RJP60V0DPM

600V - 22A - IGBT
Application: Inverter

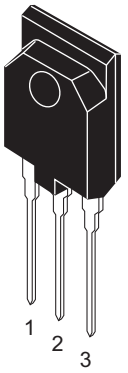
R07DS0669EJ0200
Rev.2.00
Apr 02, 2014

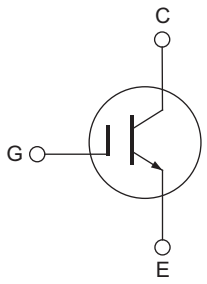
Features

- High breakdown-voltage
- Low Collector to Emitter saturation Voltage
  $V_{CE(sat)}$ = 1.5 V typ. (at I_C = 22 A, V_{GE} = 15 V, Ta = 25°C)
- Short circuit withstand time (6 µs typ.)
- Trench gate and thin wafer technology (G6H series)

Outline

RENESAS Package code: PRSS0003ZA-A
(Package name: TO-3PFM)





1. Gate
2. Collector
3. Emitter

Absolute Maximum Ratings

(Ta = 25°C)

Item		Symbol	Ratings	Unit
Collector to emitter voltage / diode reverse voltage		V_{CES} / V_R	600	V
Gate to emitter voltage		V_{GES}	±30	V
Collector current	Tc = 25°C	I_C	45	A
	Tc = 100°C	I_C	22	A
Collector peak current		$I_{C(peak)}$ Note1	90	A
Collector dissipation		P_C Note2	40	W
Junction to case thermal impedance		θj-c Note2	3.125	°C/ W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C

Electrical Characteristics

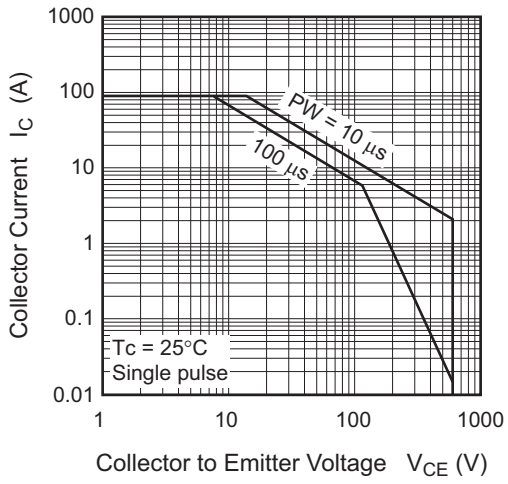
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	1	μA	V_{CE} = 600 V, V_{GE} = 0
Gate to emitter leak current	I_{GES}	—	—	±1	μA	V_{GE} = ±30 V, V_{CE} = 0
Gate to emitter cutoff voltage	$V_{GE(off)}$	5.5	—	7.5	V	V_{CE} = 10 V, I_C = 1 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.5	2.1	V	I_C = 22 A, V_{GE} = 15 V Note3
	$V_{CE(sat)}$	—	1.9	—	V	I_C = 45 A, V_{GE} = 15 V Note3
Input capacitance	Cies	—	1080	—	pF	V_{CE} = 25 V V_{GE} = 0 f = 1 MHz
Output capacitance	Coes	—	58	—	pF	
Reveres transfer capacitance	Cres	—	42	—	pF	
Total gate charge	Qg	—	75	—	nC	V_{GE} = 15 V V_{CE} = 300 V I_C = 22 A
Gate to emitter charge	Qge	—	10	—	nC	
Gate to collector charge	Qgc	—	45	—	nC	
Switching time	$t_{d(on)}$	—	45	—	ns	V_{CE} = 300 V , V_{GE} = 15 V I_C = 22 A Rg = 5 Ω Inductive load
	t_r	—	40	—	ns	
	$t_{d(off)}$	—	100	—	ns	
	t_f	—	70	—	ns	
Short circuit withstand time	t_{sc}	—	6	—	μs	V_{CC} ≤ 360 V , V_{GE} = 15 V Tc = 100 °C

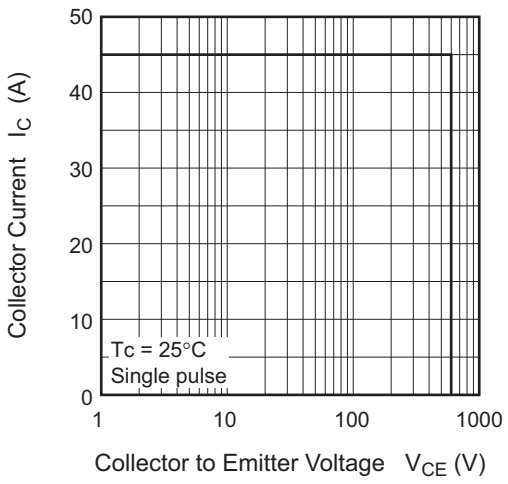
Notes: 3. Pulse test.

