

# RJP30H1DPP-M0

Silicon N Channel IGBT  
High speed power switching

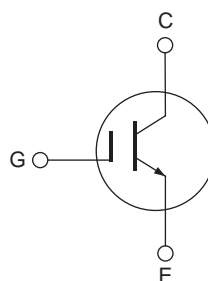
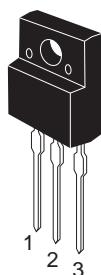
R07DS0466EJ0200  
Rev.2.00  
Jun 15, 2011

## Features

- Trench gate and thin wafer technology (G6H-II series)
- High speed switching:  $t_r = 80$  ns typ.,  $t_f = 150$  ns typ.
- Low collector to emitter saturation voltage:  $V_{CE(sat)} = 1.5$  V typ.
- Low leak current:  $I_{CES} = 1$   $\mu$ A max.
- Isolated package TO-220FL

## Outline

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



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to emitter voltage	$V_{CES}$	360	V
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$I_C$	30	A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	200	A
Collector dissipation	$P_C$ <sup>Note2</sup>	20	W
Junction to case thermal impedance	$\theta_{j-c}$	6.25	$^\circ\text{C}/\text{W}$
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Notes: 1.  $PW \leq 10$   $\mu$ s, duty cycle  $\leq 1\%$

