

RJP60V0DPM-80

600V - 22A - IGBT

Application: Inverter

R07DS1036EJ0200

Rev.2.00

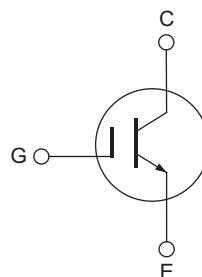
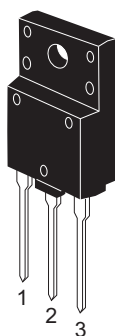
Apr 02, 2014

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: PRSS0003ZD-A
 (Package name: TO-3PF)



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}	± 30	V
Collector current	$T_c = 25^\circ\text{C}$	I_C	45
	$T_c = 100^\circ\text{C}$	I_C	22
Collector peak current	$I_{C(peak)}$ ^{Note1}	90	A
Collector dissipation	P_C ^{Note2}	60	W
Junction to case thermal impedance	θ_{j-c} ^{Note2}	2.08	$^\circ\text{C/W}$
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

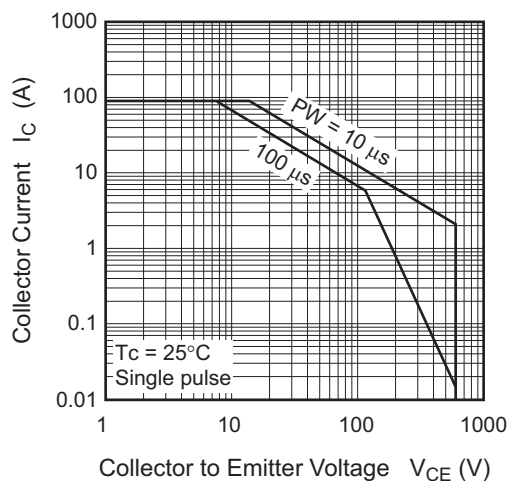
(Ta = 25°C)

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

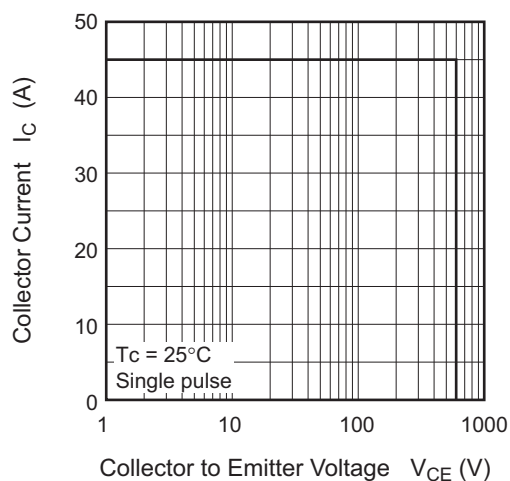
Notes: 3. Pulse test.

