RJP6016JPE

600 V - 40 A- N Channel IGBT
High Speed Power Switching

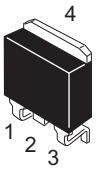
R07DS0878EJ0100
Rev.1.00
Sep 19, 2012

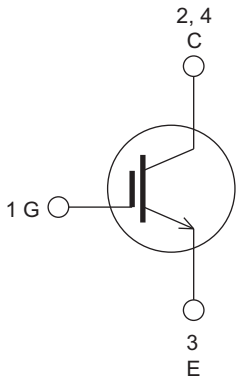
Features

- For Automotive application
- AEC-Q101 compliant
- Low collector to emitter saturation voltage.
  $V_{CE(sat)}$ = 1.7 V typ. (I_C = 20 A, V_{GE} = 15 V, Ta = 25 °C)

Outline

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





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

Absolute Maximum Ratings

(Ta = 25°C)

Item		Symbol	Value	Unit
Collector to emitter voltage		V_{CES}	600	V
Gate to Emitter voltage		V_{GES}	±20	V
Collector current	Tc = 25°C	I_C	40	A
	Tc = 100°C	I_C	20	A
Collector peak current		$i_{C(peak)}$ Note1	80	A
Collector power dissipation		P_C Note2	112	W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

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

Thermal Impedance Characteristics

- Junction to case thermal impedance θj-c: 1.12°C/W

Electrical Characteristics

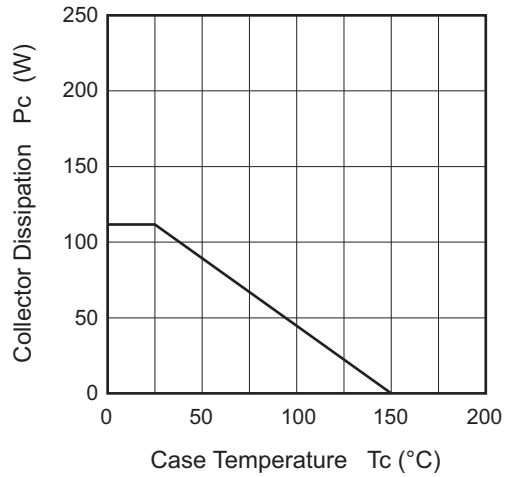
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	10	μA	V_{CE} = 600 V, V_{GE} = 0 V
Gate to emitter leak current	I_{GES}	—	—	±1	μA	V_{GE} = ±20 V, V_{CE} = 0 V
Gate to emitter cutoff voltage	$V_{GE(off)}$	6.0	7.0	8.0	V	I_C = 20 mA, V_{CE} = 10 V
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.7	2.1	V	I_C = 20 A, V_{GE} = 15 V Note3
Input capacitance	Cies	—	1100	—	pF	V_{CE} = 25 V, V_{GE} = 0 f = 1 MHz
Output capacitance	Coes	—	55	—	pF	
Reverse transfer capacitance	Cres	—	35	—	pF	
Total gate charge	Qg	—	47	—	nC	V_{CE} = 300 V, V_{GE} = 15 V, I_C = 20 A
Gate to emitter charge	Qge	—	9	—	nC	
Gate to collector charge	Qgc	—	22	—	nC	
Turn-on delay time	$t_{d(on)}$	—	24	—	ns	V_{CE} = 400 V, I_C = 20 A, V_{GE} = 15 V, R_G = 10 Ω (inductive load)
Rise time	t_r	—	12	—	ns	
Turn-off delay time	$t_{d(off)}$	—	72	—	ns	
Fall time	t_f	—	90	—	ns	

