

RJP30E2DPP-M0

Silicon N Channel IGBT
High Speed Power Switching

R07DS0347EJ0200

Rev.2.00

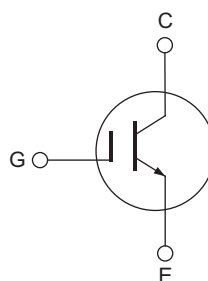
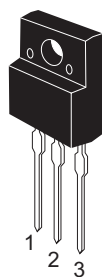
Apr 12, 2011

Features

- Trench gate technology (G5H series)
- Low collector to emitter saturation voltage $V_{CE(sat)} = 1.7 \text{ V typ}$
- High speed switching $t_f = 150 \text{ ns typ}$
- Low leak current $I_{CES} = 1 \mu\text{A max}$
- Isolated package TO-220FL

Outline

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



1. Gate
2. Collector
3. Emitter

Absolute Maximum Ratings

(Ta = 25°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	35	A
Collector peak current	$i_{c(peak)}$ ^{Note1}	200	A
Collector dissipation	P_C ^{Note2}	25	W
Junction to case thermal impedance	θ_{j-c}	5	°C/ W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

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

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

Electrical Characteristics

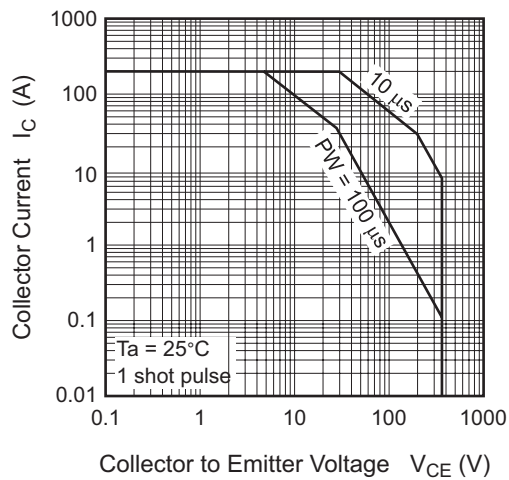
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	1	μA	$V_{CE} = 360 V, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	± 100	nA	$V_{GE} = \pm 30 V, V_{CE} = 0$
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	$V_{CE(sat)}$	—	1.7	2.2	V	$I_C = 35 A, V_{GE} = 15 V$ ^{Note3}
Input capacitance	C_{ies}	—	1160	—	pF	$V_{CE} = 25 V$ $V_{GE} = 0$ $f = 1 MHz$
Output capacitance	C_{oes}	—	60	—	pF	
Reveres transfer capacitance	C_{res}	—	26	—	pF	
Total gate charge	Q_g	—	34	—	nC	$V_{GE} = 15 V$ $V_{CE} = 150 V$ $I_C = 35 A$
Gate to emitter charge	Q_{ge}	—	6	—	nC	
Gate to collector charge	Q_{gc}	—	10	—	nC	
Switching time	$t_{d(on)}$	—	0.03	—	μs	$I_C = 35 A$ $R_L = 4.5 \Omega$ $V_{GE} = 15 V$ $R_G = 5 \Omega$
	t_r	—	0.1	—	μs	
	$t_{d(off)}$	—	0.08	—	μs	
	t_f	—	0.15	—	μs	

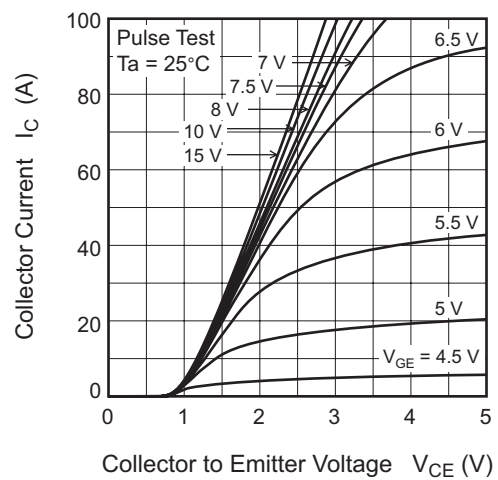
Notes: 3. Pulse test.

