

RJH30H1DPP-M0

Silicon N Channel IGBT
High speed power switching

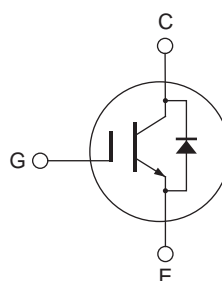
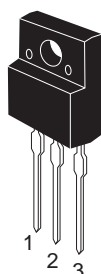
R07DS0463EJ0200
Rev.2.00
Jun 15, 2011

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: $I_{CES} = 1$ μ A max.
- Built-in Fast Recovery Diode: $V_F = 1.4$ V typ., $t_{rr} = 23$ ns typ.
- Isolated package: TO-220FL

Outline

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



1. Gate
2. Collector
3. Emitter

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	360	V
Gate to emitter voltage	V_{GES}	± 30	V
Collector current	I_C	30	A
Collector peak current	$i_{c(peak)}$ ^{Note1}	200	A
Collector to emitter diode Forward peak current	$i_{DF(peak)}$ ^{Note1}	100	A
Collector dissipation	P_C ^{Note2}	20	W
Junction to case thermal impedance	θ_{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. $PW \leq 10$ μ s, duty cycle $\leq 1\%$
2. $T_c = 25^\circ\text{C}$

Electrical Characteristics

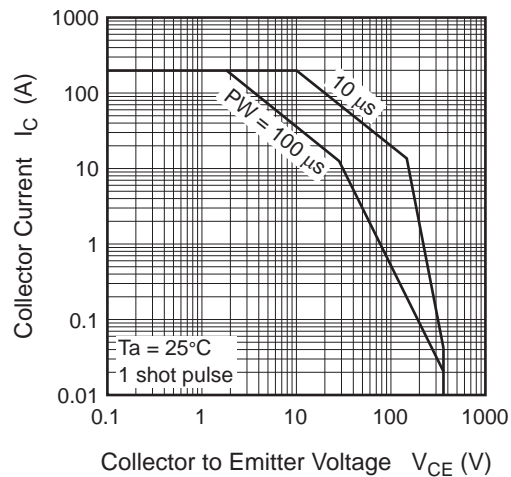
(T_j = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I _{CES}	—	—	1	μA	V _{CE} = 360 V, V _{GE} = 0
Gate to emitter leak current	I _{GES}	—	—	±100	nA	V _{GE} = ± 30 V, V _{CE} = 0
Gate to emitter cutoff voltage	V _{GE(off)}	2.5	—	5	V	V _{CE} = 10 V, I _C = 1 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	1.5	2	V	I _C = 30A, V _{GE} = 15 V ^{Note3}
Input capacitance	C _{ies}	—	740	—	pF	V _{CE} = 25 V V _{GE} = 0 f = 1 MHz
Output capacitance	C _{oes}	—	60	—	pF	
Reveres transfer capacitance	C _{res}	—	17	—	pF	
Total gate charge	Q _g	—	23	—	nC	V _{GE} = 15 V V _{CE} = 150 V I _C = 30 A
Gate to emitter charge	Q _{ge}	—	4	—	nC	
Gate to collector charge	Q _{gc}	—	8	—	nC	
Switching time	t _{d(on)}	—	0.02	—	μs	I _C = 30 A R _L = 5 Ω V _{GE} = 15 V R _G = 5 Ω
	t _r	—	0.08	—	μs	
	t _{d(off)}	—	0.04	—	μs	
	t _f	—	0.15	—	μs	
FRD Forward voltage	V _F	—	1.4	1.7	V	I _F = 20 A ^{Note3}
FRD Reverse recovery time	t _{rr}	—	23	—	ns	I _F = 20 A di _F /dt = 100 A/μs