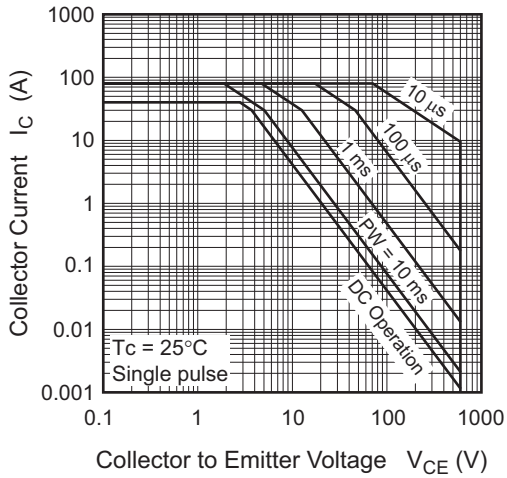
Note: 3. Pulse test

Main Characteristics

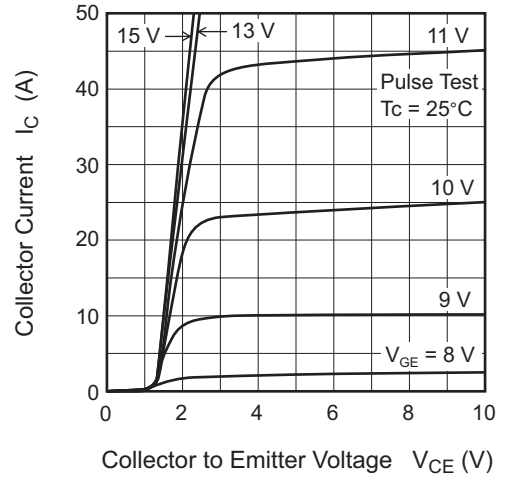
Collector Dissipation vs. Case Temperature



