

2SH28

Silicon N Channel IGBT
High Speed Power Switching

HITACHI

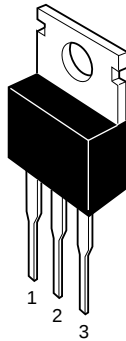
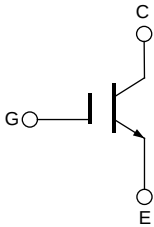
ADE-208-790A(Z)
2nd. Edition
May 1999

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	20	A
Collector peak current	ic(peak)	40	A
Collector dissipation	P _C ^{Note1}	60	W
Channel temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

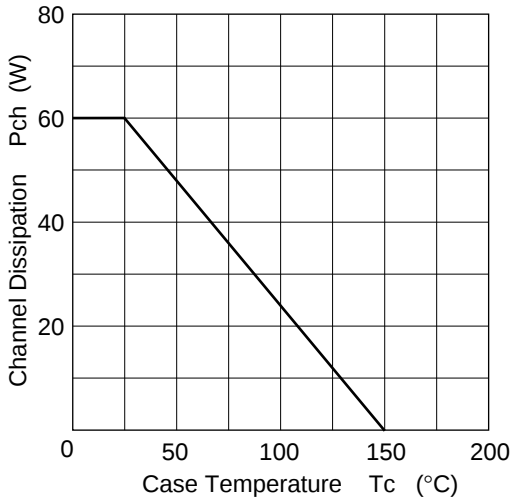
Note: 1. Value at Tc = 25°C

Electrical Characteristics (Ta = 25°C)

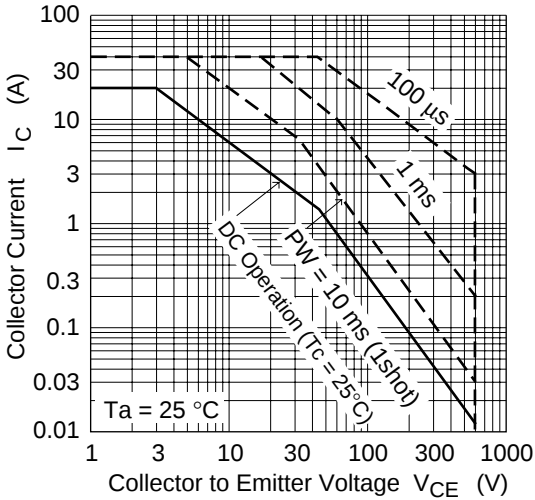
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I _{CES}	—	—	100	μA	V _{CE} = 600V, V _{GE} = 0
Gate to emitter leak current	I _{GES}	—	—	±1	μA	V _{GE} = ± 20 V, V _{CE} = 0
Gate to emitter cutoff voltage	V _{GE(off)}	6.0	—	8.0	V	I _C = 20 mA, V _{CE} = 10V
Collector to emitter saturation voltage	V _{CE(sat)}	—	2.1	2.6	V	I _C = 20 A, V _{GE} = 15V
Input capacitance	Cies	—	1200	—	pF	V _{CE} = 10V, V _{GE} = 0 f = 1MHz
Switching time	t _r	—	150	—	ns	I _C = 20 A
	t _{on}	—	230	—	ns	R _L = 15 Ω
	t _f	—	300	600	ns	V _{GS} = ±15V
	t _{off}	—	450	900	ns	Rg = 50 Ω

