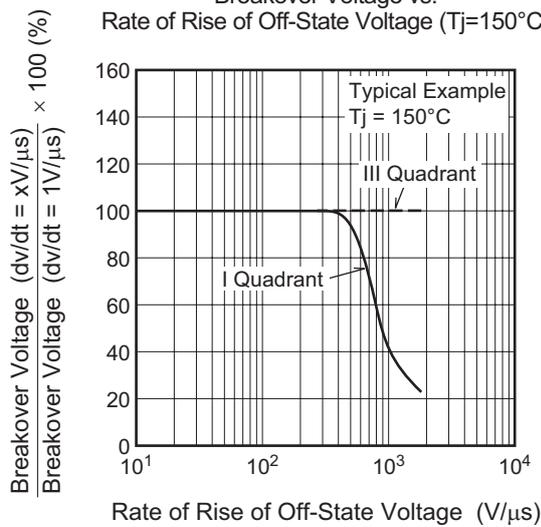
Breakover Voltage vs. Junction Temperature



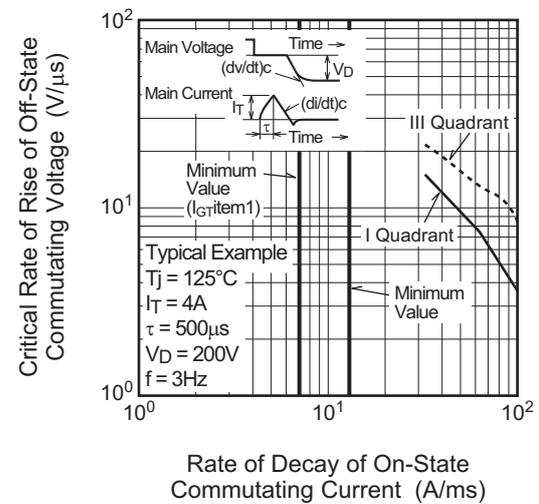
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



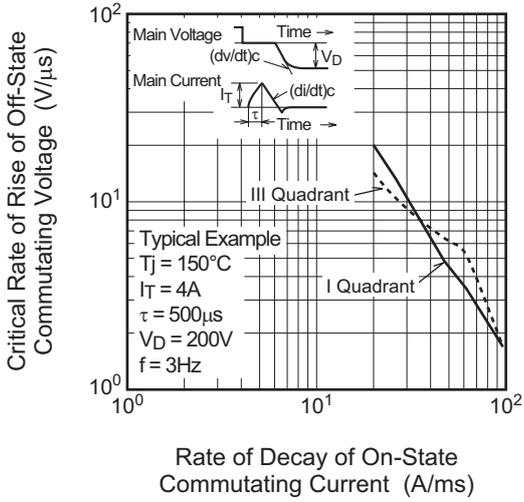
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



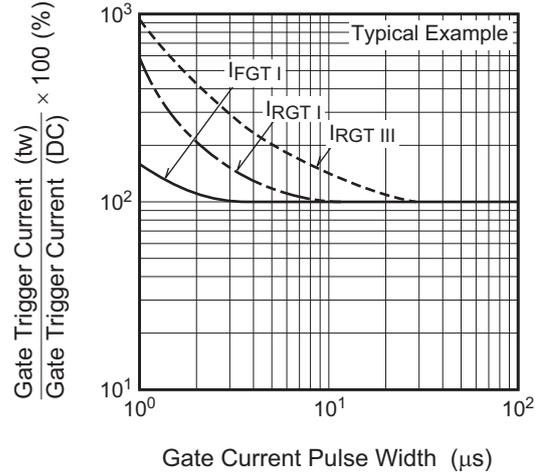
Commutation Characteristics (Tj=125°C)



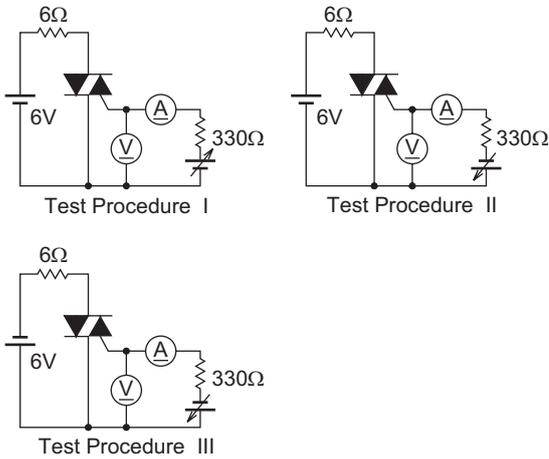
Commutation Characteristics (Tj=150°C)



