

# BCR3LM-12RB

600V - 3A - Triac

Low Power Use

R07DS0863EJ0100

Rev.1.00

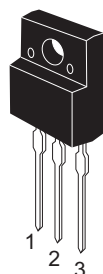
Nov 14, 2012

## Features

- $I_{T(RMS)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$ : 15 mA (10 mA)<sup>Note3</sup>
- $V_{iso}$ : 1800 V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Type
- UL Recognized: File No. E223904

## Outline

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



1. T<sub>1</sub> Terminal
2. T<sub>2</sub> Terminal
3. Gate Terminal

## Applications

Electric rice cooker, electric pot, and other heater control

## Maximum Ratings

Parameter	Symbol	Voltage class	
		12	Unit
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	$I_{T(RMS)}$	3	A	Commercial frequency, sine full wave 360° conduction, Tc = 130°C
Surge on-state current	$I_{TSM}$	30	A	60 Hz sine wave 1 full cycle, peak value, non-repetitive
I <sup>2</sup> t for fusion	I <sup>2</sup> t	3.7	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	3	W	
Average gate power dissipation	$P_{G(AV)}$	0.3	W	
Peak gate voltage	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.5	A	
Junction Temperature	T <sub>j</sub>	-40 to +150	°C	
Storage temperature	T <sub>stg</sub>	-40 to +150	°C	
Mass	—	1.5	g	Typical value
Isolation voltage <sup>Note5</sup>	Viso	1800	V	Ta = 25°C, AC 1 minute T <sub>1</sub> • T <sub>2</sub> • G terminal to case

## Electrical Characteristics

Parameter	Symbol	Rated value			Unit	Test conditions
		Min.	Typ.	Max.		
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied
On-state voltage	$V_{TM}$	—	—	1.5	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 4.5\text{A}$ , instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGT_I}$	—	—	1.5	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGT_I}$	—	—	1.5	
	III	$V_{RGT_{III}}$	—	—	1.5	
Gate trigger current <sup>Note2</sup>	I	$I_{FGT_I}$	—	—	15 <sup>Note3</sup>	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGT_I}$	—	—	15 <sup>Note3</sup>	
	III	$I_{RGT_{III}}$	—	—	15 <sup>Note3</sup>	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
		0.1	—	—	V	$T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	5.2	$^\circ\text{C/W}$	Junction to case <sup>Note4</sup>

Notes: 1. Gate open

2. Measurement using the gate trigger characteristics measurement circuit.

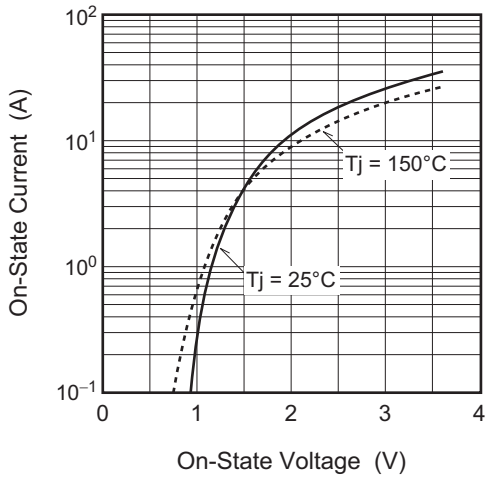
3. High sensitivity ( $I_{GT} \leq 10\text{ mA}$ ) is also available. (IGT item: 1)

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

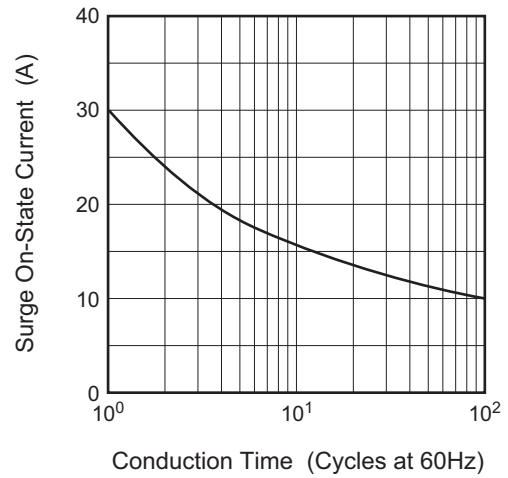
5. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it's advisable that heatsink is electrically floating.