Main Characteristics

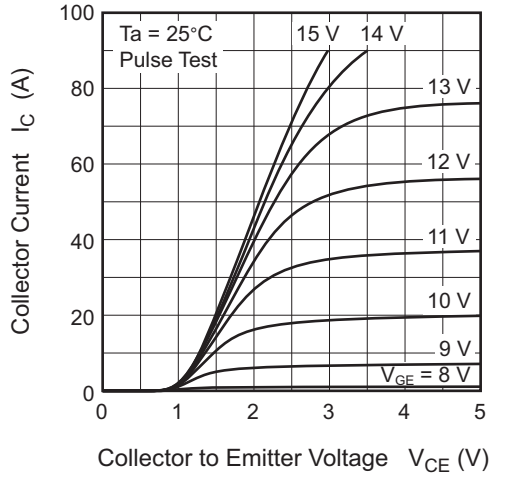
Maximum Safe Operation Area



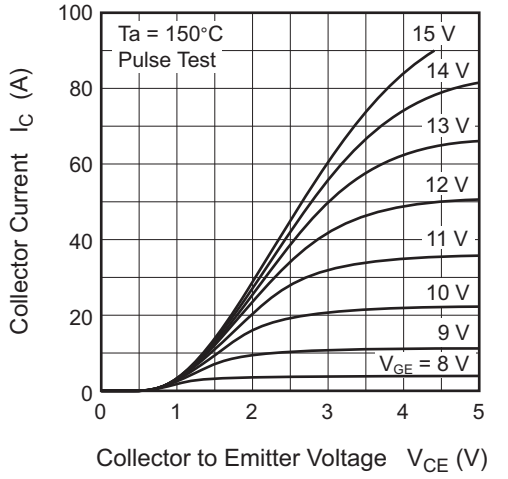
Turn-off Safe Operation Area



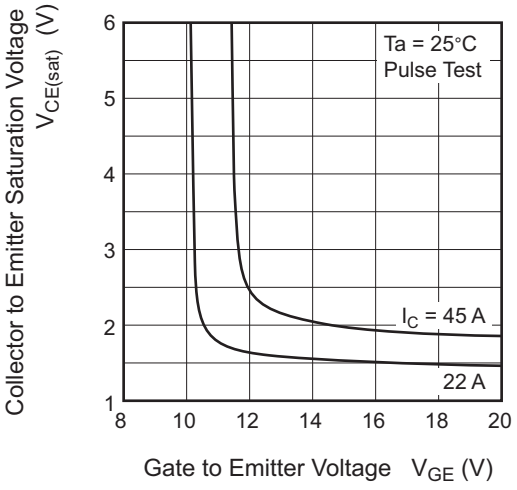
Typical Output Characteristics



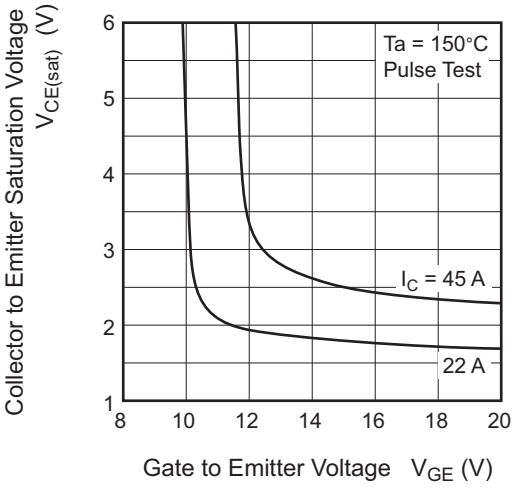
Typical Output Characteristics



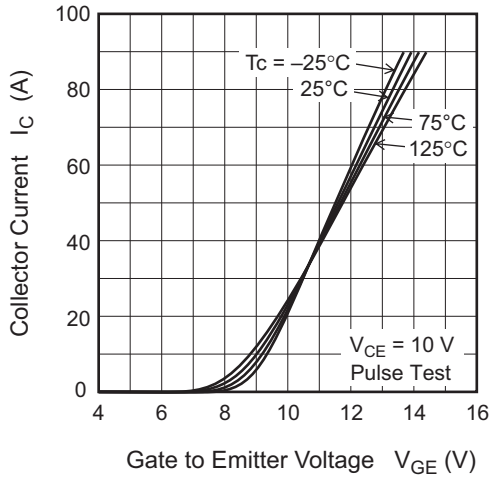
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



