

2SH13

Silicon N-Channel IGBT

HITACHI

1st. Edition
Feb. 1995

Application

High speed power switching

Features

- High speed switching
- Low on saturation voltage

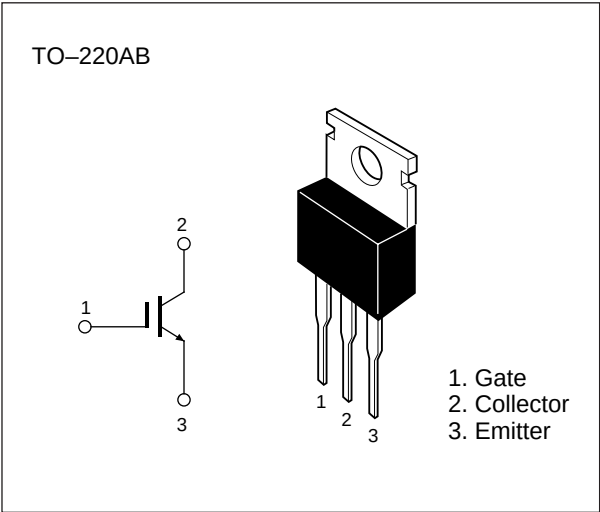


Table 1 Absolute Maximum Ratings (Ta = 25°C)

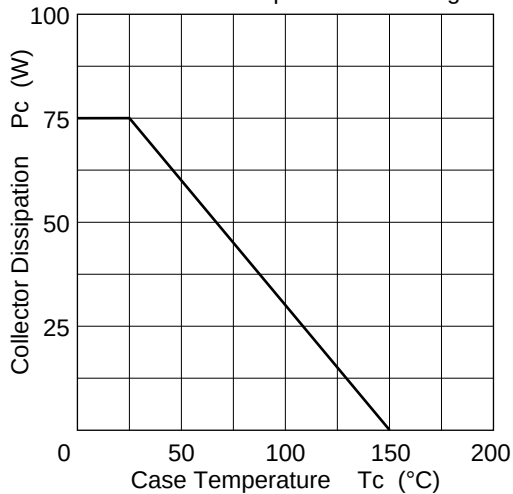
Item	Symbol	Ratings	Unit
Collector to emitter voltage	V _{CES}	600	V
Gate to emitter voltage	V _{GES}	±20	V
Collector current	I _C	20	A
Collector peak current	ic(peak)	40	A
Collector dissipation	P _C *	75	W
Channel temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* Value at Tc = 25°C

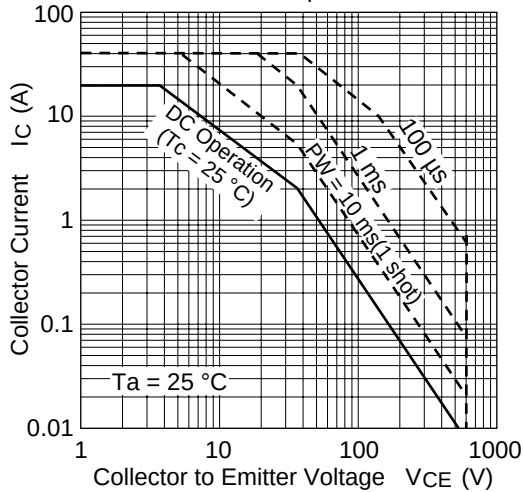
Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CES}$	600	—	—	V	$I_C = 100\ \mu A, V_{GE} = 0$
Zero gate voltage collector current	I_{CES}	—	—	0.5	mA	$V_{CE} = 600\ V, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	± 1	μA	$V_{GE} = \pm 20\ V, V_{CE} = 0$
Gate to emitter cutoff current	$V_{GE(off)}$	3.0	—	5.0	V	$I_C = 1\ mA, V_{CE} = 10\ V$
Collector to emitter saturation voltage	$V_{CE(sat)1}$	—	2.0	—	V	$I_C = 10\ A, V_{GE} = 15\ V$
Collector to emitter saturation voltage	$V_{CE(sat)2}$	—	2.6	3.3	V	$I_C = 20\ A, V_{GE} = 15\ V$
Input capacitance	C_{ies}	—	1800	—	pF	$V_{CE} = 10\ V, V_{GE} = 0, f = 1\ MHz$
Switching time	t_r	—	130	—	ns	$I_C = 20\ A,$
	t_{on}	—	210	—		$R_L = 15\ \Omega,$
	t_f	—	300	600		$V_{GE} = \pm 15\ V$
	t_{off}	—	500	1000		$R_g = 50\ \Omega$