Performance Curves

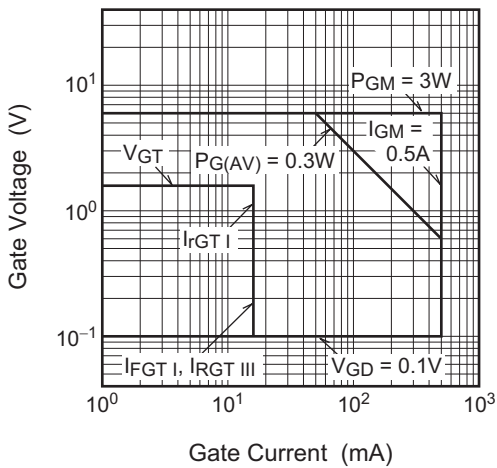
Maximum On-State Characteristics



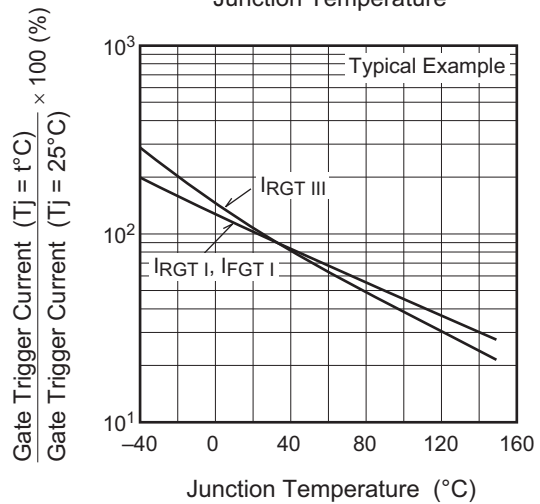
Rated Surge On-State Current



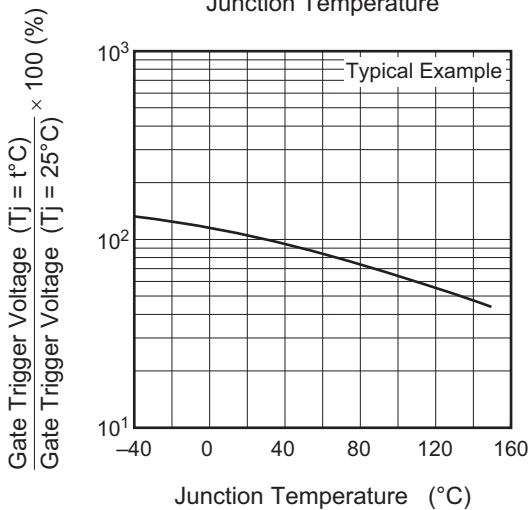
Gate Characteristics (I, II and III)



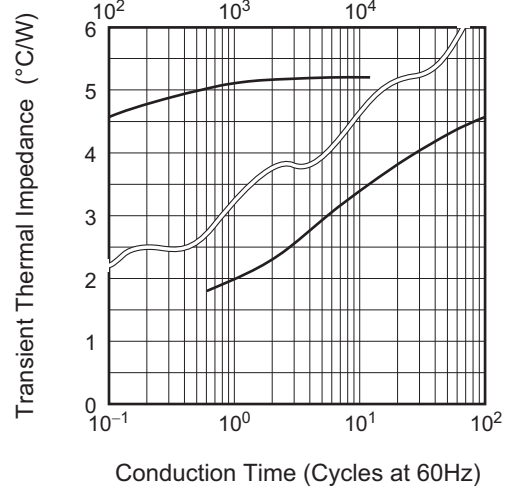
Gate Trigger Current vs. Junction Temperature



