

RJP60F0DPE

600 V - 25 A - IGBT
High Speed Power Switching

R07DS0540EJ0100

Rev.1.00

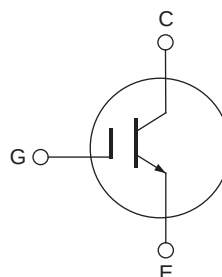
Sep 09, 2011

Features

- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.4 \text{ V typ. (at } I_C = 25 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- Trench gate and thin wafer technology
- High speed switching
 $t_f = 90 \text{ ns typ. (at } I_C = 30 \text{ A, } V_{CE} = 400 \text{ V, } V_{GE} = 15 \text{ V, } R_g = 5 \Omega, T_a = 25^\circ\text{C, inductive load)}$

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK (S)-(1))



1. Gate
2. Collector
3. Emitter
4. Collector

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	600	V
Gate to emitter voltage	V_{GES}	± 30	V
Collector current	$T_c = 25^\circ\text{C}$ I_C ^{Note1}	50	A
	$T_c = 100^\circ\text{C}$ I_C ^{Note1}	25	A
Collector peak current	$i_{c(peak)}$ ^{Note1}	100	A
Collector dissipation	P_C	122	W
Junction to case thermal impedance	θ_{j-c}	1.02	$^\circ\text{C/W}$
Channel temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. Pulse width limited by safe operating area.

Electrical Characteristics

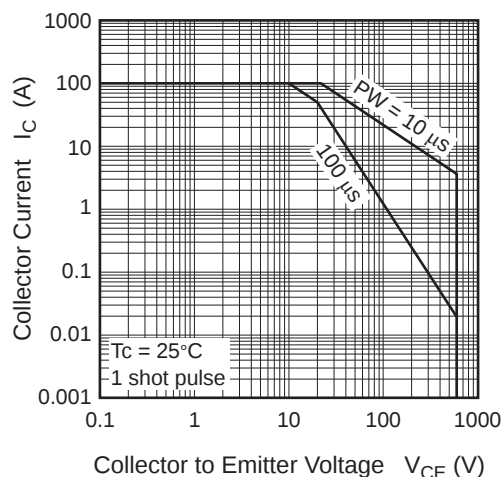
(T_j = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I _{CES}	—	—	100	μA	V _{CE} = 600V, 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)}	4	—	8	V	V _{CE} = 10V, I _C = 1 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	1.4	1.82	V	I _C = 25 A, V _{GE} = 15V ^{Note2}
		—	1.7	—	V	I _C = 50 A, V _{GE} = 15V ^{Note2}
Input capacitance	C _{ies}	—	1550	—	pF	V _{CE} = 25 V V _{GE} = 0 V f = 1 MHz
Output capacitance	C _{oes}	—	82	—	pF	
Reverse transfer capacitance	C _{res}	—	26	—	pF	
Switching time	t _{d(on)}	—	46	—	ns	I _C = 30 A, V _{CE} = 400 V V _{GE} = 15 V, R _g = 5 Ω ^{Note2} Inductive load Diode clamp: RJH60F0DPK
	t _r	—	92	—	ns	
	t _{d(off)}	—	70	—	ns	
	t _f	—	90	—	ns	