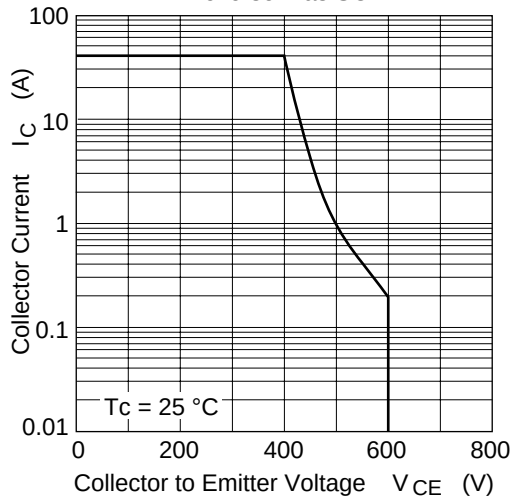
Power vs. Temperature Derating



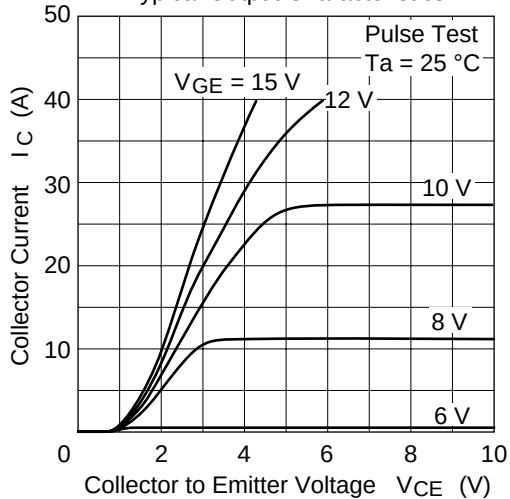
Maximum Safe Operation Area

