RJH60M7DPQ-A0

600 V - 50 A - IGBT
Application: Inverter

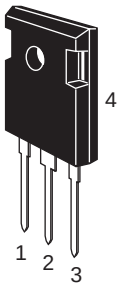
R07DS0538EJ0100
Rev.1.00
Sep 02, 2011

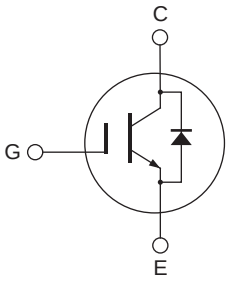
Features

- Short circuit withstand time (8 μs typ.)
- Low collector to emitter saturation voltage
  $V_{CE(sat)}$ = 1.6 V typ. (at I_C = 50 A, V_{GE} = 15 V, Ta = 25°C)
- Built in fast recovery diode (100 ns typ.) in one package
- Trench gate and thin wafer technology
- High speed switching
  t_f = 80 ns typ. (at V_{CC} = 300 V, V_{GE} = 15 V, I_C = 50 A, 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

(Ta = 25°C)

Item		Symbol	Ratings	Unit
Collector to emitter voltage / diode reverse voltage		V_{CES} / V_R	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	200	A
Collector to emitter diode forward current		i_{DF}	50	A
Collector to emitter diode forward peak current		i_{DF}(peak) Note1	200	A
Collector dissipation		P_C Note2	300	W
Junction to case thermal resistance (IGBT)		θj-c Note2	0.42	°C/ W
Junction to case thermal resistance (Diode)		θj-cd Note2	1.07	°C/ W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. Value at Tc = 25°C

Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current / Diode reverse current	I_{CES} / I_R	—	—	5	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	$V_{GE(off)}$	5	—	7	V	V_{CE} = 10 V, I_C = 1 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.6	2.1	V	I_C = 50 A, V_{GE} = 15 V Note3
	$V_{CE(sat)}$	—	1.9	—	V	I_C = 90 A, V_{GE} = 15 V Note3
Input capacitance	Cies	—	3150	—	pF	V_{CE} = 25 V V_{GE} = 0 f = 1 MHz
Output capacitance	Coes	—	180	—	pF	
Reverse transfer capacitance	Cres	—	95	—	pF	
Total gate charge	Qg	—	125	—	nC	V_{GE} = 15 V V_{CE} = 300 V I_C = 50 A
Gate to emitter charge	Qge	—	25	—	nC	
Gate to collector charge	Qgc	—	50	—	nC	
Switching time	$t_{d(on)}$	—	60	—	ns	V_{CC} = 300 V, V_{GE} = 15 V I_C = 50 A Rg = 5 Ω (Inductive load)
	t_r	—	50	—	ns	
	$t_{d(off)}$	—	180	—	ns	
	t_f	—	80	—	ns	
Short circuit withstand time	t_{sc}	6	8	—	μs	Tc = 100 °C V_{CC} ≤ 360 V, V_{GE} = 15 V

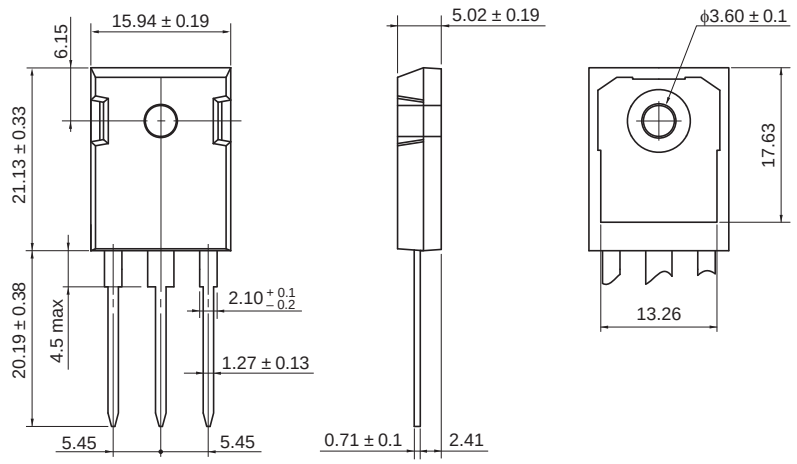
FRD forward voltage	V_F	—	1.4	2.0	V	I_F = 50 A Note3
FRD reverse recovery time	t_{rr}	—	100	—	ns	I_F = 50 A diF/dt = 100 A/μs

Notes: 3. Pulse test

Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-247A	—	PRSS0003ZH-A	—	6.14g

Unit: mm



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH60M7DPQ-A0-T0	240 pcs	Box (Tube)

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