
2SC535

Silicon NPN Epitaxial Planar

HITACHI

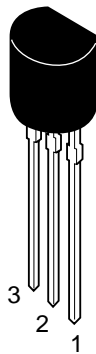
ADE-208-1047 (Z)
1st. Edition
Mar. 2001

Application

VHF amplifier, mixer, local oscillator

Outline

TO-92 (2)



1. Emitter
2. Collector
3. Base

2SC535

Absolute Maximum Ratings (Ta = 25°C)

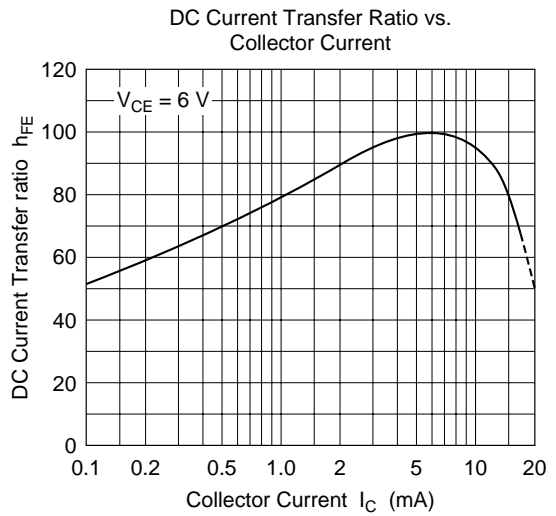
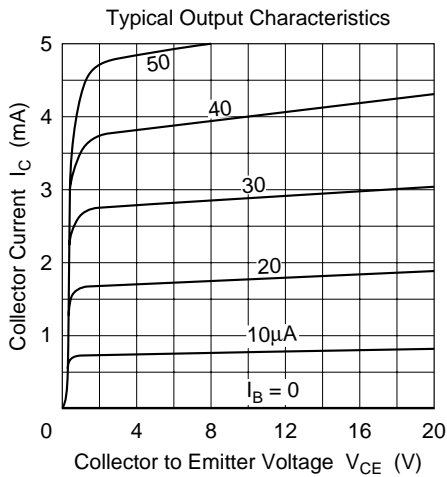
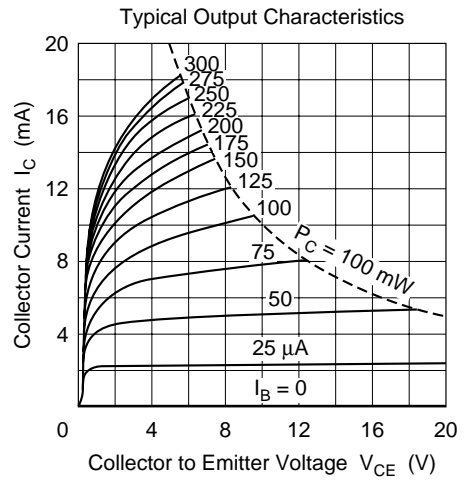
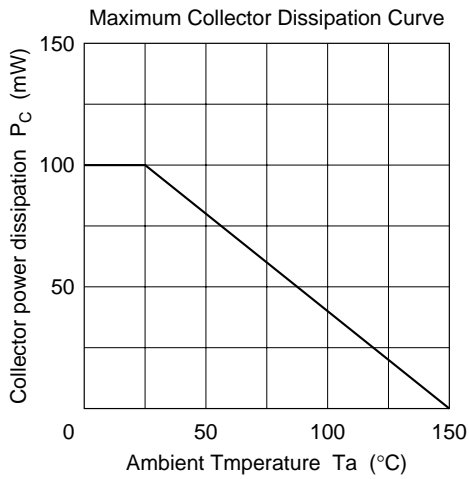
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	4	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

