

2SH26

Silicon N Channel IGBT High Speed Power Switching

HITACHI

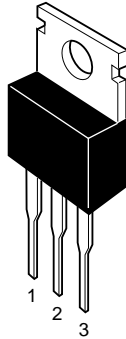
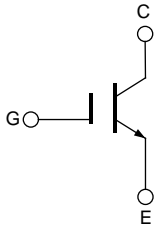
ADE-208-788A(Z)
2nd. Edition
May 1999

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	10	A
Collector peak current	ic(peak)	20	A
Collector dissipation	P_C ^{Note1}	50	W
Channel temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

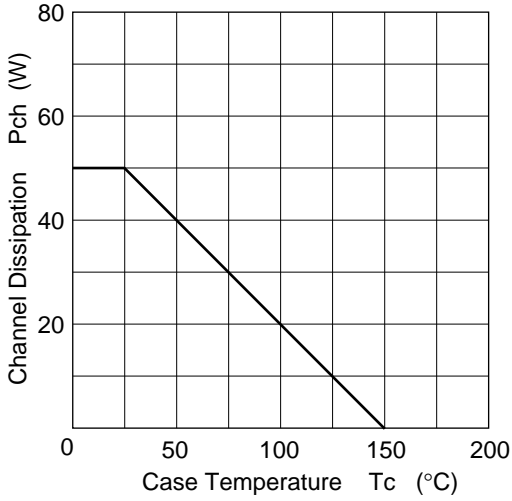
Note: 1. Value at Tc = 25°C

Electrical Characteristics (Ta = 25°C)

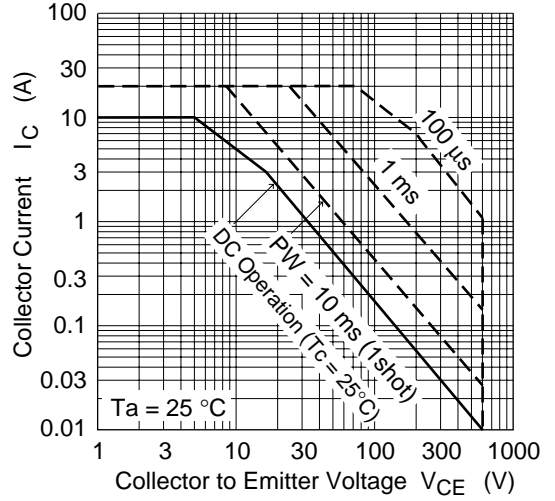
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	100	μA	$V_{CE} = 600V, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	±1	μA	$V_{GE} = \pm 20 V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	6.0	—	8.0	V	$I_C = 10mA, V_{CE} = 10V$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	2.1	2.6	V	$I_C = 10A, V_{GE} = 15V$
Input capacitance	Cies	—	620	—	pF	$V_{CE} = 10V, V_{GE} = 0$ $f = 1MHz$
Switching time	t_r	—	140	—	ns	$I_C = 10A$
	t_{on}	—	215	—	ns	$R_L = 30 \Omega$
	t_f	—	300	600	ns	$V_{GS} = \pm 15V$
	t_{off}	—	380	760	ns	$R_g = 50 \Omega$

