

RJP60D0DPK

Silicon N Channel IGBT
High Speed Power Switching

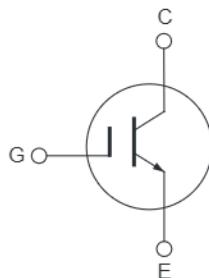
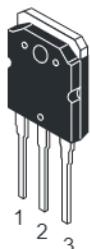
R07DS0166EJ0300
Rev.3.00
Jul 13, 2011

Features

- Short circuit withstand time (5 μ s typ.)
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.6$ V typ. ($I_C = 22$ A, $V_{GE} = 15$ V, $T_a = 25^\circ\text{C}$)
- Gate to emitter voltage rating ± 30 V
- Pb-free lead plating and chip bonding

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



1. Gate
2. Collector
3. Emitter

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	600	V
Gate to emitter voltage	V_{GES}	± 30	V
Collector current	I_C	45	A
	I_C	22	A
Collector peak current	$i_{C(peak)}$ ^{Note1}	90	A
Collector dissipation	P_C ^{Note2}	140	W
Junction to case thermal impedance	θ_{j-c} ^{Note2}	0.89	$^\circ\text{C}/\text{W}$
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ\text{C}$

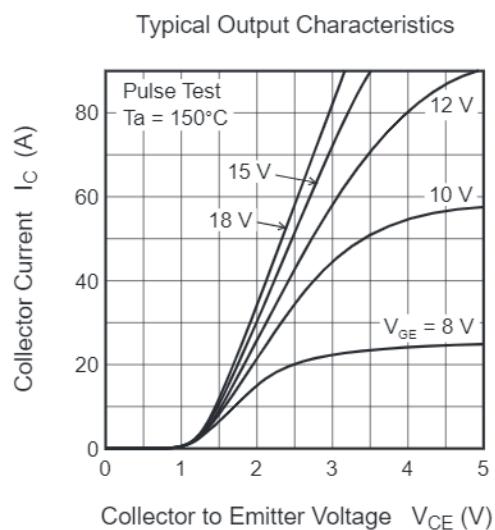
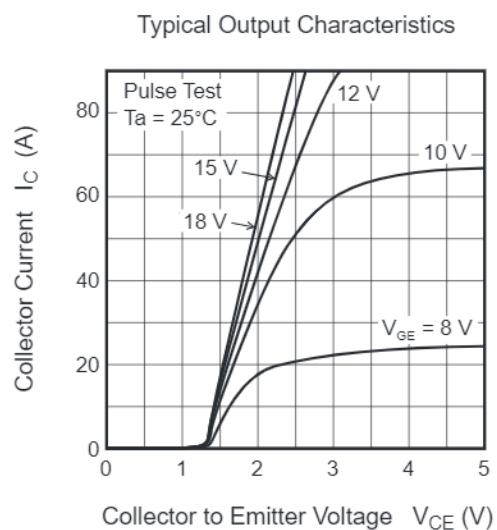
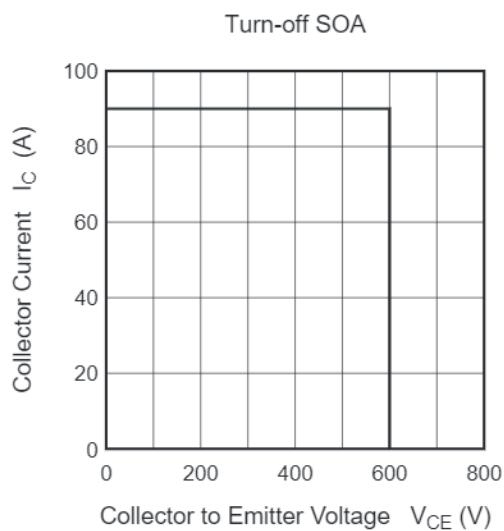
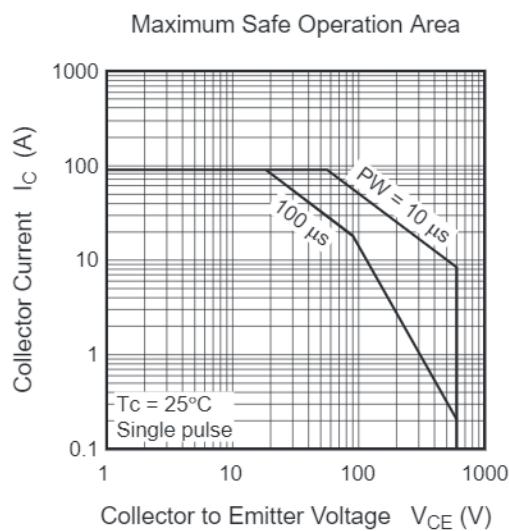
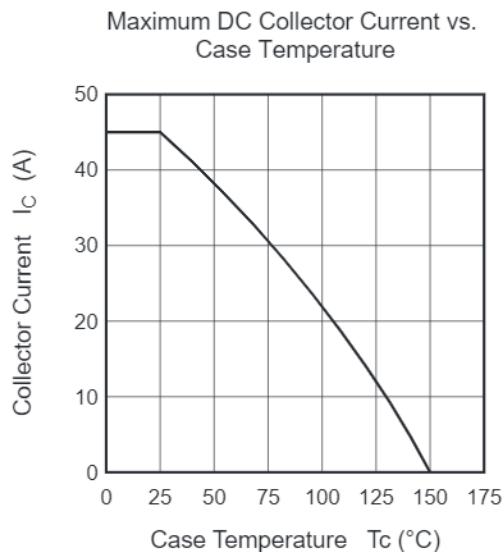
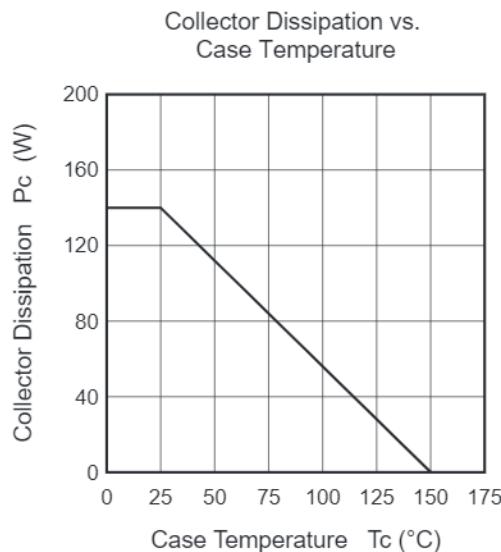
Electrical Characteristics

