2SH18
Silicon N-Channel IGBT

HITACHI

1st. Edition
Feb. 1995

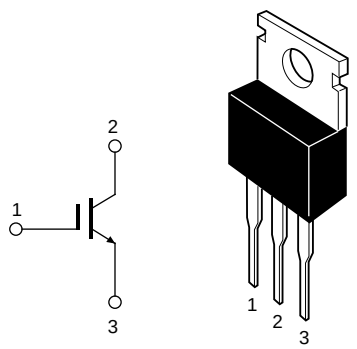
Application

High speed power switching

Features

- High speed switching
- Low on saturation voltage

TO–220AB



1. Gate
2. Collector
3. Emitter

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

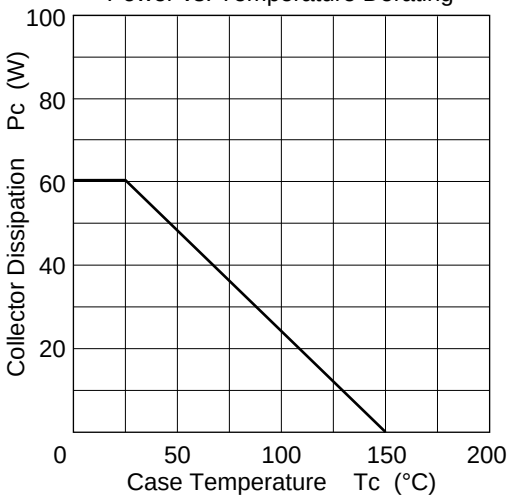
Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	600	V
Gate to emitter voltage	V_{GES}	±20	V
Collector current	I_C	18	A
Collector peak current	ic(peak)	30	A
Collector dissipation	P_C*	60	W
Channel temperature	T_j	150	°C
Storage temperature	Tstg	–55 to +150	°C

* Value at Tc = 25°C

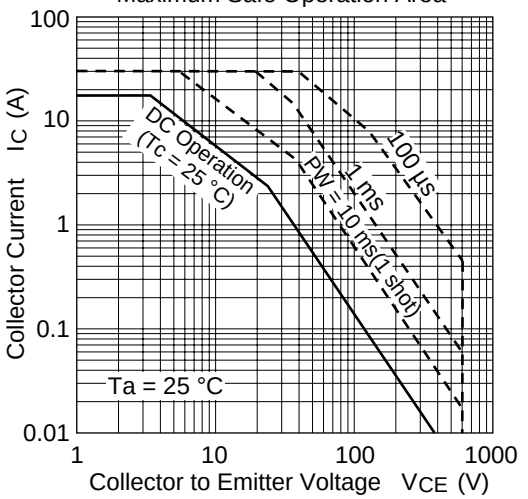
Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CES}$	600	—	—	V	I_C = 100 µA, 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} = ±20 V, V_{CE} = 0
Gate to emitter cutoff current	$V_{GE(off)}$	3.0	—	6.0	V	I_C = 1 mA, V_{CE} = 10 V
Collector to emitter saturation voltage	$V_{CE(sat)}$[1]	—	1.5	—	V	I_C = 7.5 A, V_{GE} = 15 V
Collector to emitter saturation voltage	$V_{CE(sat)}$[2]	—	2.0	2.6	V	I_C = 15 A, V_{GE} = 15 V
Input capacitance	Cies	—	1400	—	pF	V_{CE} = 10 V, V_{GE} = 0, f = 1 MHz
Switching time	t_r	—	120	—	ns	I_C = 15 A,
	t_{on}	—	200	—		R_L = 20 Ω,
	t_f	—	2000	—		V_{GE} = ±15 V
	t_{off}	—	2500	—		Rg = 50 Ω

