To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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2SH27

Silicon N Channel IGBT
High Speed Power Switching

ADE-208-789A(Z)
2nd. Edition
May 1999

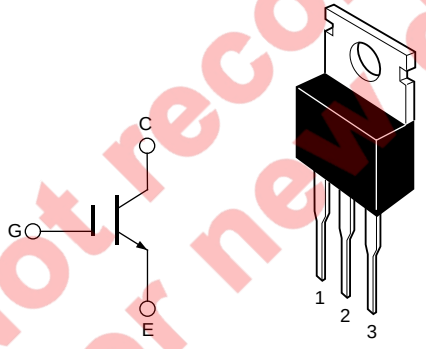
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Features

- High speed switching
- Low on-voltage

Outline

TO–220AB



1. Gate
2. Collector (Flange)
3. Emitter

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to Emitter voltage	V_{CES}	600	V
Gate to Emitter voltage	V_{GES}	±20	V
Collector current	I_C	15	A
Collector peak current	ic(peak)	30	A
Collector dissipation	P_C Note1	50	W
Channel temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. Value at Tc = 25°C

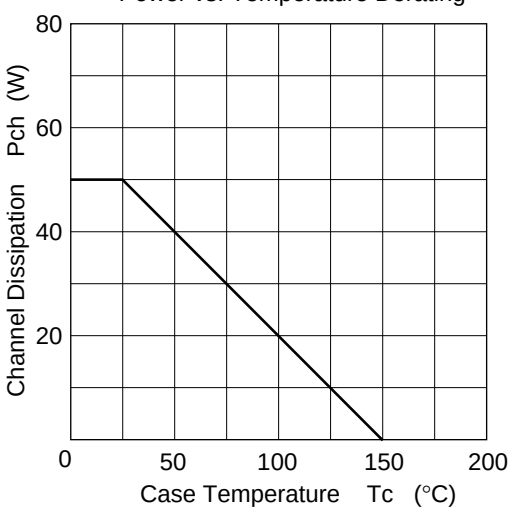
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	100	µA	V_{CE} = 600V, V_{GE} = 0
Gate to emitter leak current	I_{GES}	—	—	±1	µA	V_{GE} = ± 20 V, V_{CE} = 0
Gate to emitter cutoff voltage	$V_{GE(off)}$	6.0	—	8.0	V	I_C = 15mA, V_{CE} = 10V
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	2.1	2.6	V	I_C = 15A, V_{GE} = 15V
Input capacitance	Cies	—	920	—	pF	V_{CE} = 10V, V_{GE} = 0 f = 1MHz
Switching time	t_r	—	150	—	ns	I_C = 15A
	t_{on}	—	220	—	ns	R_L = 20 Ω
	t_f	—	300	600	ns	V_{GS} = ±15V
	t_{off}	—	410	820	ns	Rg = 50 Ω

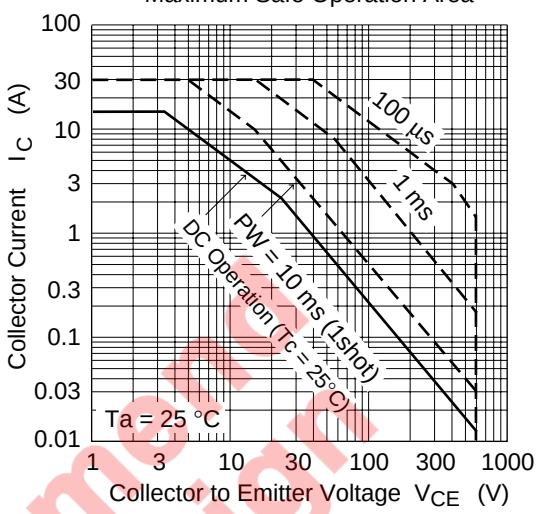
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Main Characteristics

