

RJH6087BDPK

Silicon N Channel IGBT
High Speed Power Switching

R07DS0389EJ0100

Rev.1.00

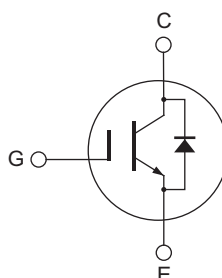
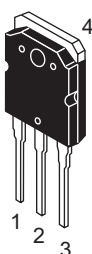
May 11, 2011

Features

- Ultra high speed switching
 $t_f = 55$ ns typ. (at $I_C = 30$ A, $V_{CC} = 300$ V, $V_{GE} = 15$ V, $R_g = 5$ Ω , Inductive Load)
- Low on-state voltage
- Fast recovery diode

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



1. Gate
2. Collector
3. Emitter
4. Collector (Flange)

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	600	V
Gate to emitter voltage	V_{GES}	± 30	V
Collector current	I_C	50	A
Collector peak current	$i_{c(\text{peak})}$ ^{Note1}	100	A
Collector to emitter diode forward peak current	$i_{DF(\text{peak})}$ ^{Note2}	100	A
Collector dissipation	P_C	223.2	W
Junction to case thermal impedance (IGBT)	θ_{j-c}	0.56	$^\circ\text{C} / \text{W}$
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes: 1. Pulse width limited by safe operating area.
2. Pulse width limited by maximum junction temperature.

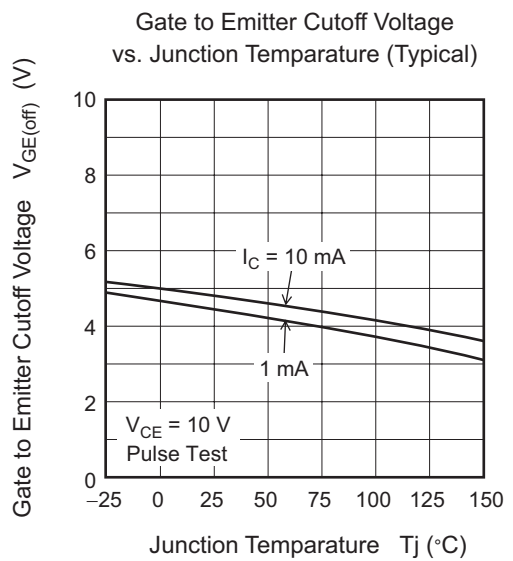
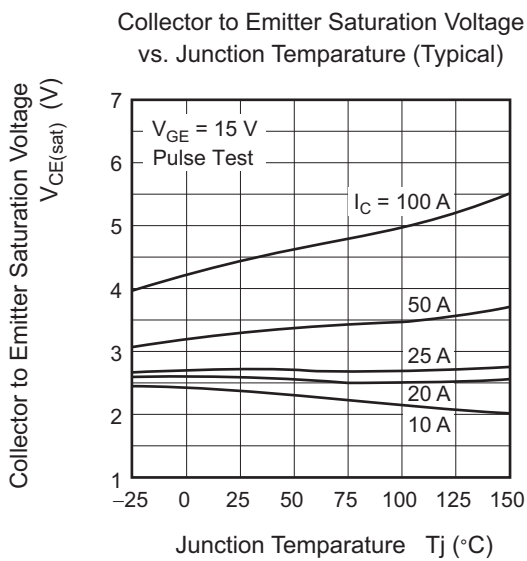
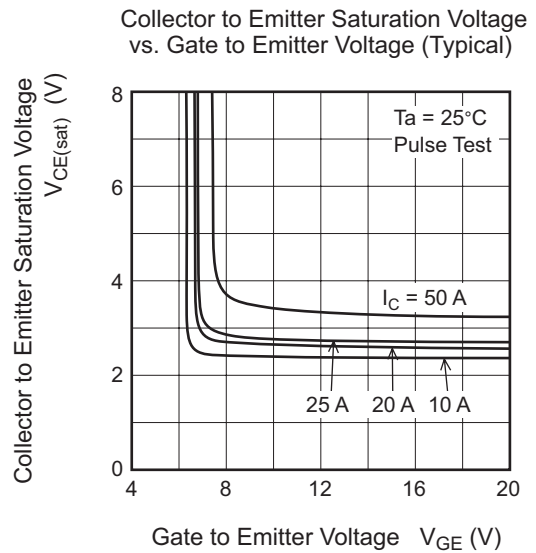
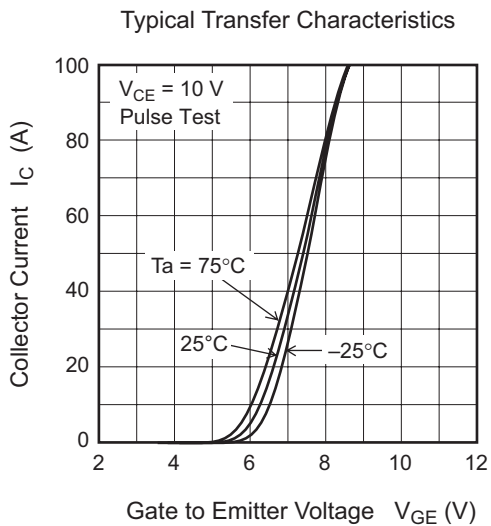
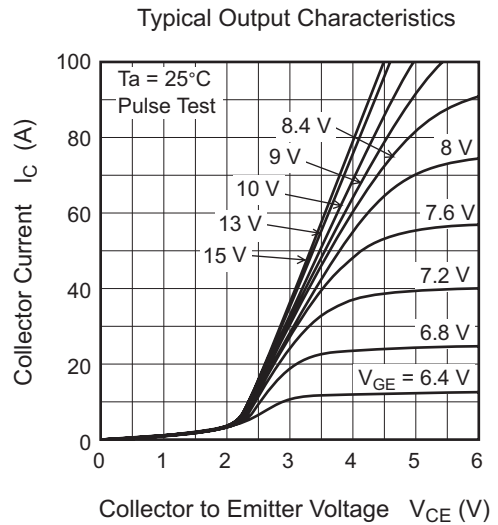
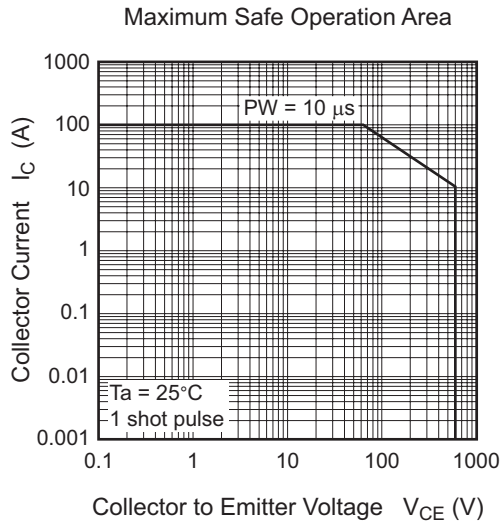
Electrical Characteristics

