

# 2SH27

## Silicon N Channel IGBT High Speed Power Switching

# HITACHI

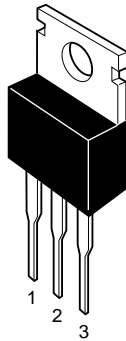
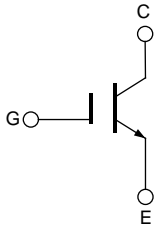
ADE-208-789A(Z)  
2nd. Edition  
May 1999

### 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	$I_C$	15	A
Collector peak current	ic(peak)	30	A
Collector dissipation	$P_C$ <sup>Note1</sup>	50	W
Channel temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

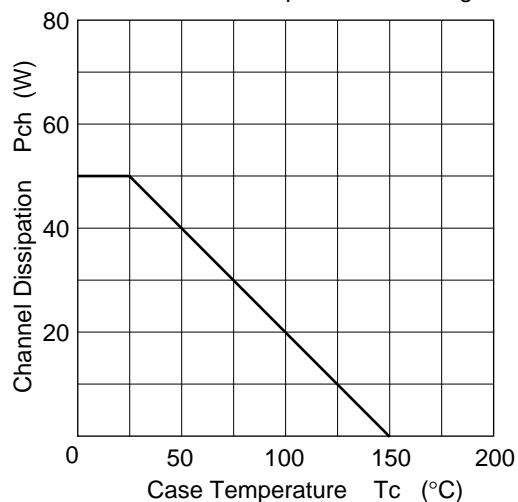
Note: 1. Value at Tc = 25°C

## Electrical Characteristics (Ta = 25°C)

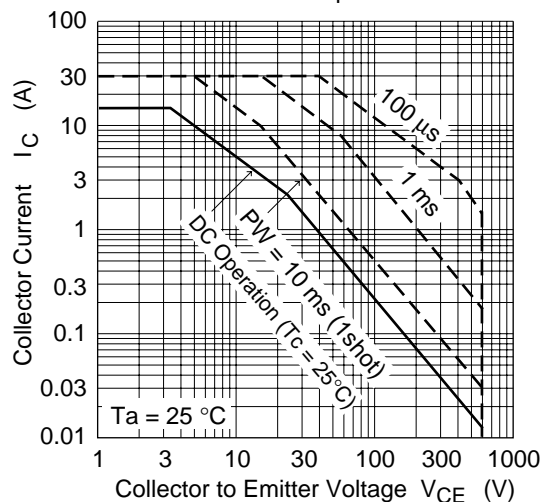
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	100	μA	$V_{CE} = 600V, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	±1	μA	$V_{GE} = \pm 20 V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	6.0	—	8.0	V	$I_C = 15mA, V_{CE} = 10V$
Collector 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	$R_L = 20 \Omega$
	$t_f$	—	300	600	ns	$V_{GS} = \pm 15V$
	$t_{off}$	—	410	820	ns	$R_g = 50 \Omega$