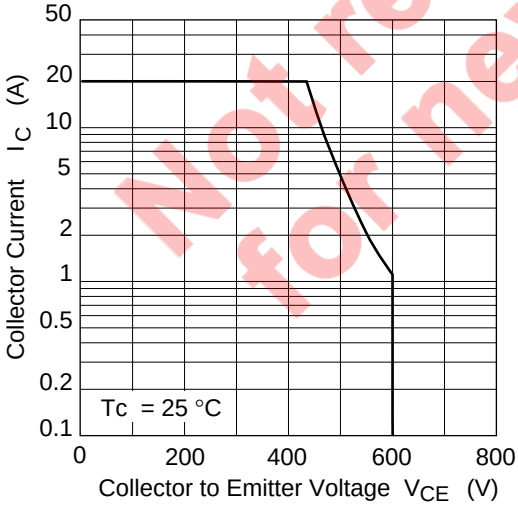
Power vs. Temperature Derating



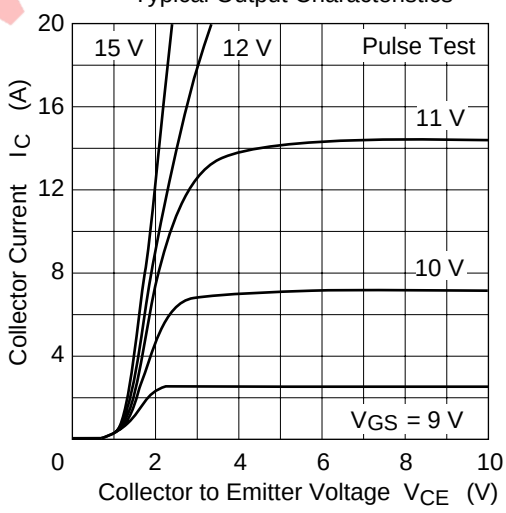
Maximum Safe Operation Area



Reverse Bias SOA

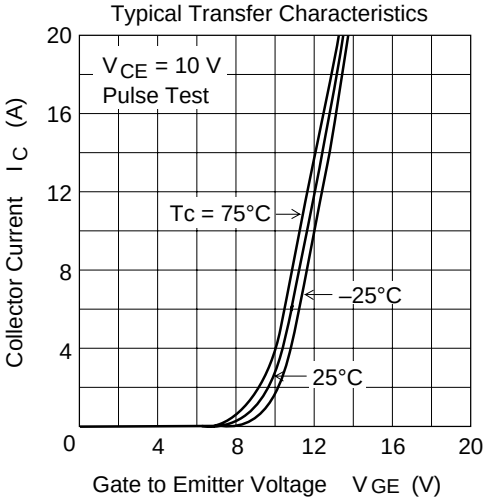


Typical Output Characteristics

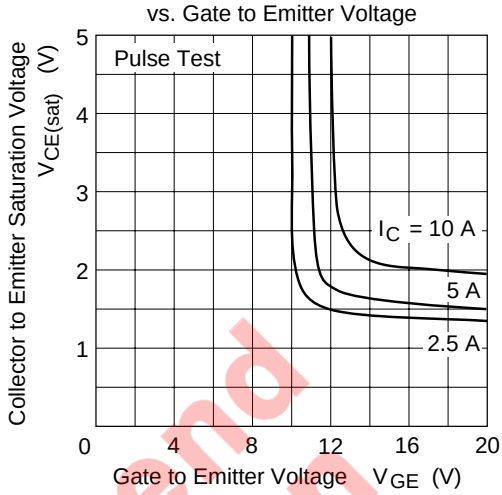


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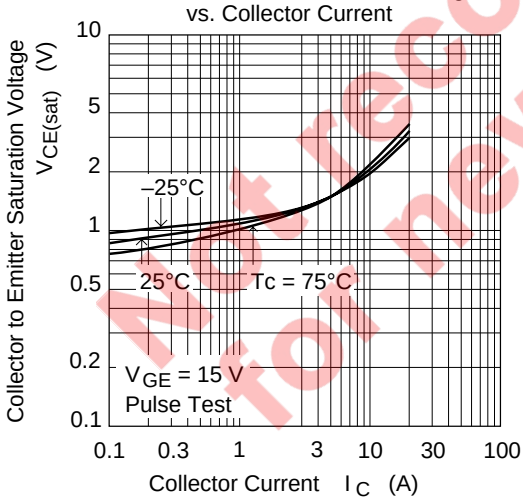
Typical Transfer Characteristics



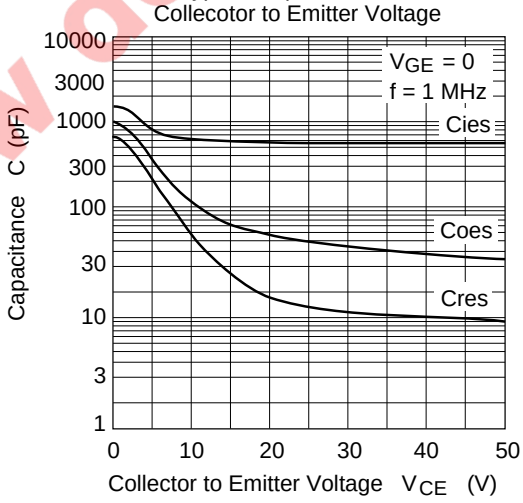
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage



