

# RJH60F5DPK

Silicon N Channel IGBT  
High Speed Power Switching

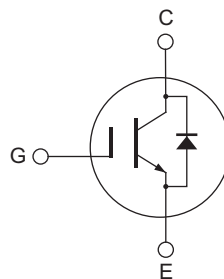
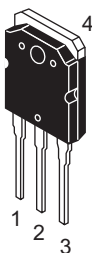
REJ03G1836-0100  
Rev.1.00  
Oct 13, 2009

## 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

(T<sub>c</sub> = 25°C)

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V <sub>CE(S)</sub>	600	V
Gate to emitter voltage	V <sub>GE(S)</sub>	±30	V
Collector current	T <sub>c</sub> = 25 °C	I <sub>C</sub>	A
	T <sub>c</sub> = 100 °C	I <sub>C</sub>	A
Collector peak current	i <sub>C(peak)</sub> <sup>Note1</sup>	160	A
Collector to emitter diode forward peak current	i <sub>DF(peak)</sub> <sup>Note2</sup>	100	A
Collector dissipation	P <sub>C</sub>	260.4	W
Junction to case thermal impedance (IGBT)	θ <sub>j-c</sub>	0.48	°C/W
Junction to case thermal impedance (Diode)	θ <sub>j-c</sub>	2.0	°C/W
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

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

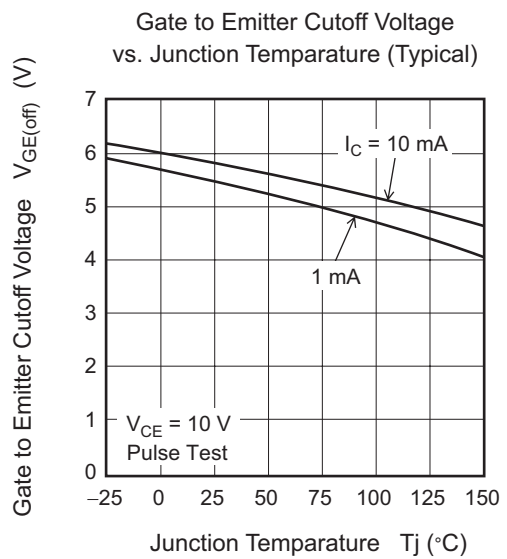
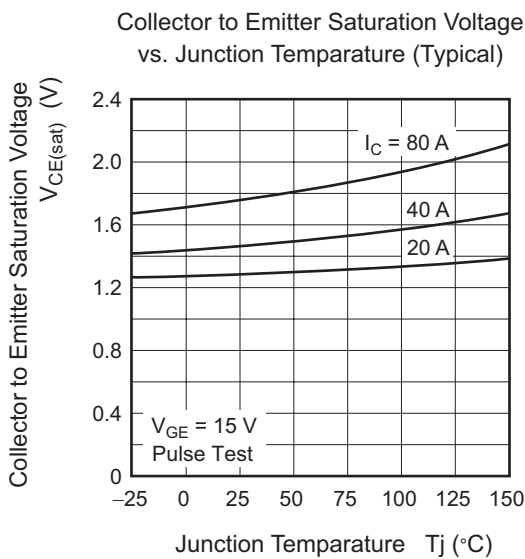
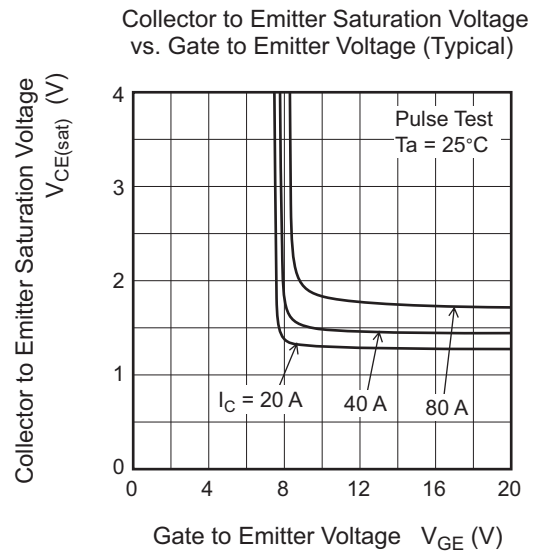
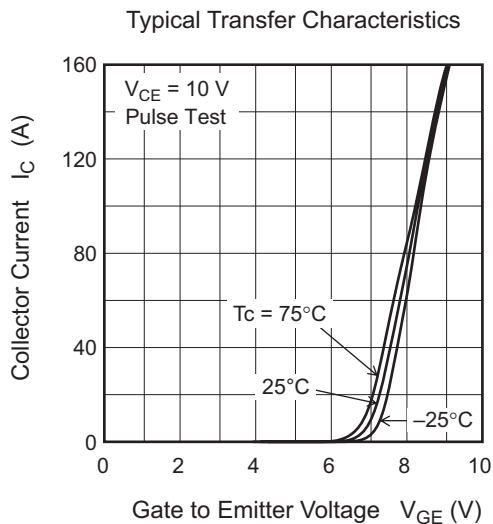
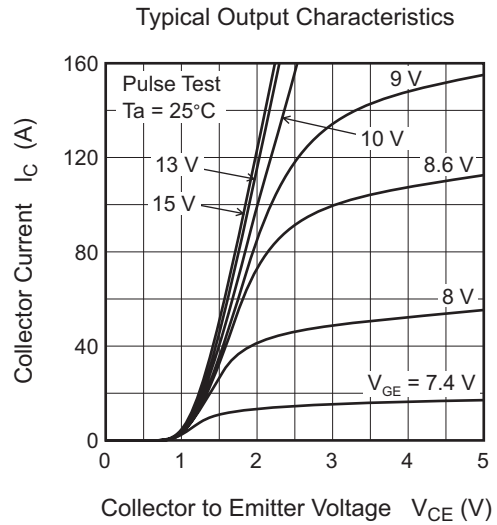
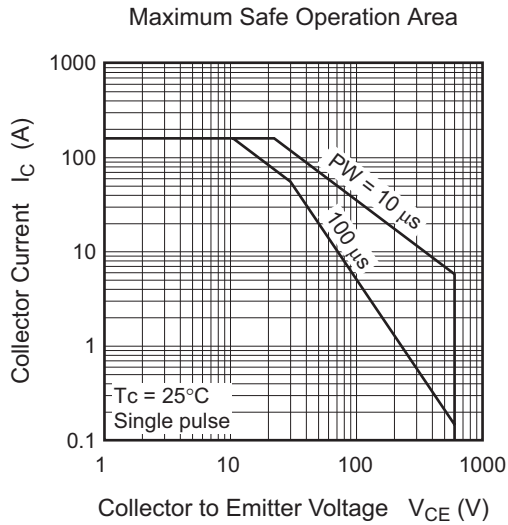
## Electrical Characteristics