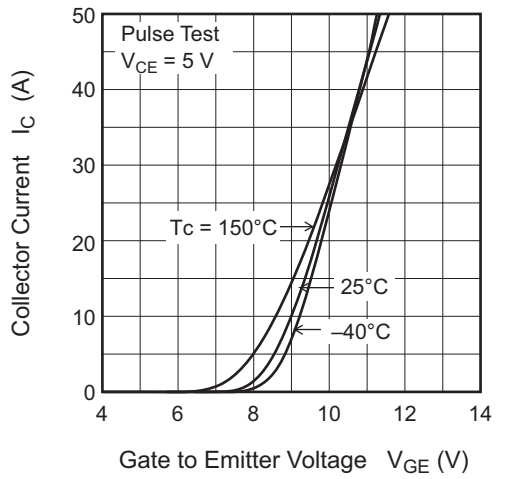
Maximum Safe Operation Area



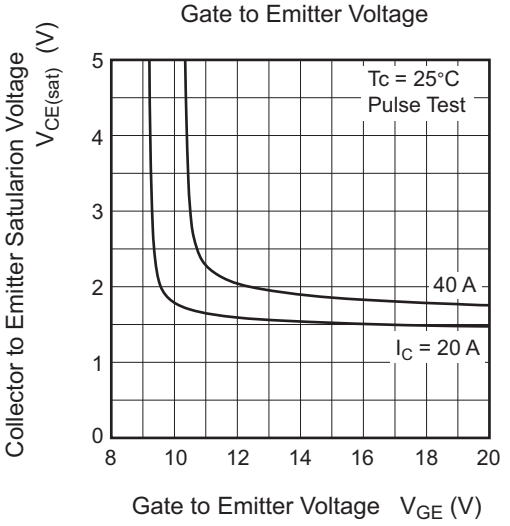
Typical Output Characteristics



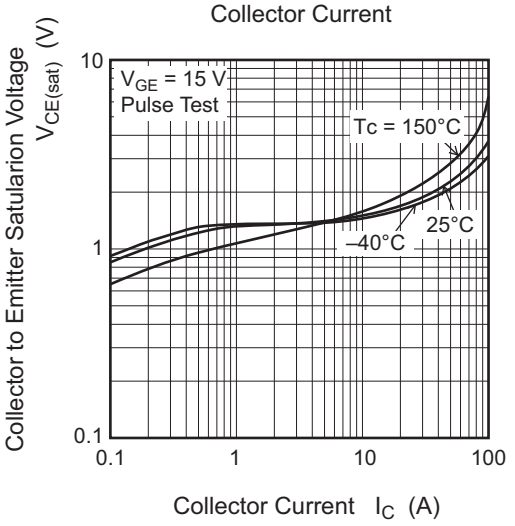
Typical Transfer Characteristics



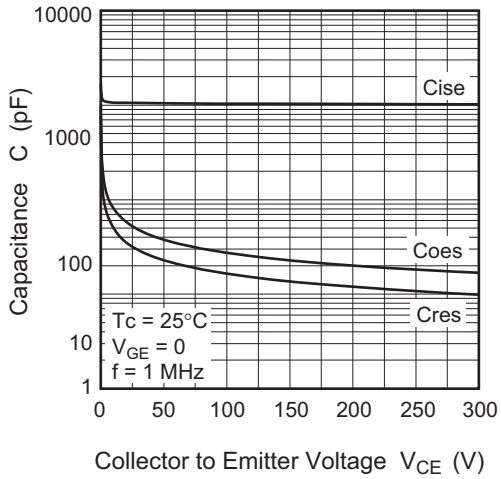
Collector to Emitter Satularion Voltage vs. Gate to Emitter Voltage



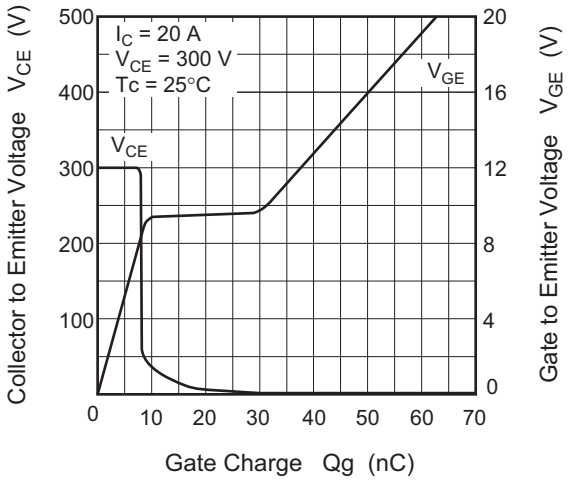
Collector to Emitter Satularion Voltage vs. Collector Current



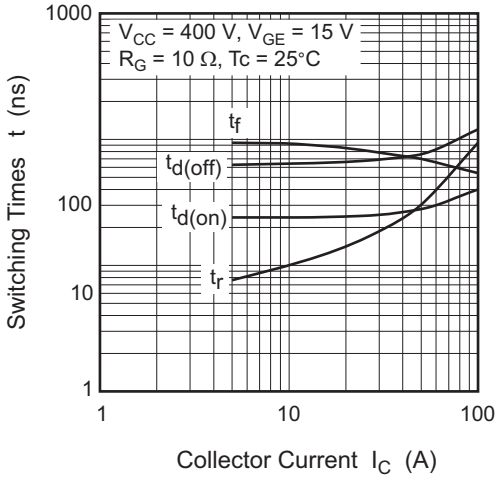
Typical Capacitance vs.
Collector to Emitter Voltage