(Ta = 25°C)

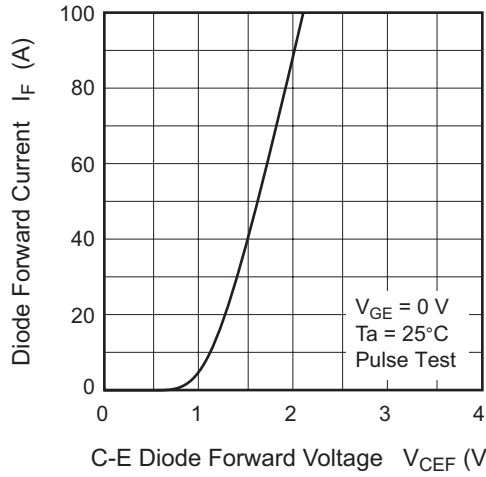
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	10	μA	$V_{CE} = 600\text{ V}, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	± 1	μA	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	3.0	—	5.5	V	$V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	2.65	3.5	V	$I_C = 25\text{ A}, V_{GE} = 15\text{ V}$ ^{Note3}
	$V_{CE(sat)}$	—	3.2	—	V	$I_C = 50\text{ A}, V_{GE} = 15\text{ V}$ ^{Note3}
Input capacitance	C_{ies}	—	1800	—	pF	$V_{CE} = 25\text{ V}$ $V_{GE} = 0$ $f = 1\text{ MHz}$
Output capacitance	C_{oes}	—	200	—	pF	
Reveres transfer capacitance	C_{res}	—	16	—	pF	
Switching time	$t_{d(on)}$	—	45	—	ns	$I_C = 30\text{ A}$ $V_{CC} = 300\text{ V}, V_{GE} = 15\text{ V}$ $R_g = 5\ \Omega$ Inductive Load
	t_r	—	35	—	ns	
	$t_{d(off)}$	—	95	—	ns	
	t_f	—	55	—	ns	
C-E diode Forward voltage	V_{ECF1}	—	1.4	1.9	V	$I_F = 30\text{ A}$ ^{Note3}
C-E diode reverse recovery time	t_{rr}	—	100	—	ns	$I_F = 30\text{ A}$ $di_F/dt = 100\text{ A}/\mu\text{s}$