Main Characteristics

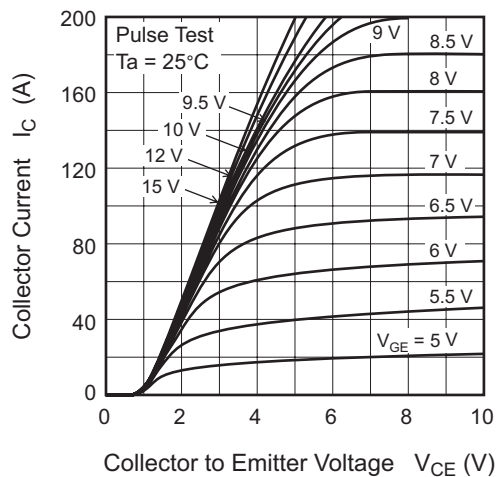
Maximum Safe Operation Area



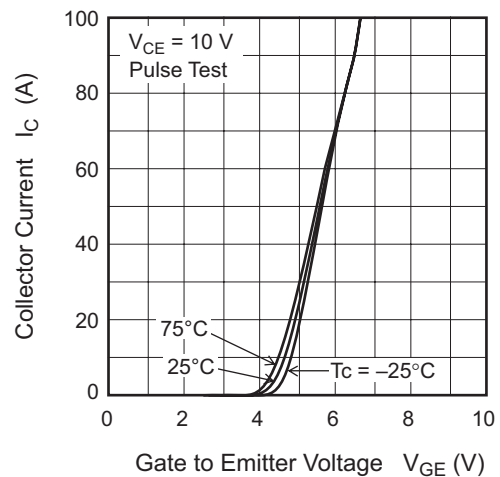
Typical Output Characteristics (1)



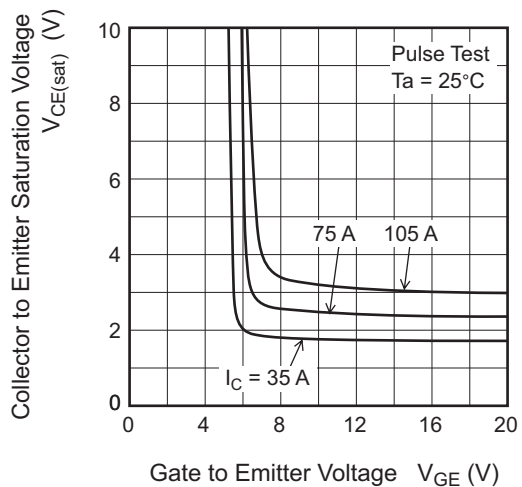
Typical Output Characteristics (2)



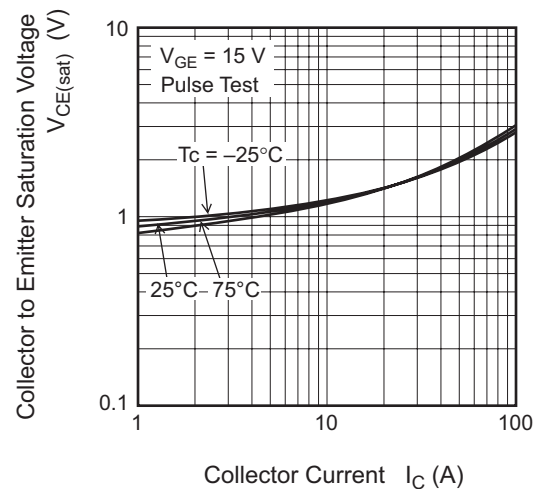
Typical Transfer Characteristics

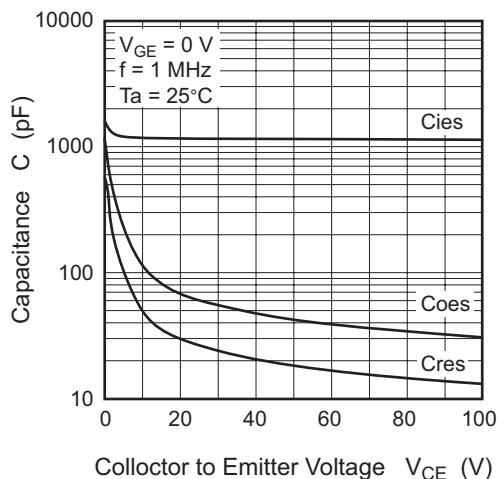


Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)