## Main Characteristics

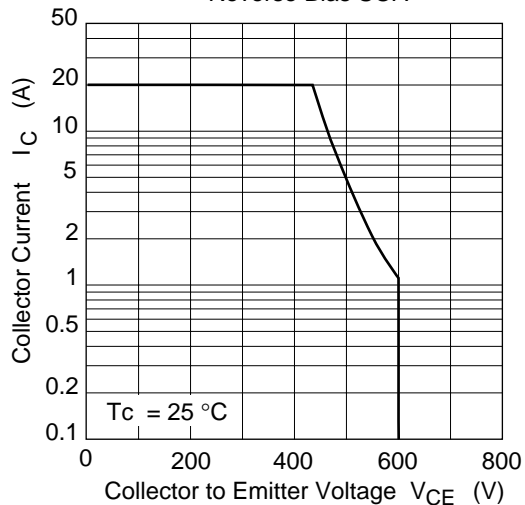
Power vs. Temperature Derating



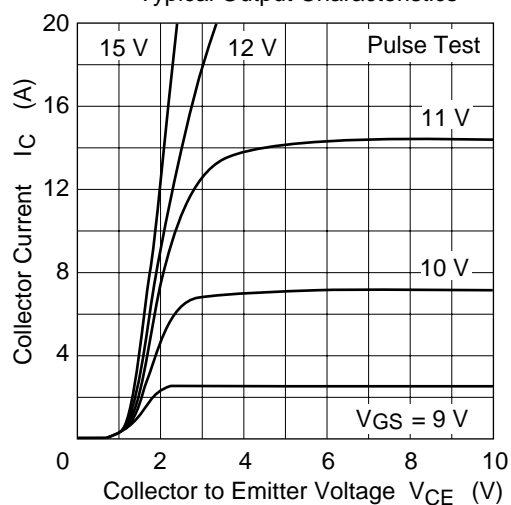
Maximum Safe Operation Area

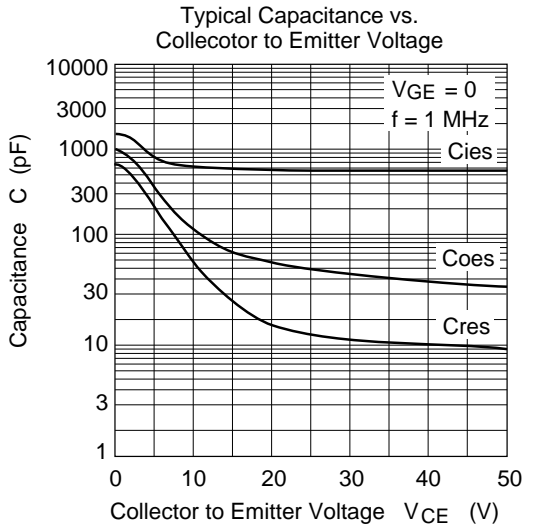
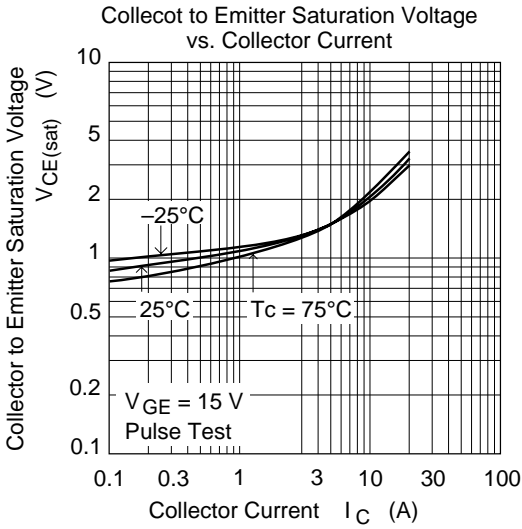
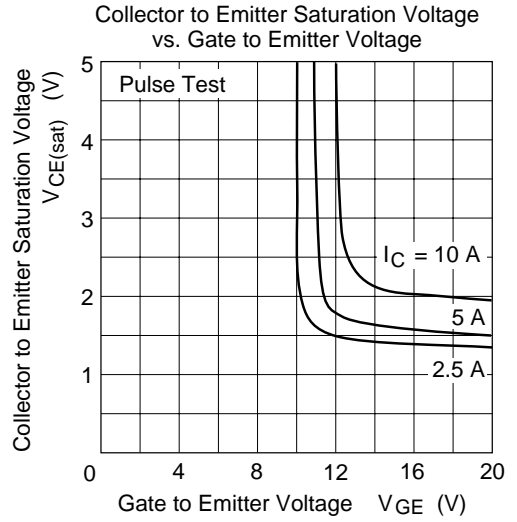
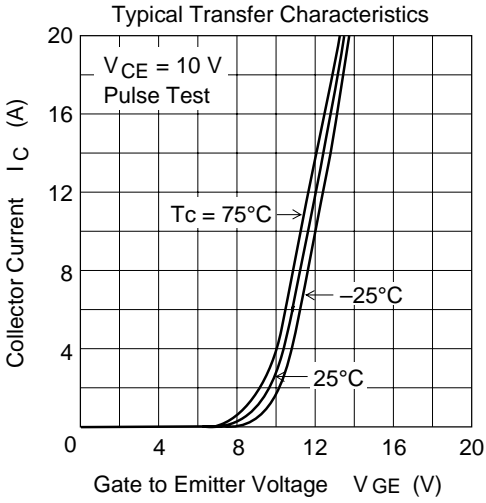


