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RJH60F7ADPK

Silicon N Channel IGBT
High Speed Power Switching

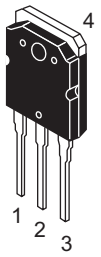
REJ03G1837-0100
Rev.1.00
Oct 13, 2009

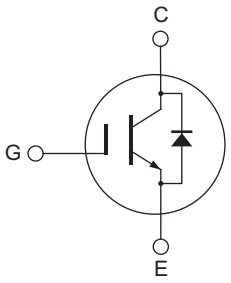
Features

- High speed switching
- Low on-state voltage
- Fast recovery diode

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)





1. Gate
2. Collector
3. Emitter
4. Collector (Flange)

Absolute Maximum Ratings

(Tc = 25°C)

Item		Symbol	Ratings	Unit
Collector to emitter voltage		V_{CES}	600	V
Gate to emitter voltage		V_{GES}	±30	V
Collector current	Tc = 25°C	I_C	90	A
	Tc = 100°C	I_C	50	A
Collector peak current		ic(peak) Note1	180	A
Collector to emitter diode forward peak current		i_{DF}(peak) Note2	100	A
Collector dissipation		P_C	328.9	W
Junction to case thermal impedance (IGBT)		θj-c	0.38	°C/W
Junction to case thermal impedance (Diode)		θj-c	2.0	°C/W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

Notes: 1. Pulse width limited by safe operating area.
2. PW ≤ 5 μs, duty cycle ≤ 1%

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Electrical Characteristics

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(Tj = 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	$V_{CE(sat)}$	—	—	1.75	V	I_C = 50 A, V_{GE} = 15V Note3
	$V_{CE(sat)}$	—	1.6	—	V	I_C = 90 A, V_{GE} = 15V Note3
Input capacitance	Cies	—	4890	—	pF	V_{CE} = 25 V V_{GE} = 0 V f = 1 MHz
Output capacitance	Coes	—	198	—	pF	
Reverse transfer capacitance	Cres	—	83	—		
Switching time	$t_{d(on)}$	—	48	—	ns	I_C = 30 A, Resistive Load V_{CC} = 300 V V_{GE} = 15 V Rg = 5 Ω Note3
	t_r	—	36	—	ns	
	$t_{d(off)}$	—	122	—	ns	
	t_f	—	95	—	ns	
C-E diode forward voltage	V_{ECF1}	—	1.6	2.1	V	I_F = 20 A Note3
C-E diode reverse recovery time	t_{rr}	—	140	—	ns	I_F = 20 A di_F/dt = 100 A/μs

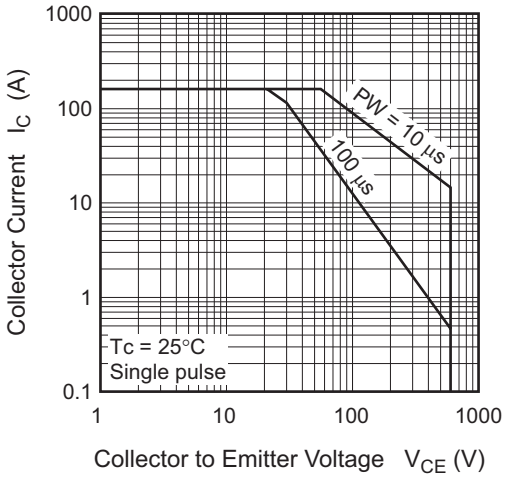
Notes: 3. Pulse test

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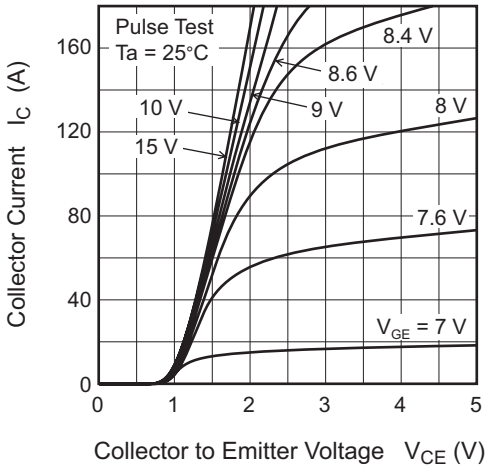
Main Characteristics