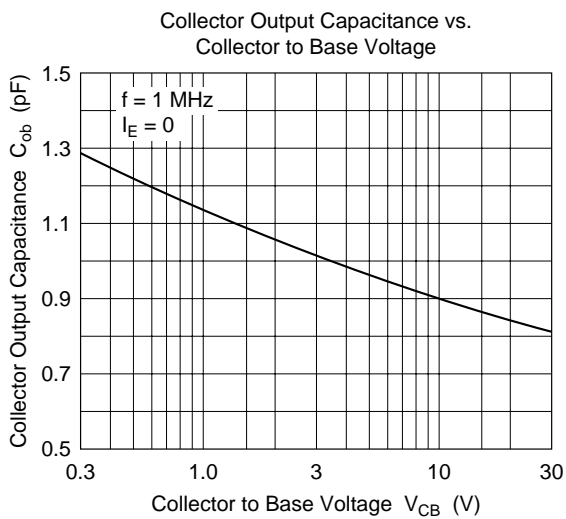
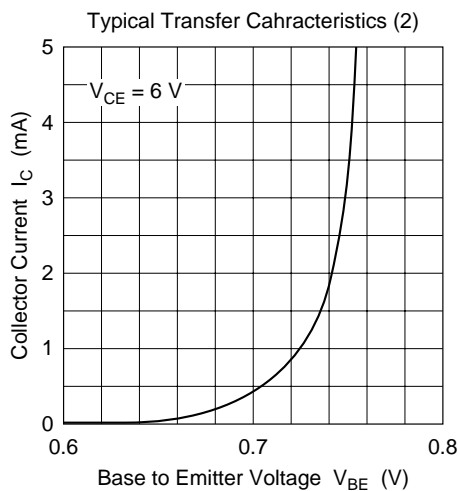
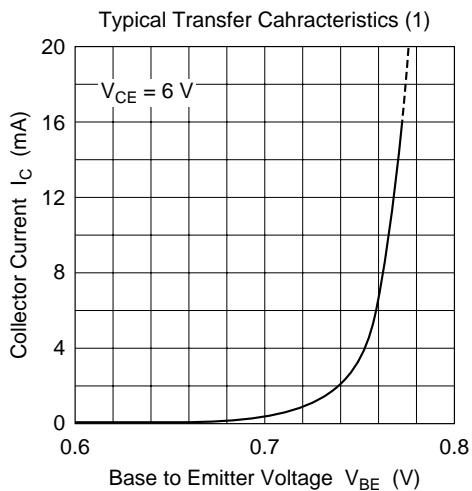
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 10 \text{ V}, I_E = 0$
DC current transfer ratio	h_{FE}^{*1}	60	—	200		$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$
Base to emitter voltage	V_{BE}	—	0.72	—	V	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.17	—	V	$I_C = 20 \text{ mA}, I_B = 4 \text{ mA}$
Gain bandwidth product	f_T	450	940	—	MHz	$V_{CE} = 6 \text{ V}, I_C = 5 \text{ mA}$
Collector output capacitance	Cob	—	0.9	1.2	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Power gain	PG	17	20	—	dB	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}$
Noise figure	NF	—	3.5	5.5	dB	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 50 \Omega$
Input admittance (typ)	yie	1.3 + j5.3			mS	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}$
Reverse transfer admittance (typ)	yre	-0.078 - j0.41			mS	
Foward transfer admittance (typ)	yfe	32 - j10			mS	
Output admittance (typ)	yoe	0.08 + j0.82			mS	

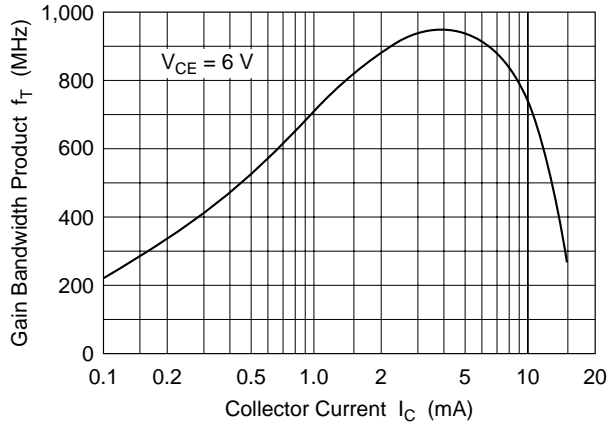
Note: 1. The 2SC535 is grouped by h_{FE} as follows.

B	C
60 to 120	100 to 200

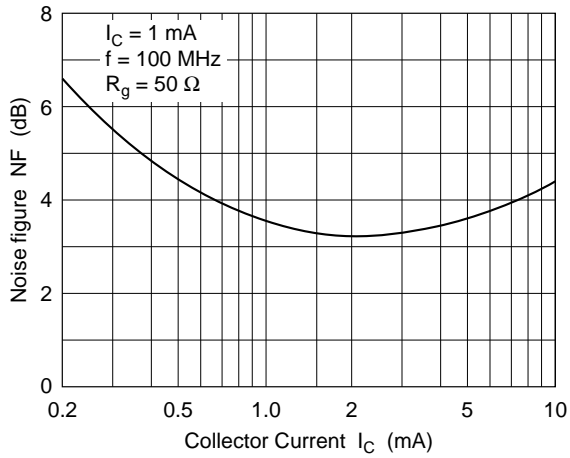




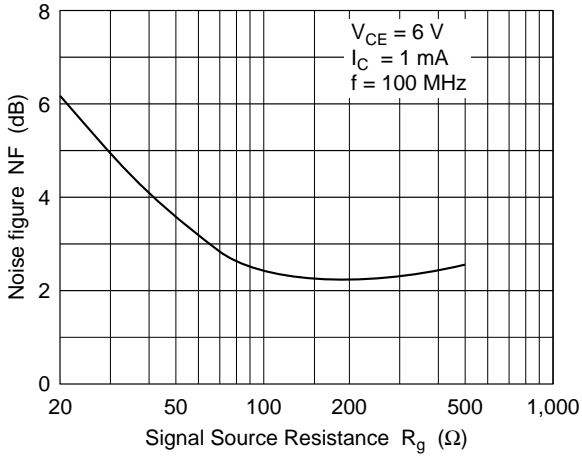
Gain Bandwidth Product vs. Collector Current