Main Characteristics

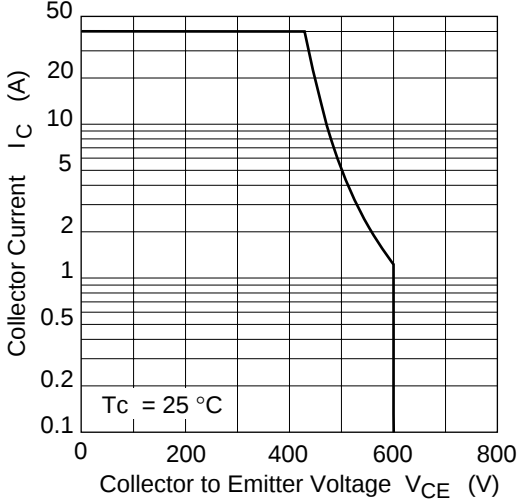
Power vs. Temperature Derating



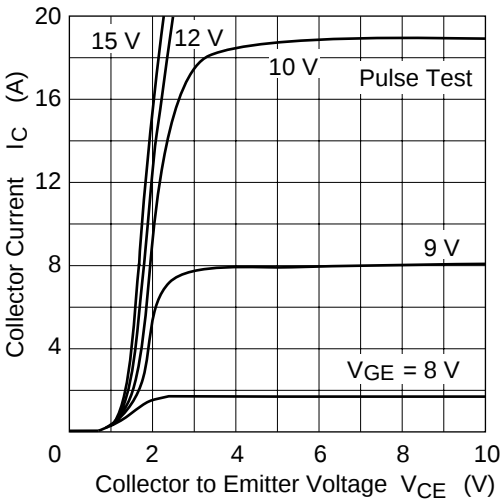
Maximum Safe Operation Area

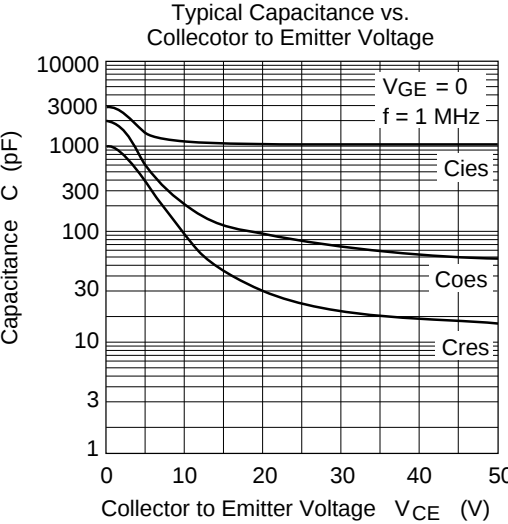
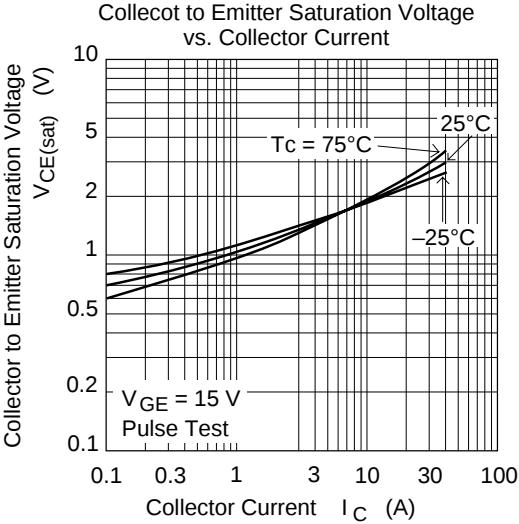
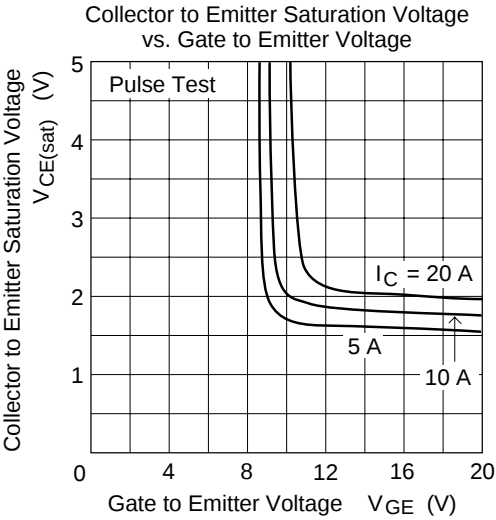
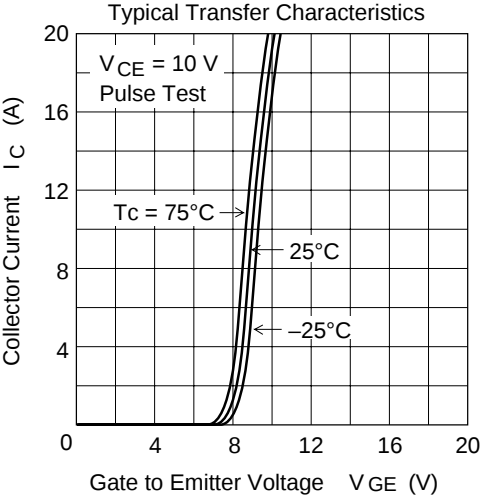