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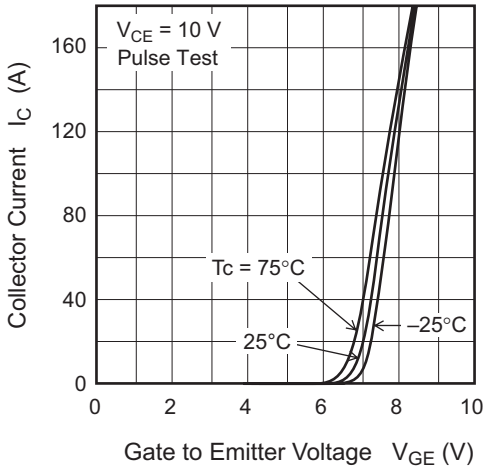
Maximum Safe Operation Area



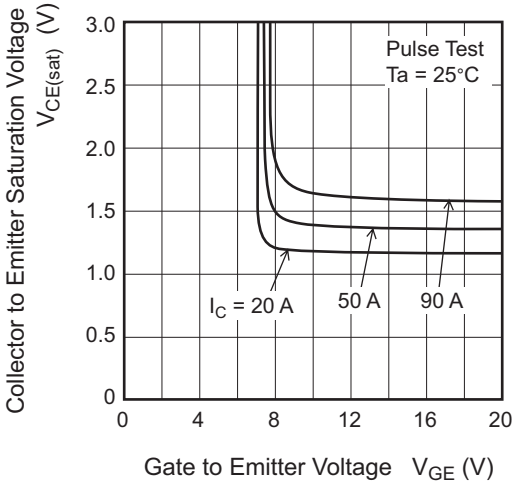
Typical Output Characteristics



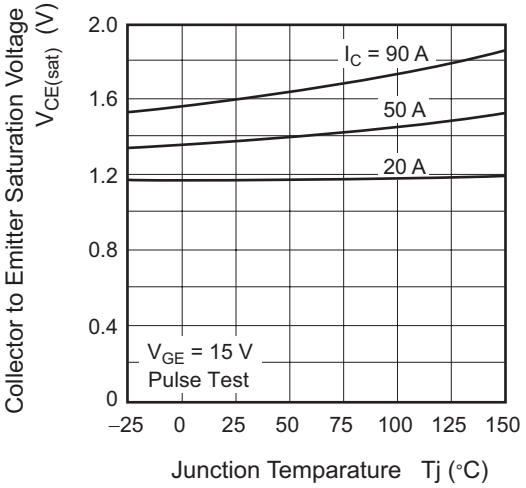
Typical Transfer Characteristics



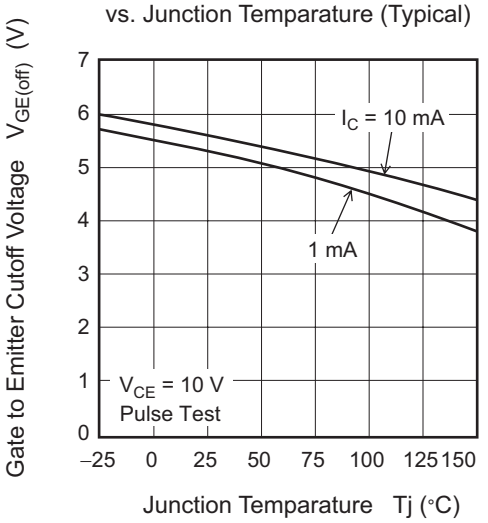
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



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



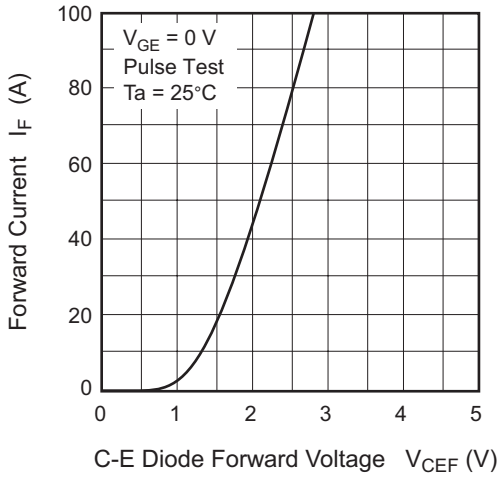
Gate to Emitter Cutoff Voltage vs. Junction Temparature (Typical)