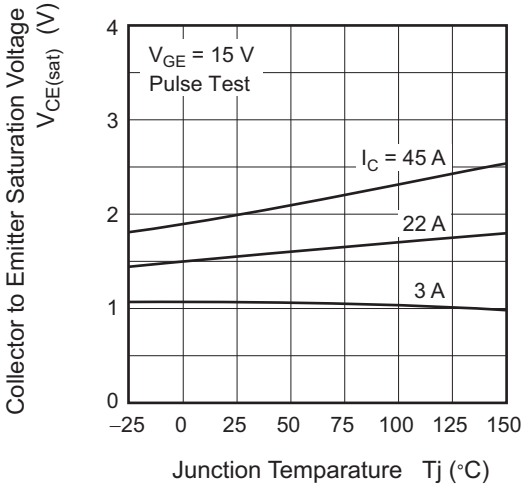
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



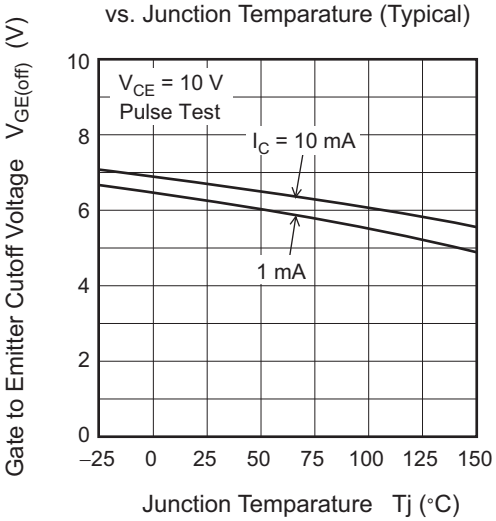
Typical Transfer Characteristics



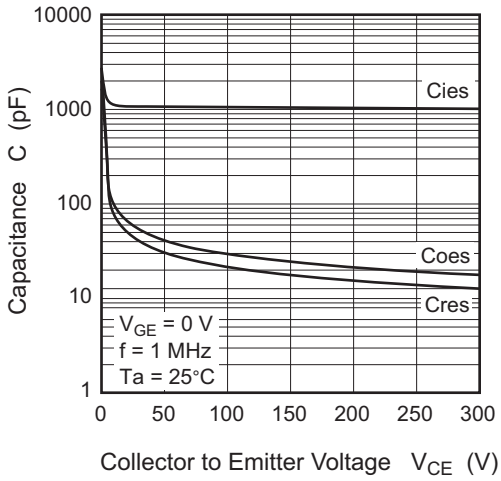
Collector to Emitter Saturation Voltage vs. Junction Temparature (Typical)



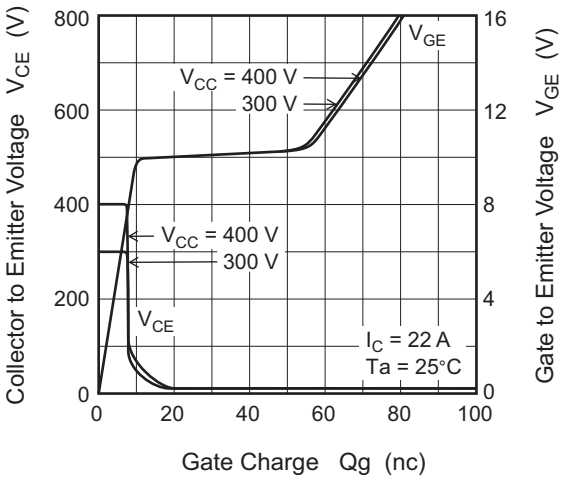
Gate to Emitter Cutoff Voltage vs. Junction Temparature (Typical)



