

RJH1CV7DPK

1200V - 35A - IGBT Application: Inverter R07DS0748EJ0300 Rev.3.00 Feb 14, 2013

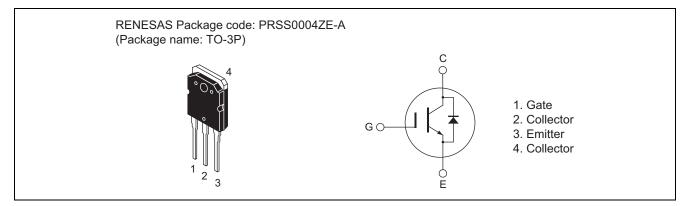
Datasheet

Features

- Short circuit withstand time (5 µs typ.)
- Low collector to emitter saturation voltage $V_{CE(sat)} = 1.8 \text{ V typ.}$ (at $I_C = 35 \text{ A}$, $V_{GE} = 15 \text{ V}$, $Ta = 25^{\circ}C$)
- Built-in fast recovery diode ($t_{rr} = 200$ ns typ.) in one package
- Trench gate and thin wafer technology
- High speed switching

 $t_f = 280$ ns typ. (at $V_{CC} = 600$ V, $V_{GE} = 15$ V, $I_C = 35$ A, Rg = 5 Ω , $Ta = 25^{\circ}C$, inductive load)

Outline



Absolute Maximum Ratings

				$(Ta = 25^{\circ}C)$
Item		Symbol	Ratings	Unit
Collector to emitter voltage / diode reverse voltage		V _{CES} / V _R	1200	V
Gate to emitter voltage		V _{GES}	±30	V
Collector current	Tc = 25°C	lc	70	А
	Tc = 100°C	lc	35	А
Collector peak current		ic(peak) Note1	105	А
Collector to emitter diode forward current		I _{DF}	35	А
Collector to emitter diod	de forward peak current	i _{DF} (peak) ^{Note1}	105	А
Collector dissipation		Pc ^{Note2}	320	W
Junction to case thermal resistance (IGBT)		θj-c ^{Note2}	0.39	°C/W
Junction to case thermal resistance (Diode)		θj-cd ^{Note2}	0.69	°C/W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	-55 to +150	°C
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Notes: 1. $PW \le 10 \ \mu s$, duty cycle $\le 1\%$