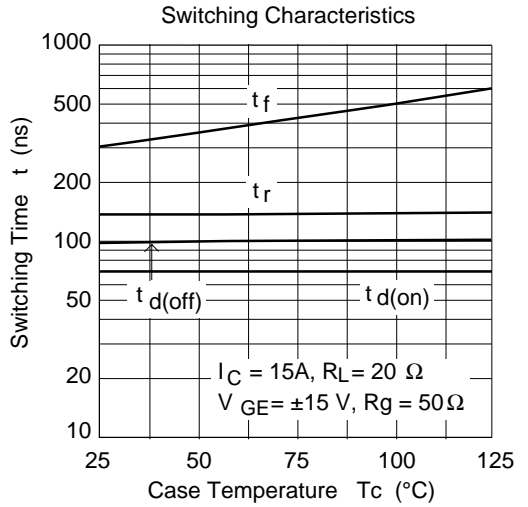
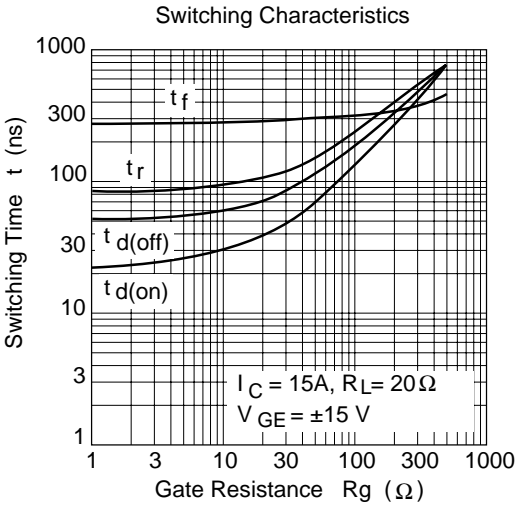
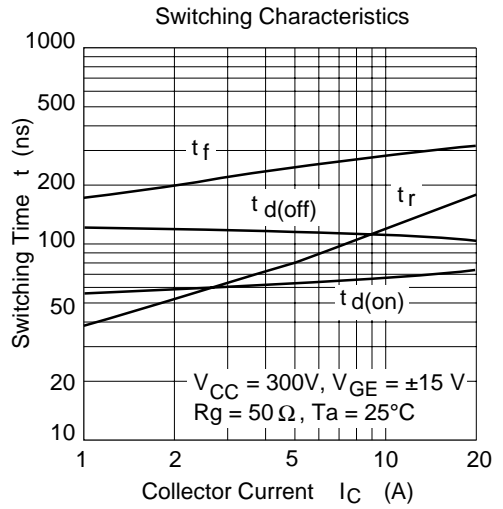
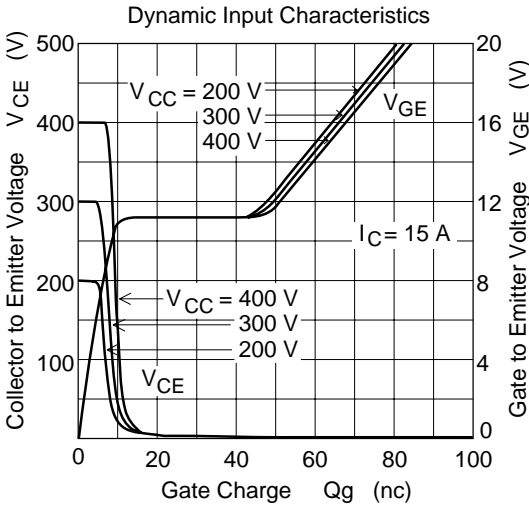
Reverse Bias SOA



