

# RJP60V0DPM

600V - 22A - IGBT

Application: Inverter

R07DS0669EJ0100

Rev.1.00

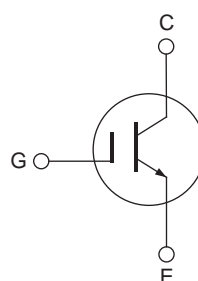
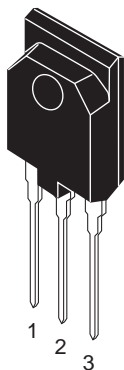
Feb 07, 2012

## Features

- High breakdown-voltage
- Low Collector to Emitter saturation Voltage  
 $V_{CE(sat)} = 1.5 \text{ V typ. (at } I_C = 22 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- Short circuit withstand time (6  $\mu\text{s typ.}$ )
- 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

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

Item	Symbol	Ratings	Unit	
Collector to emitter voltage / diode reverse voltage	$V_{CES} / V_R$	600	V	
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V	
Collector current	$T_c = 25^\circ\text{C}$	$I_C$	45	A
	$T_c = 100^\circ\text{C}$	$I_C$	22	A
Collector peak current	$I_{C(peak)}$ <sup>Note1</sup>	90	A	
Collector dissipation	$P_C$ <sup>Note2</sup>	40	W	
Junction to case thermal impedance	$\theta_{j-c}$ <sup>Note2</sup>	3.125	$^\circ\text{C/W}$	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

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

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

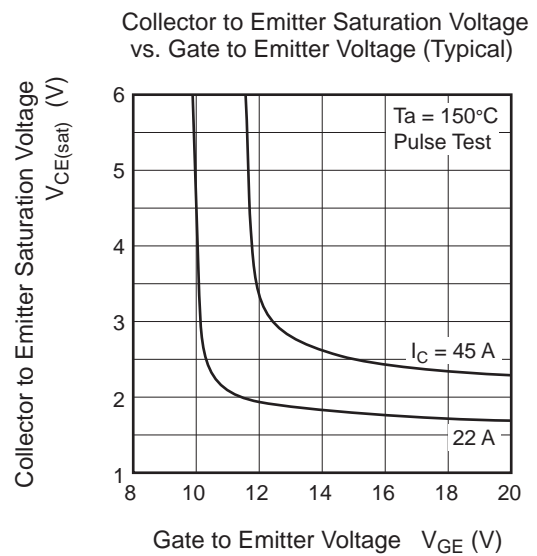
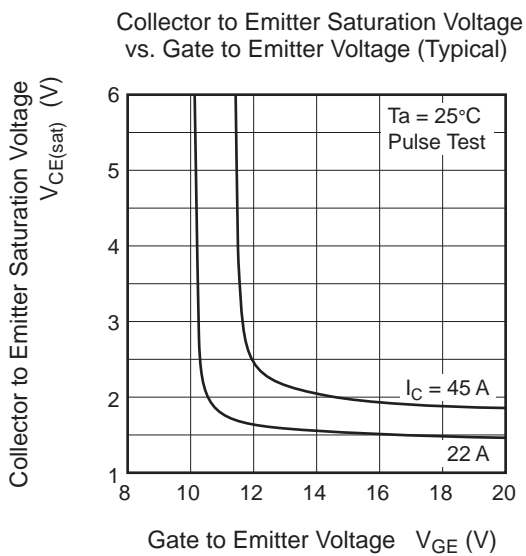
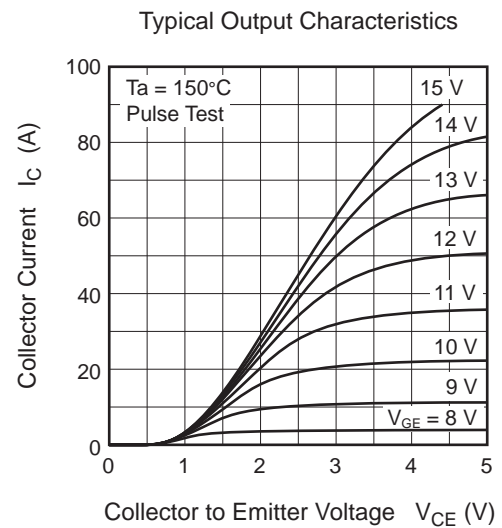
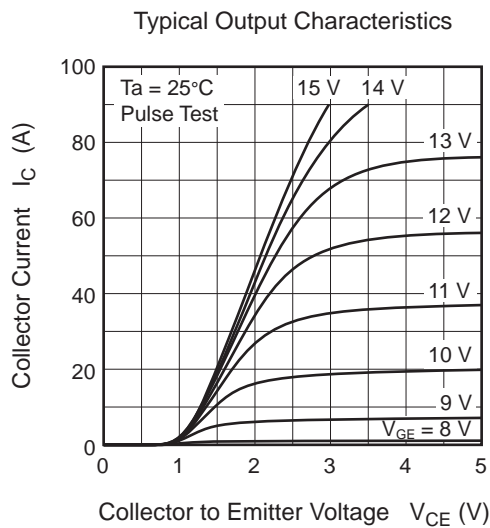
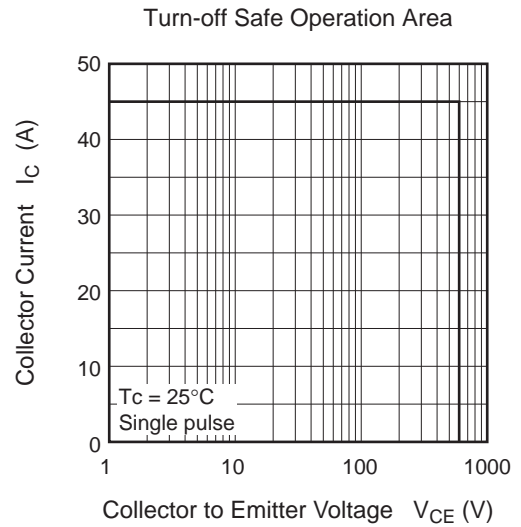
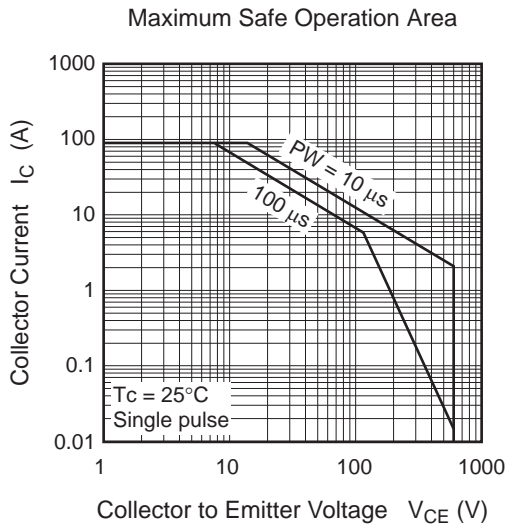
## Electrical Characteristics