Main Characteristics

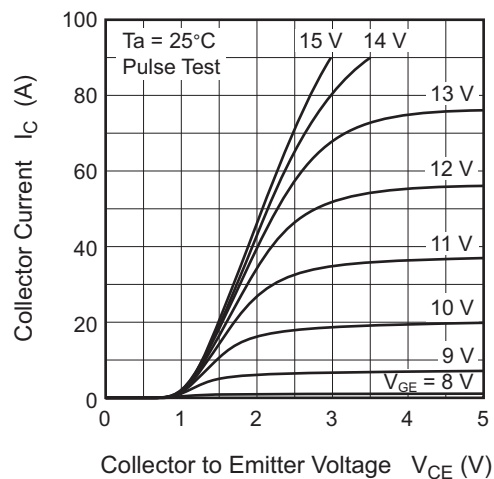
Maximum Safe Operation Area



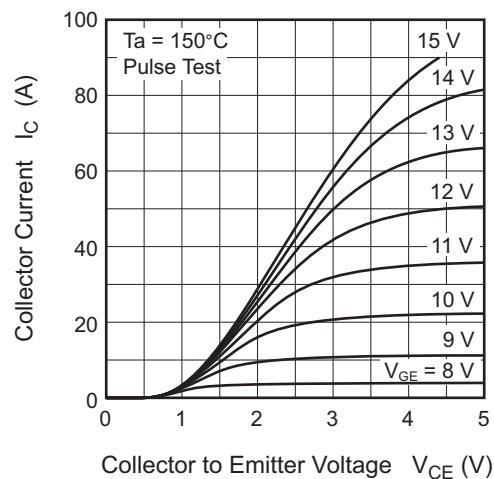
Turn-off Safe Operation Area



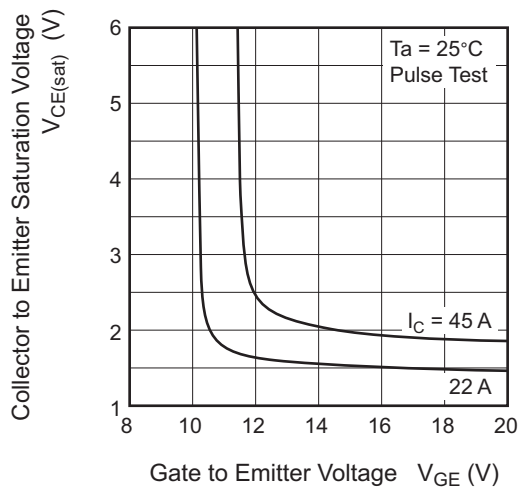
Typical Output Characteristics



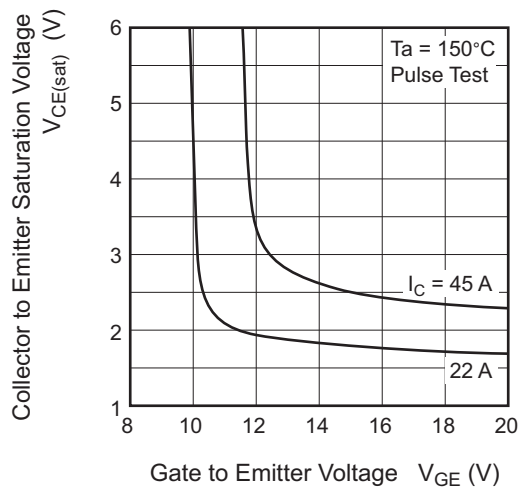
Typical Output Characteristics



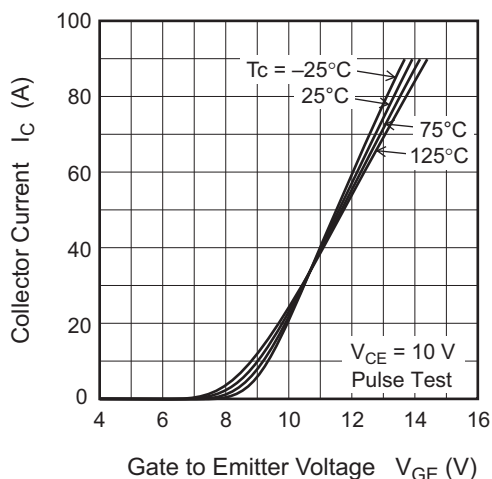
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



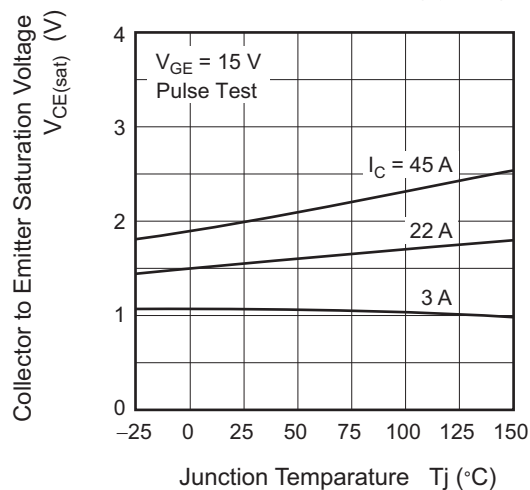
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