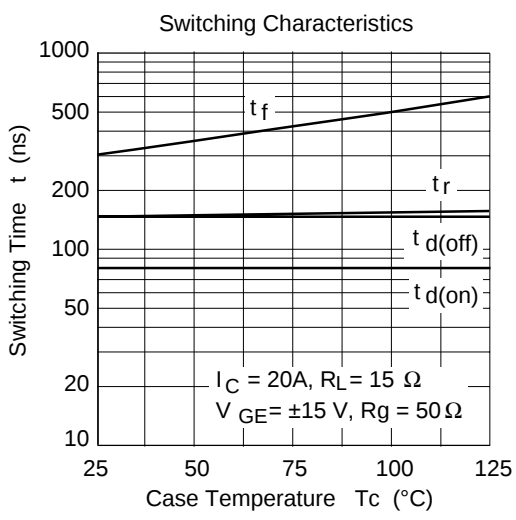
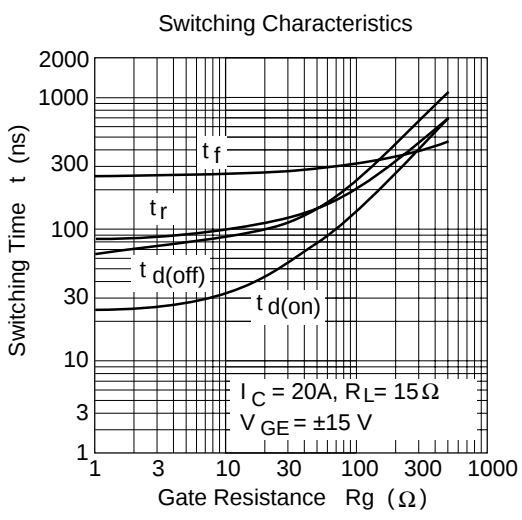
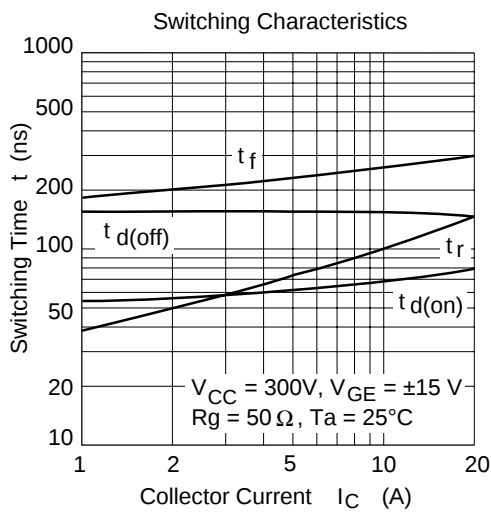
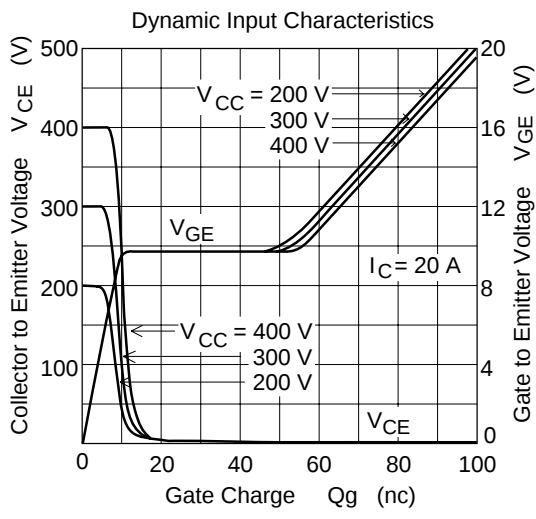
Reverse Bias SOA



