

RJH60F5DPK

Silicon N Channel IGBT High Speed Power Switching

R07DS0055EJ0300

Rev.3.00

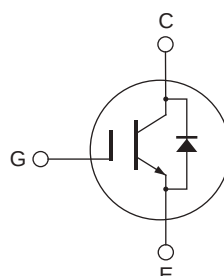
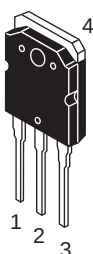
Nov 24, 2010

Features

- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.37 \text{ V typ. (} I_C = 40 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- Built in fast recovery diode in one package
- Trench gate and thin wafer technology
- High speed switching
 $t_r = 85 \text{ ns typ. (at } I_C = 30 \text{ A, } V_{CE} = 400 \text{ V, } V_{GE} = 15 \text{ V, } R_g = 5 \Omega, T_a = 25^\circ\text{C, inductive load)}$

Outline

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



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

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	80
	$T_c = 100^\circ\text{C}$	I_C	40
Collector peak current	$i_{C(peak)}$ ^{Note1}	160	A
Collector to emitter diode forward peak current	$i_{DF(peak)}$ ^{Note2}	100	A
Collector dissipation	P_C	260.4	W
Junction to case thermal impedance (IGBT)	θ_{j-c}	0.48	$^\circ\text{C/W}$
Junction to case thermal impedance (Diode)	θ_{j-c}	2.0	$^\circ\text{C/W}$
Junction 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.

2. $PW \leq 5 \mu\text{s}$, duty cycle $\leq 1\%$

Electrical Characteristics

(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	$V_{GE} = \pm 30V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	4	—	8	V	$V_{CE} = 10V, I_C = 1mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.37	1.8	V	$I_C = 40A, V_{GE} = 15V$ ^{Note3}
	$V_{CE(sat)}$	—	1.7	—	V	$I_C = 80A, V_{GE} = 15V$ ^{Note3}
Input capacitance	C_{ies}	—	2780	—	pF	$V_{CE} = 25V$ $V_{GE} = 0V$ $f = 1MHz$
Output capacitance	C_{oes}	—	122	—	pF	
Reverse transfer capacitance	C_{res}	—	43	—	pF	
Switching time	$t_{d(on)}$	—	53	—	ns	$I_C = 30A,$ $V_{CE} = 400V, V_{GE} = 15V$ $R_g = 5\Omega$ ^{Note3} , Inductive load
	t_r	—	145	—	ns	
	$t_{d(off)}$	—	105	—	ns	
	t_f	—	85	—	ns	
C-E diode forward voltage	V_{ECF1}	—	1.6	2.1	V	$I_F = 20A$ ^{Note3}
	V_{ECF2}	—	1.8	—	V	$I_F = 40A$ ^{Note3}
C-E diode reverse recovery time	t_{rr}	—	140	—	ns	$I_F = 20A$ $di_F/dt = 100A/\mu s$

Notes: 3. Pulse test