RJH6087BDPK

Silicon N Channel IGBT
High Speed Power Switching

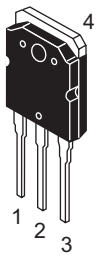
R07DS0389EJ0100
Rev.1.00
May 11, 2011

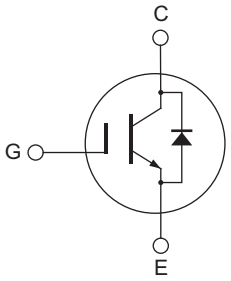
Features

- Ultra high speed switching
  t_f = 55 ns typ. (at I_C = 30 A, V_{CC} = 300 V, V_{GE} = 15 V, Rg = 5 Ω, Inductive Load)
- 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	I_C	50	A
Collector peak current	ic(peak) Note1	100	A
Collector to emitter diode forward peak current	i_{DF}(peak) Note2	100	A
Collector dissipation	P_C	223.2	W
Junction to case thermal impedance (IGBT)	θj-c	0.56	°C / W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. Pulse width limited by safe operating area.
2. Pulse width limited by maximum junction temperature.

Electrical Characteristics

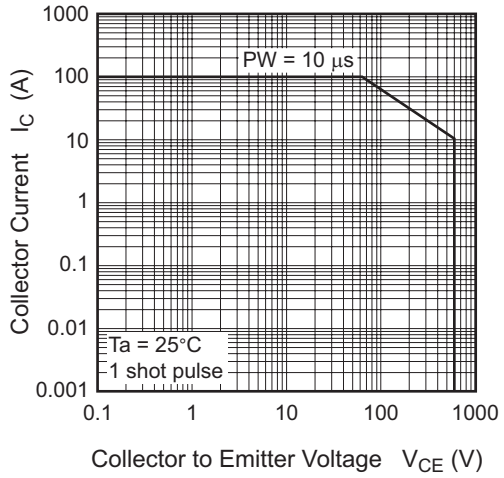
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	10	μA	V_{CE} = 600 V, V_{GE} = 0
Gate to emitter leak current	I_{GES}	—	—	±1	μA	V_{GE} = ±30 V, V_{CE} = 0
Gate to emitter cutoff voltage	$V_{GE(off)}$	3.0	—	5.5	V	V_{CE} = 10 V, I_C = 1 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	2.65	3.5	V	I_C = 25 A, V_{GE} = 15 V Note3
	$V_{CE(sat)}$	—	3.2	—	V	I_C = 50 A, V_{GE} = 15 V Note3
Input capacitance	Cies	—	1800	—	pF	V_{CE} = 25 V V_{GE} = 0 f = 1 MHz
Output capacitance	Coes	—	200	—	pF	
Reveres transfer capacitance	Cres	—	16	—	pF	
Switching time	$t_{d(on)}$	—	45	—	ns	I_C = 30 A V_{CC} = 300 V, V_{GE} = 15 V Rg = 5 Ω Inductive Load
	t_r	—	35	—	ns	
	$t_{d(off)}$	—	95	—	ns	
	t_f	—	55	—	ns	
C-E diode Forward voltage	V_{ECF1}	—	1.4	1.9	V	I_F = 30 A Note3
C-E diode reverse recovery time	t_{rr}	—	100	—	ns	I_F = 30 A di_F/dt = 100 A/μs