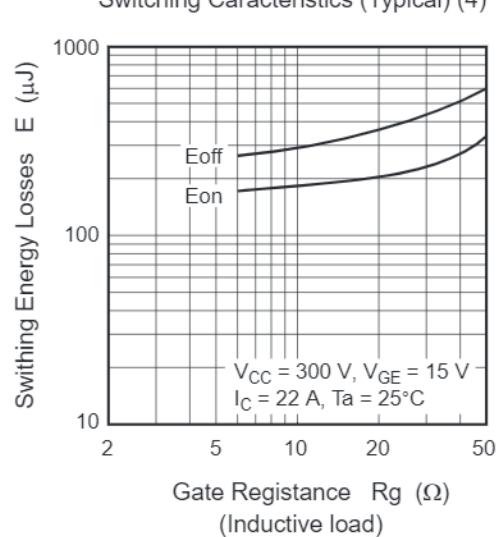
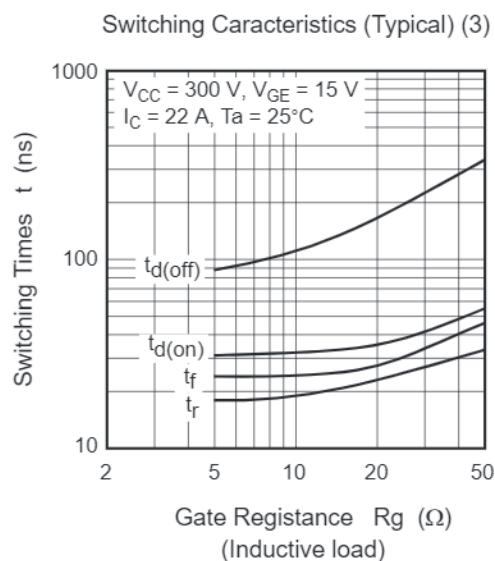
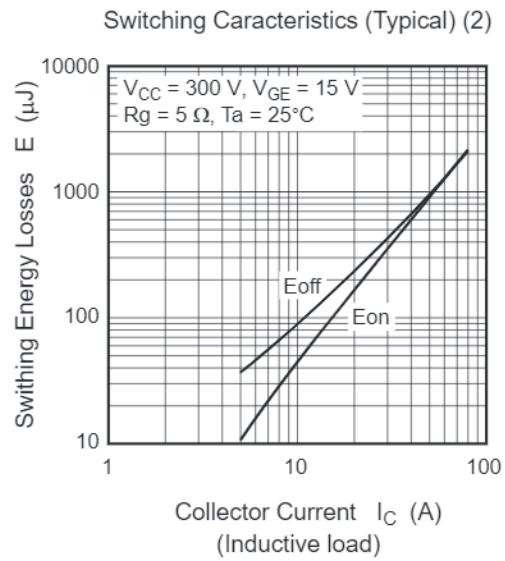
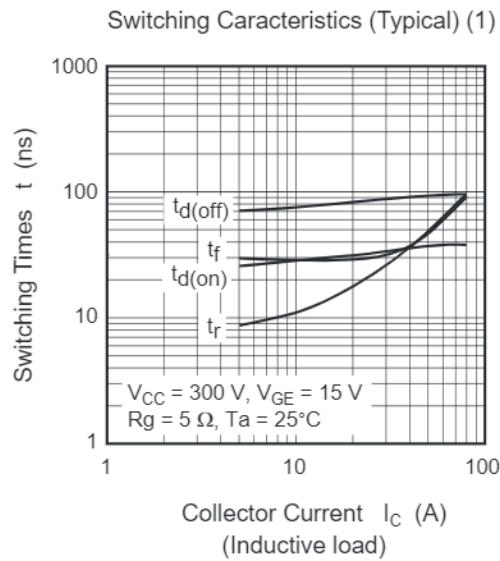
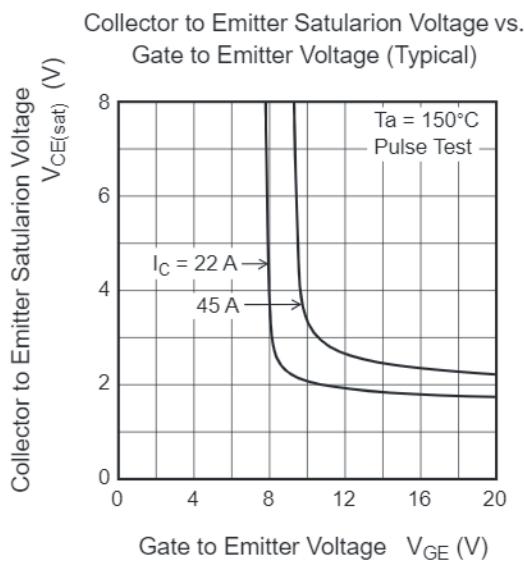
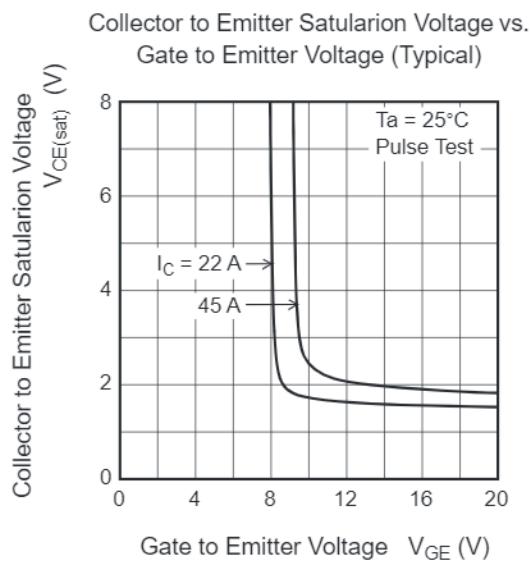
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I _{CES}	—	—	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)}	4.0	—	6.0	V	V _{CE} = 10 V, I _C = 1 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	1.6	2.2	V	I _C = 22 A, V _{GE} = 15 V ^{Note3}
	V _{CE(sat)}	—	2.0	—	V	I _C = 45 A, V _{GE} = 15 V ^{Note3}
Input capacitance	C _{ies}	—	1050	—	pF	V _{CE} = 20 V
Output capacitance	C _{oes}	—	70	—	pF	V _{GE} = 0
Reveres transfer capacitance	C _{res}	—	32	—	pF	f = 1 MHz
Total gate charge	Q _g	—	45	—	nC	V _{GE} = 15 V
Gate to emitter charge	Q _{ge}	—	6	—	nC	V _{CE} = 300 V
Gate to collector charge	Q _{gc}	—	20	—	nC	I _C = 22 A
Switching time	t _{d(on)}	—	35	—	ns	V _{CC} = 300 V, V _{GE} = 15 V
	t _r	—	20	—	ns	I _C = 22 A
	t _{d(off)}	—	90	—	ns	R _g = 5 Ω
	t _f	—	70	—	ns	(Inductive load)
Short circuit withstand time	t _{sc}	3.0	5.0	—	μs	V _{CC} ≤ 360 V, V _{GE} = 15 V