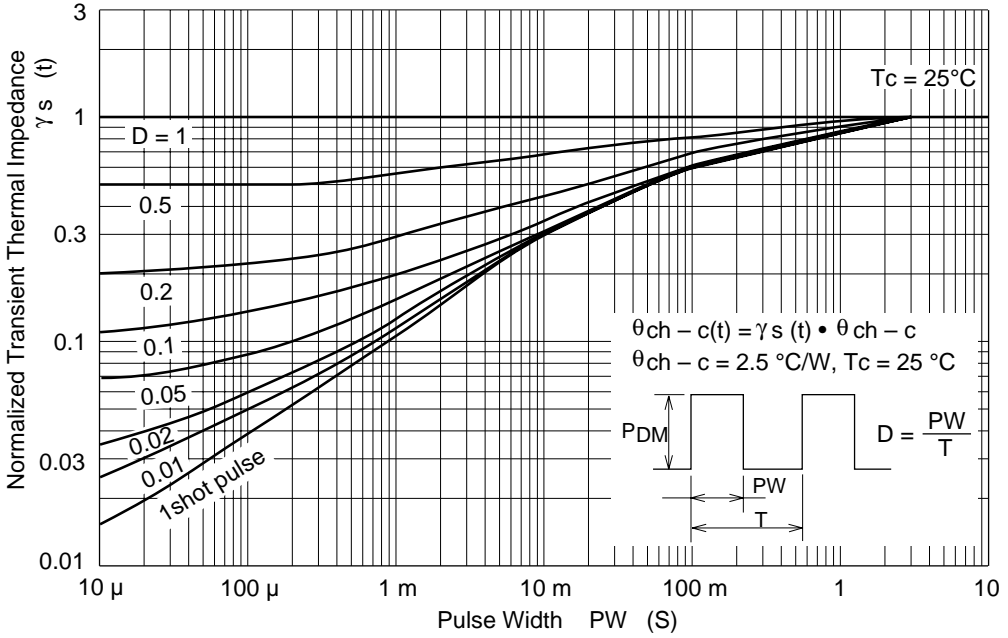
Typical Output Characteristics



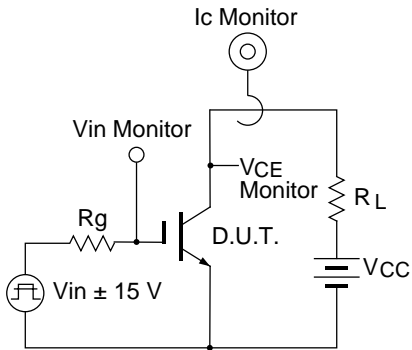




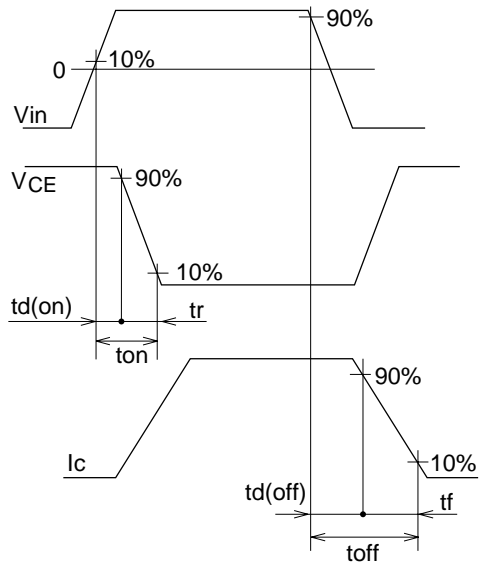
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

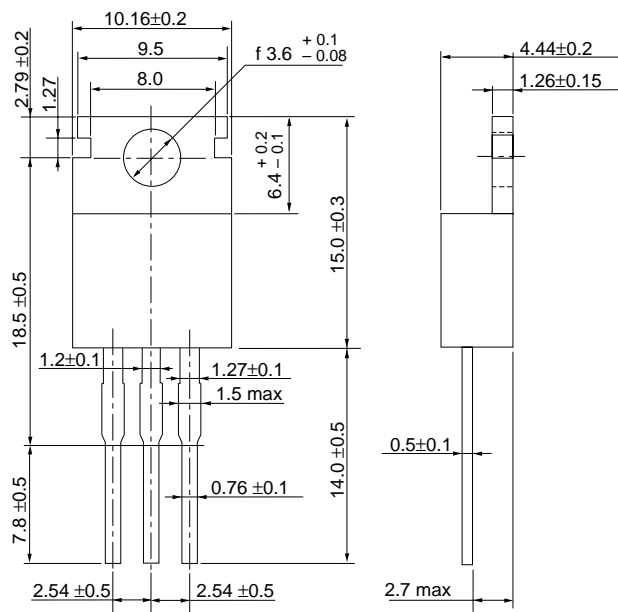


Waveform



## Package Dimensions

Unit: mm



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

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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

URL      North America      : <http://semiconductor.hitachi.com/>  
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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  
Telex: 40815 HITEC HX

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