

# RJH60M1DPE

600 V - 8 A - IGBT

Application: Inverter

R07DS0529EJ0100

Rev.1.00

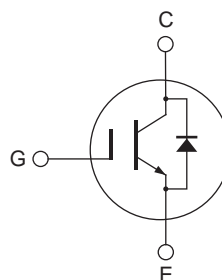
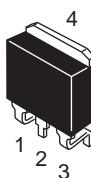
Sep 02, 2011

## Features

- Short circuit withstand time (8  $\mu$ 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,  $R_g = 5$   $\Omega$ , 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		$V_{GES}$	$\pm 30$	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		$i_{c(peak)}$ <sup>Note1</sup>	32	A
Collector to emitter diode forward current		$i_{DF}$	8	A
Collector to Emitter diode forward peak current		$i_{DF(peak)}$ <sup>Note1</sup>	32	A
Collector dissipation		$P_C$ <sup>Note2</sup>	52	W
Junction to case thermal resistance (IGBT)		$\theta_{j-c}$ <sup>Note2</sup>	2.4	$^\circ\text{C} / \text{W}$
Junction to case thermal resistance (Diode)		$\theta_{j-cd}$ <sup>Note2</sup>	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.  $PW \leq 10$   $\mu$ 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	$\mu A$	$V_{CE} = 600 V, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 1$	$\mu A$	$V_{GE} = \pm 30 V, V_{CE} = 0$
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	$I_C = 8 A, V_{GE} = 15 V$ <sup>Note3</sup>
	$V_{CE(sat)}$	—	2.3	—	V	$I_C = 16 A, V_{GE} = 15 V$ <sup>Note3</sup>
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	—	$\mu s$	$T_C = 100 ^\circ C$ $V_{CC} \leq 360V, V_{GE} = 15 V$

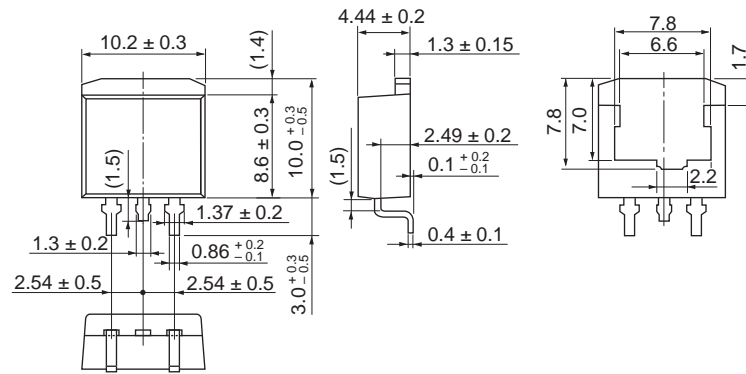
FRD forward voltage	$V_F$	—	1.4	1.9	V	$I_F = 8 A$ <sup>Note3</sup>
FRD reverse recovery time	$t_{rr}$	—	100	—	ns	$I_F = 8 A$ $di_F/dt = 100 A/\mu s$

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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