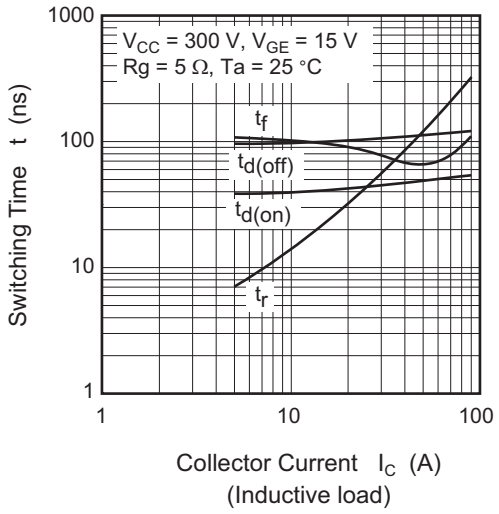
Typical Capacitance vs. Collector to Emitter Voltage



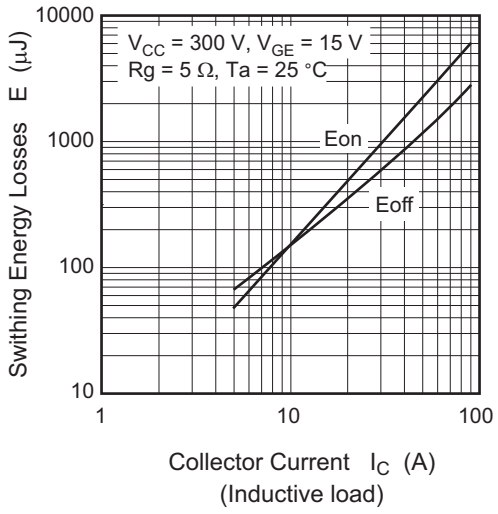
Dynamic Input Characteristics (Typical)



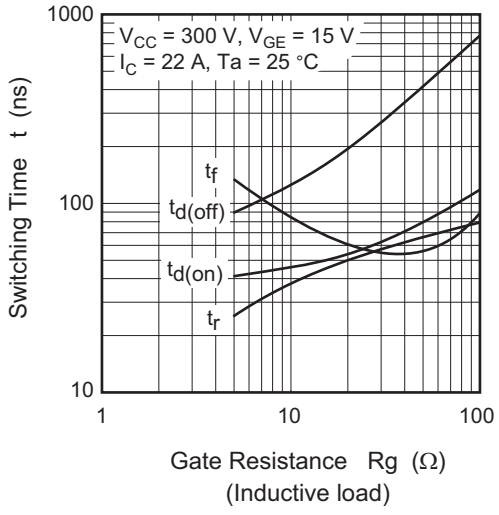
Switching Characteristics (Typical) (1)



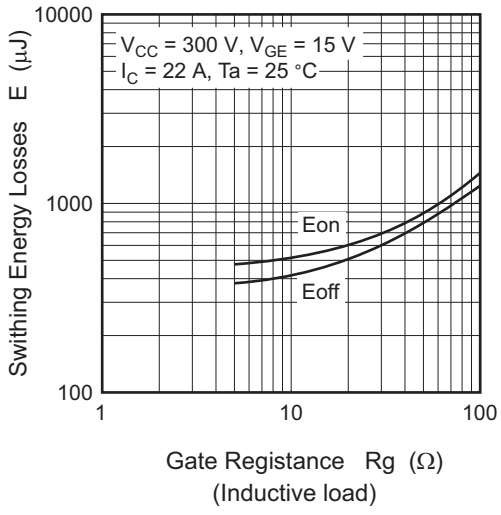
Switching Characteristics (Typical) (2)



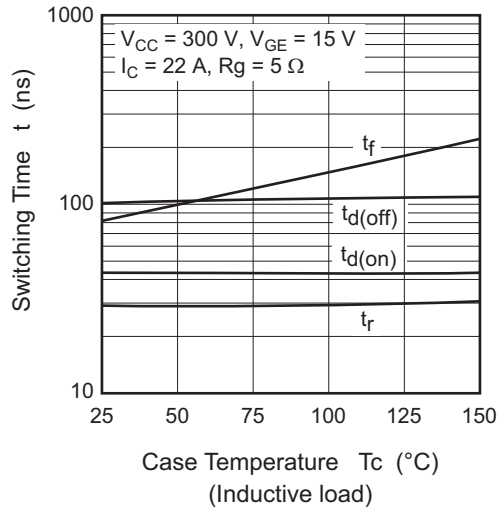
Switching Characteristics (Typical) (3)