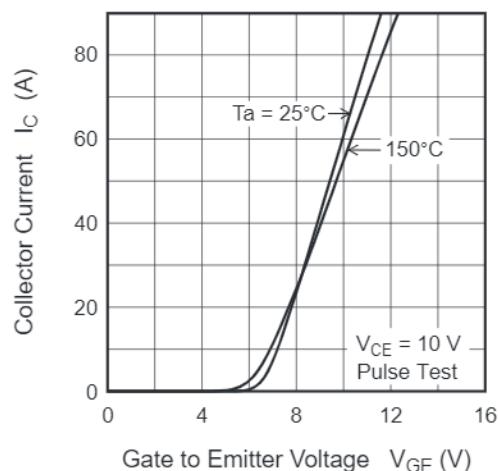
Notes: 3. Pulse test

Main Characteristics

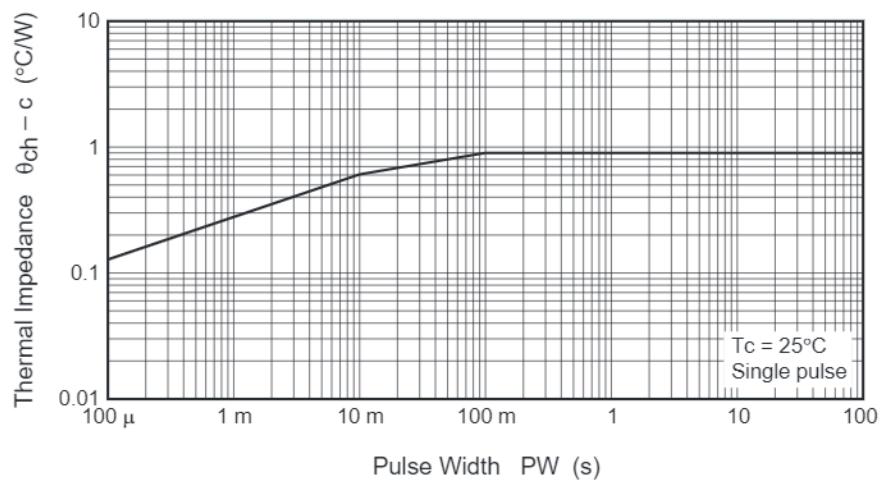




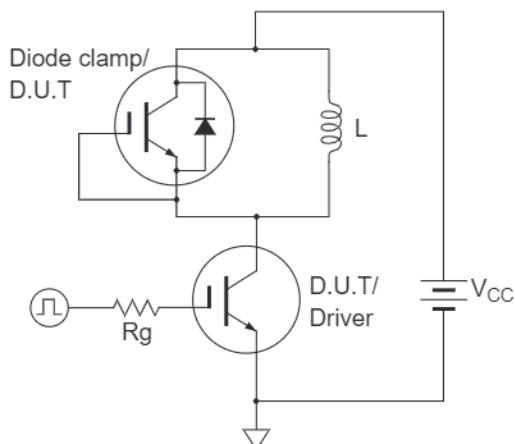
Transfer Characteristics (Typical)