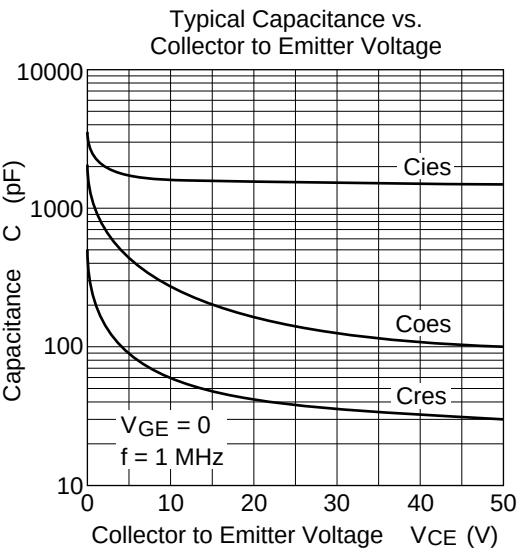
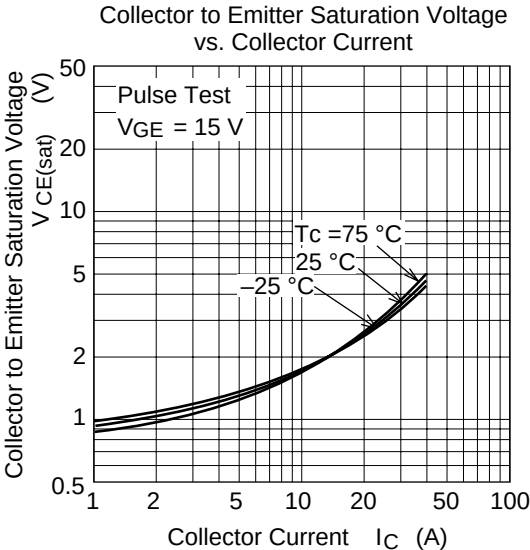
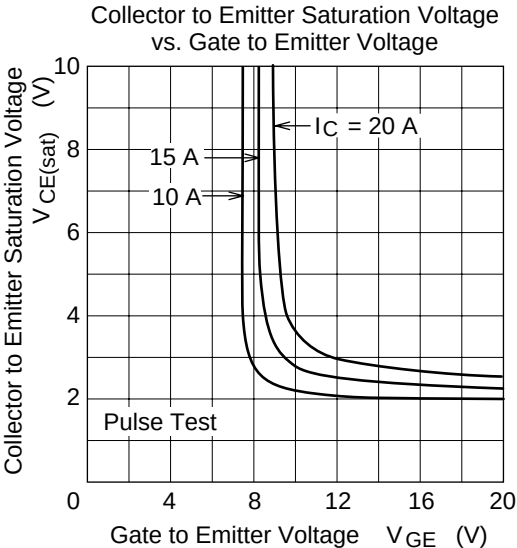
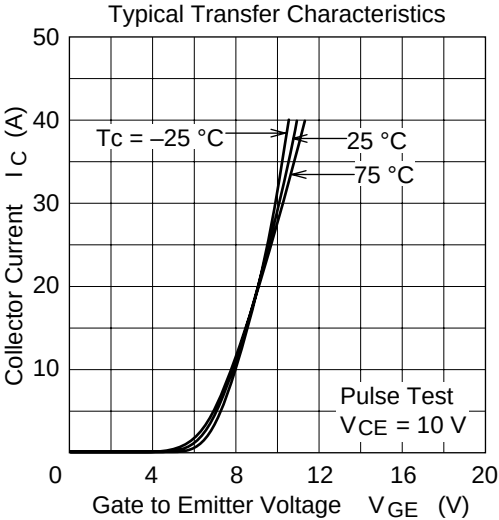