(Ta = 25°C)

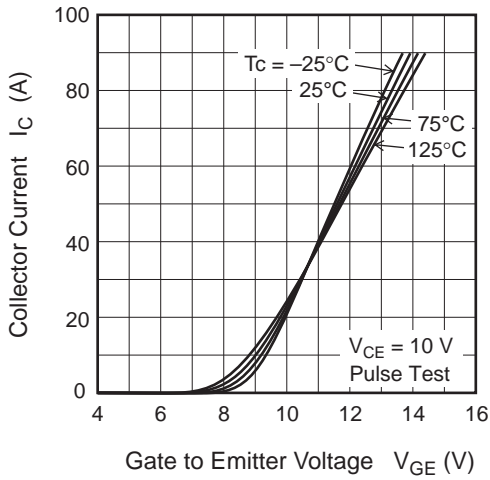
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu\text{A}$	$V_{CE} = 600\text{ V}, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	5.5	—	7.5	V	$V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.5	2.1	V	$I_C = 22\text{ A}, V_{GE} = 15\text{ V}$ <sup>Note3</sup>
	$V_{CE(sat)}$	—	1.9	—	V	$I_C = 45\text{ A}, V_{GE} = 15\text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{ies}$	—	1080	—	pF	$V_{CE} = 25\text{ V}$
Output capacitance	$C_{oes}$	—	58	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	$C_{res}$	—	42	—	pF	$f = 1\text{ MHz}$
Total gate charge	$Q_g$	—	75	—	nC	$V_{GE} = 15\text{ V}$
Gate to emitter charge	$Q_{ge}$	—	10	—	nC	$V_{CE} = 300\text{ V}$
Gate to collector charge	$Q_{gc}$	—	45	—	nC	$I_C = 22\text{ A}$
Switching time	$t_{d(on)}$	—	45	—	ns	$V_{CE} = 300\text{ V}, V_{GE} = 15\text{ V}$
	$t_r$	—	40	—	ns	$I_C = 22\text{ A}$
	$t_{d(off)}$	—	100	—	ns	$R_g = 5\ \Omega$
	$t_f$	—	70	—	ns	Inductive load
Short circuit withstand time	$t_{sc}$	—	6	—	$\mu\text{s}$	$V_{CC} \leq 360\text{ V}, V_{GE} = 15\text{ V}$ $T_C = 100\text{ }^\circ\text{C}$