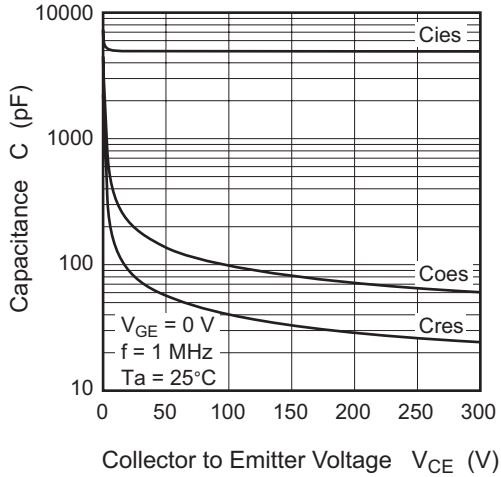
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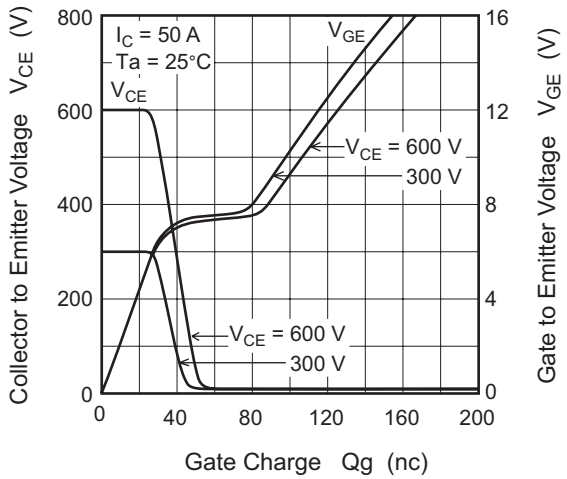
Forward Current vs. Forward Voltage (Typical)



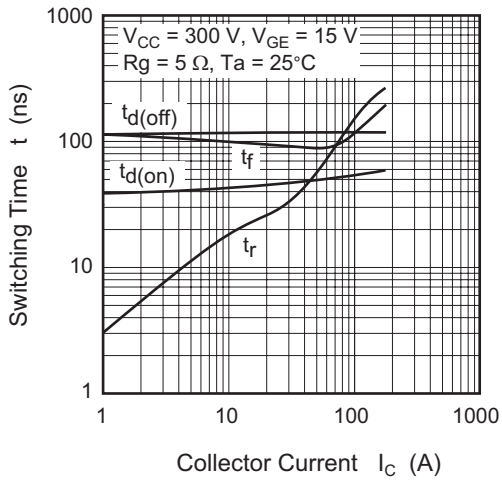
Typical Capacitance vs.
Collector to Emitter Voltage (Typical)



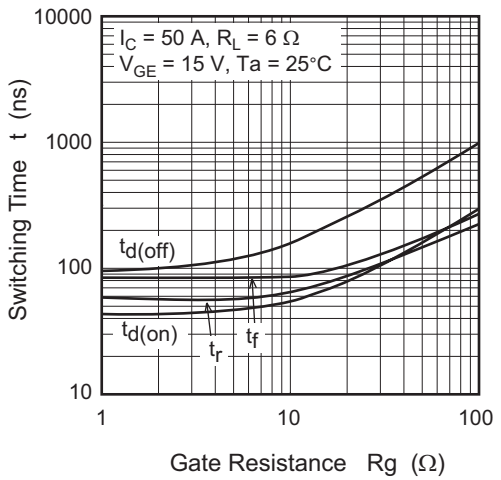
Dynamic Input Characteristics (Typical)



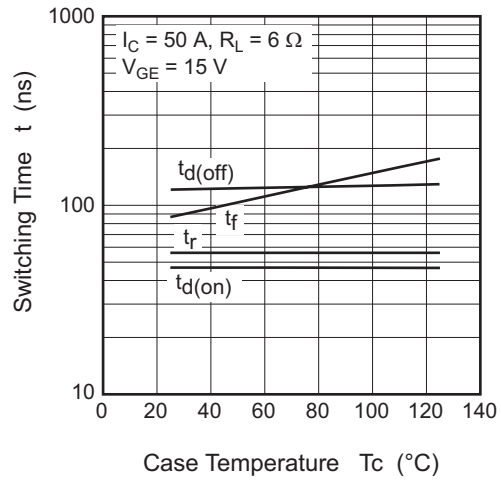
Switching Characteristics (Typical) (1)