(T<sub>j</sub> = 25°C)

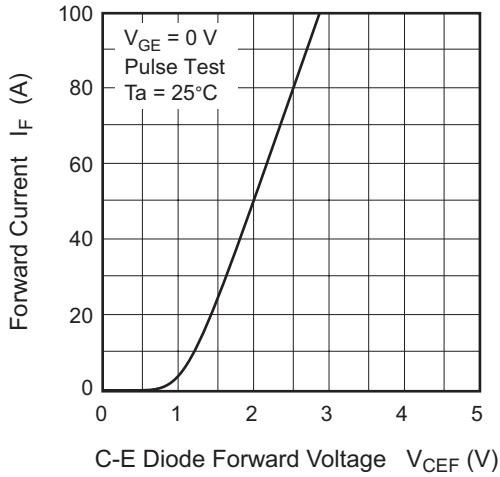
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I <sub>CEs</sub>	—	—	100	μA	V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0
Gate to emitter leak current	I <sub>GES</sub>	—	—	±1	μA	V <sub>GE</sub> = ±30 V, V <sub>CE</sub> = 0
Gate to emitter cutoff voltage	V <sub>GE(off)</sub>	4	—	8	V	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1 mA
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	—	1.37	1.8	V	I <sub>C</sub> = 40 A, V <sub>GE</sub> = 15V <sup>Note3</sup>
	V <sub>CE(sat)</sub>	—	1.7	—	V	I <sub>C</sub> = 80 A, V <sub>GE</sub> = 15V <sup>Note3</sup>
Input capacitance	C <sub>ies</sub>	—	2880	—	pF	V <sub>CE</sub> = 25 V V <sub>GE</sub> = 0 V f = 1 MHz
Output capacitance	C <sub>oes</sub>	—	122	—	pF	
Reverse transfer capacitance	C <sub>res</sub>	—	47	—	pF	
Switching time	t <sub>d(on)</sub>	—	40	—	ns	I <sub>C</sub> = 30 A, Resistive Load V <sub>CC</sub> = 300 V V <sub>GE</sub> = 15 V R <sub>g</sub> = 5 Ω <sup>Note3</sup>
	t <sub>r</sub>	—	35	—	ns	
	t <sub>d(off)</sub>	—	80	—	ns	
	t <sub>f</sub>	—	80	—	ns	
C-E diode forward voltage	V <sub>ECF1</sub>	—	1.6	2.1	V	I <sub>F</sub> = 20 A <sup>Note3</sup>
	V <sub>ECF2</sub>	—	1.8	—	V	I <sub>F</sub> = 40 A <sup>Note3</sup>
C-E diode reverse recovery time	t <sub>rr</sub>	—	140	—	ns	I <sub>F</sub> = 20 A di <sub>F</sub> /dt = 100 A/μs