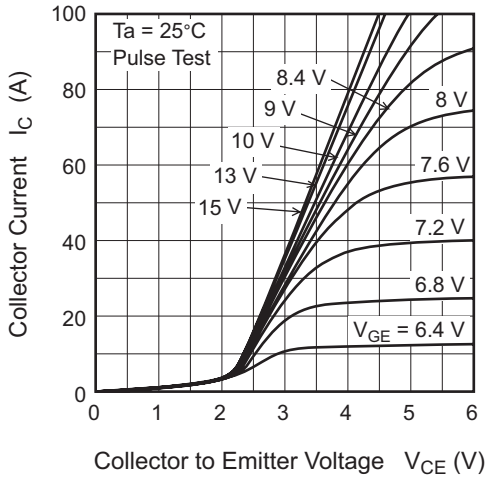
Notes: 3. Pulse test

Main Characteristics

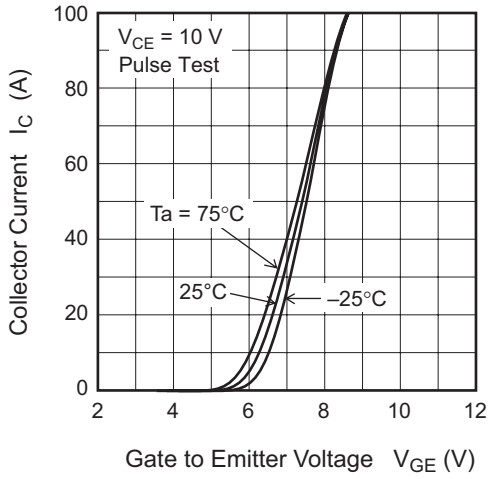
Maximum Safe Operation Area



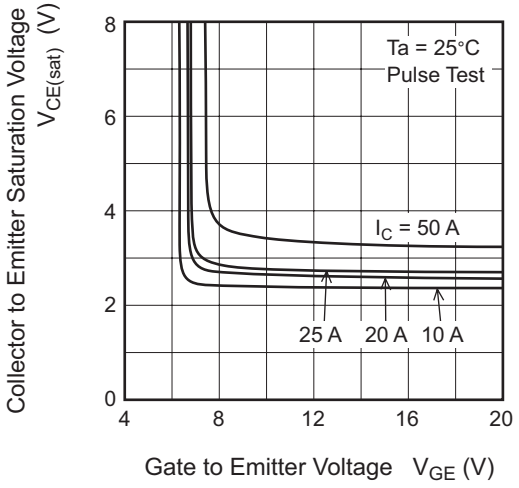
Typical Output Characteristics



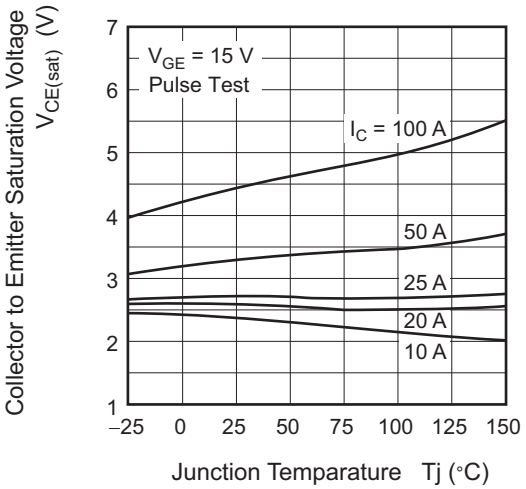
Typical Transfer Characteristics



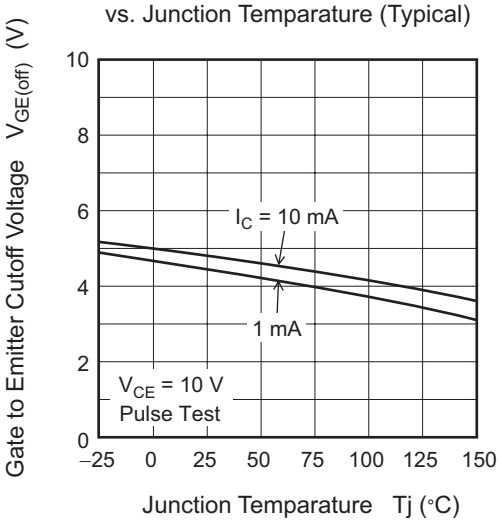
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



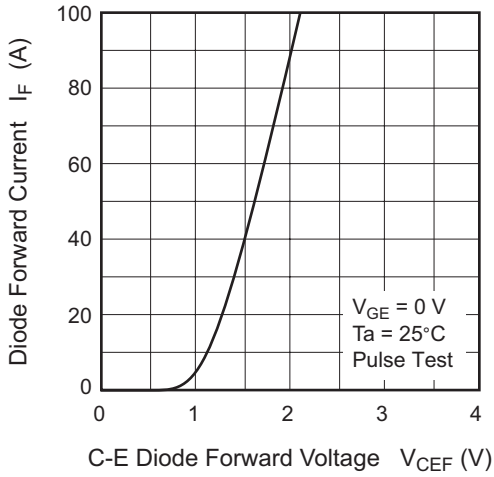
Collector to Emitter Saturation Voltage vs. Junction Temparature (Typical)



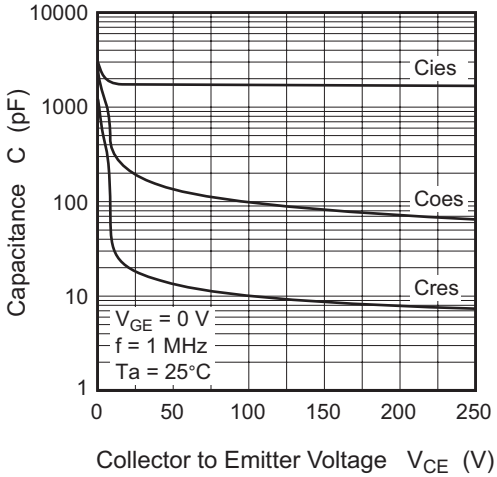
Gate to Emitter Cutoff Voltage vs. Junction Temparature (Typical)