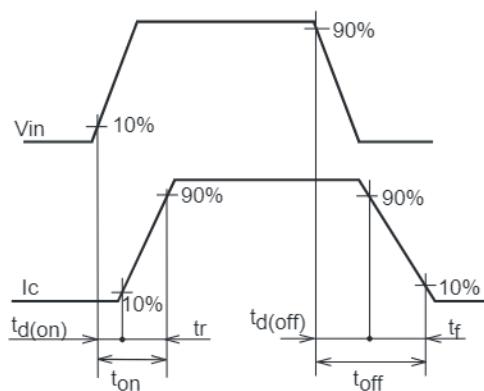
Thermal Impedance vs. Pulse Width



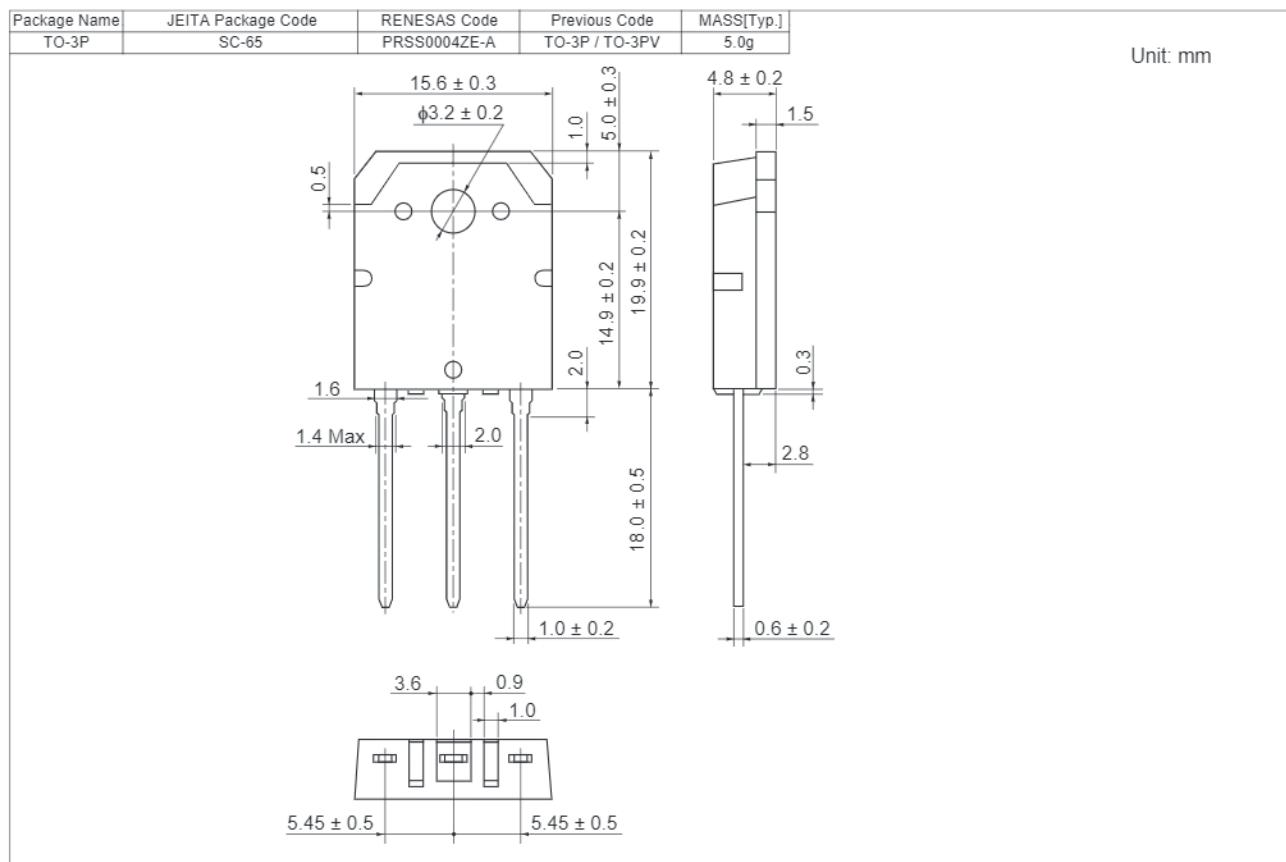
Switching Time Test Circuit



Waveform



Package Dimension



Ordering Information

Ordering Part No.	Quantity	Shipping Container
RJP60D0DPK-00-T0	360 pcs	Box (Tube)

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