Notes: 3. Pulse test.

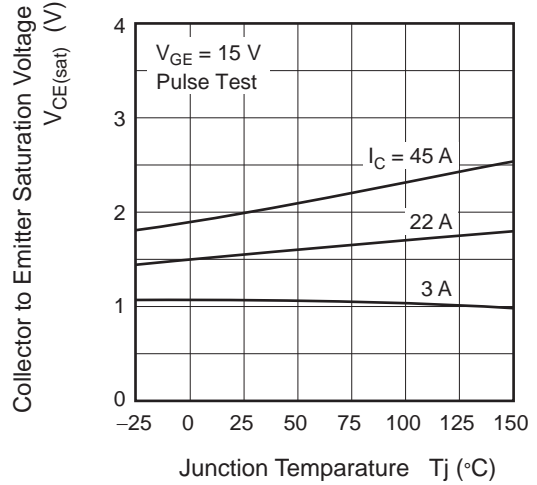
Main Characteristics



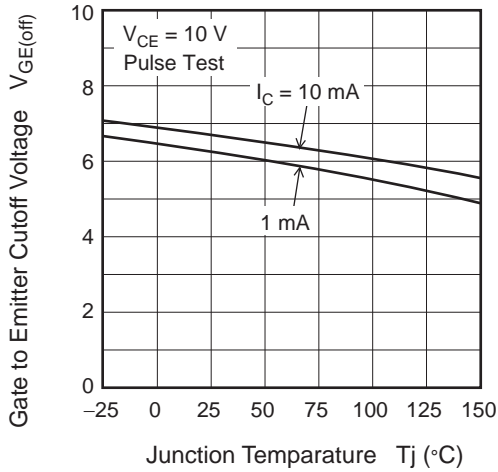
Typical Transfer Characteristics



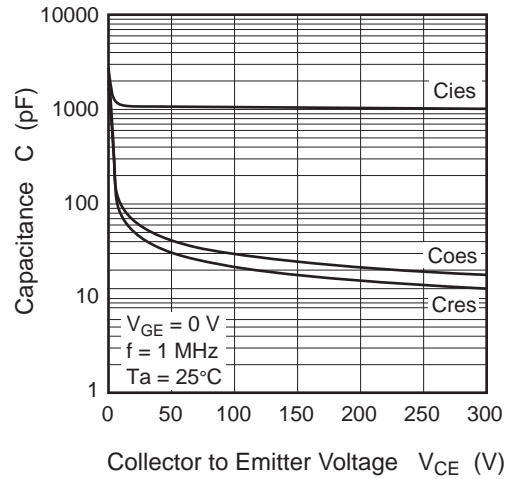
Collector to Emitter Saturation Voltage vs. Junction Temperature (Typical)



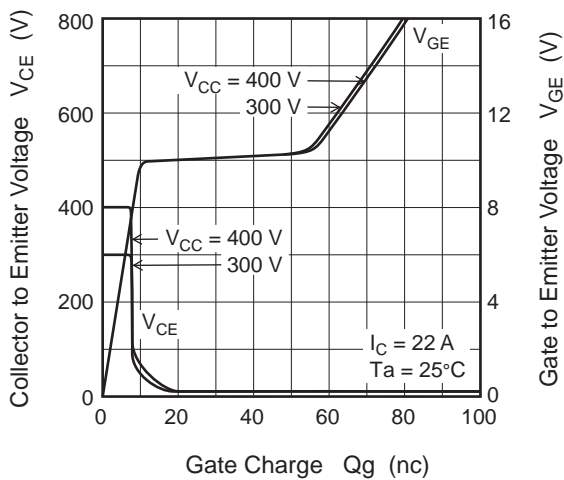
Gate to Emitter Cutoff Voltage vs. Junction Temperature (Typical)