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



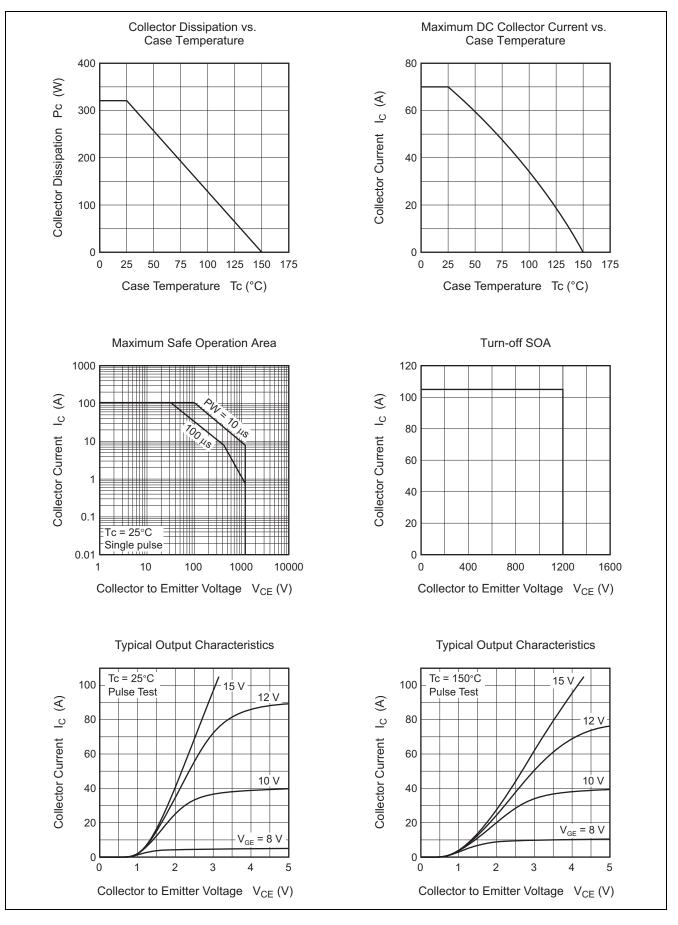
Electrical Characteristics

						$(Ta = 25^{\circ}C)$	
Item	Symbol	Min	Тур	Max	Unit	Test Conditions	
Zero gate voltage collector current / Diode reverse current	I _{CES} /I _R	—	—	5	μA	$V_{CE} = 1200 \text{ V}, \text{ V}_{GE} = 0$	
Gate to emitter leak current	I _{GES}		—	±1	μΑ	$V_{GE} = \pm 30 \text{ V}, \text{ V}_{CE} = 0$	
Gate to emitter cutoff voltage	V _{GE(off)}	4.5	—	6.5	V	$V_{CE} = 10 \text{ V}, I_{C} = 1 \text{ mA}$	
Collector to emitter saturation voltage	V _{CE(sat)}	_	1.8	2.3	V	$I_{C} = 35 \text{ A}, V_{GE} = 15 \text{ V}^{Note3}$	
	V _{CE(sat)}		2.5	—	V	$I_C = 70 \text{ A}, V_{GE} = 15 \text{ V}^{Note3}$	
Input capacitance	Cies		2075	—	pF	V _{CE} = 25 V	
Output capacitance	Coes		100	_	pF	$V_{GE} = 0$	
Reverse transfer capacitance	Cres		55	—	pF	f = 1 MHz	
Total gate charge	Qg	_	166	—	nC	V _{GE} = 15 V V _{CE} = 300 V	
Gate to emitter charge	Qge	_	20	_	nC		
Gate to collector charge	Qgc	_	95	—	nC	I _C = 35 A	
Turn-on delay time	t _{d(on)}	_	53	—	ns	$V_{CC} = 600 V$ $V_{GE} = 15 V$ $I_C = 35 A$	
Rise time	tr	_	45	_	ns		
Turn-off delay time	t _{d(off)}		185	_	ns		
Fall time	t _f	_	280	_	ns	$Rg = 5 \Omega$	
Turn-on energy	Eon	_	3.2	_	mJ	Inductive load	
Turn-off energy	E _{off}	_	2.5	_	mJ		
Total switching energy	E _{total}	_	5.7	_	mJ	1	
Short circuit withstand time	t _{sc}	_	5	—	μs	$\label{eq:V_CC} \begin{array}{l} V_{CC} \leq 720 \mbox{ V}, V_{GE} = 15 \mbox{ V} \\ Tc \leq 125^{\circ}C \end{array}$	
		-			-		
FRD forward voltage	VF	_	2.1	—	V	$I_F = 35 A^{Note3}$	
FRD reverse recovery time	t _{rr}	_	200	—	ns	I _F = 35 A	
FRD reverse recovery charge	Q _{rr}	_	0.7		μC	di _F /dt = 100 A/µs	
FRD peak reverse recovery current	Irr		9.6	—	А		

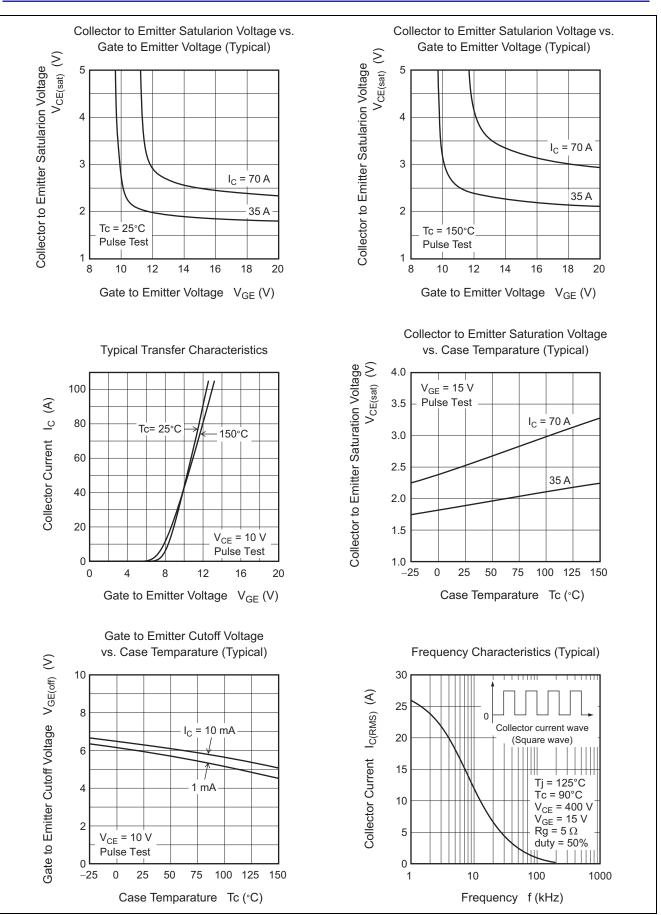
Notes: 3. Pulse test.