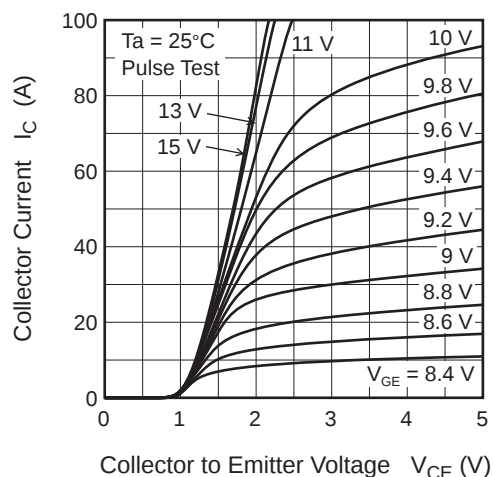
Notes: 2. Pulse test

Main Characteristics

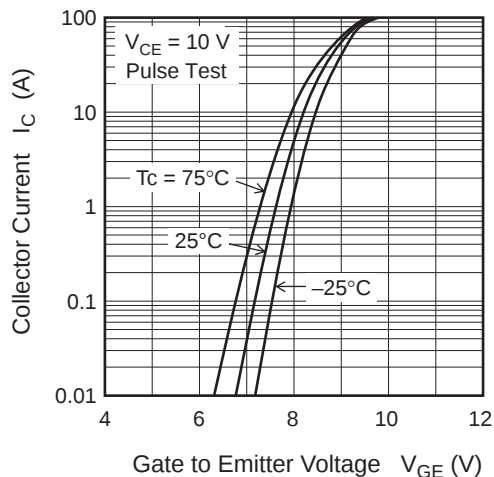
Maximum Safe Operation Area



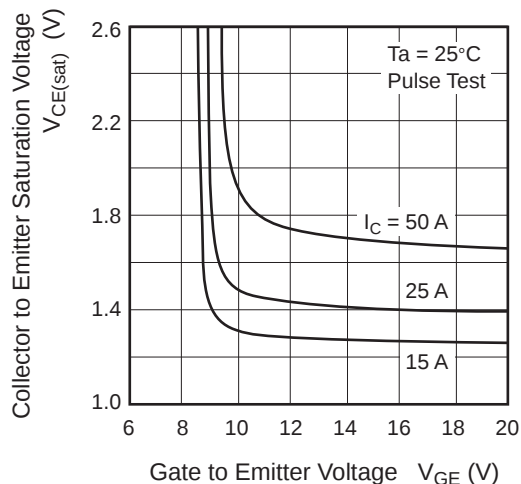
Typical Output Characteristics



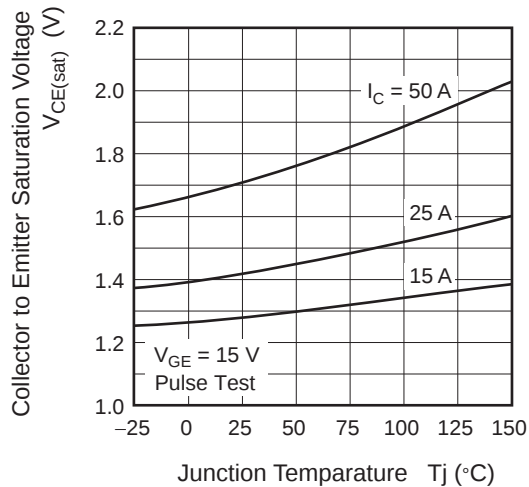
Typical Transfer Characteristics



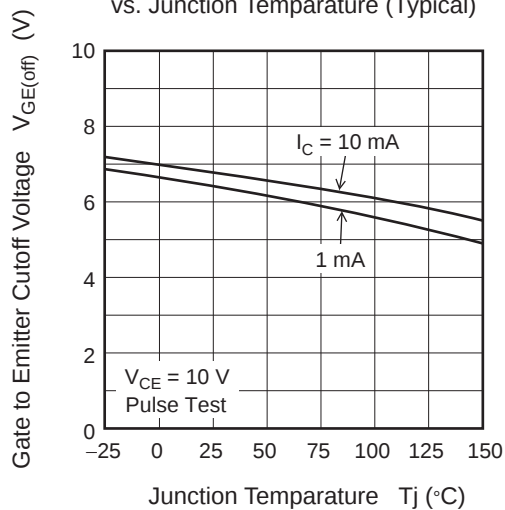
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)

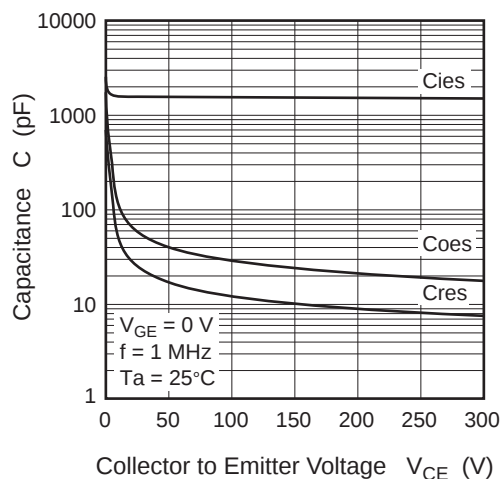


Collector to Emitter Saturation Voltage vs. Junction Temperature (Typical)