Main Characteristics

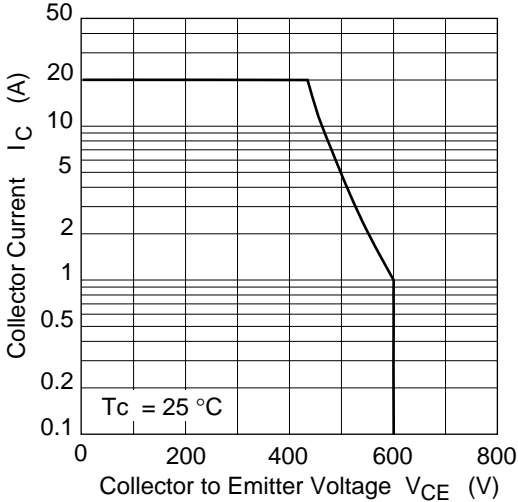
Power vs. Temperature Derating



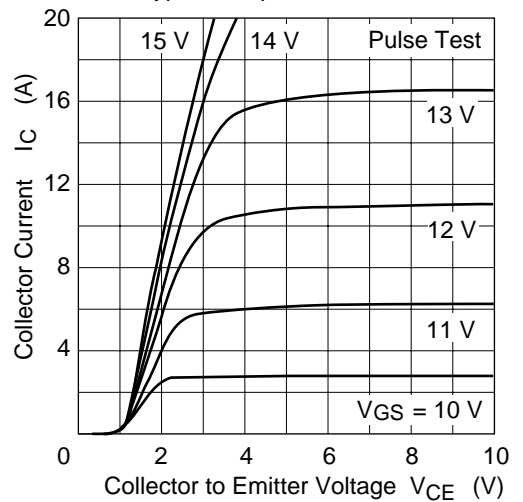
Maximum Safe Operation Area

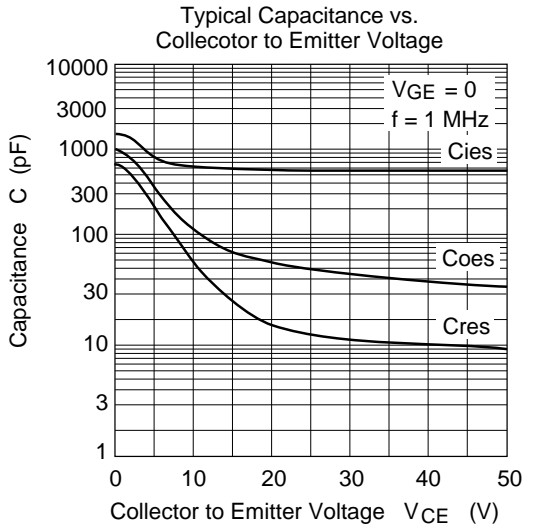
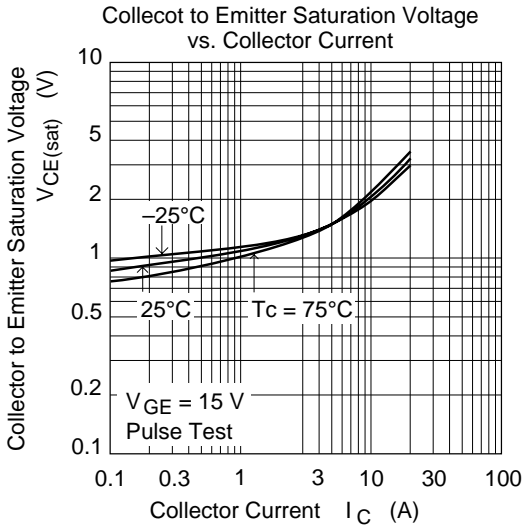
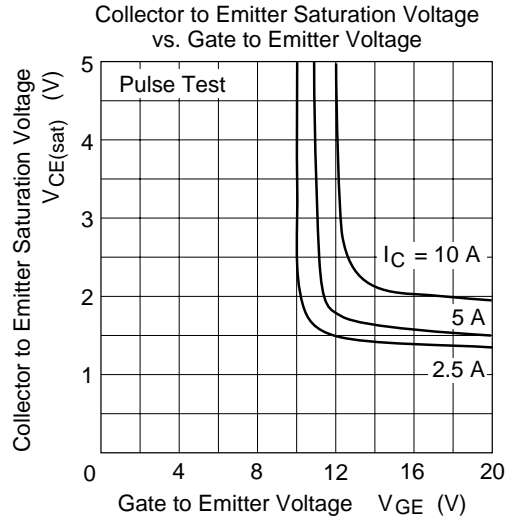
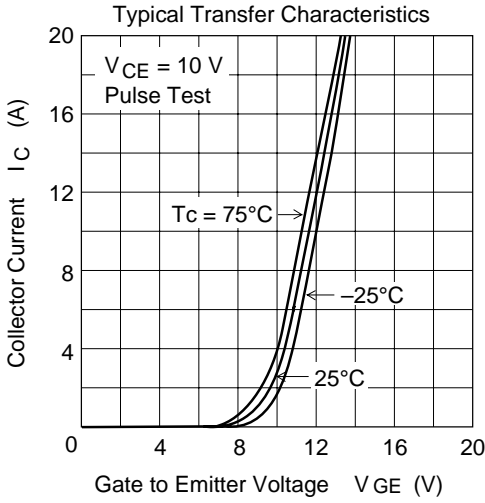