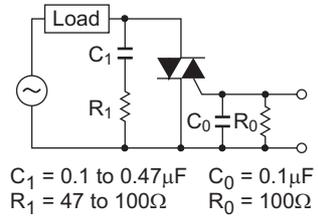
Gate Trigger Current vs. Gate Current Pulse Width



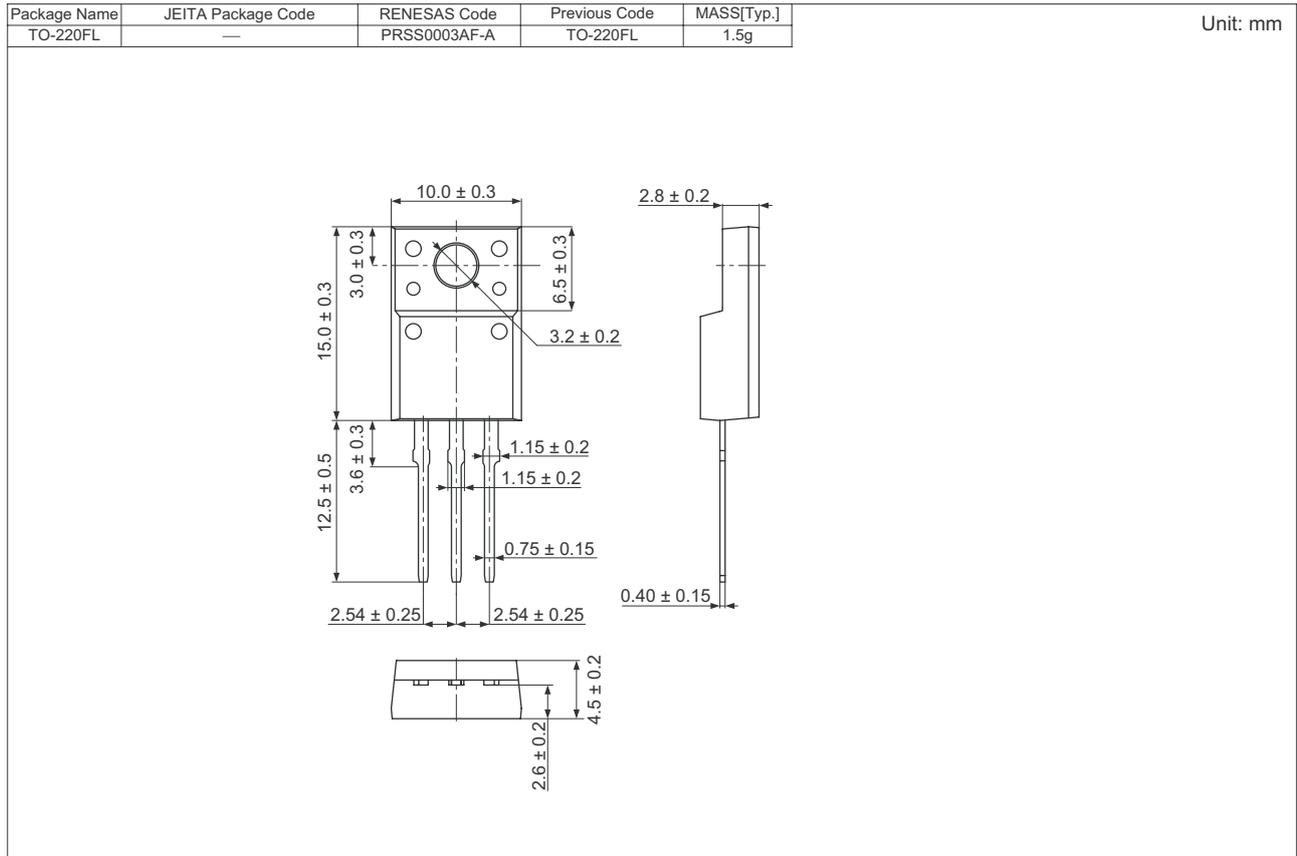
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions



Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR12LM-16LH#B00	Tube	50 pcs.	Straight type
BCR12LM-16LH-1#B00	Tube	50 pcs.	Straight type, I _{GT} item:1

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

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-586-6000, Fax: +1-408-586-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 HarbourFront Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6276-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jin Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141