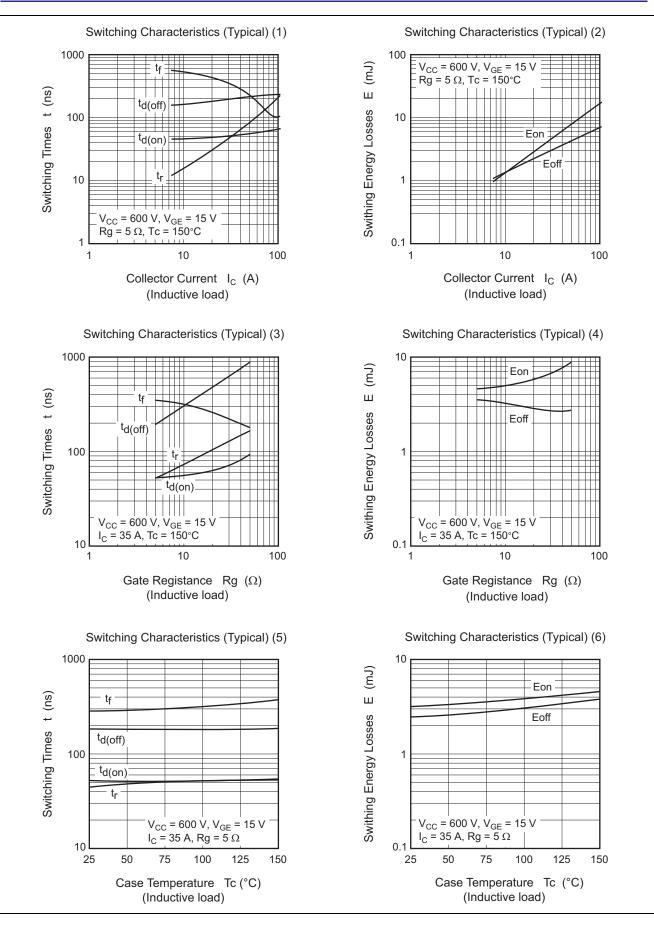


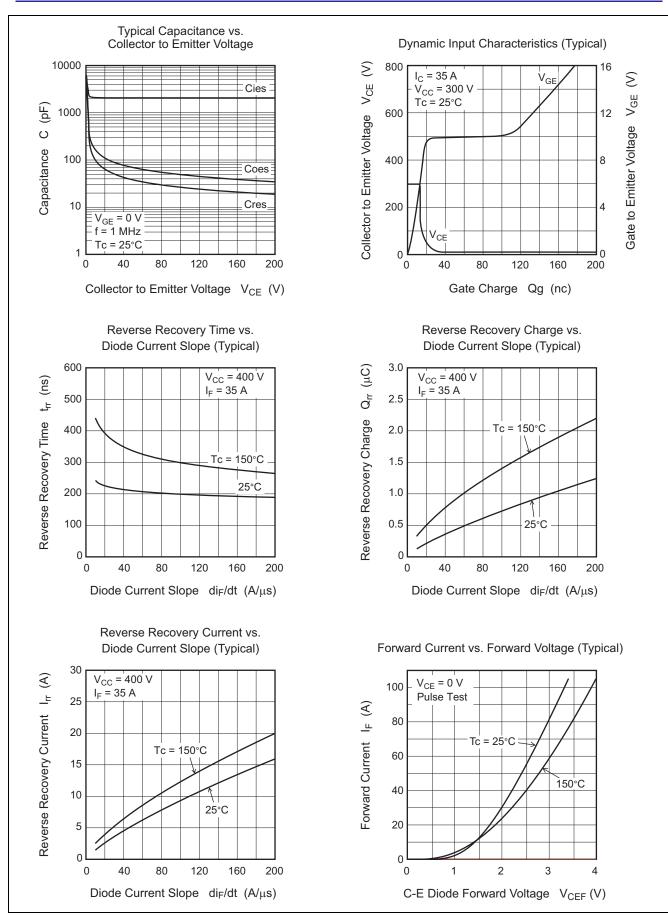
Main Characteristics



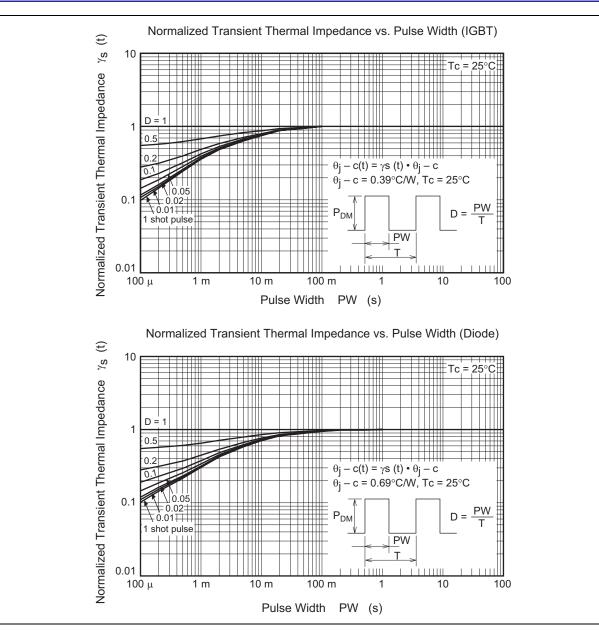




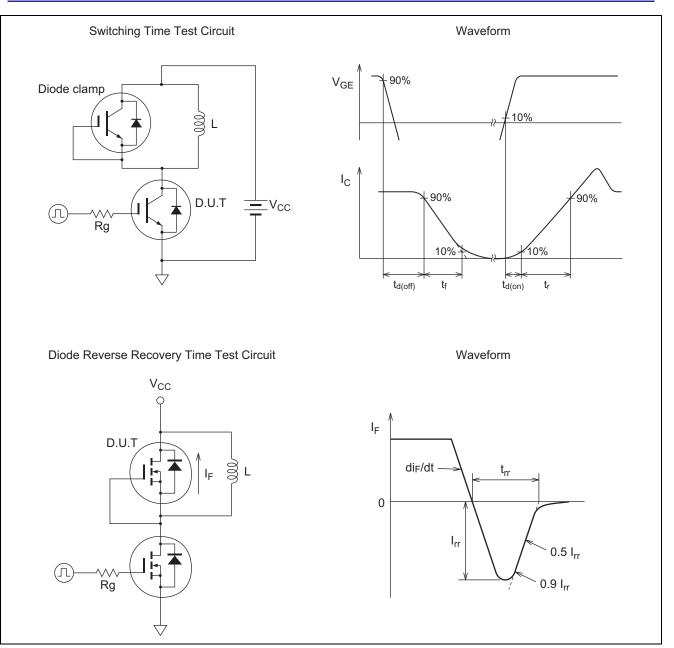














Package Dimension

Package Name TO-3P	JEITA Package Code SC-65	RENESAS Code PRSS0004ZE-A	Previous Code TO-3P / TO-3PV	MASS[Typ.] 5.0g	
	<u>1.6</u> <u>1.4 Ma</u>	15.6 ± 0.3	10 ± 0.2	4.8 ± 0.2 1.5 2.8 0.6 ± 0.2	Unit: mm
	<u>5.45 ± 0</u>		<u>.0</u> <u>5.45 ± 0.5</u>		

Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH1CV7DPK-00#T0	30 pcs	Tube



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