Notes: 3. Pulse test

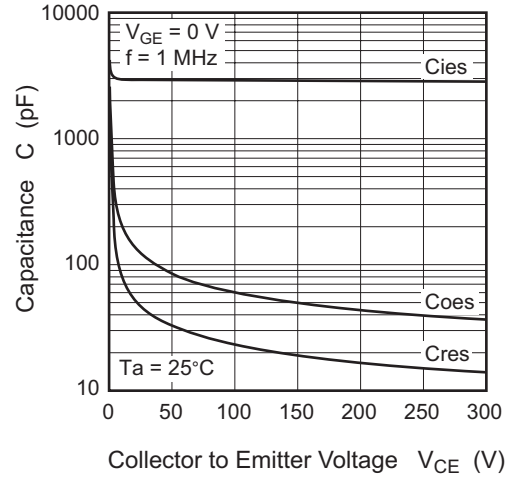
Main Characteristics



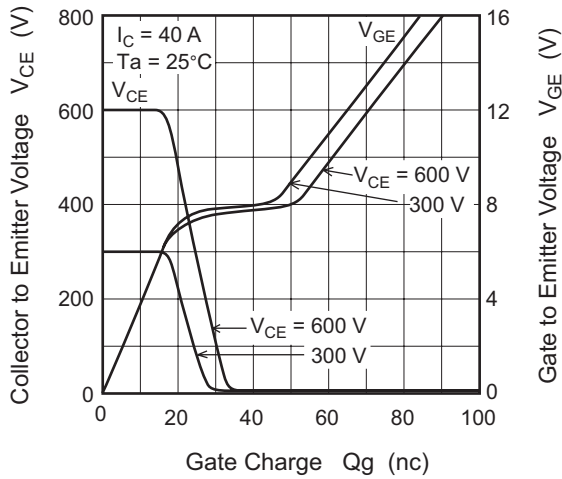
Forward Current vs. Forward Voltage (Typical)



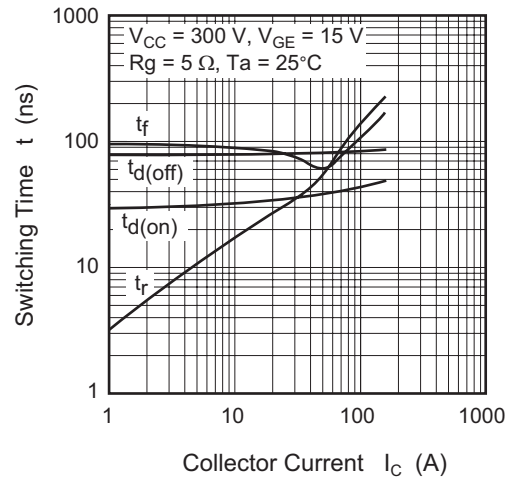
Typical Capacitance vs. Collector to Emitter Voltage (Typical)



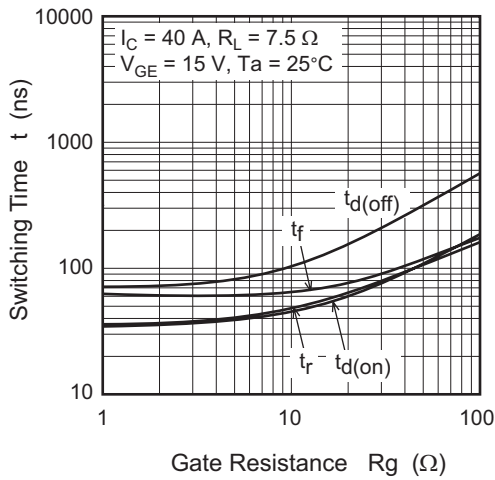
Dynamic Input Characteristics (Typical)