2.  $T_c = 25^\circ\text{C}$

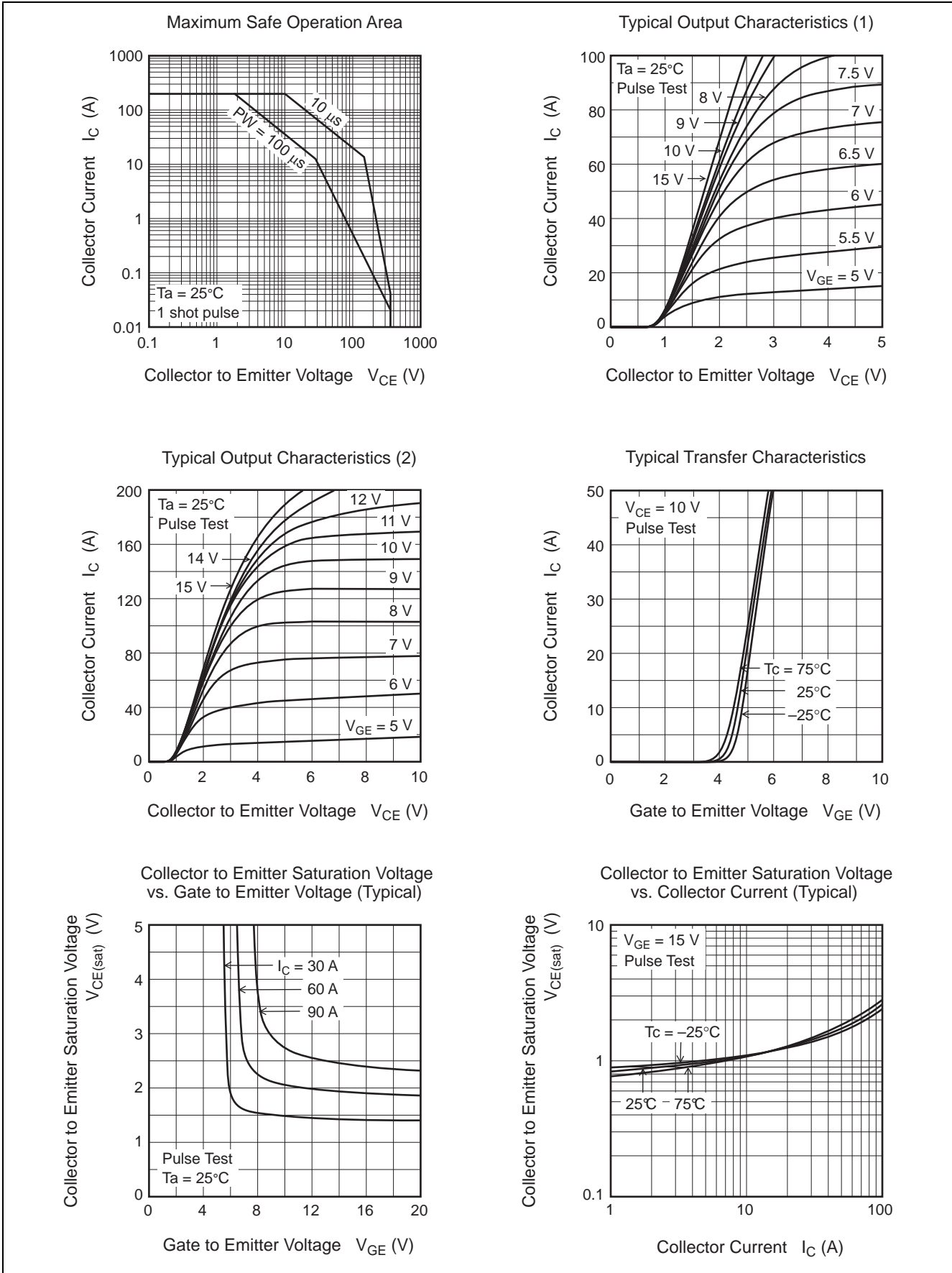
## Electrical Characteristics

(Ta = 25°C)

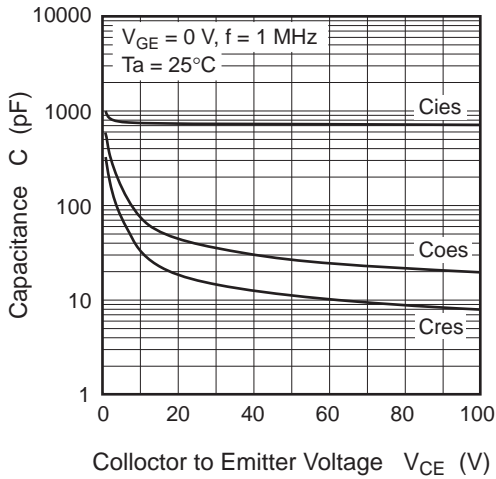
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu\text{A}$	$V_{CE} = 360\text{ V}, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 100$	nA	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	2.5	—	5	V	$V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.5	2	V	$I_C = 30\text{ A}, V_{GE} = 15\text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{ies}$	—	740	—	pF	$V_{CE} = 25\text{ V}$ $V_{GE} = 0$ $f = 1\text{ MHz}$
Output capacitance	$C_{oes}$	—	40	—	pF	
Reveres transfer capacitance	$C_{res}$	—	17	—	pF	
Total gate charge	$Q_g$	—	23	—	nC	$V_{GE} = 15\text{ V}$ $V_{CE} = 150\text{ V}$ $I_C = 30\text{ A}$
Gate to emitter charge	$Q_{ge}$	—	4	—	nC	
Gate to collector charge	$Q_{gc}$	—	8	—	nC	
Switching time	$t_{d(on)}$	—	0.02	—	$\mu\text{s}$	$I_C = 30\text{ A}$ $R_L = 5\ \Omega$ $V_{GE} = 15\text{ V}$ $R_G = 5\ \Omega$
	$t_r$	—	0.08	—	$\mu\text{s}$	
	$t_{d(off)}$	—	0.04	—	$\mu\text{s}$	
	$t_f$	—	0.15	—	$\mu\text{s}$	

Notes: 3. Pulse test

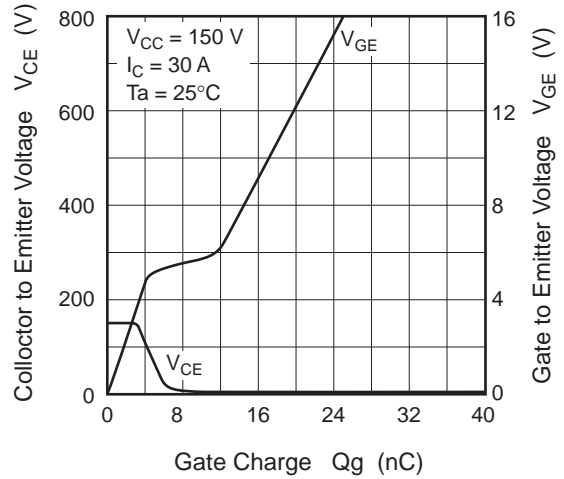
### Main Characteristics



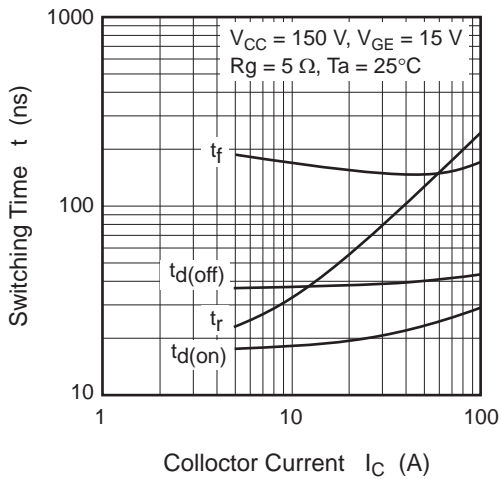
Typical Capacitance vs. Collector to Emitter Voltage