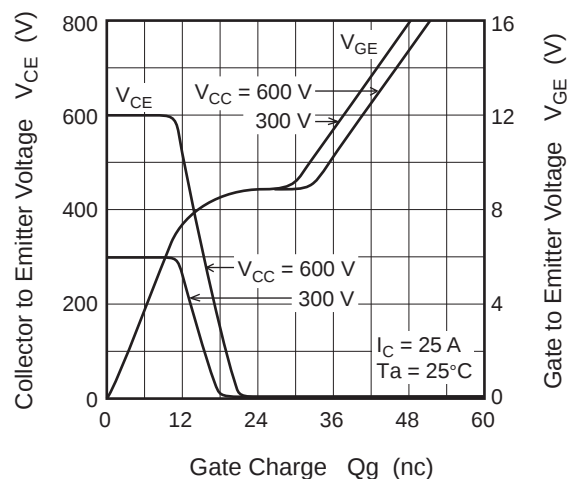


Gate to Emitter Cutoff Voltage vs. Junction Temperature (Typical)

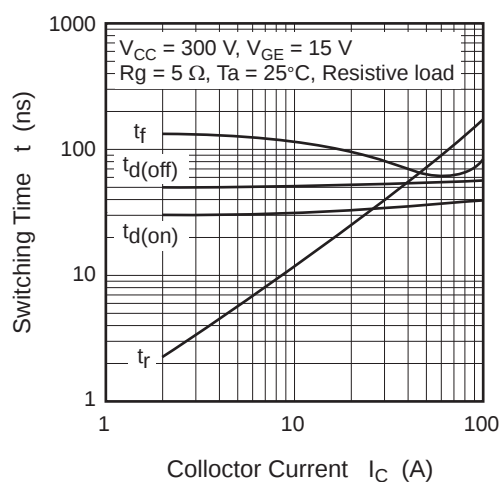


Typical Capacitance vs.
Collector to Emitter Voltage

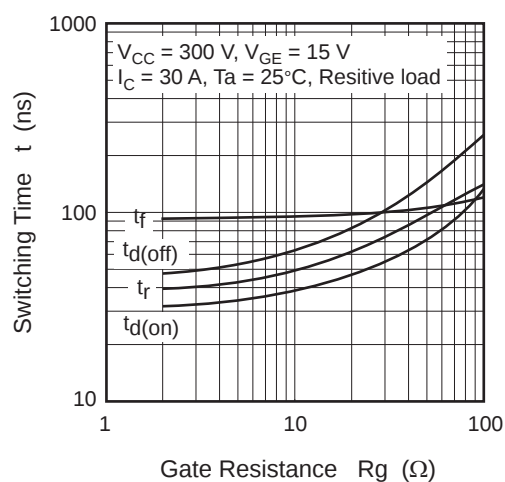
Dynamic Input Characteristics (Typical)



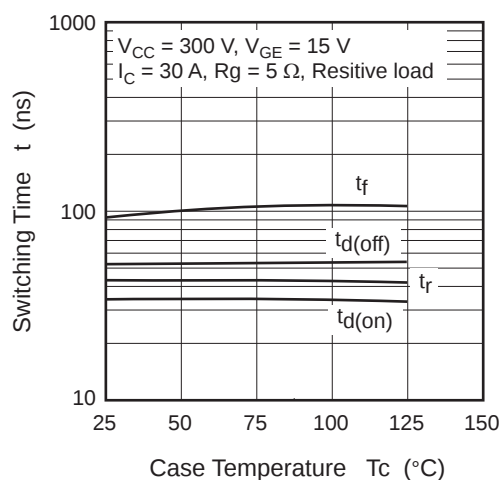
Switching Characteristics (Typical) (1)