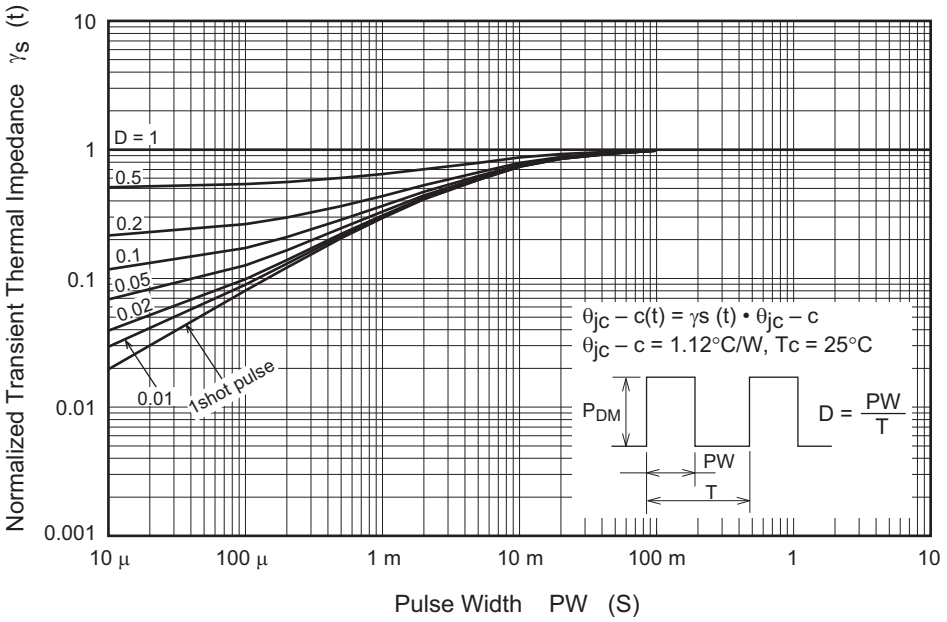
Dynamic Input Characteristics



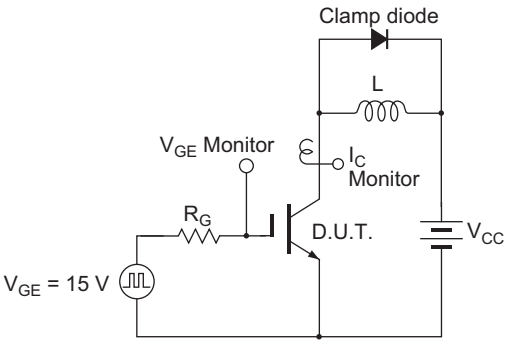
Switching Characteristics



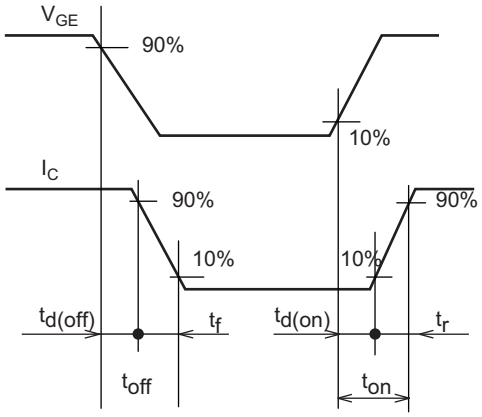
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



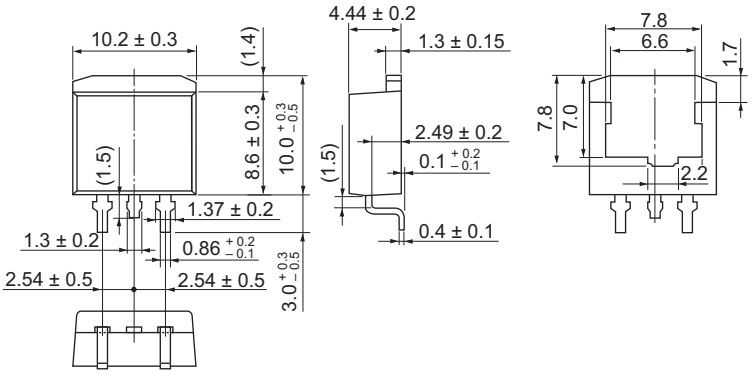
Waveform



Package Dimensions

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

Unit: mm



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP6016JPE-00-J3	1000 pcs	Taping (Sinistrorse)

Note: The symbol of 2nd "-" is occasionally presented as "#".

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