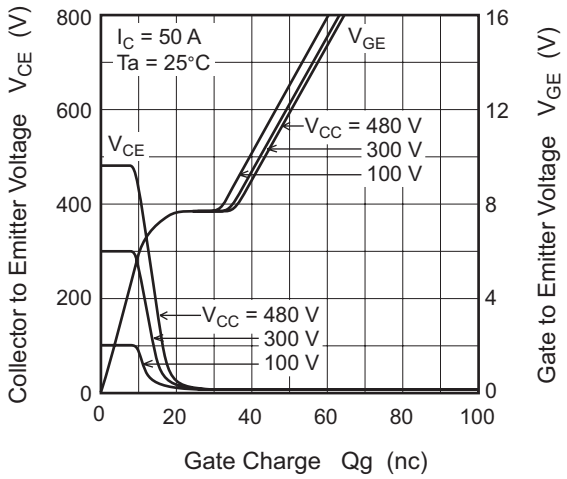
Forward Current vs. Forward Voltage (Typical)



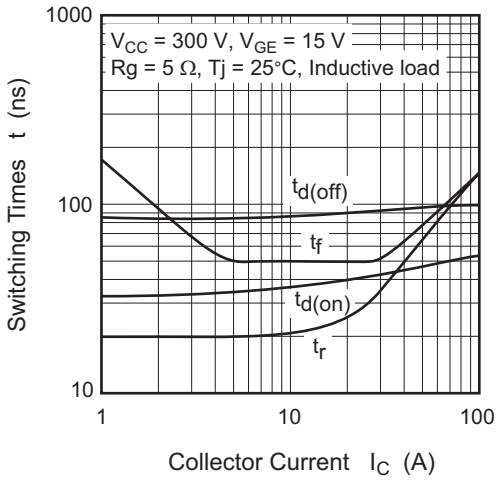
Typical Capacitance vs. Collector to Emitter Voltage



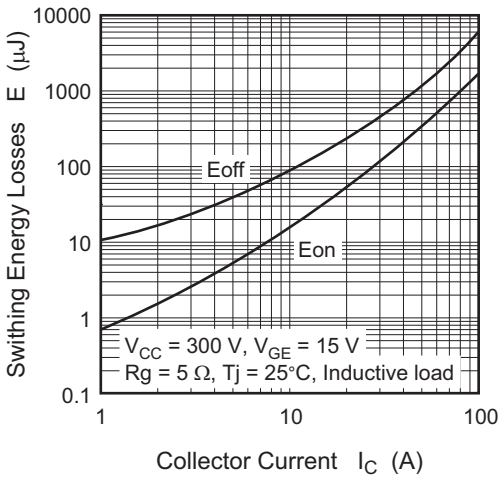
Dynamic Input Characteristics (Typical)



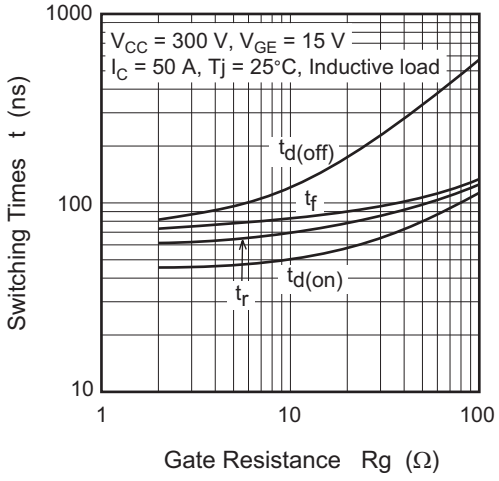
Switching Characteristics (Typical) (1)



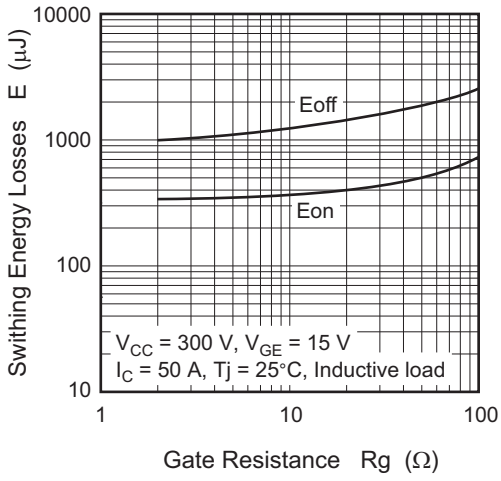
Switching Characteristics (Typical) (2)