Switching Characteristics (Typical) (2)



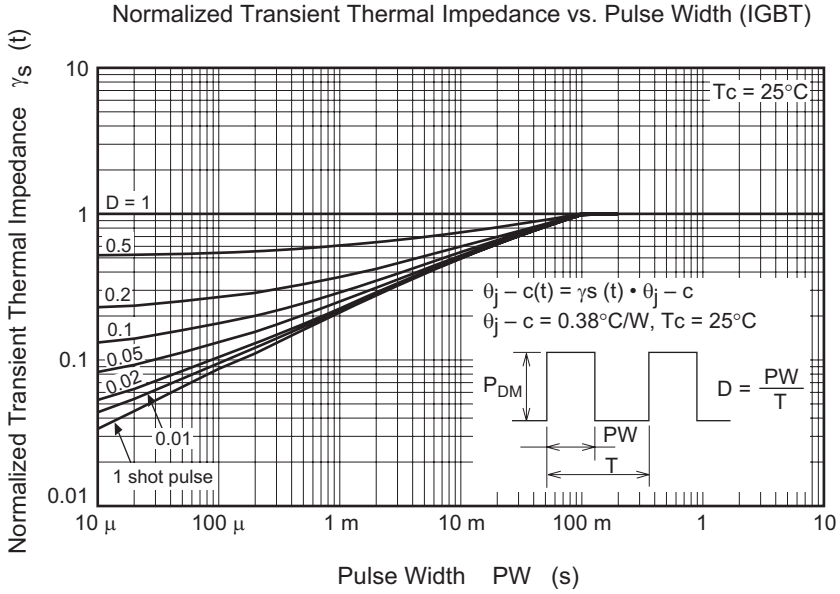
Switching Characteristics (Typical) (3)



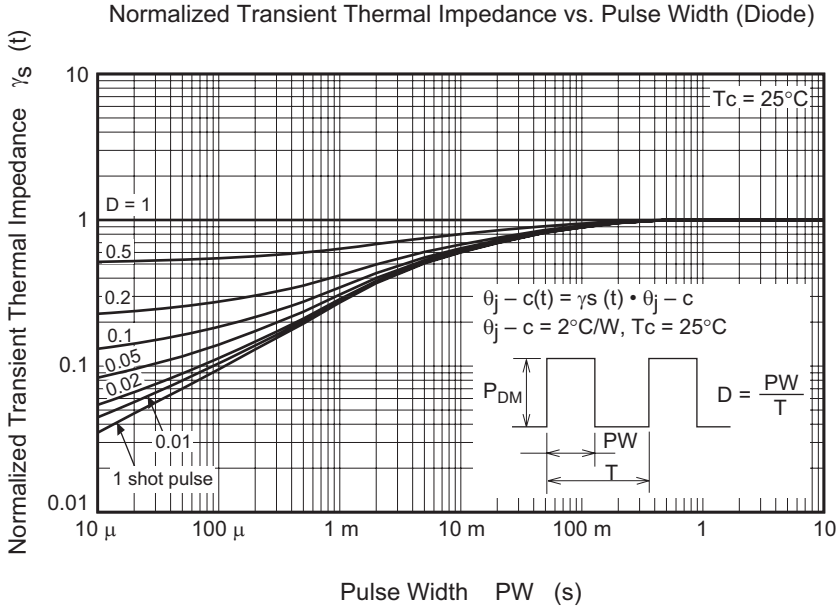
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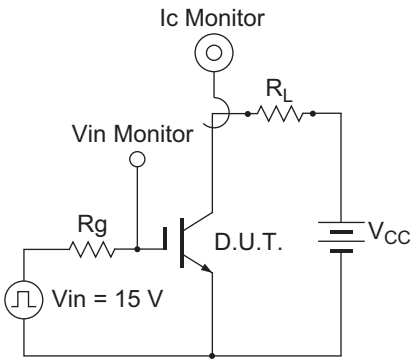
Normalized Transient Thermal Impedance vs. Pulse Width (IGBT)