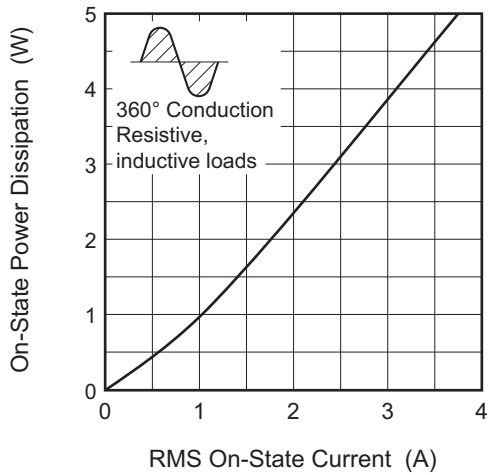
Gate Trigger Voltage vs. Junction Temperature



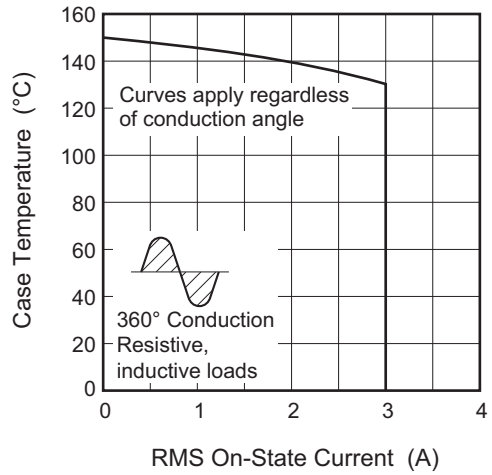
Maximum Transient Thermal Impedance Characteristics (Junction to case)



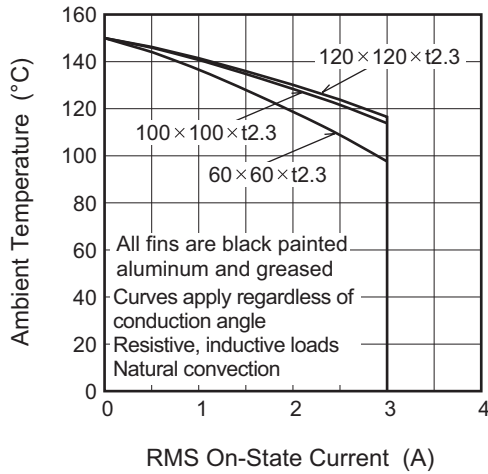
Maximum On-State Power Dissipation



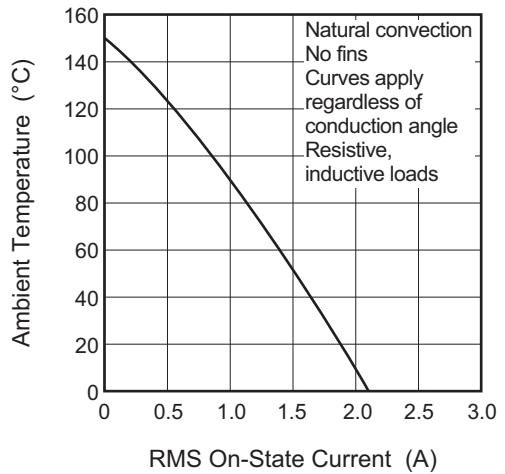
Allowable Case Temperature vs. RMS On-State Current



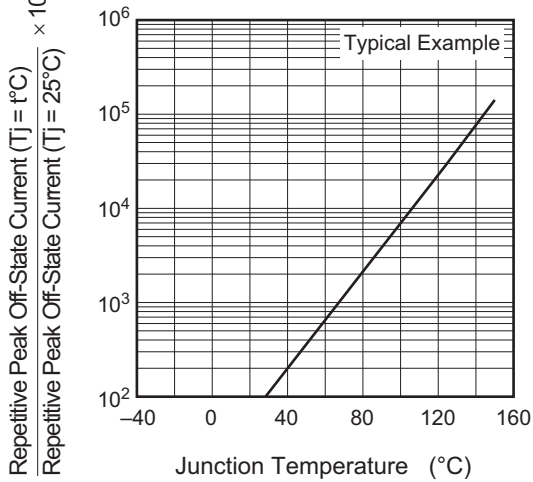
Allowable Ambient Temperature vs. RMS On-State Current