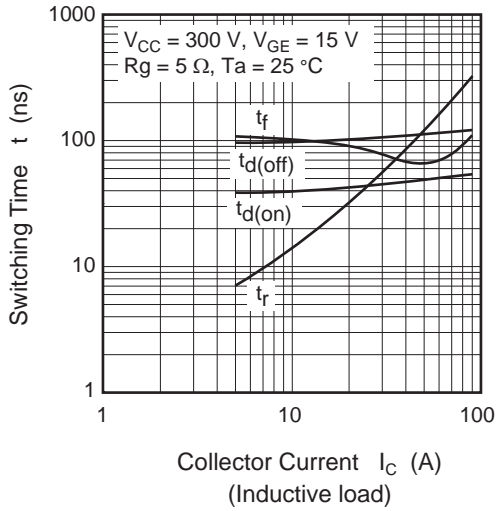
Typical Capacitance vs. Collector to Emitter Voltage



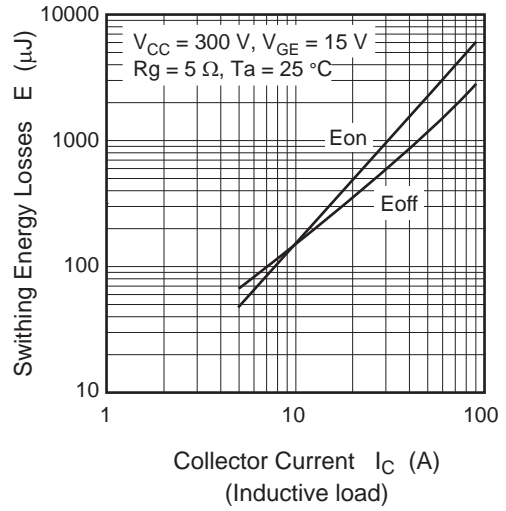
Dynamic Input Characteristics (Typical)



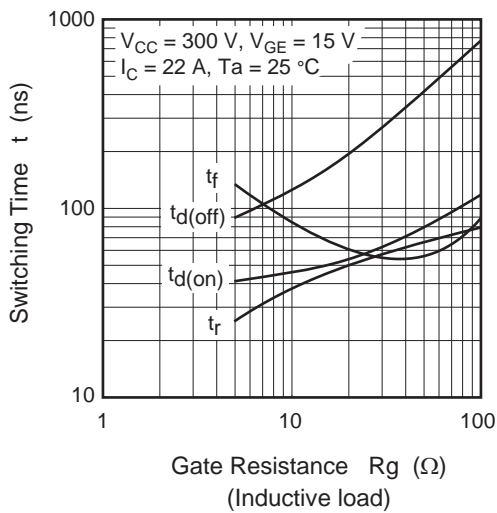
Switching Characteristics (Typical) (1)



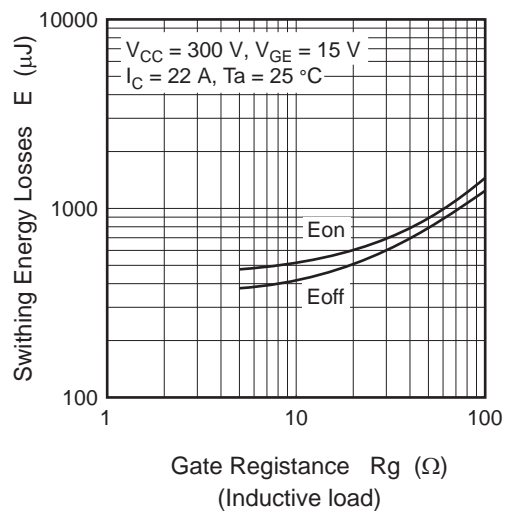
Switching Characteristics (Typical) (2)



