RJH60F7DPQ-A0

600 V - 50 A - IGBT
High Speed Power Switching

R07DS0328EJ0200
Rev.2.00
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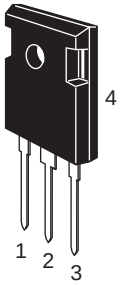
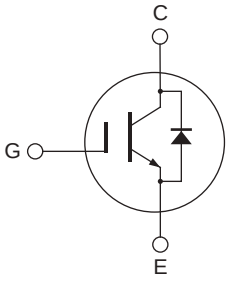
Features

- Low collector to emitter saturation voltage
  $V_{CE(sat)}$ = 1.35 V typ. (at I_C = 50 A, V_{GE} = 15 V, Ta = 25°C)
- Built in fast recovery diode in one package
- Trench gate and thin wafer technology
- High speed switching
  t_f = 74 ns typ. (at I_C = 30 A, V_{CE} = 400 V, V_{GE} = 15 V, Rg = 5 Ω, Ta = 25°C, inductive load)

Outline

RENESAS Package code: PRSS0003ZH-A
(Package name: TO-247A)





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

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-cd	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%

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} = ±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	$V_{CE(sat)}$	—	1.35	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	—	4700	—	pF	V_{CE} = 25 V V_{GE} = 0 V f = 1 MHz
Output capacitance	Coes	—	198	—	pF	
Reverse transfer capacitance	Cres	—	83	—	pF	
Switching time	$t_{d(on)}$	—	63	—	ns	I_C = 30 A, V_{CE} = 400 V, V_{GE} = 15 V Rg = 5 Ω Note3 Inductive load
	t_r	—	81	—	ns	
	$t_{d(off)}$	—	142	—	ns	
	t_f	—	74	—	ns	
C-E diode forward voltage	V_{ECF1}	—	1.2	2.1	V	I_F = 20 A Note3
	V_{ECF2}	—	1.5	—	V	I_F = 40 A Note3
C-E diode reverse recovery time	t_{rr}	—	90	—	ns	I_F = 20 A di_F/dt = 100 A/μs

Notes: 3. Pulse test