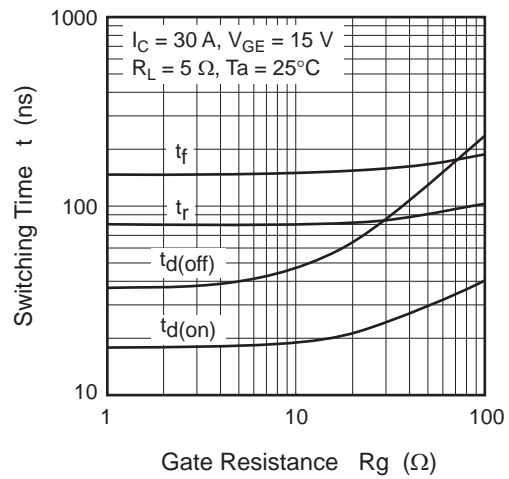
Dynamic Input Characteristics (Typical)



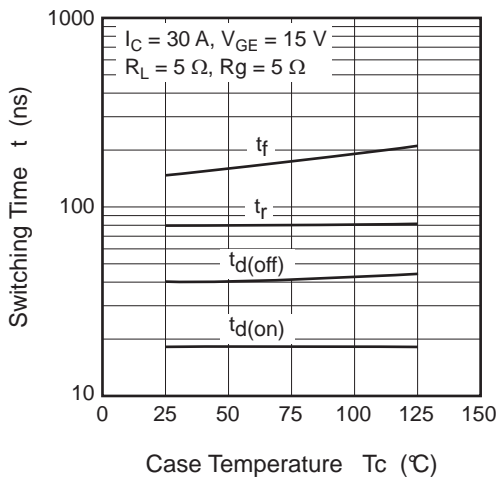
Switching Characteristics (Typical) (1)



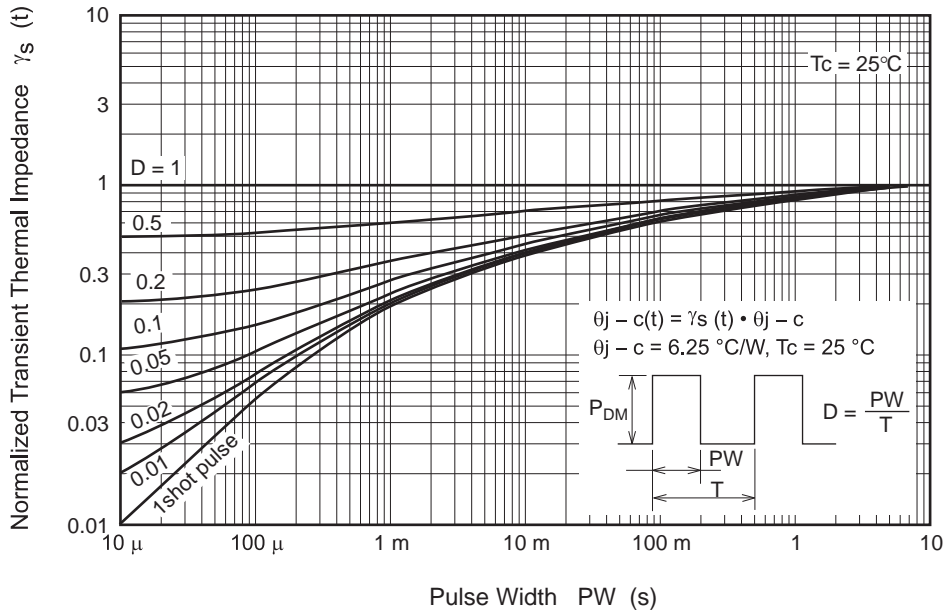
Switching Characteristics (Typical) (2)



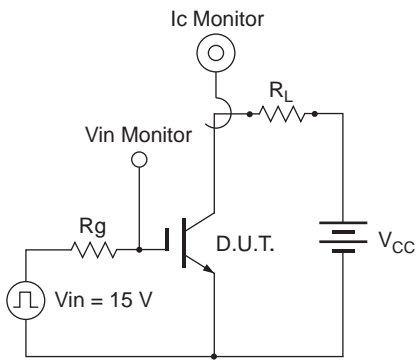
Switching Characteristics (Typical) (3)