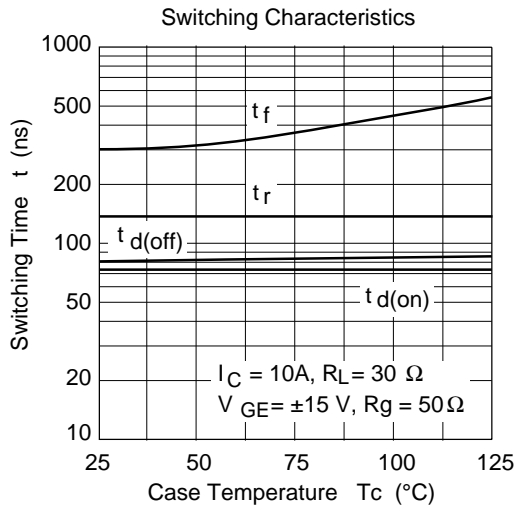
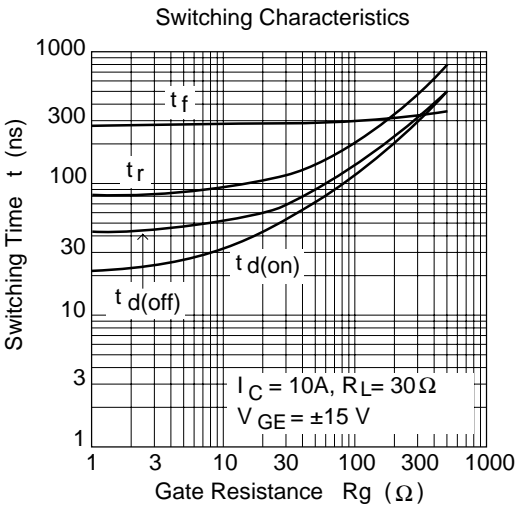
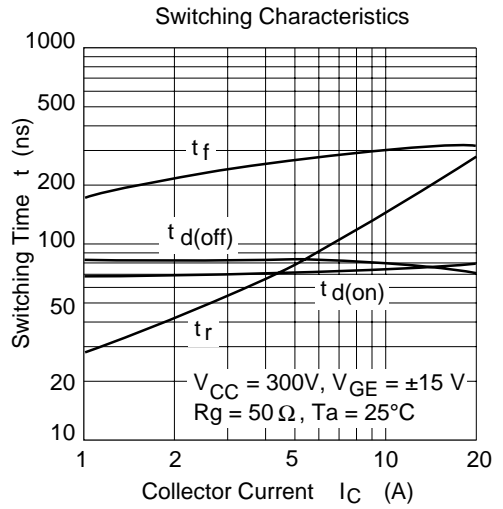
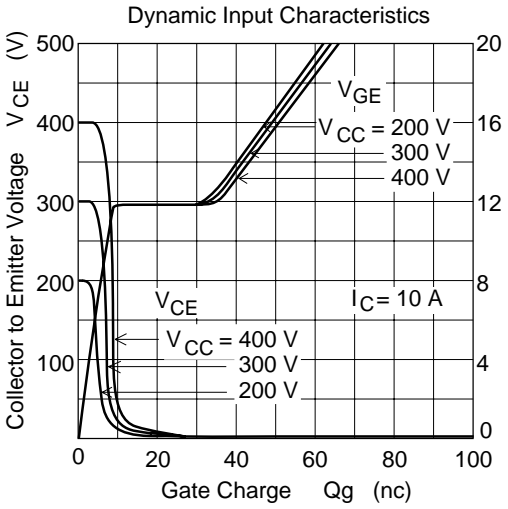
Reverse Bias SOA