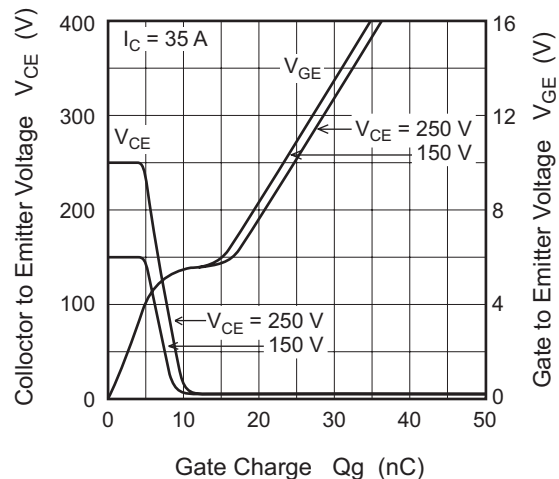


Collector to Emitter Saturation Voltage vs. Collector Current (Typical)

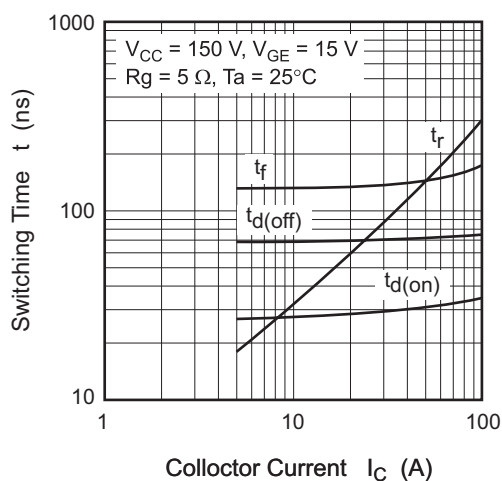


Typical Capacitance vs.
Collector to Emitter Voltage

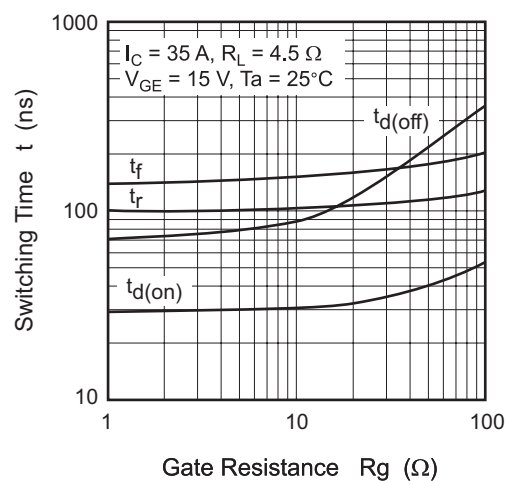
Dynamic Input Characteristics (Typical)



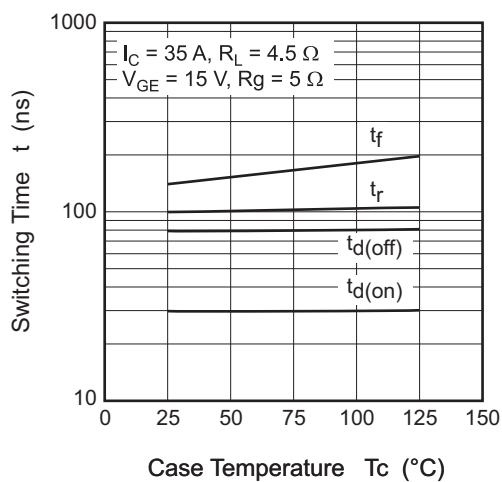
Switching Characteristics (Typical) (1)