Collecot to Emitter Saturation Voltage vs. Collector Current

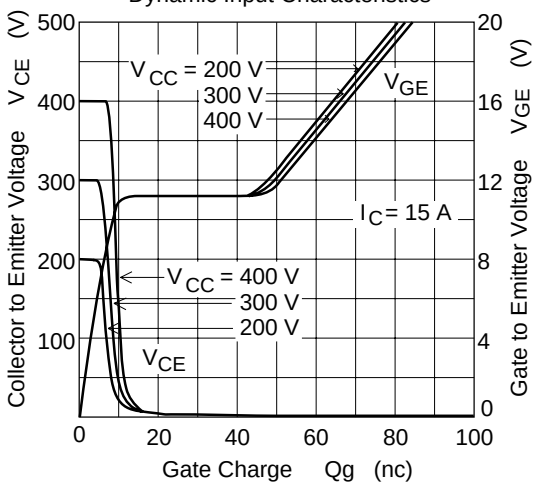


Typical Capacitance vs. Collecotor to Emitter Voltage

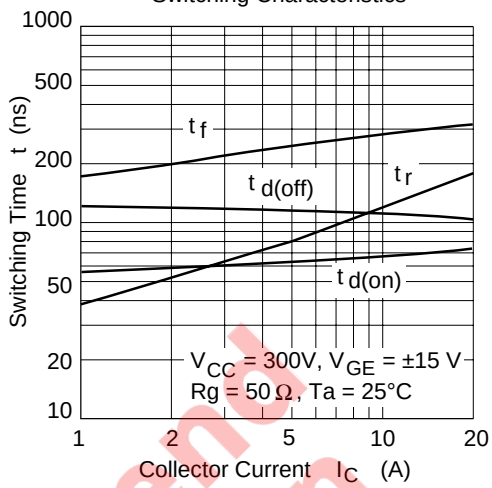


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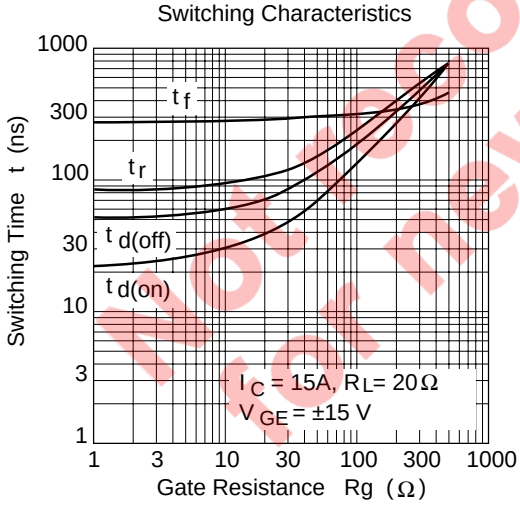
Dynamic Input Characteristics