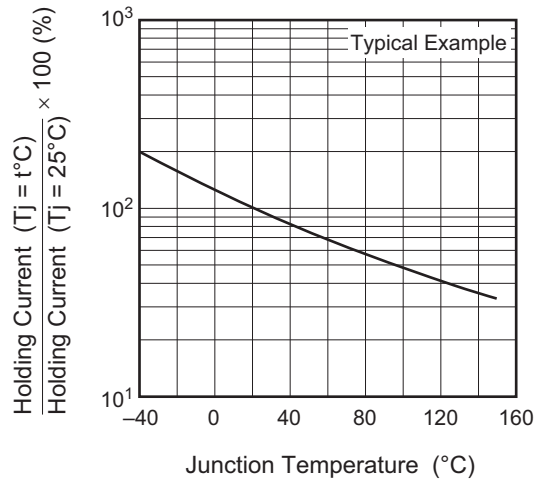
Allowable Ambient Temperature vs. RMS On-State Current



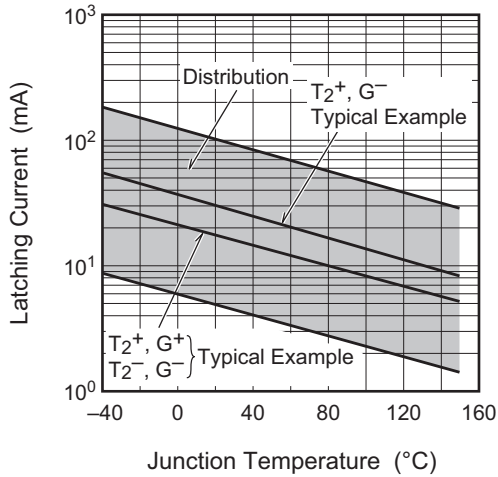
Repetitive Peak Off-State Current vs. Junction Temperature



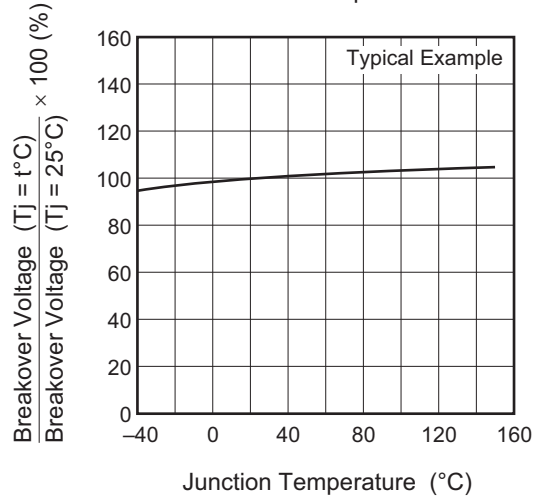
Holding Current vs. Junction Temperature



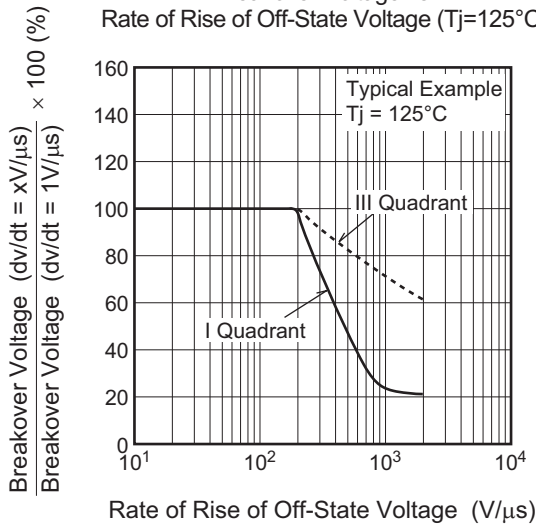
Latching Current vs. Junction Temperature