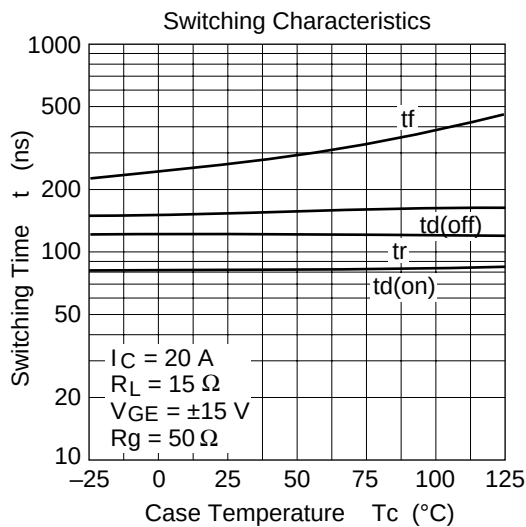
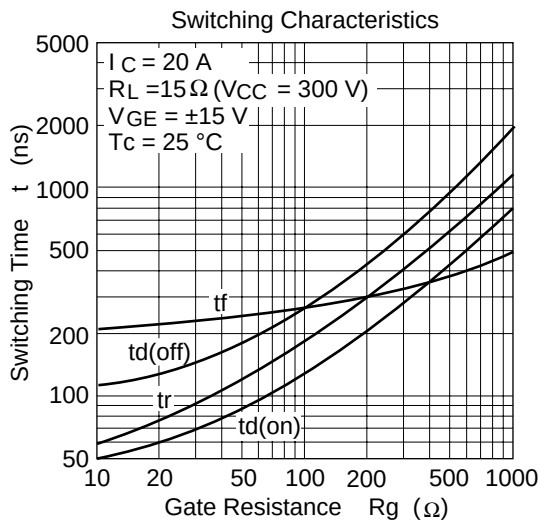
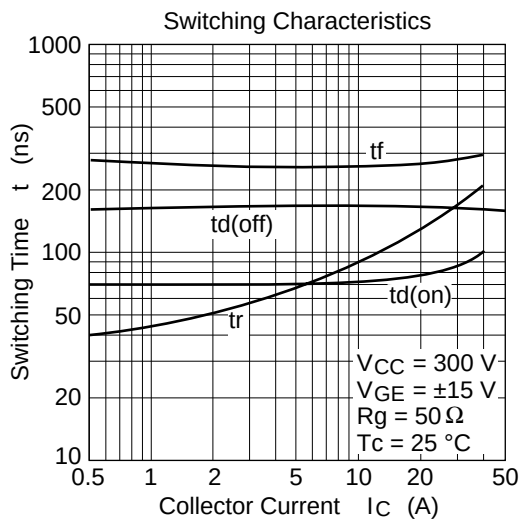
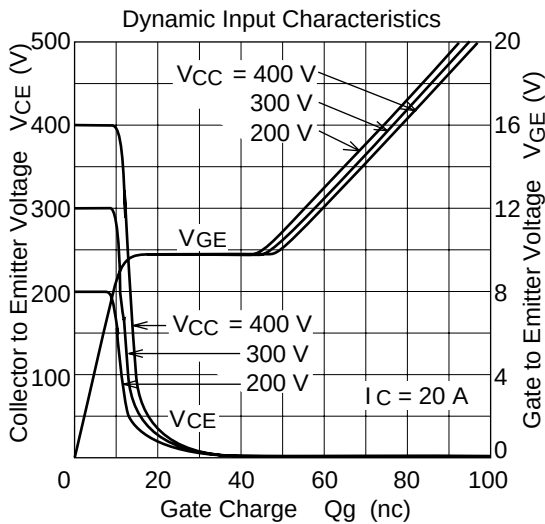
Reverse Bias SOA