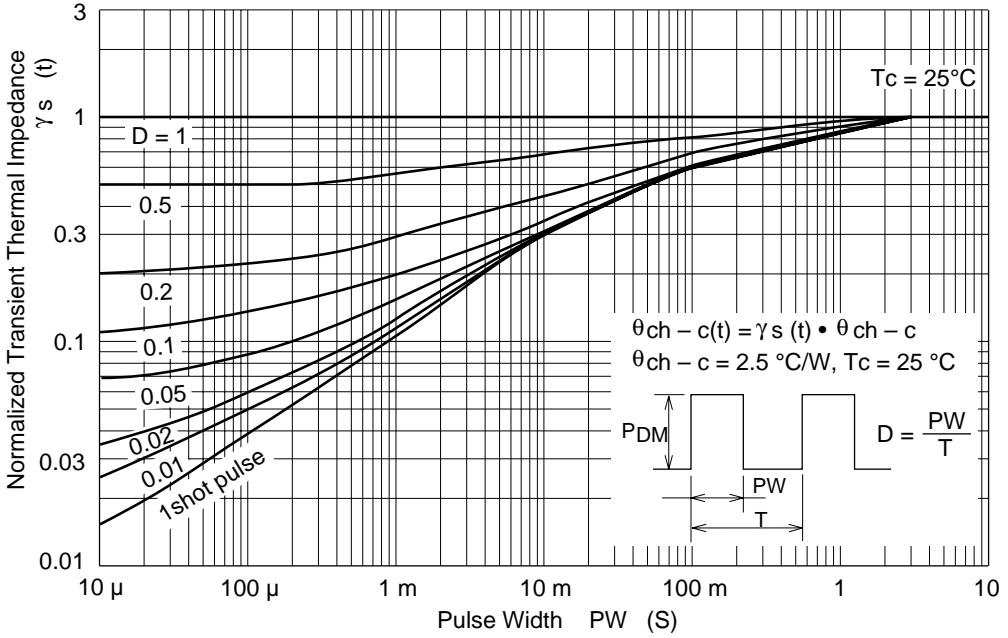
Typical Output Characteristics



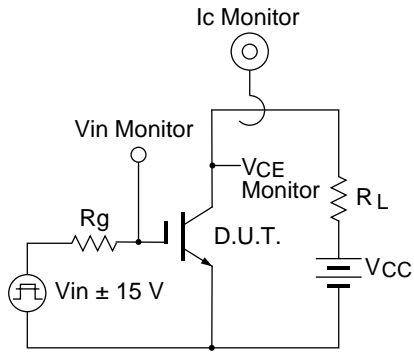




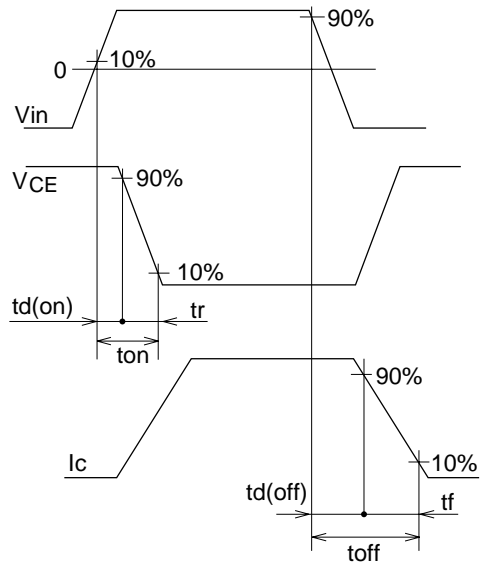
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform



Cautions

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

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

URL North America : <http://semiconductor.hitachi.com/>
 Europe : <http://www.hitachi-eu.com/hel/ecg>
 Asia (Singapore) : <http://www.has.hitachi.com.sg/grp3/sicd/index.htm>
 Asia (Taiwan) : http://www.hitachi.com.tw/E/Product/SICD_Frame.htm
 Asia (HongKong) : <http://www.hitachi.com.hk/eng/bo/grp3/index.htm>
 Japan : <http://www.hitachi.co.jp/Sicd/indx.htm>

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
 Telex: 40815 HITEC HX

Copyright © Hitachi, Ltd., 1998. All rights reserved. Printed in Japan.