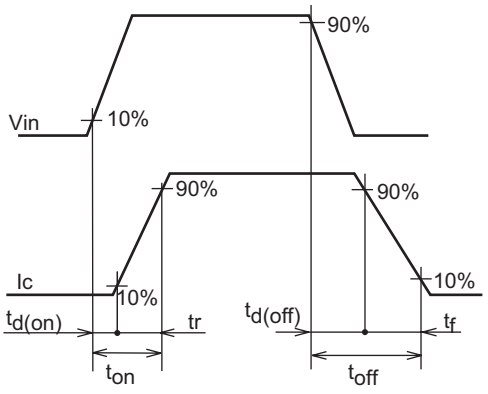
Normalized Transient Thermal Impedance vs. Pulse Width (Diode)



Switching Time Test Circuit



Waveform



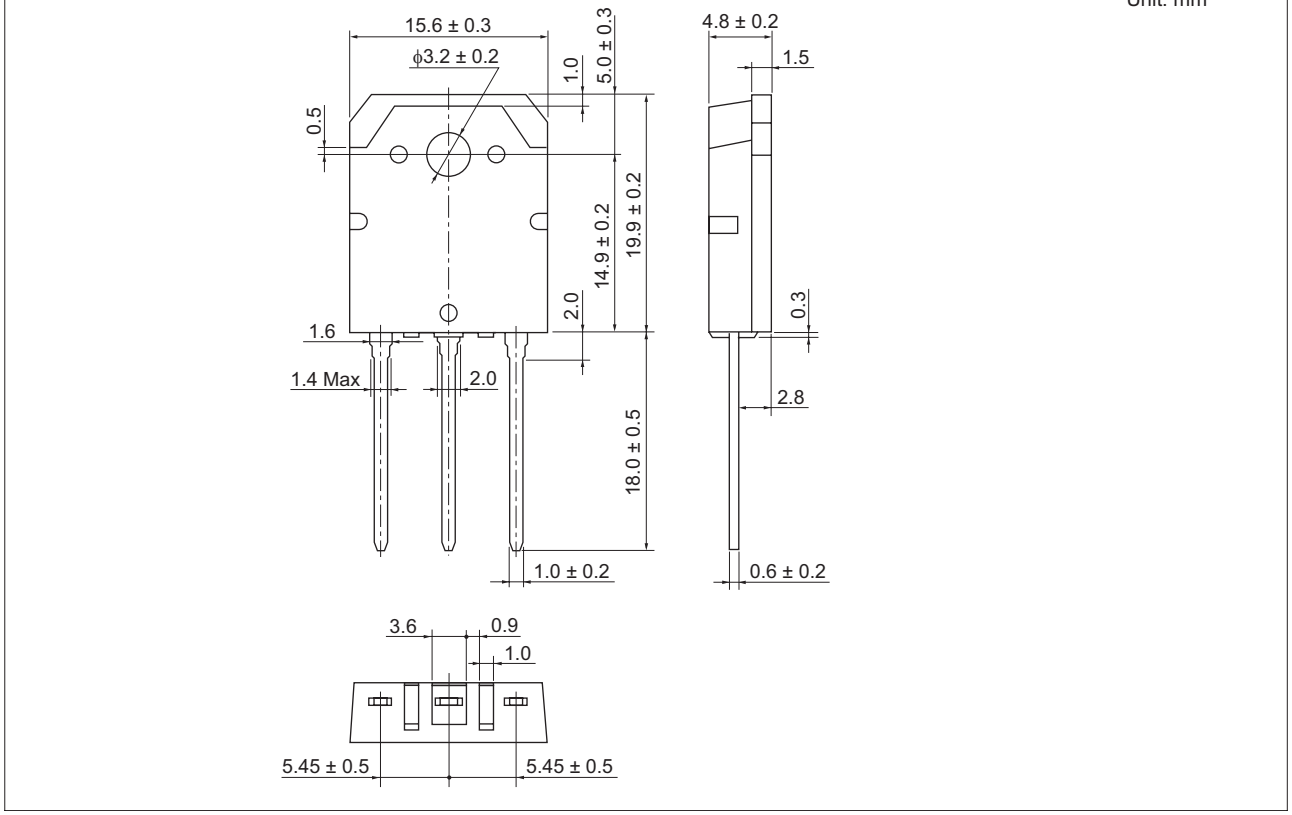
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Package Dimensions

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Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3P	SC-65	PRSS0004ZE-A	TO-3P / TO-3PV	5.0g

Unit: mm



Ordering Information

Part No.	Quantity	Shipping Container
RJH60F7ADPK-00-T0	360 pcs	Box (Tube)

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