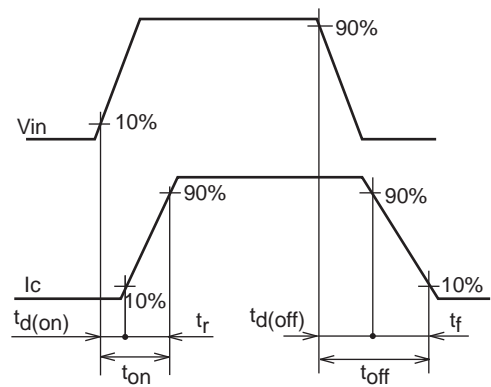
Normalized Transient Thermal Impedance vs. Pulse Width



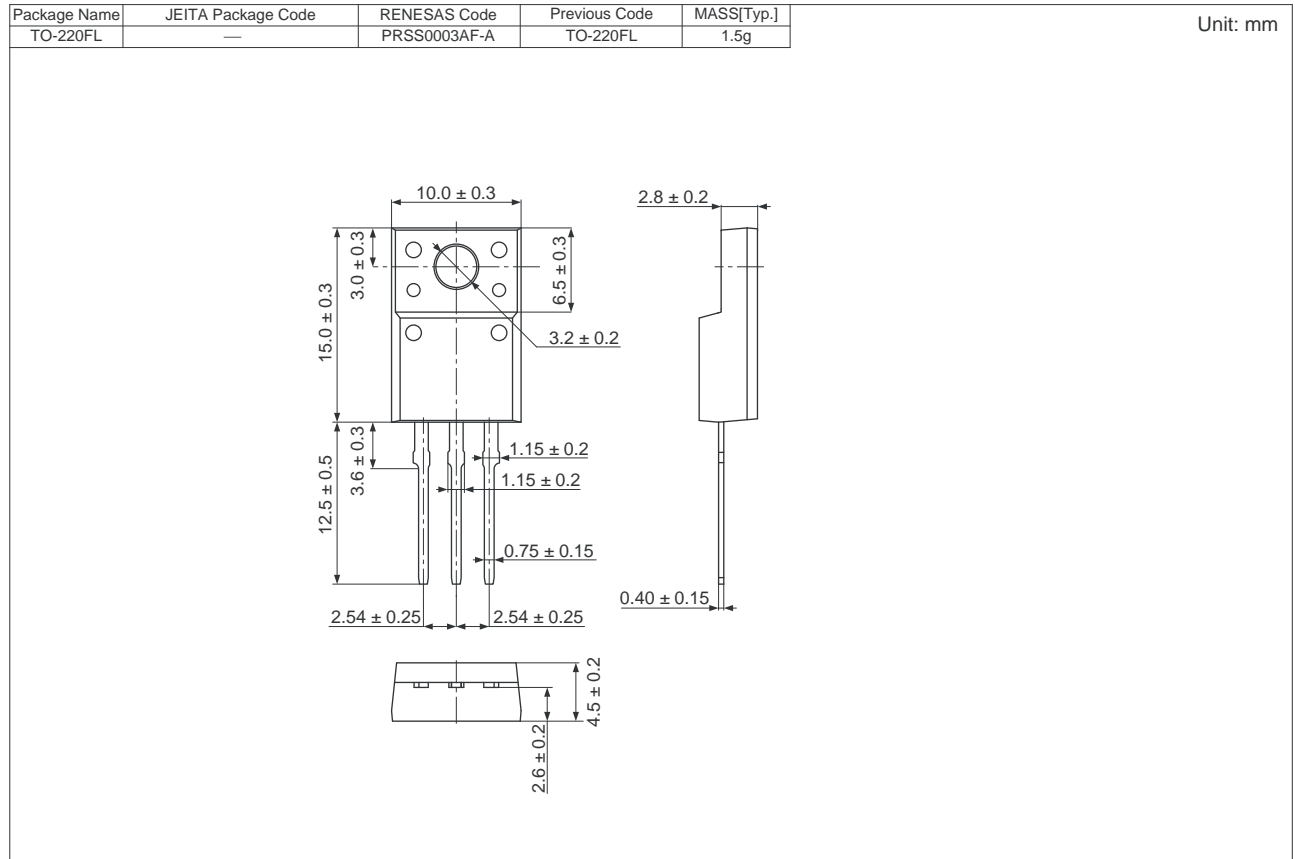
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP30H1DPP-M0-T2	600 pcs	Box (Tube)

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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: +44-1628-585-100, 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: +65-6278-8001

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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: +60-3-7955-9390, 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