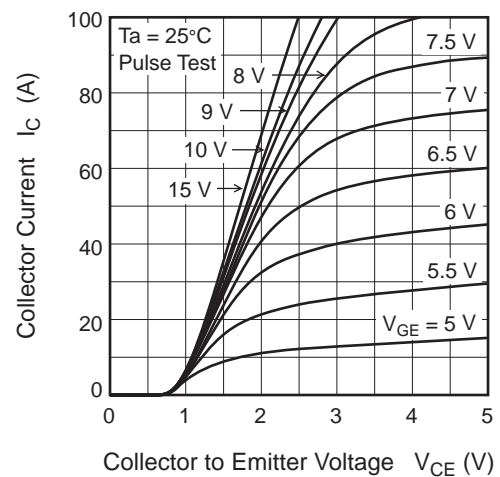
Notes: 3. Pulse test

Main Characteristics

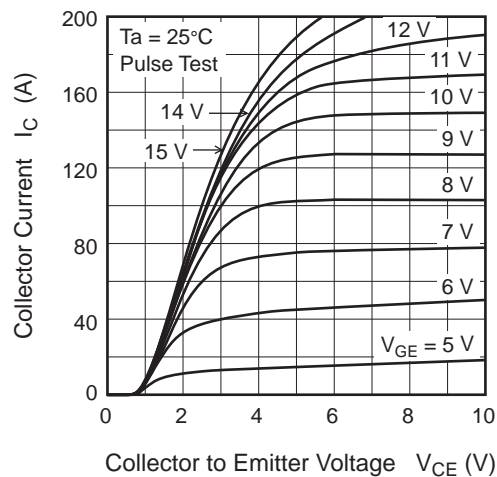
Maximum Safe Operation Area



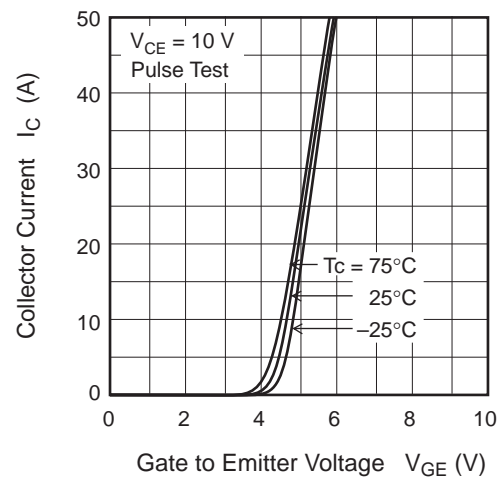
Typical Output Characteristics (1)



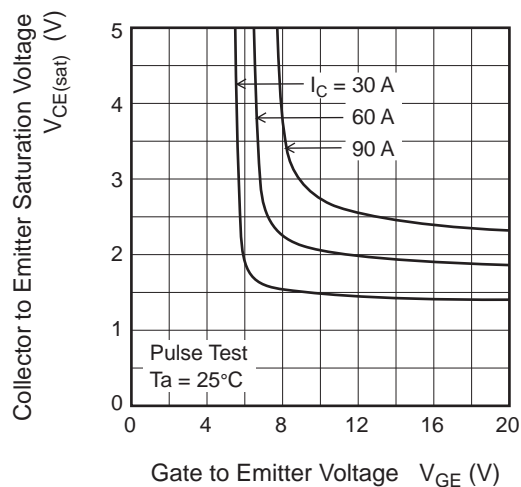
Typical Output Characteristics (2)