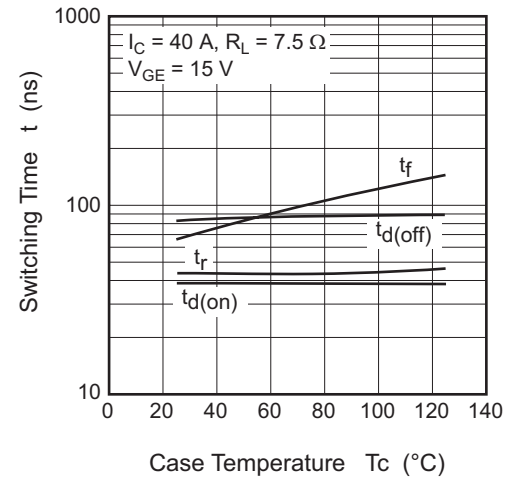
Switching Characteristics (Typical) (1)

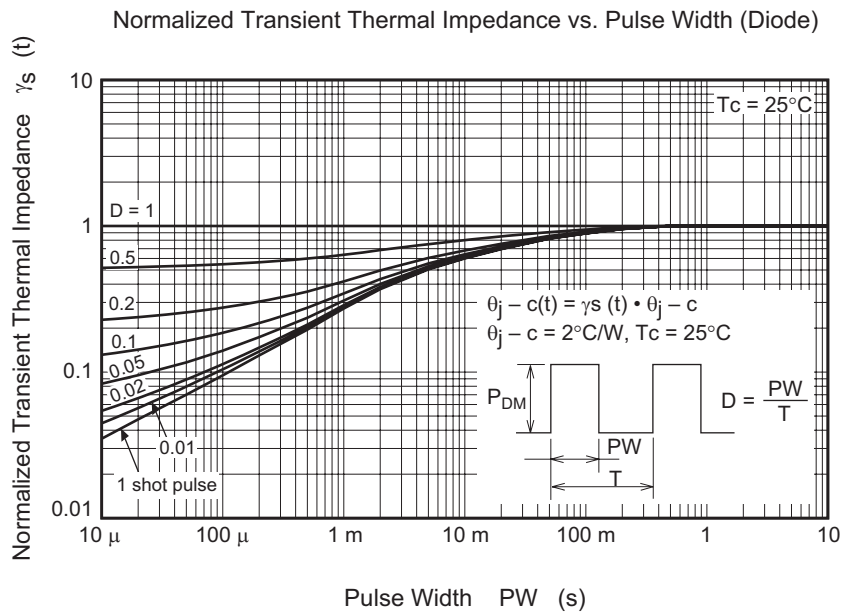
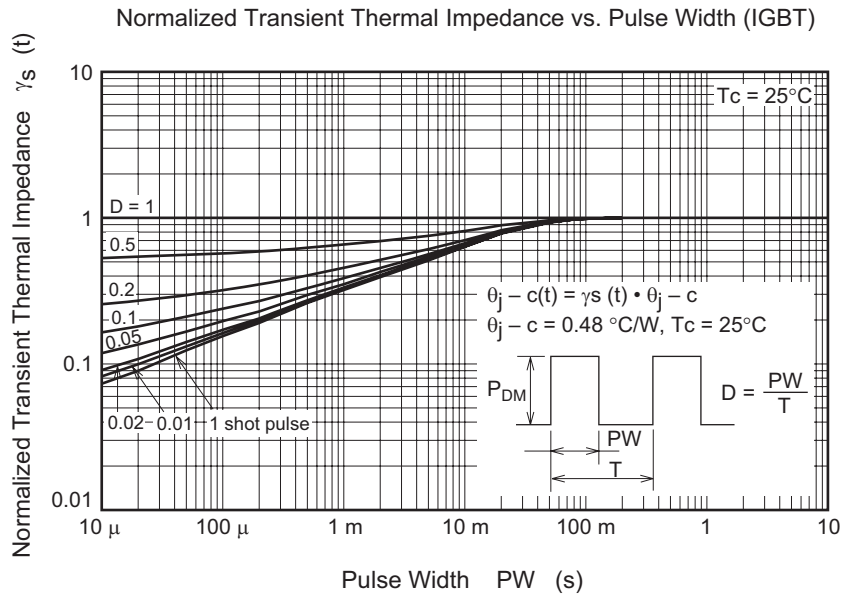


Switching Characteristics (Typical) (2)

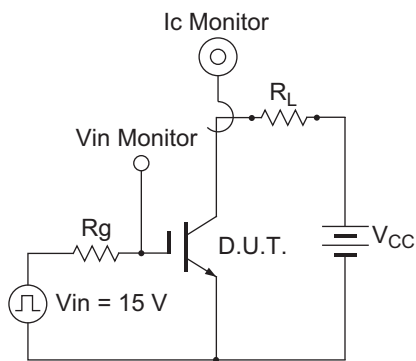


Switching Characteristics (Typical) (3)