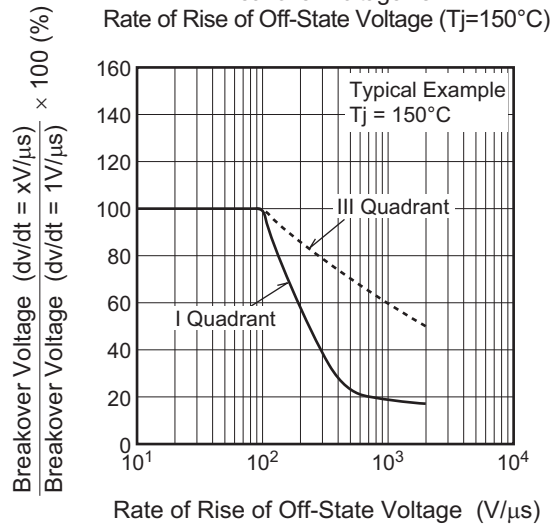
Breakover Voltage vs. Junction Temperature



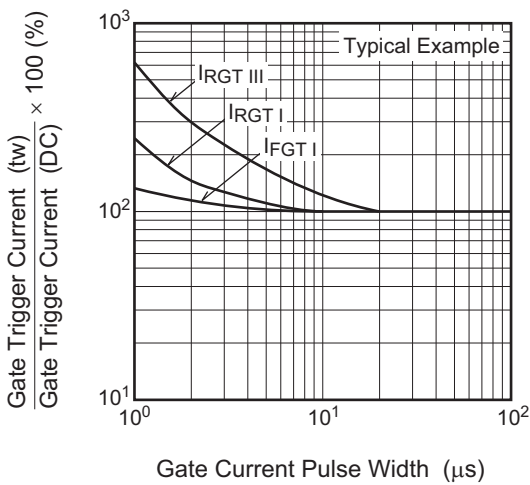
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



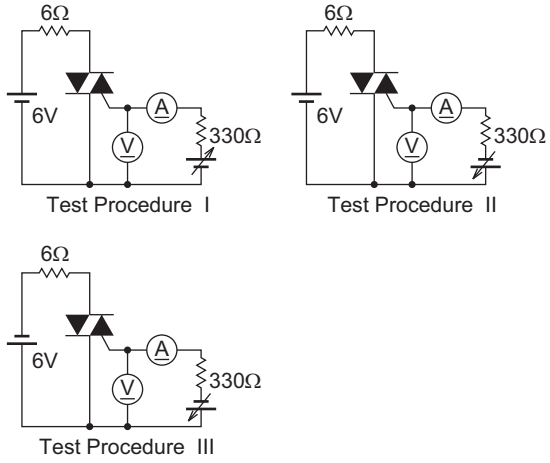
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



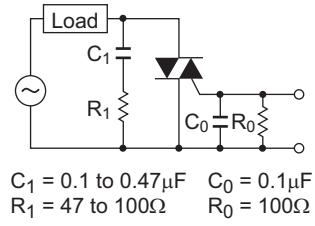
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g	

The technical drawing illustrates the dimensions of the BCR3LM-12RB package. The top view shows a rectangular body with a width of  $10.0 \pm 0.3$  mm and a height of  $15.0 \pm 0.3$  mm. The distance between the top two mounting holes is  $3.0 \pm 0.3$  mm, and the distance between the bottom two is  $6.5 \pm 0.3$  mm. The distance between the two central leads is  $3.2 \pm 0.2$  mm. The side view shows a total height of  $12.5 \pm 0.5$  mm, with a lead height of  $3.6 \pm 0.3$  mm. The lead thickness is  $0.75 \pm 0.15$  mm, and the lead width at the base is  $1.15 \pm 0.2$  mm. The distance between the two leads is  $2.54 \pm 0.25$  mm. The detail view shows a lead diameter of  $2.6 \pm 0.2$  mm and a lead length of  $4.5 \pm 0.2$  mm. The distance from the top of the package to the start of the lead is  $2.8 \pm 0.2$  mm, and the distance from the bottom of the package to the start of the lead is  $0.40 \pm 0.15$  mm.

## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR3LM-12RB#B00	Tube	50 pcs.	Straight type
BCR3LM-12RB-A8#B00	Tube	50 pcs.	A8 Lead form

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

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2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.  
Tel: +1-408-588-6000, Fax: +1-408-588-6130

**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: +44-1628-651-700, Fax: +44-1628-651-804

**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.**  
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949  
Tel: +65-6213-0200, Fax: +65-6213-0300

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Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: +60-3-7955-3390, Fax: +60-3-7955-9510

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