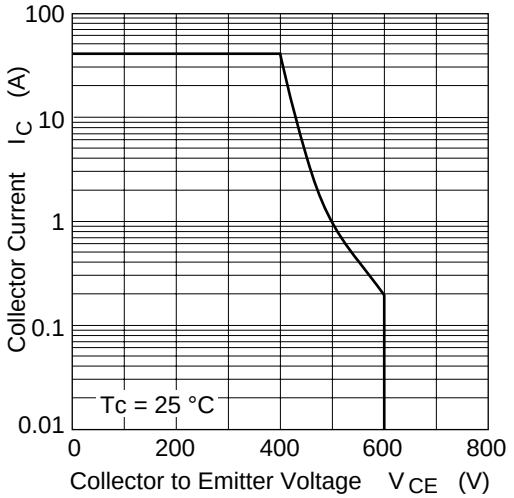
Power vs. Temperature Derating



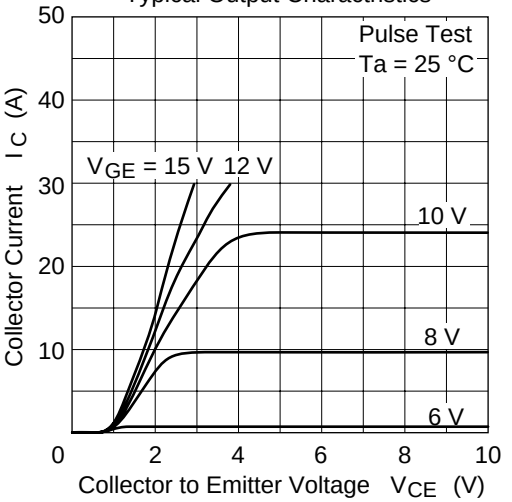
Maximum Safe Operation Area



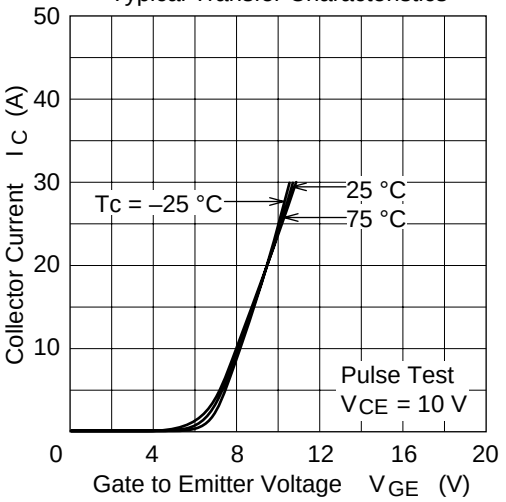
Reverse Bias SOA



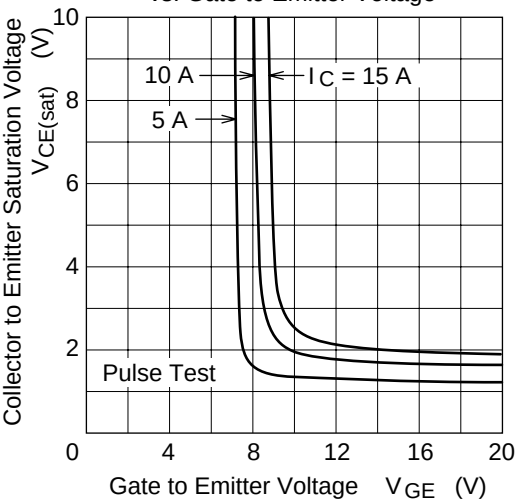
Typical Output Charactristics



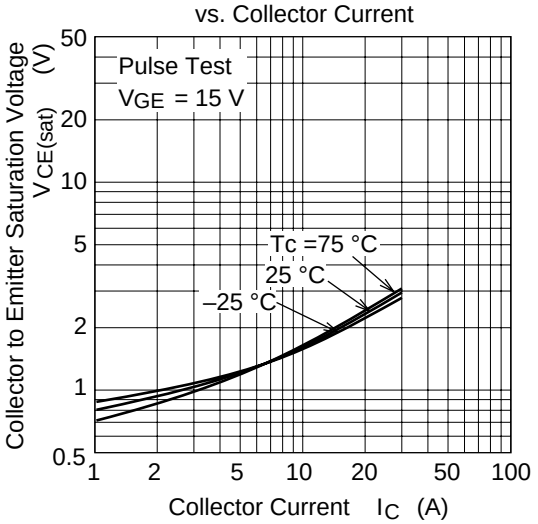
Typical Transfer Characteristics



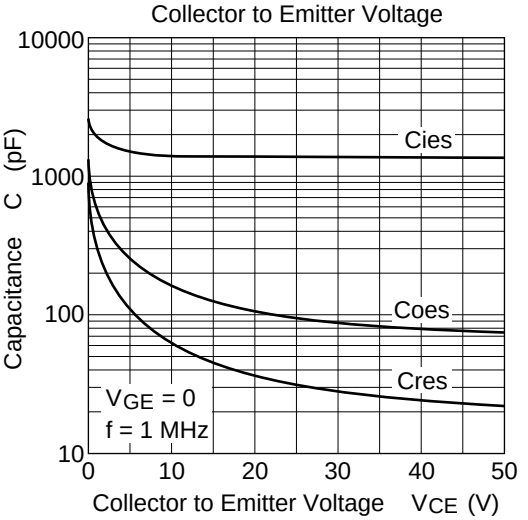
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage