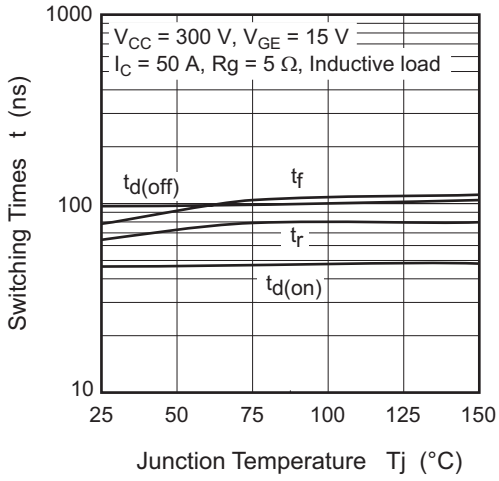
Switching Characteristics (Typical) (3)



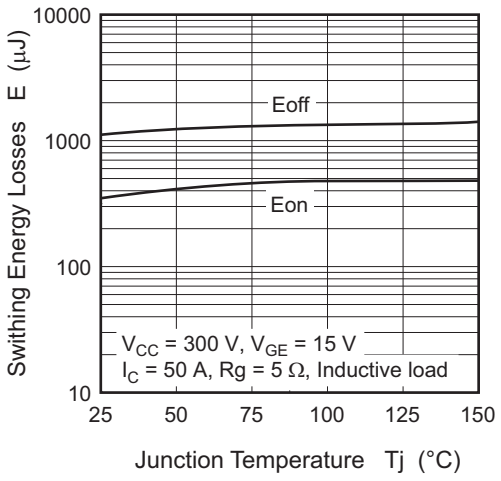
Switching Characteristics (Typical) (4)



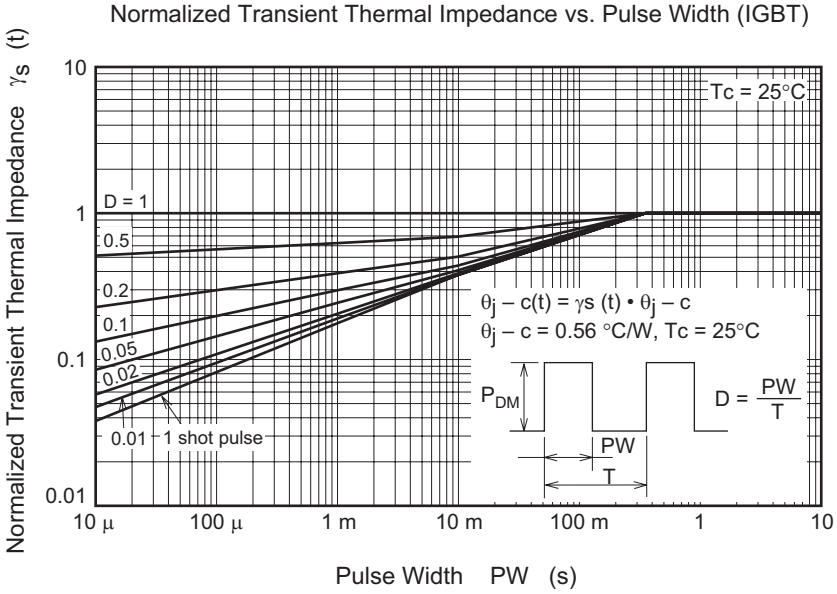
Switching Characteristics (Typical) (5)