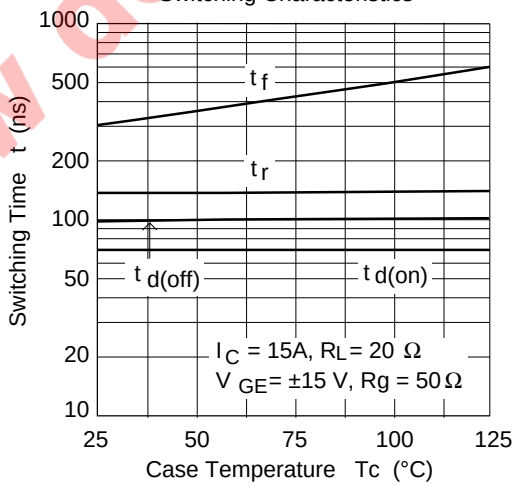
Switching Characteristics



Switching Characteristics

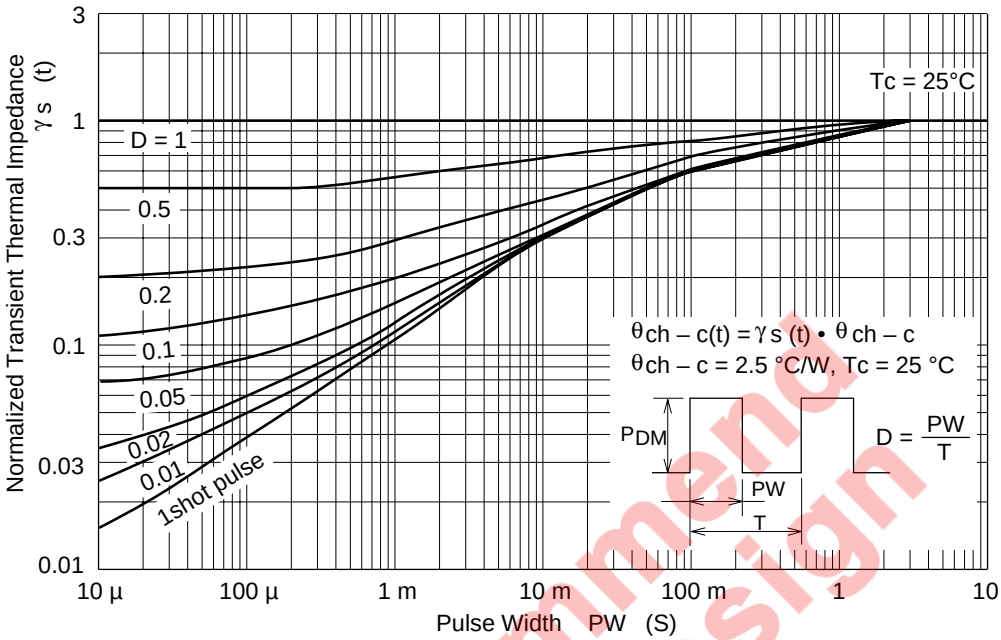


Switching Characteristics



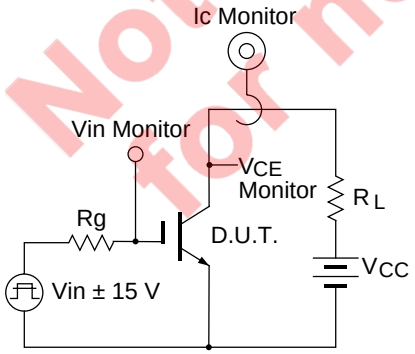
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Normalized Transient Thermal Impedance vs. Pulse Width

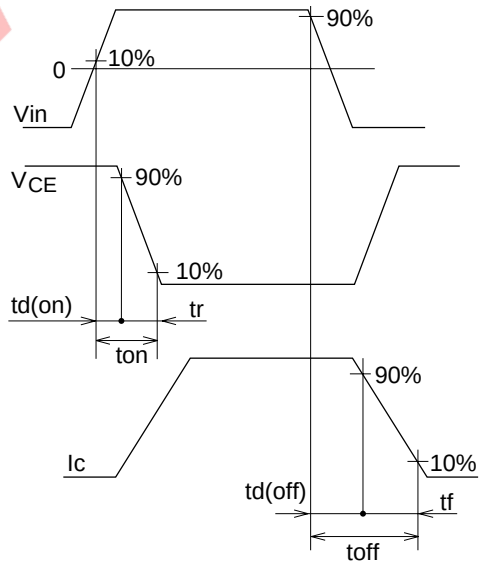


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Switching Time Test Circuit

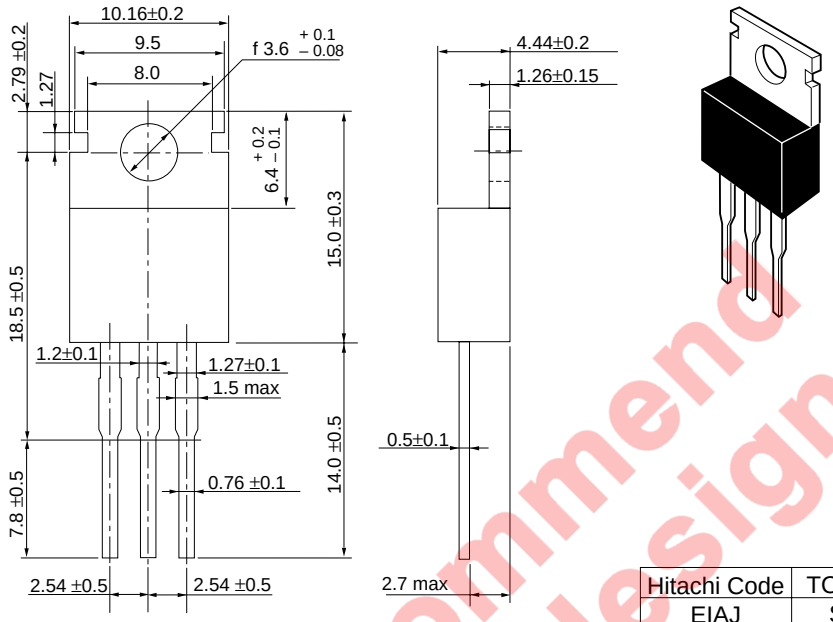


Waveform



Package Dimensions

Unit: mm



Hitachi Code	TO–220AB
EIAJ	SC–46
JEDEC	—

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