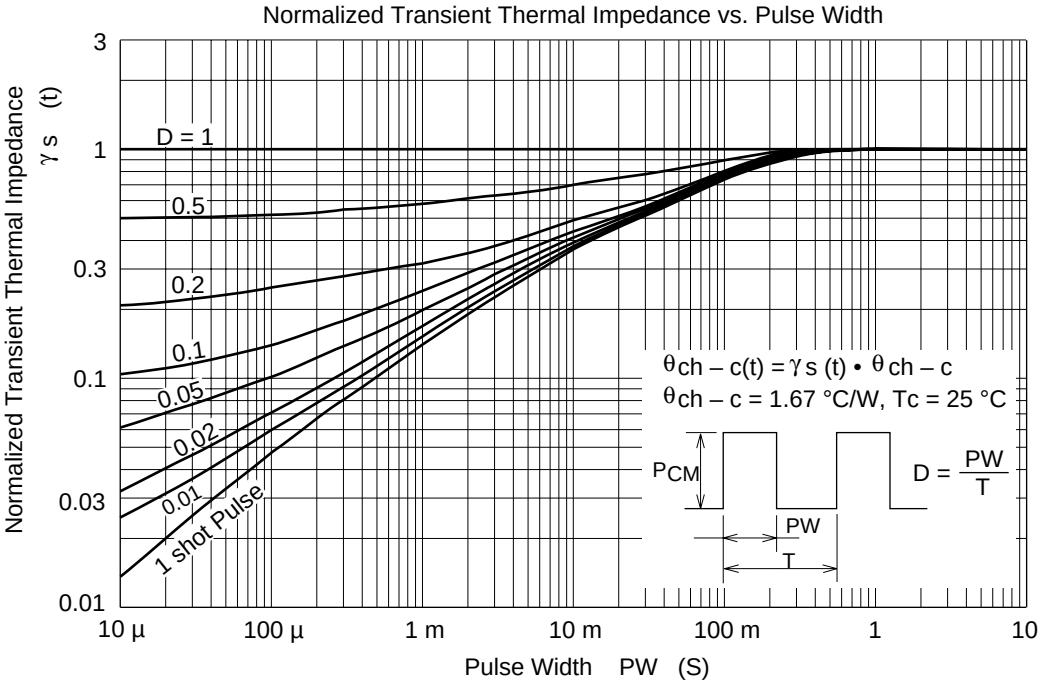


Typical Output Characteristics

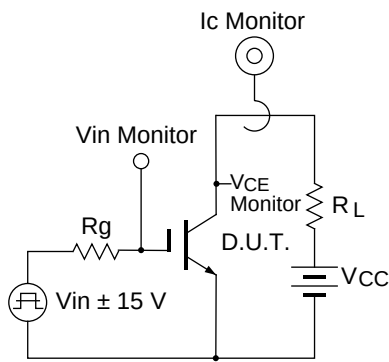




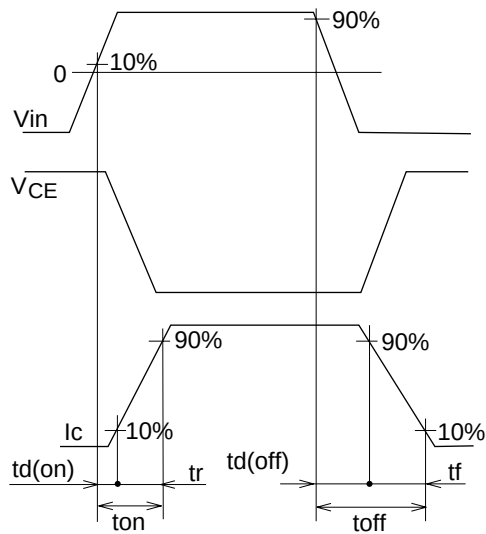




Switching Time Test Circuit



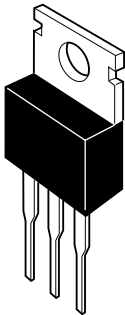
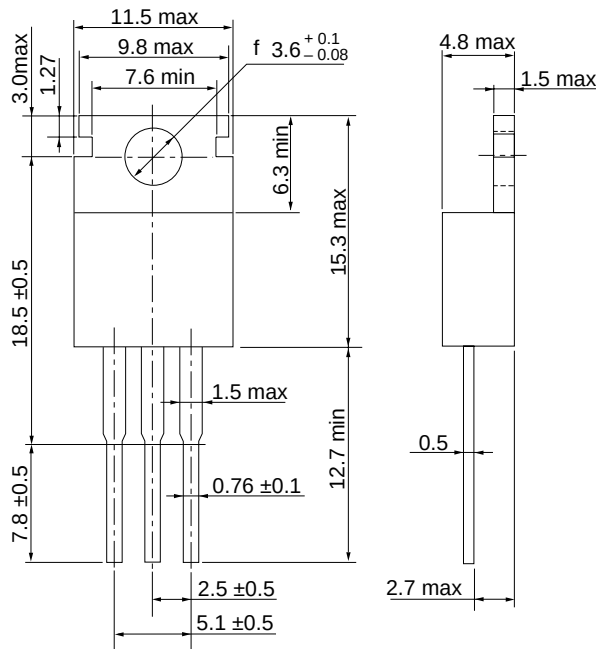
Waveforms



Package Dimensions

Unit : mm

• TO-220AB



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

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