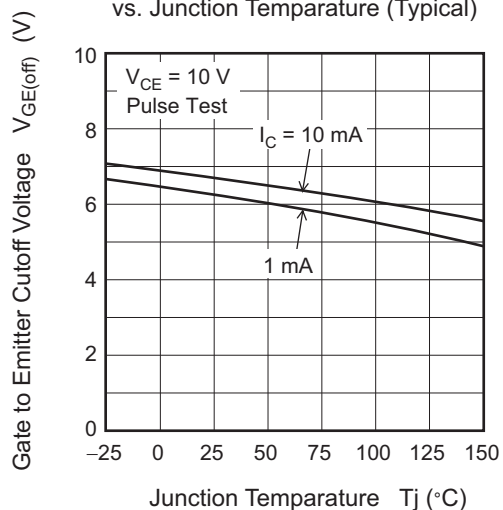
Typical Transfer Characteristics



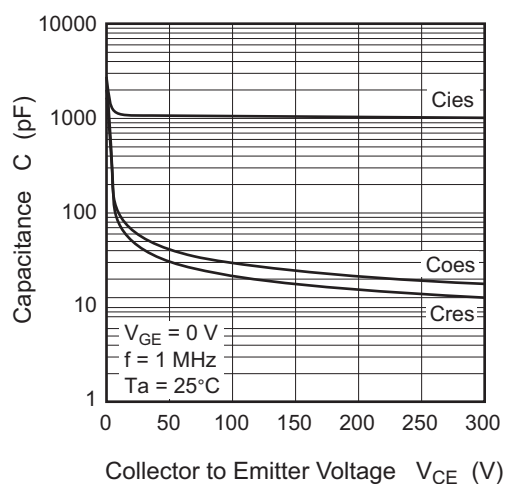
Collector to Emitter Saturation Voltage vs. Junction Temperature (Typical)



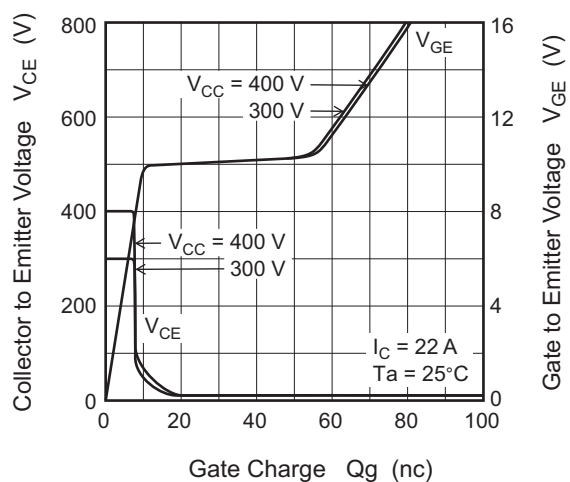
Gate to Emitter Cutoff Voltage vs. Junction Temperature (Typical)



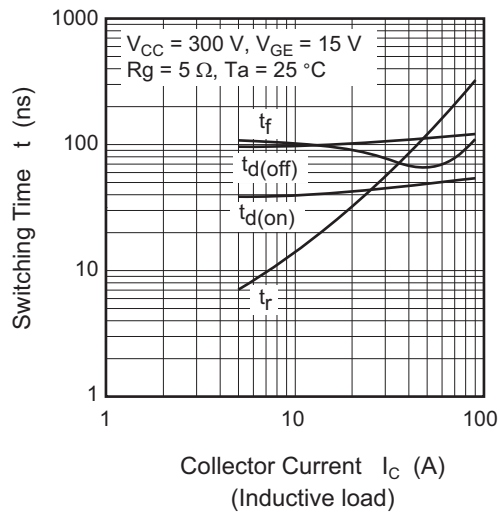
Typical Capacitance vs. Collector to Emitter Voltage



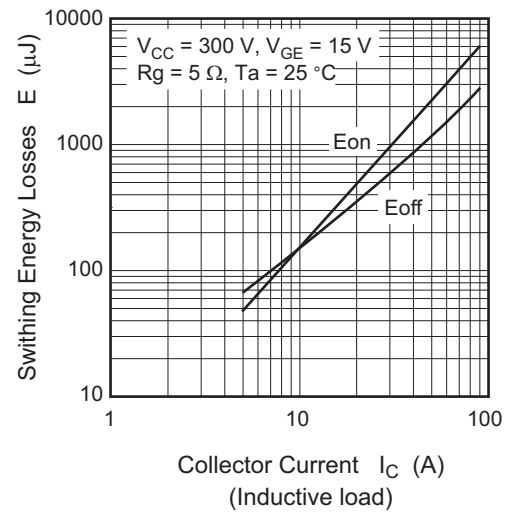
Dynamic Input Characteristics (Typical)