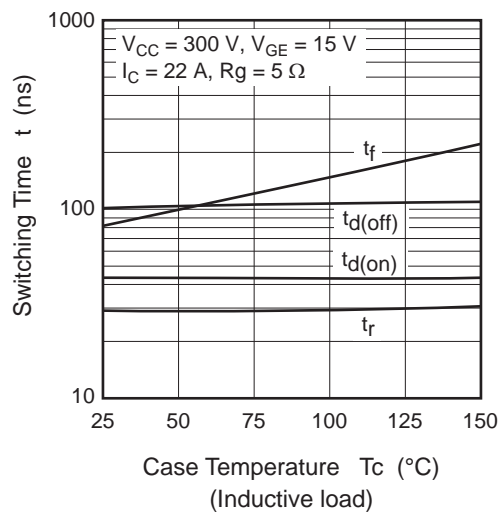
Switching Characteristics (Typical) (3)



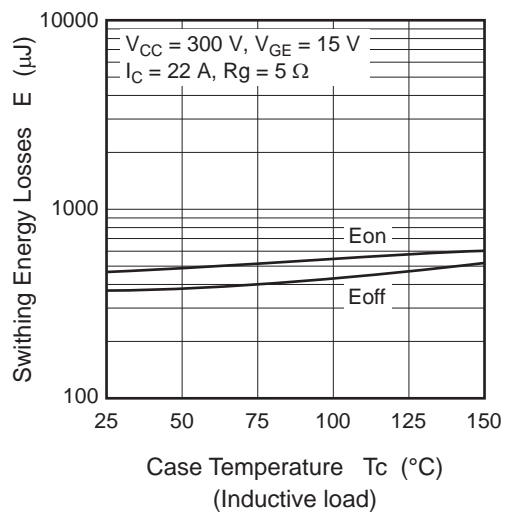
Switching Characteristics (Typical) (4)



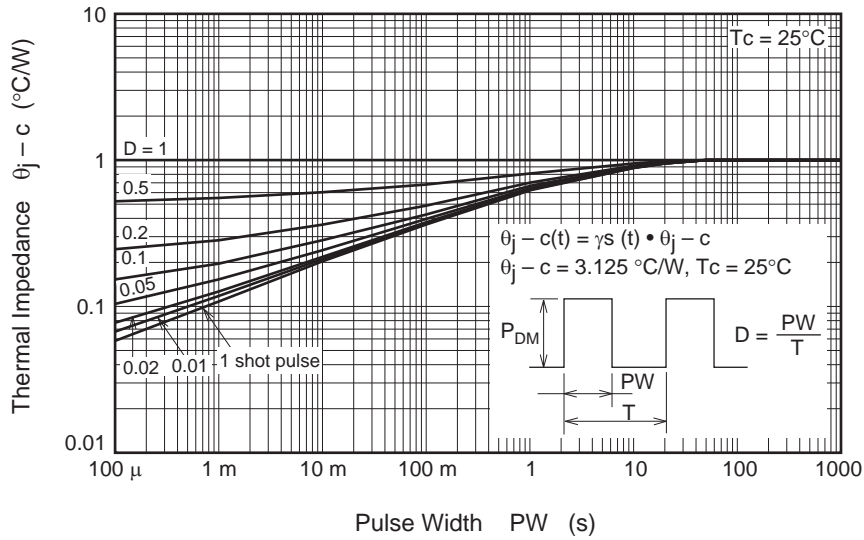
Switching Characteristics (Typical) (5)



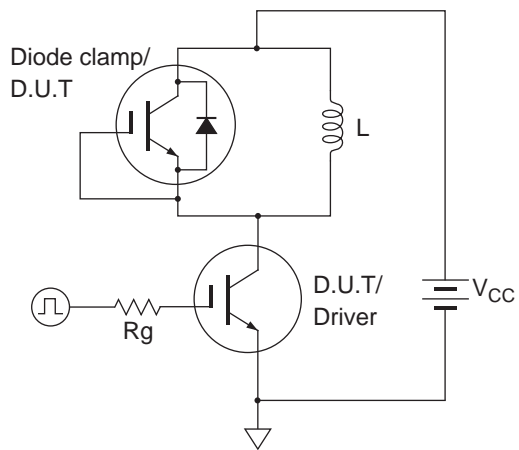
Switching Characteristics (Typical) (6)



