

RJH60M1DPE

600 V - 8 A - IGBT

Application: Inverter

R07DS0529EJ0100

Rev.1.00

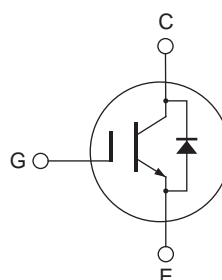
Sep 02, 2011

Features

- Short circuit withstand time (8 μ s typ.)
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.9$ V typ. (at $I_C = 8$ A, $V_{GE} = 15$ V, $T_a = 25^\circ\text{C}$)
- 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, $I_C = 8$ A, $R_g = 5$ Ω , inductive load)

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK (S)-(1))



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

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

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	$T_c = 25^\circ\text{C}$	I_C	16	A
	$T_c = 100^\circ\text{C}$	I_C	8	A
Collector peak current		$i_{c(peak)}$ ^{Note1}	32	A
Collector to emitter diode forward current		i_{DF}	8	A
Collector to Emitter diode forward peak current		$i_{DF(peak)}$ ^{Note1}	32	A
Collector dissipation		P_C ^{Note2}	52	W
Junction to case thermal resistance (IGBT)		θ_{j-c} ^{Note2}	2.4	$^\circ\text{C} / \text{W}$
Junction to case thermal resistance (Diode)		θ_{j-cd} ^{Note2}	4.2	$^\circ\text{C} / \text{W}$
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. $PW \leq 10$ μ s, duty cycle $\leq 1\%$

2. Value at $T_c = 25^\circ\text{C}$

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	$V_{GE} = \pm 30 V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	5	—	7	V	$V_{CE} = 10 V, I_C = 1 mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.9	2.4	V	$I_C = 8 A, V_{GE} = 15 V$ ^{Note3}
	$V_{CE(sat)}$	—	2.3	—	V	$I_C = 16 A, V_{GE} = 15 V$ ^{Note3}
Input capacitance	C_{ies}	—	275	—	pF	$V_{CE} = 25 V$
Output capacitance	C_{oes}	—	25	—	pF	$V_{GE} = 0$
Reverse transfer capacitance	C_{res}	—	7.5	—	pF	$f = 1 MHz$
Total gate charge	Q_g	—	12.0	—	nC	$V_{GE} = 15 V$
Gate to emitter charge	Q_{ge}	—	2.0	—	nC	$V_{CE} = 300 V$
Gate to collector charge	Q_{gc}	—	6.0	—	nC	$I_C = 8 A$
Switching time	$t_{d(on)}$	—	30	—	ns	$V_{CC} = 300V, V_{GE} = 15 V$ $I_C = 8 A,$ $R_g = 5 \Omega$ Inductive load
	t_r	—	13	—	ns	
	$t_{d(off)}$	—	80	—	ns	
	t_f	—	80	—	ns	
Short circuit withstand time	t_{sc}	6	8	—	μs	$T_C = 100 ^\circ C$ $V_{CC} \leq 360V, V_{GE} = 15 V$

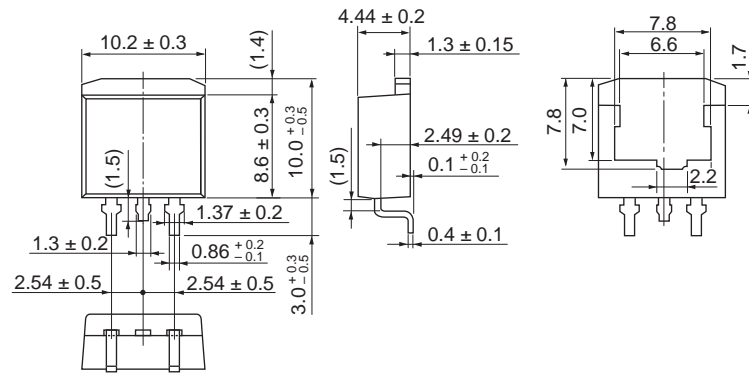
FRD forward voltage	V_F	—	1.4	1.9	V	$I_F = 8 A$ ^{Note3}
FRD reverse recovery time	t_{rr}	—	100	—	ns	$I_F = 8 A$ $di_F/dt = 100 A/\mu s$

Notes: 3. Pulse test.

Package Dimension

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDBAK(S)-(1)	SC-83	PRSS0004AE-B	LDBAK(S)-(1) / LDBAK(S)-(1)V	1.30g

Unit: mm



Ordering Information

Orderable Part No.	Quantity	Shipping Container
RJH60M1DPE-00-J3	1000 pcs	Taping

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
1 harbourFront Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: +65-6213-0200, Fax: +65-6278-8001

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
11F., Samik Lavied' or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141