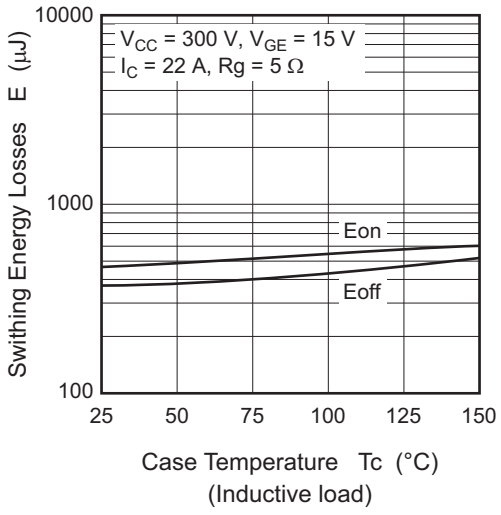
Switching Characteristics (Typical) (4)



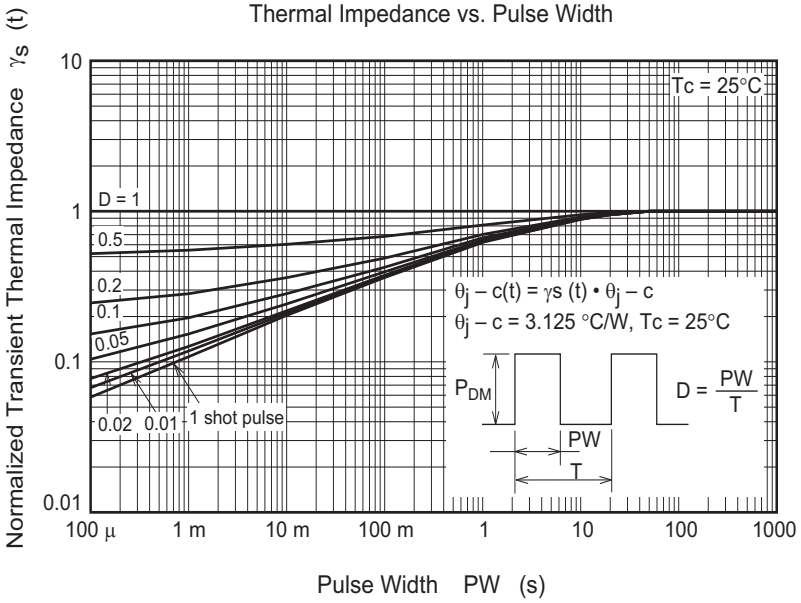
Switching Characteristics (Typical) (5)



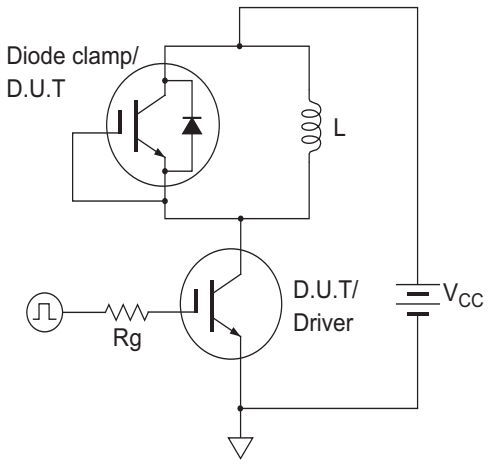
Switching Characteristics (Typical) (6)



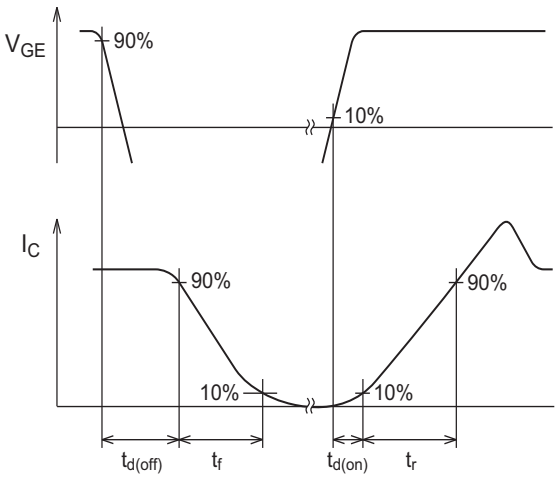
Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