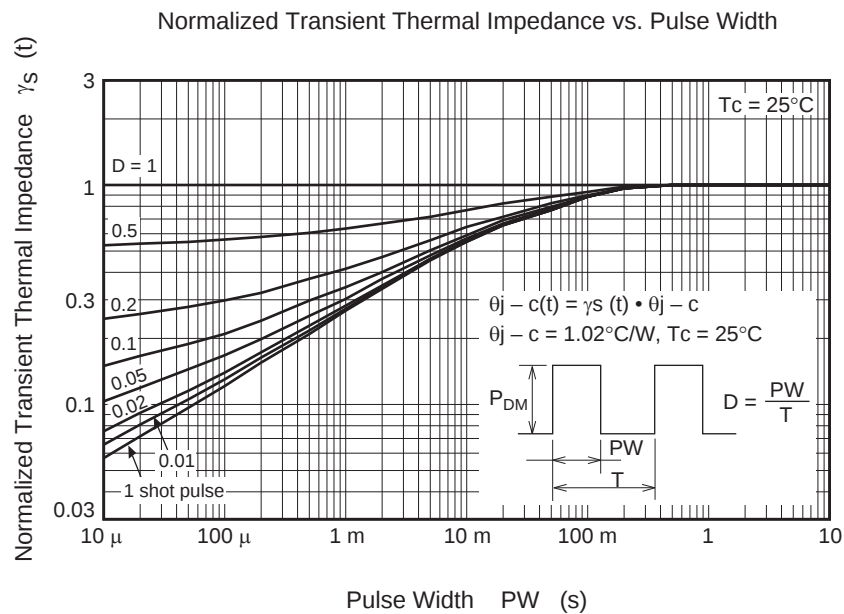


Switching Characteristics (Typical) (2)

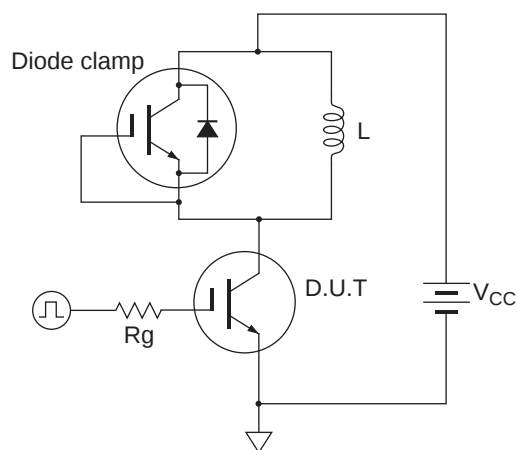


Switching Characteristics (Typical) (3)

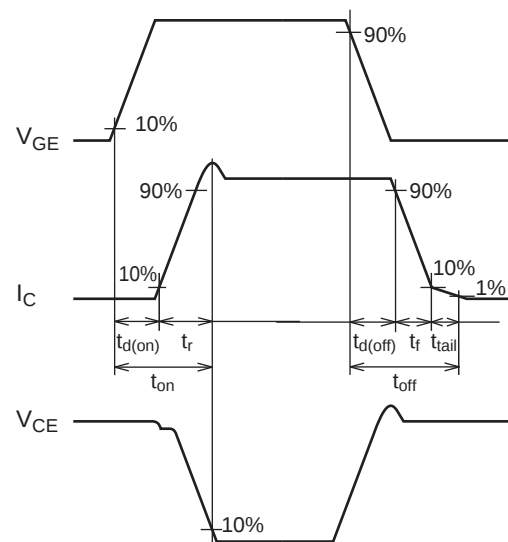




Switching Time Test Circuit



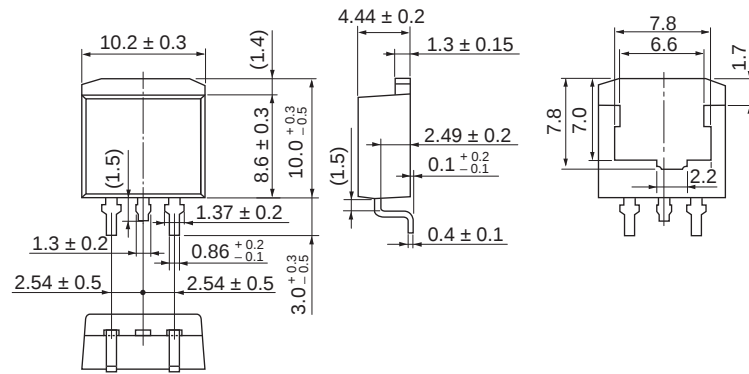
Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDBAK(S)-(1)	SC-83	PRSS0004AE-B	LDBAK(S)-(1) / LDBAK(S)-(1)V	1.30g

Unit: mm



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP60F0DPE-00-J3	1000 pcs	Taping

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