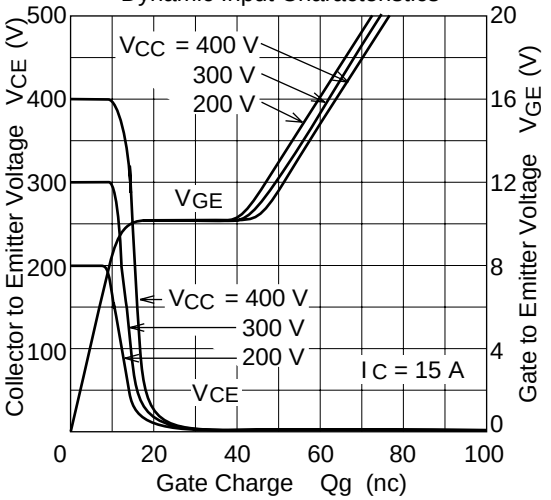
Collector to Emitter Saturation Voltage vs. Collector Current



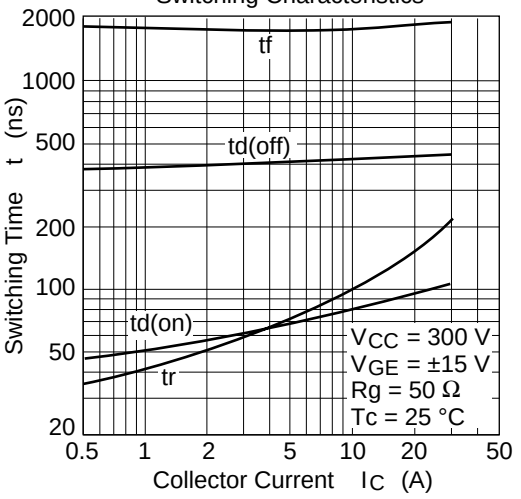
Typical Cpacacitance vs. Collector to Emitter Voltage



Dynamic Input Characteristics



Switching Characteristics



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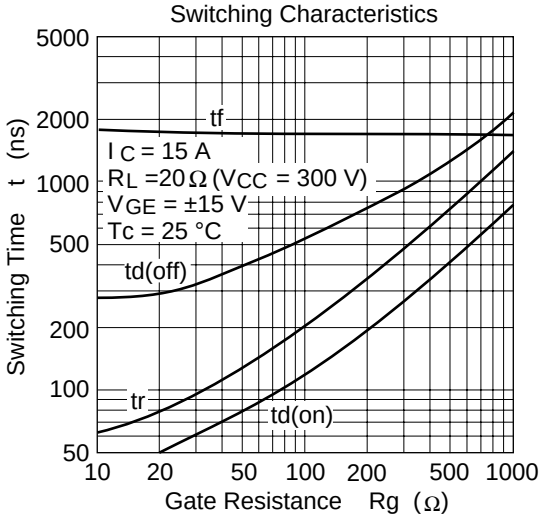

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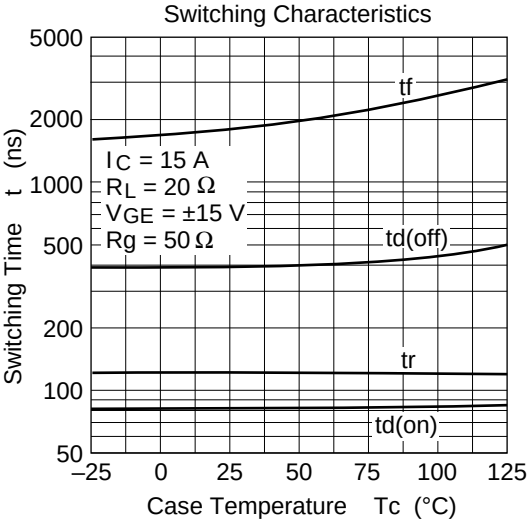
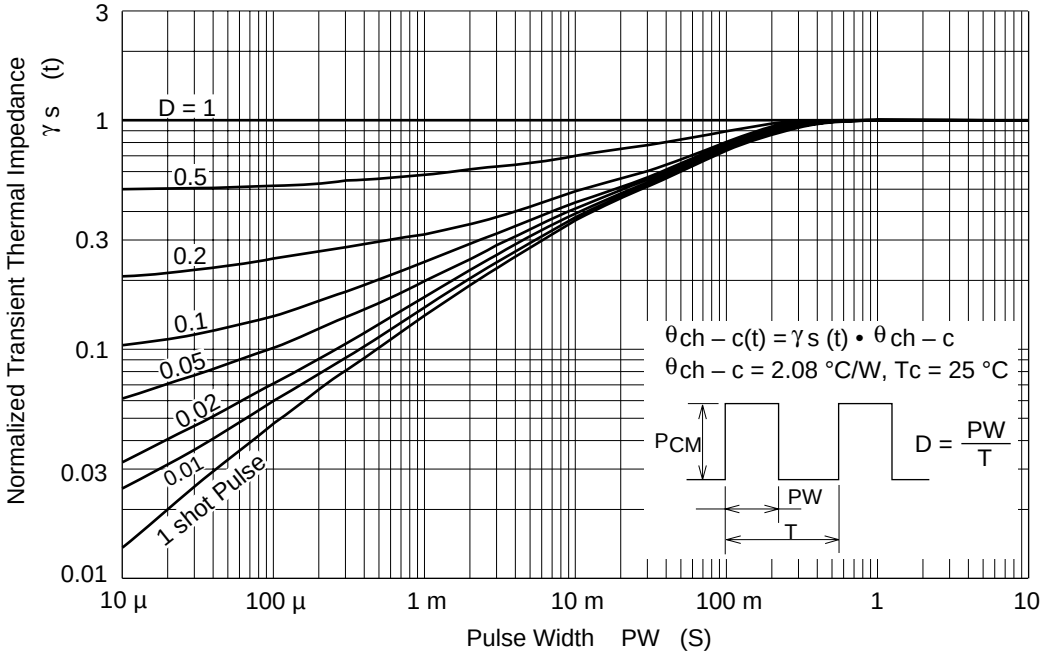
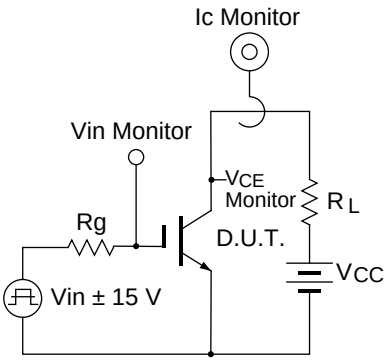