Notes: 3. Pulse test

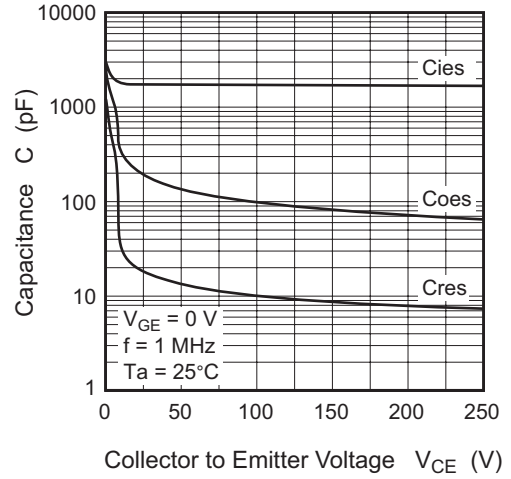
Main Characteristics



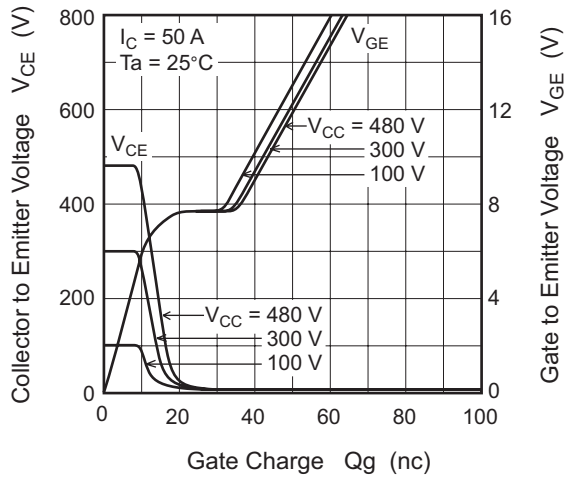
Forward Current vs. Forward Voltage (Typical)



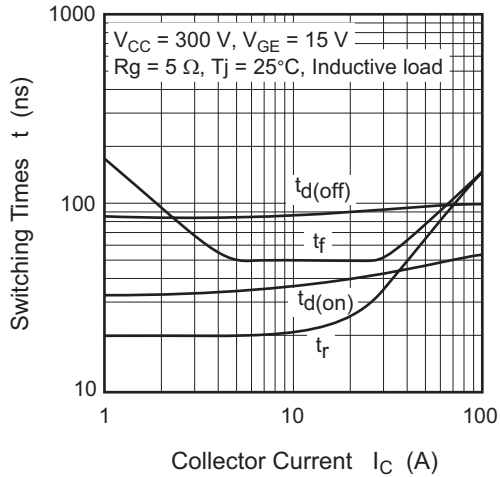
Typical Capacitance vs. Collector to Emitter Voltage



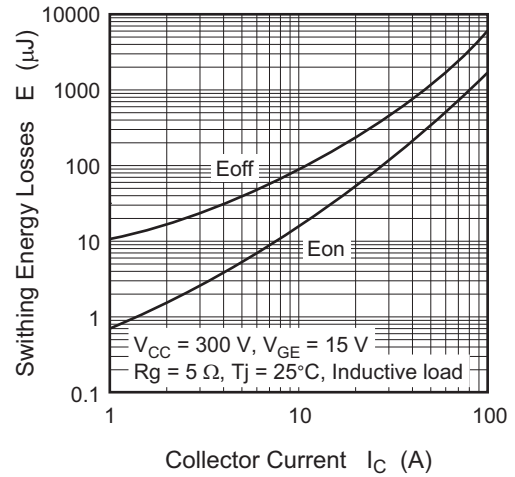
Dynamic Input Characteristics (Typical)