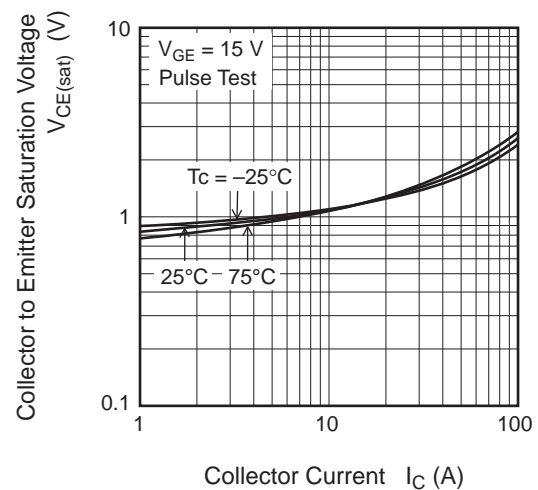
Typical Transfer Characteristics



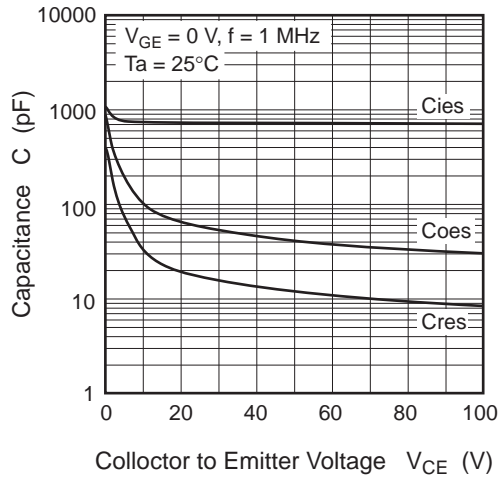
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



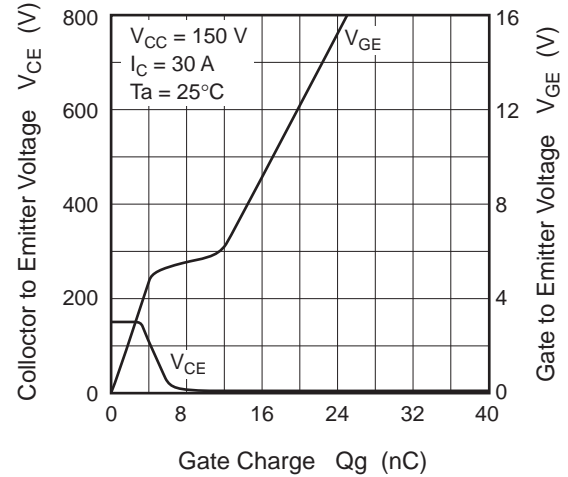
Collector to Emitter Saturation Voltage vs. Collector Current (Typical)



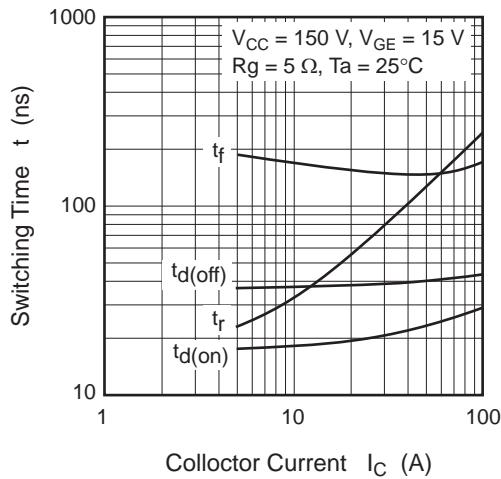
Typical Capacitance vs.
Collector to Emitter Voltage



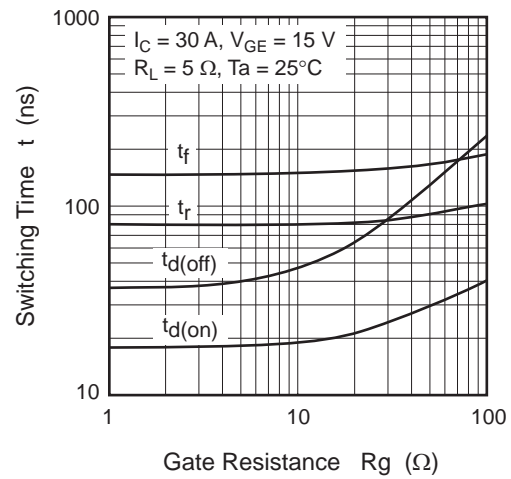
Dynamic Input Characteristics (Typical)



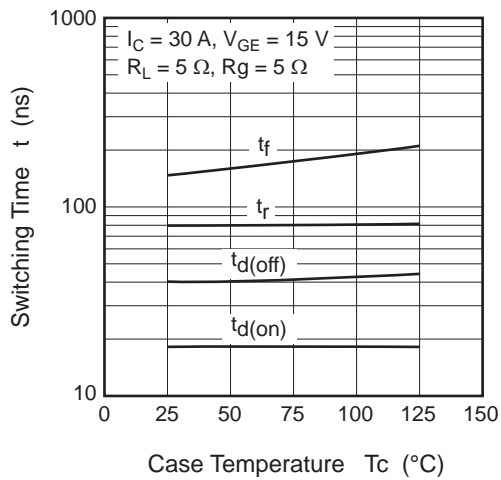
Switching Characteristics (Typical) (1)