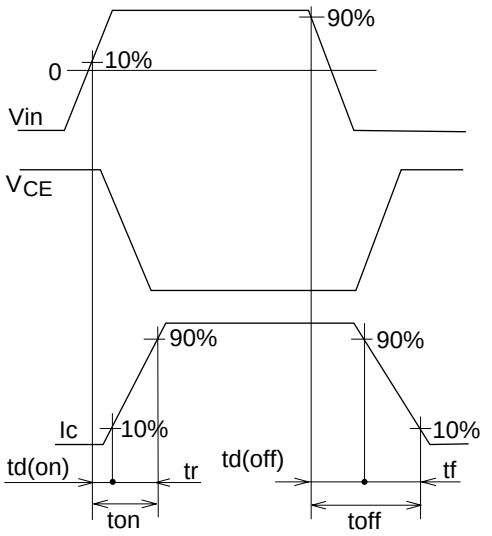
Normalized Transient Thermal Imperande vs. Pulse Width



Switching Time Test Circuit



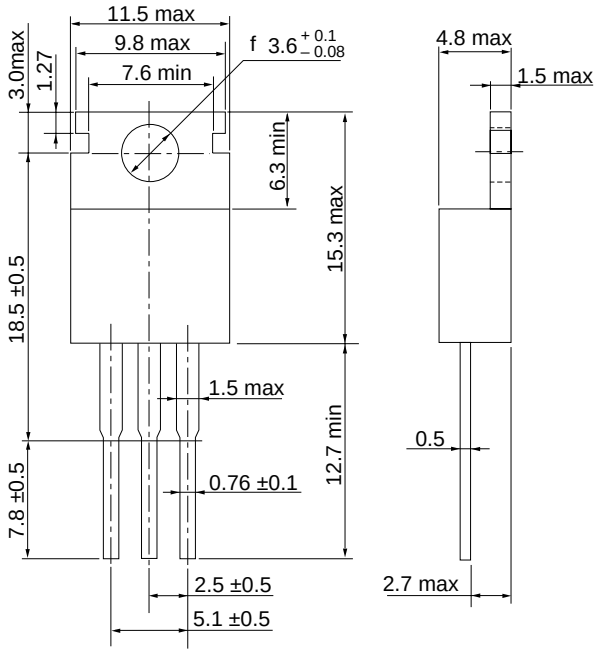
Waveforms

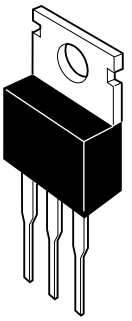


Package Dimensions

Unit : mm

• TO-220AB





Hitachi Code	TO–220AB
EIAJ	SC–46
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HITACHI

Hitachi, Ltd.
Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

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For further information write to:

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive,
San Jose,CA 95134
Tel: <1> (408) 433-1990
Fax: <1>(408) 433-0223

Hitachi Europe GmbH
Electronic components Group
Dornacher Straße 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3F, Hung Kuo Building. No.167,
Tun-Hwa North Road, Taipei (105)
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
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