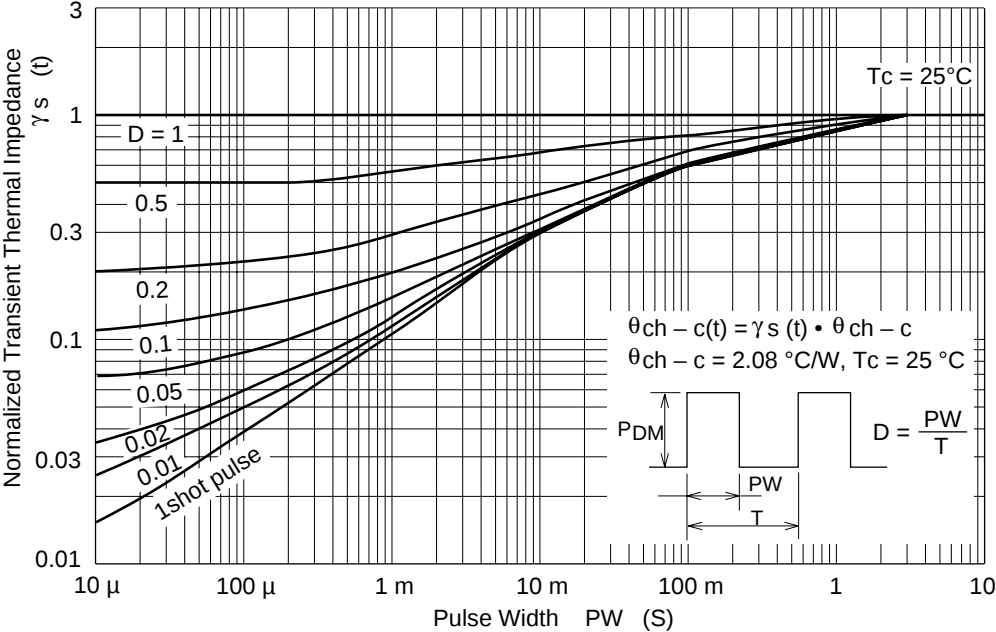
Typical Output Characteristics



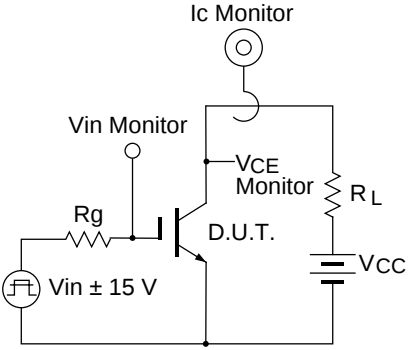




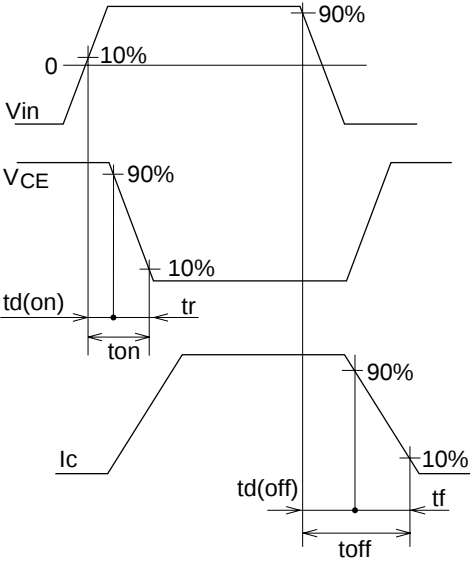
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

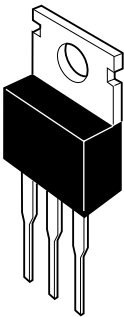
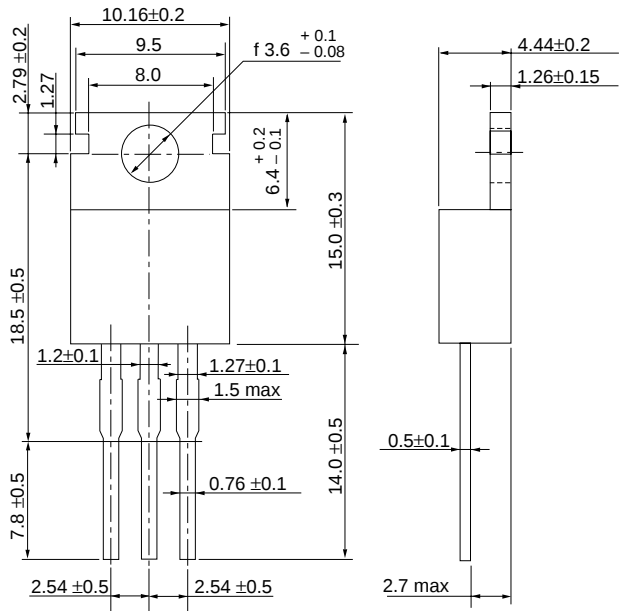


Waveform



Package Dimensions

Unit: mm



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

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