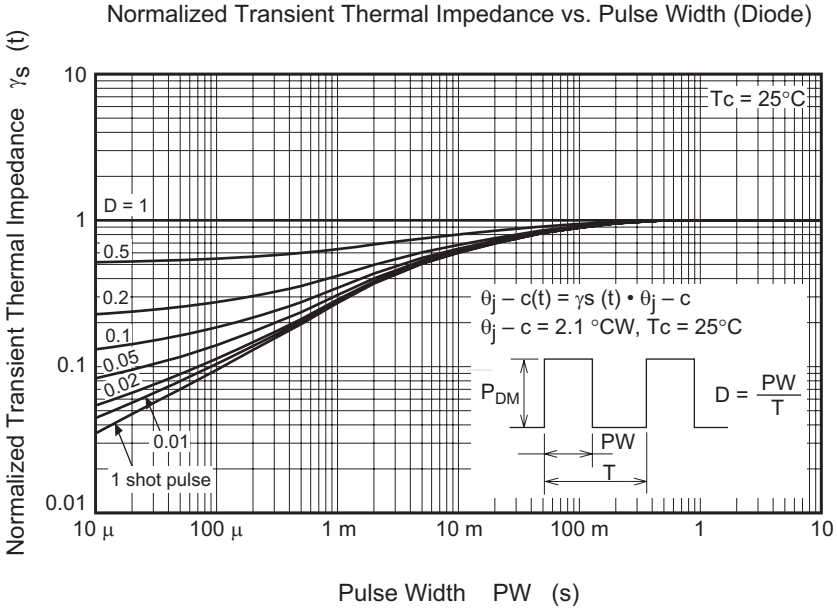
Switching Characteristics (Typical) (6)



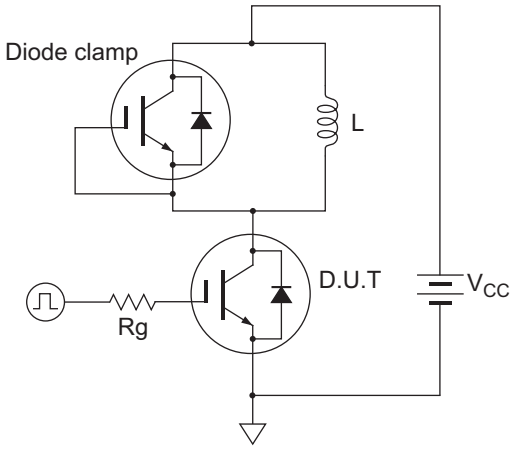
Normalized Transient Thermal Impedance vs. Pulse Width (IGBT)



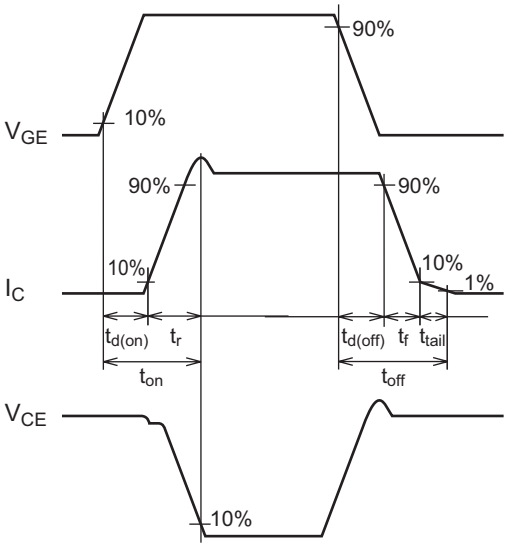
Normalized Transient Thermal Impedance vs. Pulse Width (Diode)



Switching Time Test Circuit



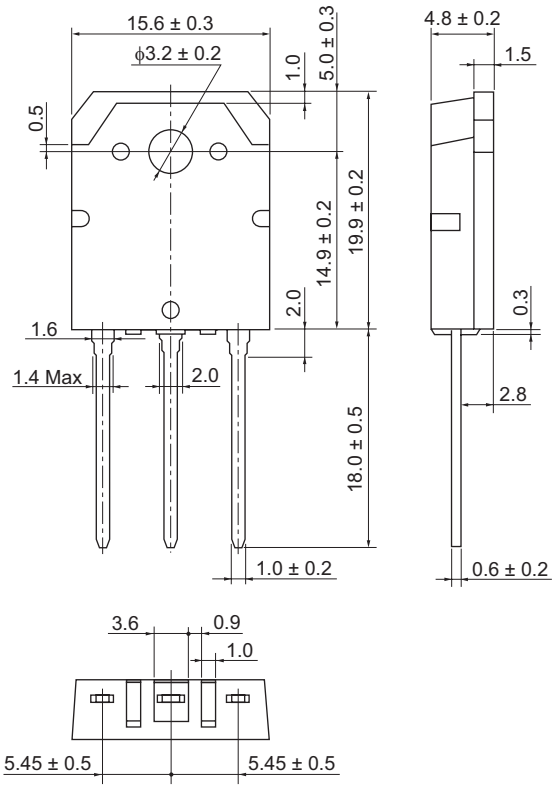
Waveform



Package Dimensions

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

Orderable Part Number	Quantity	Shipping Container
RJH6087BDPK-00-T0	360 pcs	Box (Tube)

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