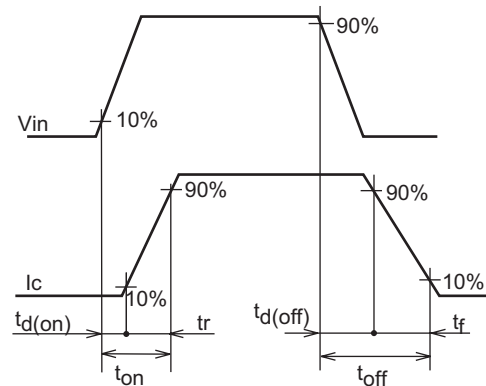




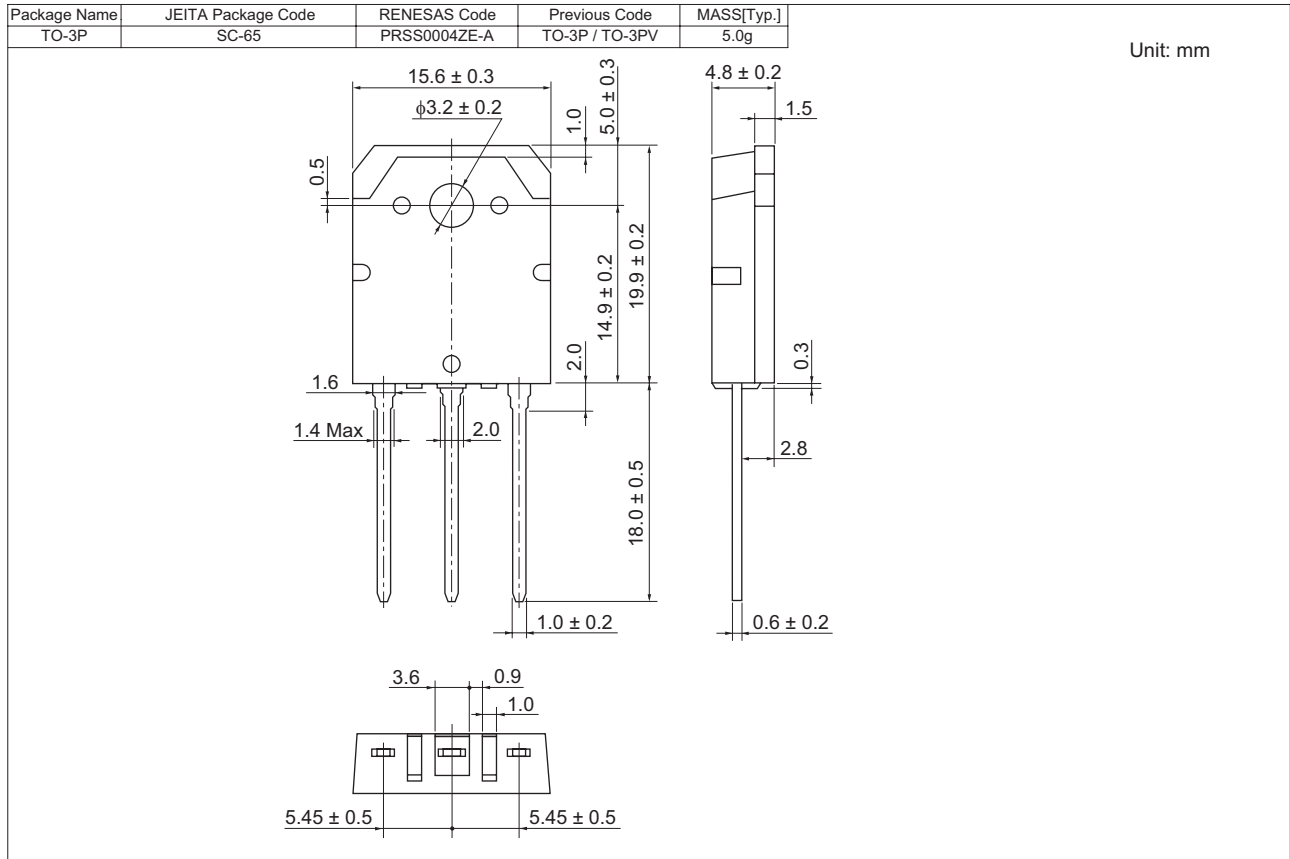
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Part No.	Quantity	Shipping Container
RJH60F5DPK-00-T0	360 pcs	Box (Tube)

Notes:

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