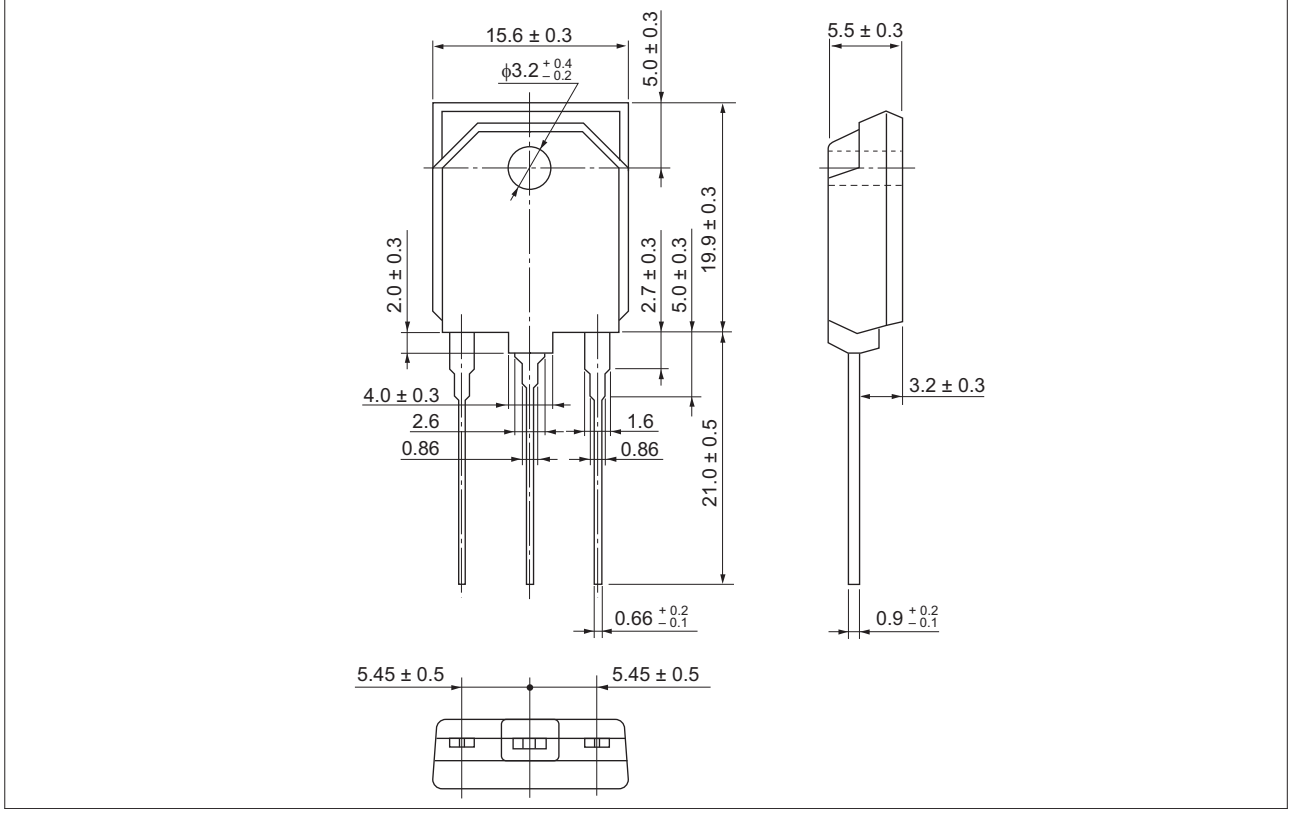
Waveform



Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3PFM	SC-93	PRSS0003ZA-A	TO-3PFM / TO-3PFMV	5.2g

Unit: mm



Ordering Information

Orderable Part No.	Quantity	Shipping Container
RJP60V0DPM-00#T1	360 pcs	Box (Tube)

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Renesas Electronics America Inc.
2801 Scott Boulevard Santa Clara, CA 95050-2549, 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: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100191, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, P. R. China 200333
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

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: +852-2265-6688, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

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Tel: +65-6213-0200, Fax: +65-6213-0300

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Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
12F., 234 Teheran-ro, Gangnam-Ku, Seoul, 135-920, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

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