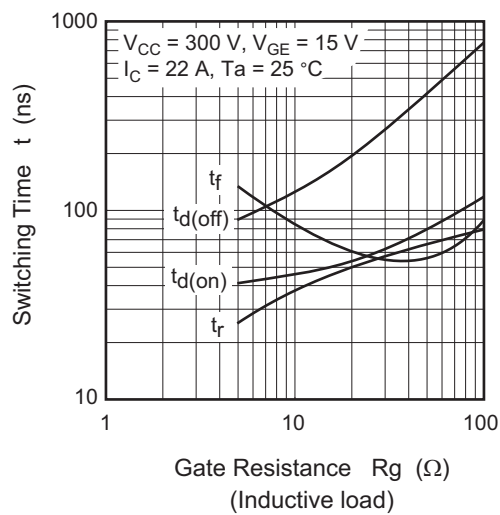
Switching Characteristics (Typical) (1)



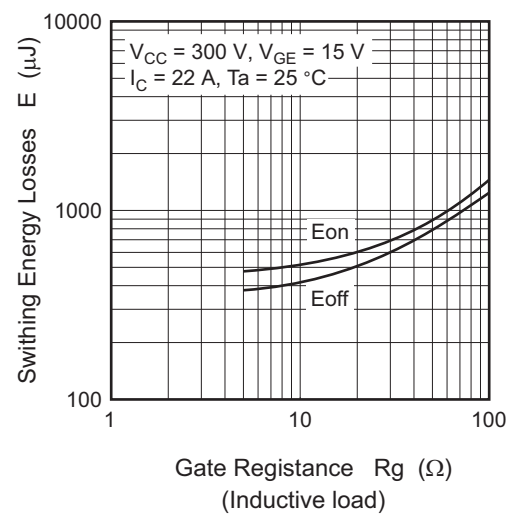
Switching Characteristics (Typical) (2)



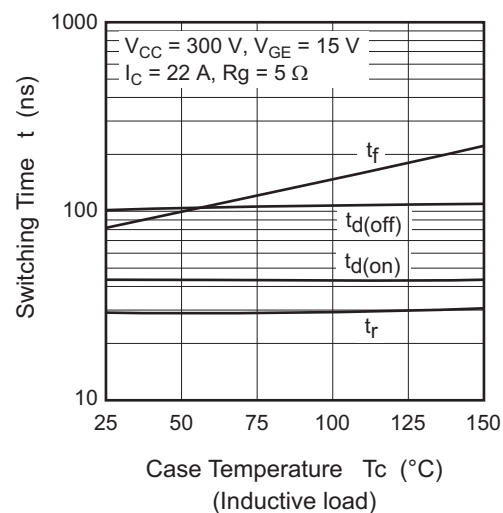
Switching Characteristics (Typical) (3)



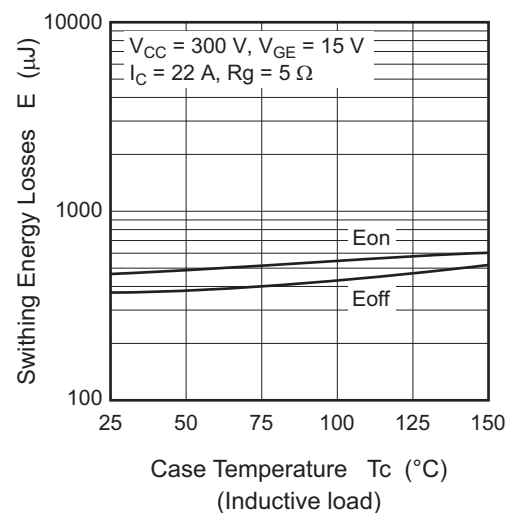
Switching Characteristics (Typical) (4)