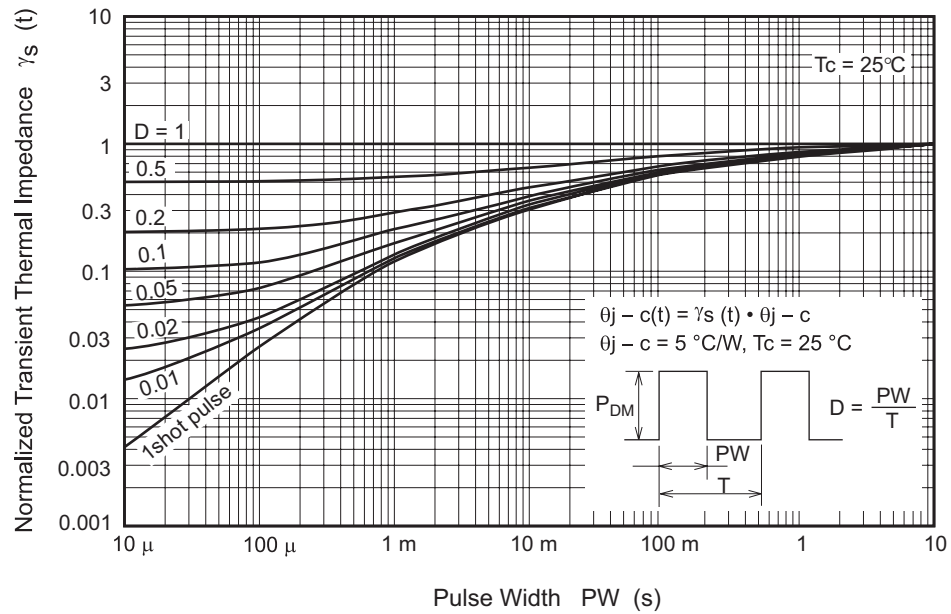
Switching Characteristics (Typical) (2)



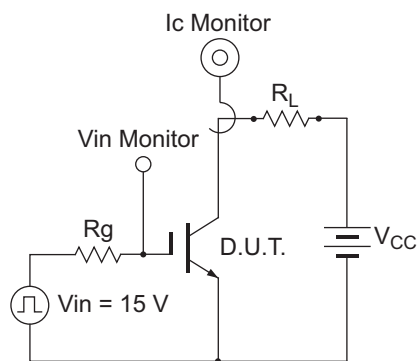
Switching Characteristics (Typical) (3)



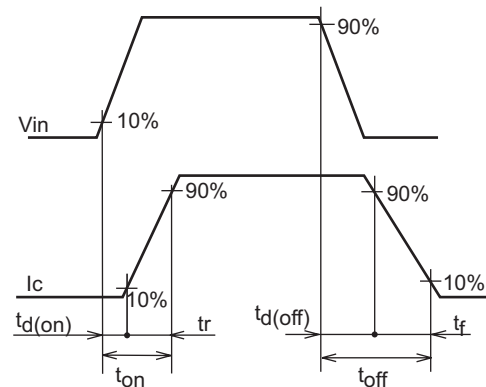
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform



Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g	

The drawing illustrates the mechanical dimensions of the RJP30E2DPP-M0 TO-220FL package. The top view shows a square body with a width of 10.0 ± 0.3 mm and a height of 15.0 ± 0.3 mm. The mounting tab has a width of 6.5 ± 0.3 mm and a height of 3.0 ± 0.3 mm. The distance from the center of the package to the center of the mounting tab is 3.2 ± 0.2 mm. The side view shows a total height of 12.5 ± 0.5 mm, with a mounting tab height of 3.6 ± 0.3 mm. The lead length is 2.8 ± 0.2 mm. The lead thickness is 0.40 ± 0.15 mm. The lead width at the base is 2.54 ± 0.25 mm. The lead thickness at the base is 0.75 ± 0.15 mm. The lead width at the top is 1.15 ± 0.2 mm. The lead thickness at the top is 1.15 ± 0.2 mm. The lead width at the bottom is 2.6 ± 0.2 mm. The lead thickness at the bottom is 4.5 ± 0.2 mm.

Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP30E2DPP-M0-T2	600 pcs	Box (Tube)

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