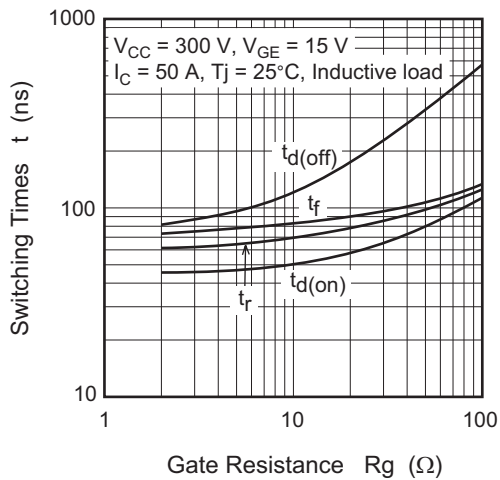
Switching Characteristics (Typical) (1)



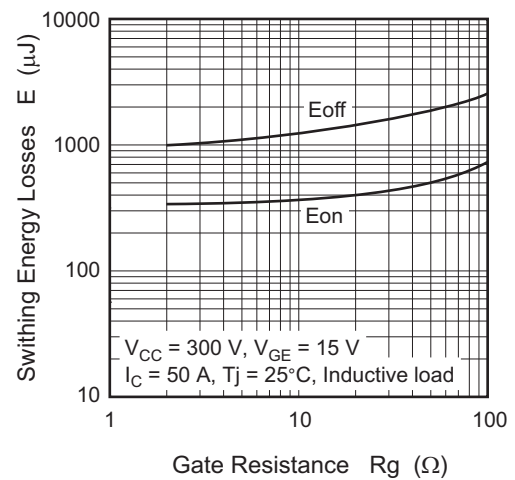
Switching Characteristics (Typical) (2)



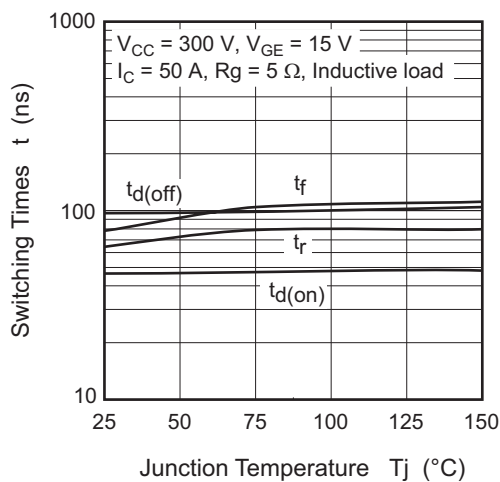
Switching Characteristics (Typical) (3)



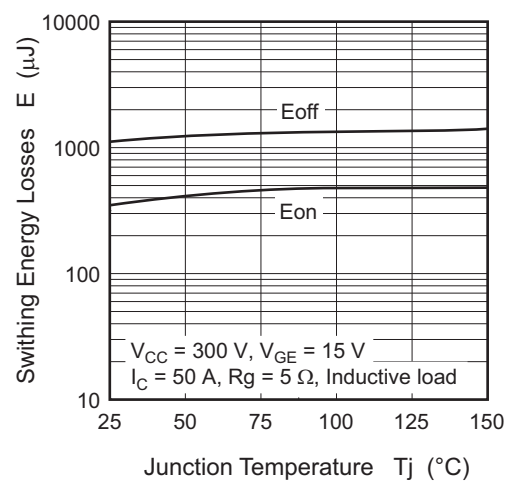
Switching Characteristics (Typical) (4)