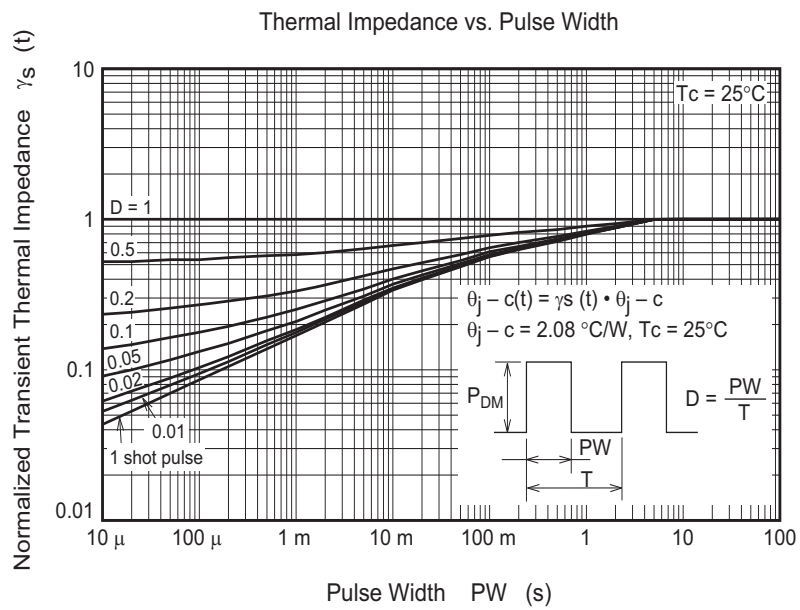


Switching Characteristics (Typical) (5)

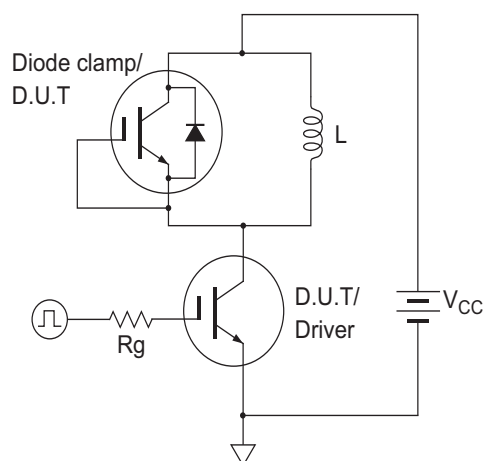


Switching Characteristics (Typical) (6)

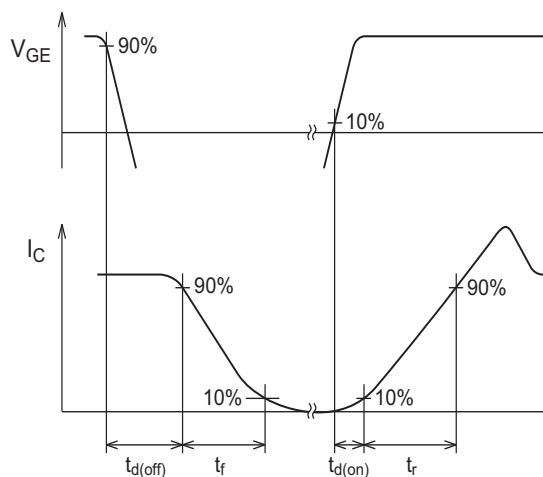




Switching Time Test Circuit



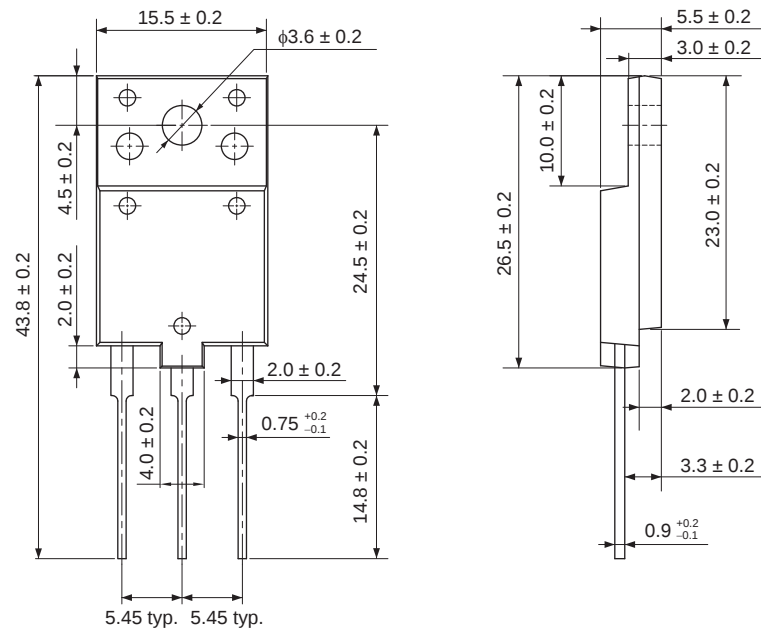
Waveform



Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3PF	—	PRSS0003ZD-A	TO-3PFS	5.5g

Unit: mm



Ordering Information

Orderable Part No.	Quantity	Shipping Container
RJP60V0DPM-80#T2	360 pcs	Box (Tube)

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