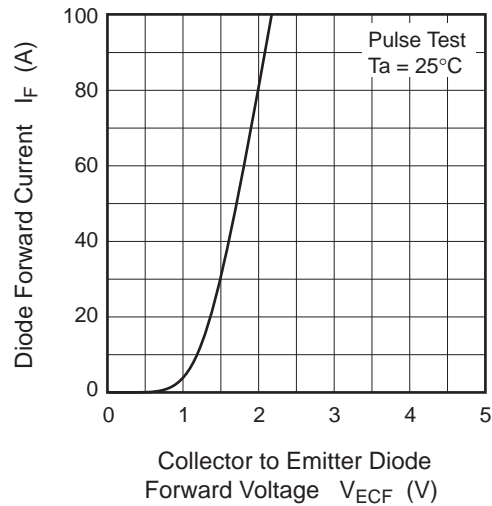
Switching Characteristics (Typical) (2)



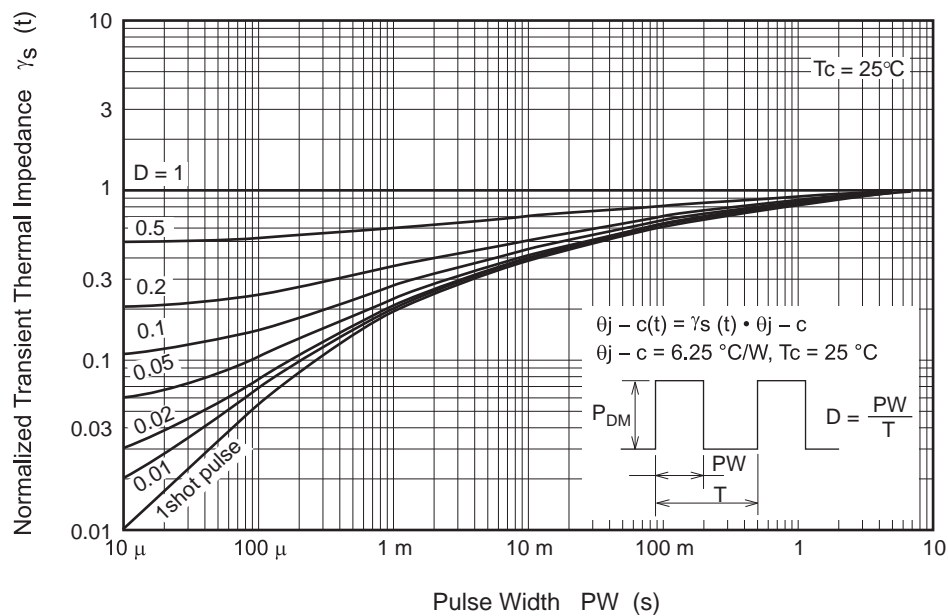
Switching Characteristics (Typical) (3)



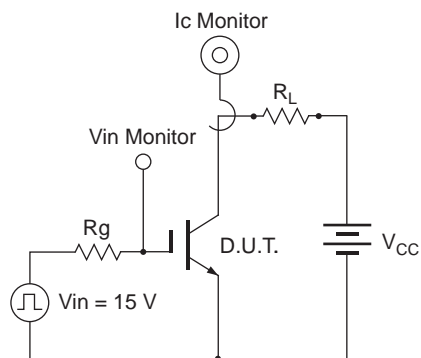
Collector to Emitter Diode Forward Voltage vs.
Diode Forward Current



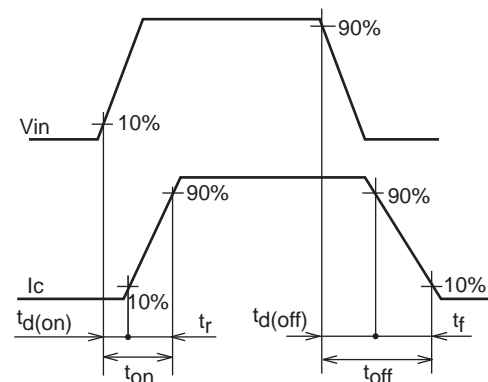
Normalized Transient Thermal Impedance vs. Pulse Width