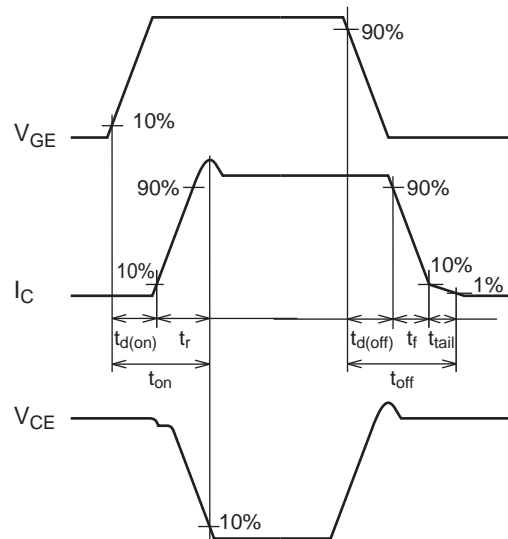
Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



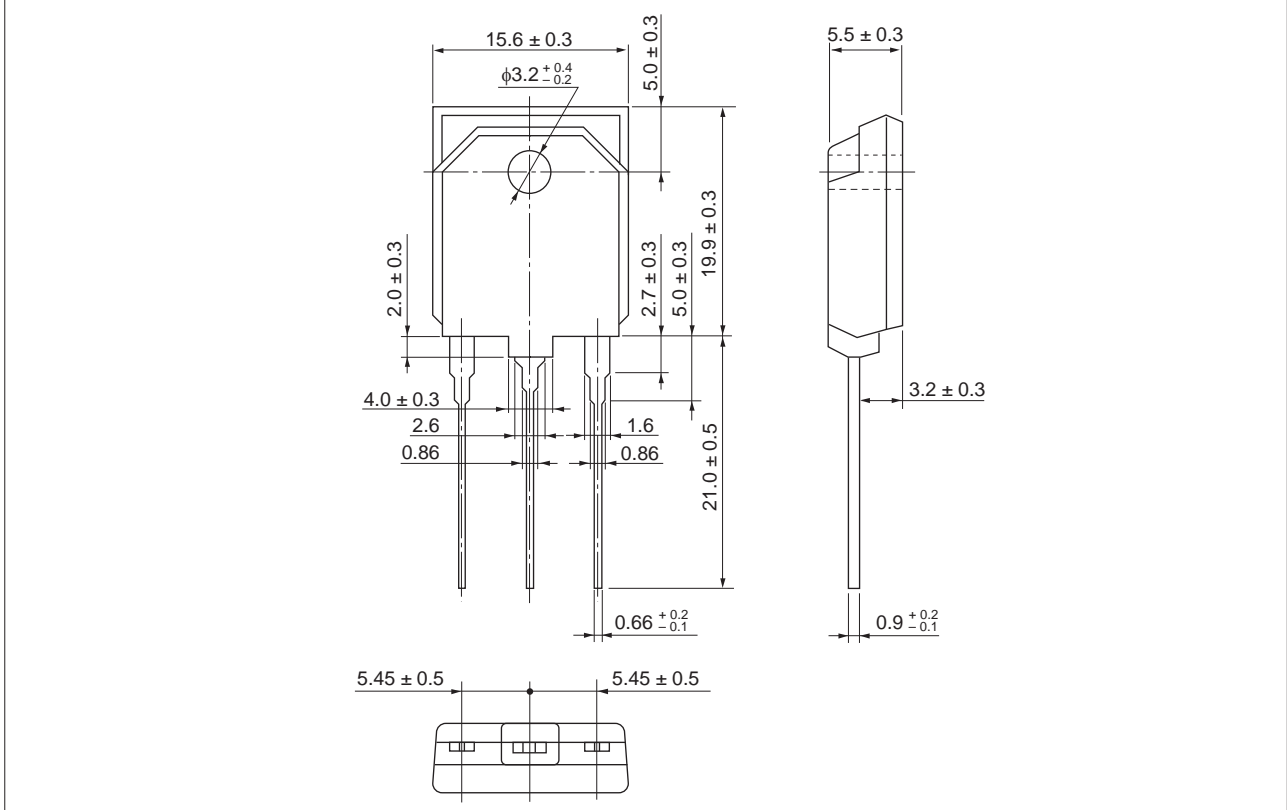
Waveform



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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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.**  
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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.**  
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Tel: +65-6213-0200, Fax: +65-6278-8001

**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