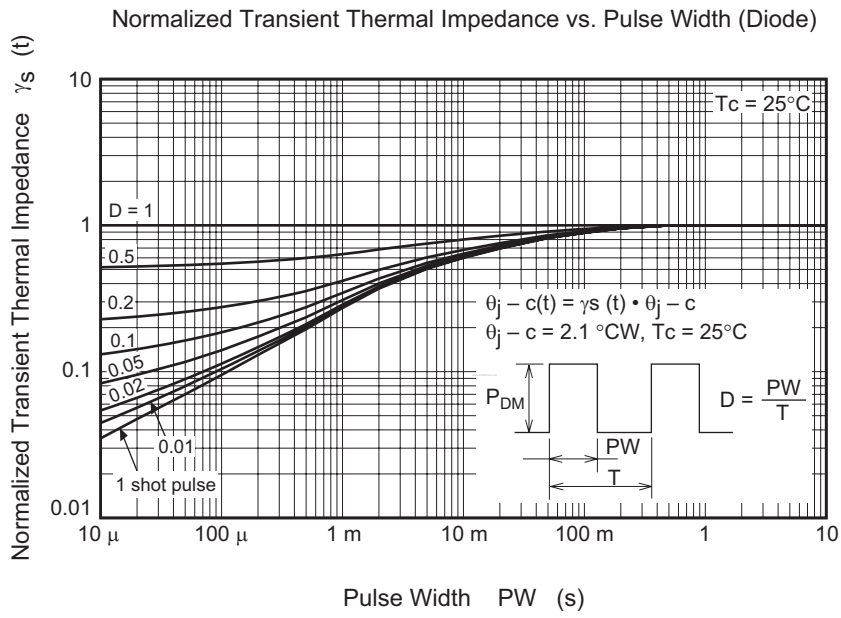
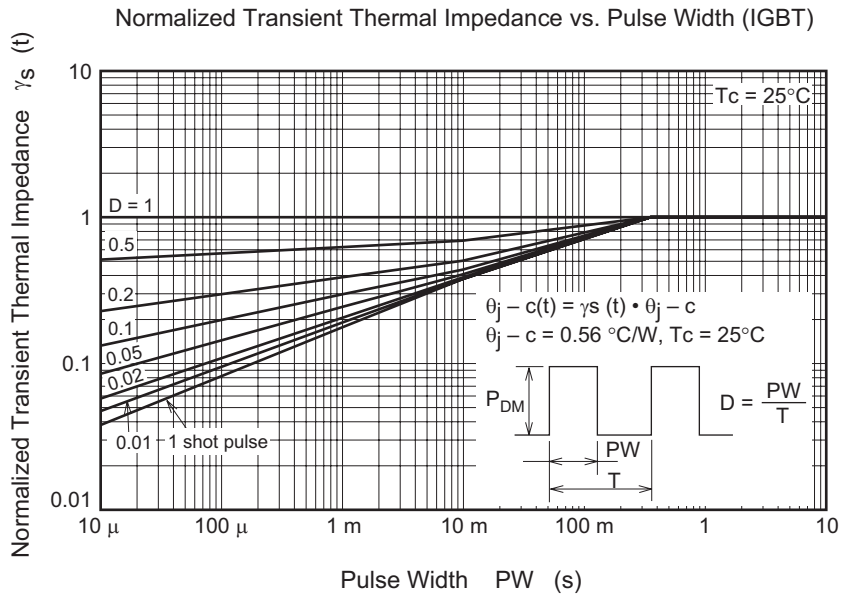


Switching Characteristics (Typical) (5)

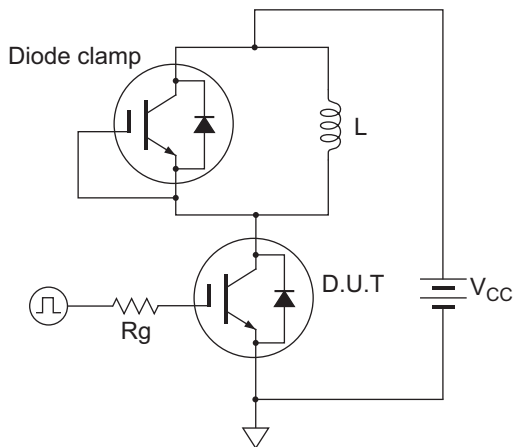


Switching Characteristics (Typical) (6)