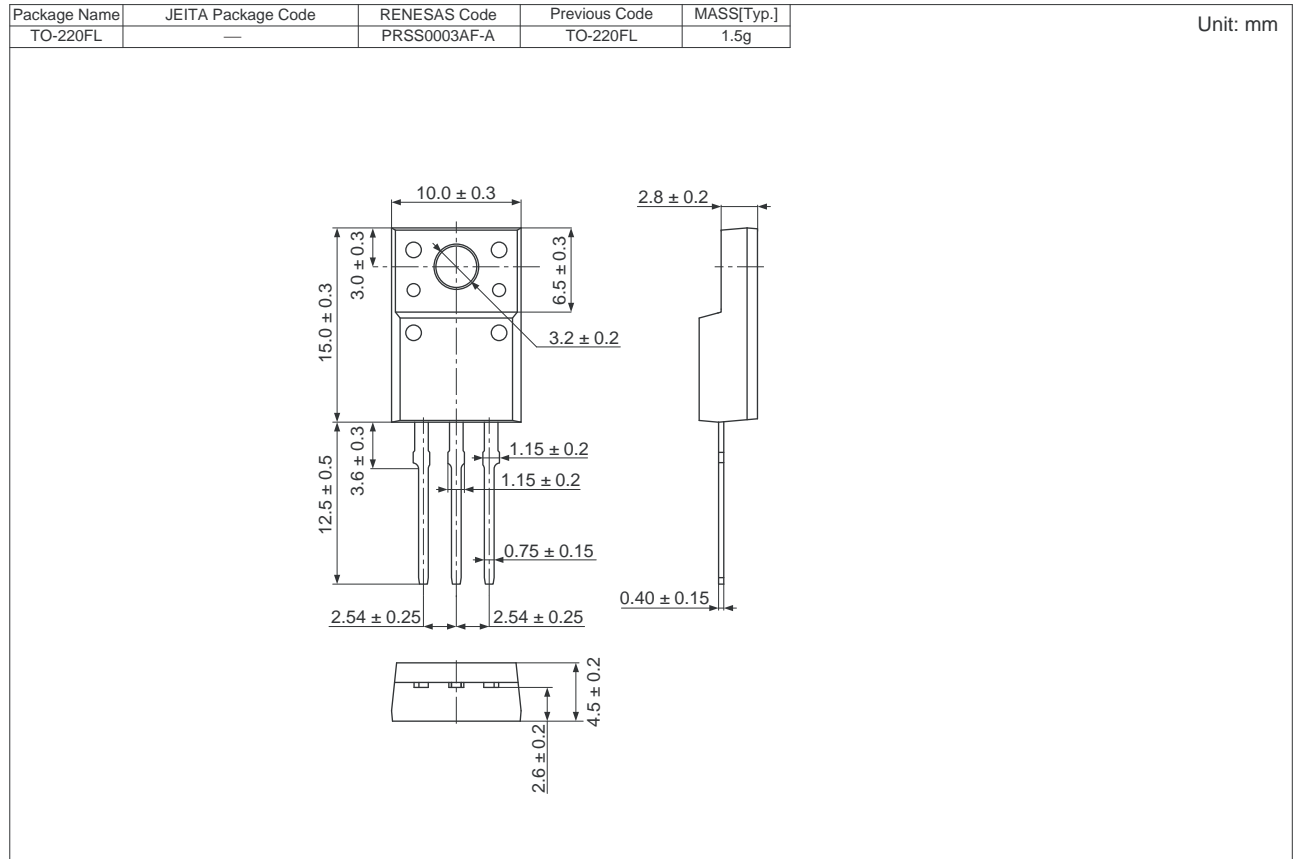
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH30H1DPP-M0-T2	600 pcs	Box (Tube)

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, 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

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 Laviel* or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141