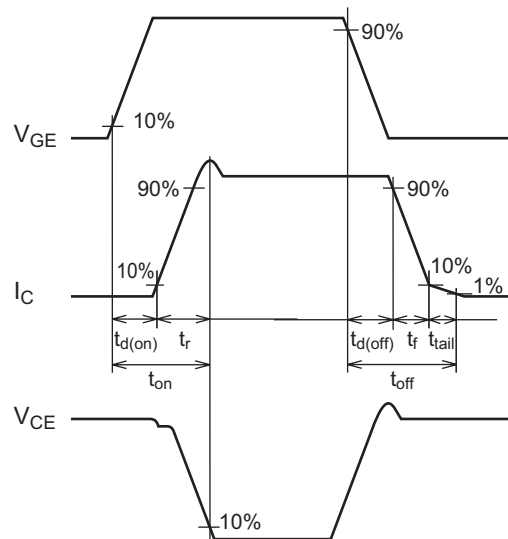




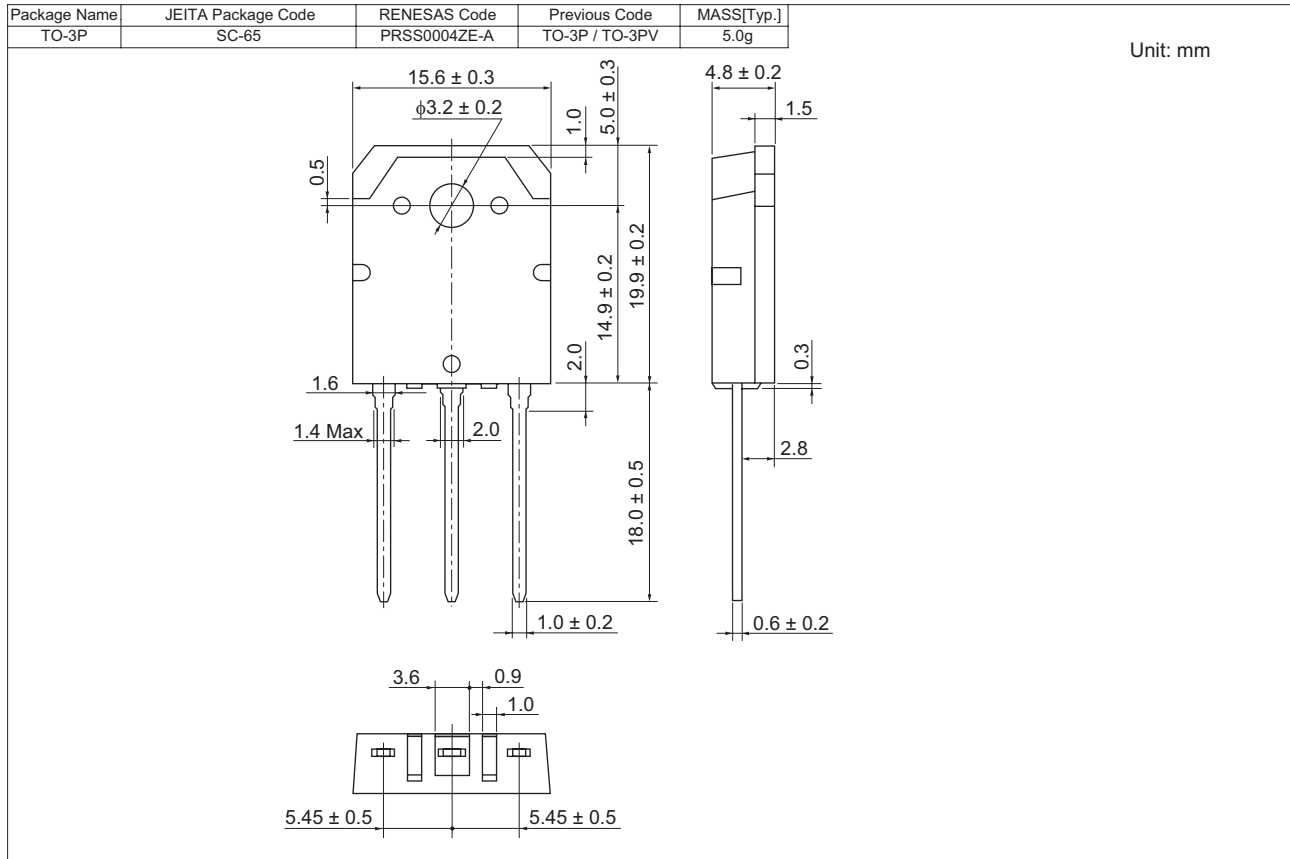
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH6087BDPK-00-T0	360 pcs	Box (Tube)

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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, 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