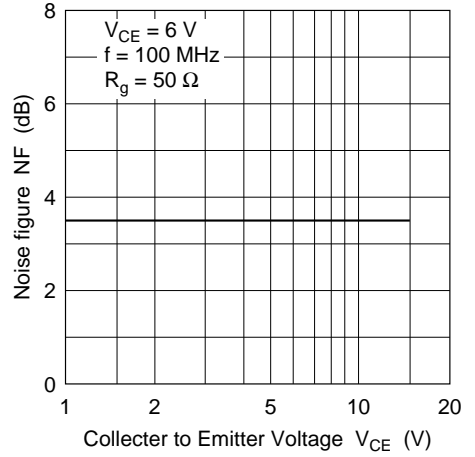
Noise Figure vs. Collector Current



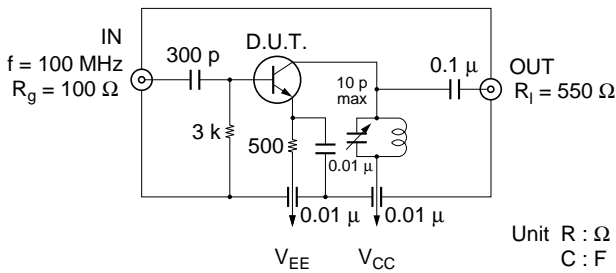
Noise Figure vs. Signal Source Resistance



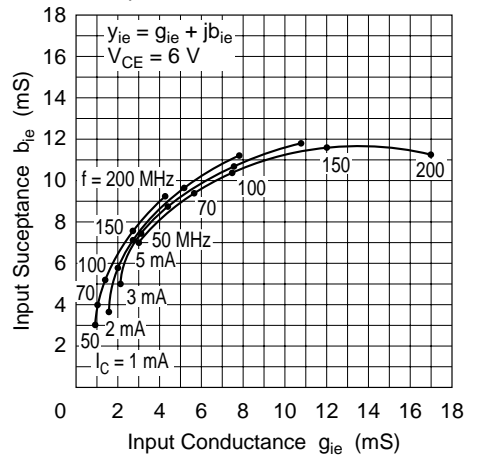
Noise Figure vs. Collector to Emitter Voltage



100 MHz Power Gain Test Circuit

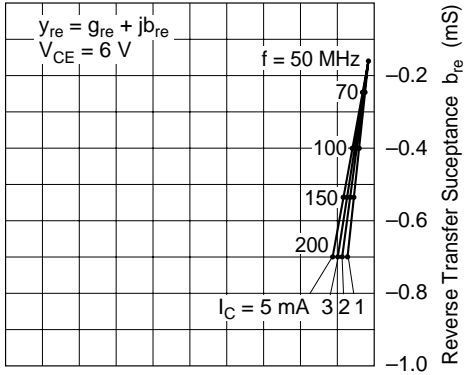


Input Admittance Characteristics



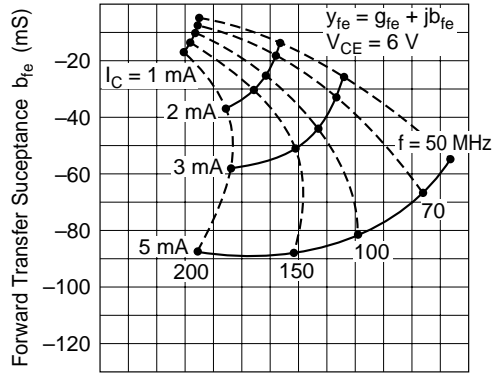
Reverse Transfer Admittance Characteristics

Reverse Transfer Conductance g_{re} (mS)
 -0.20 -0.16 -0.12 -0.08 -0.04 0

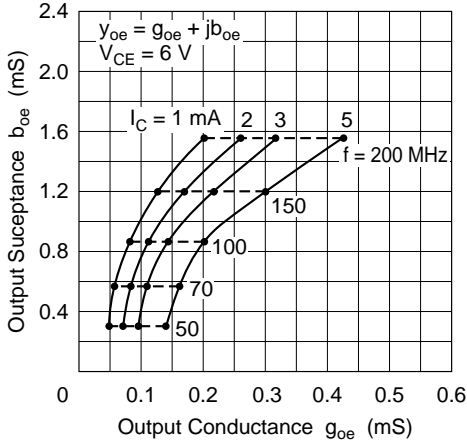


Forward Transfer Admittance Characteristics

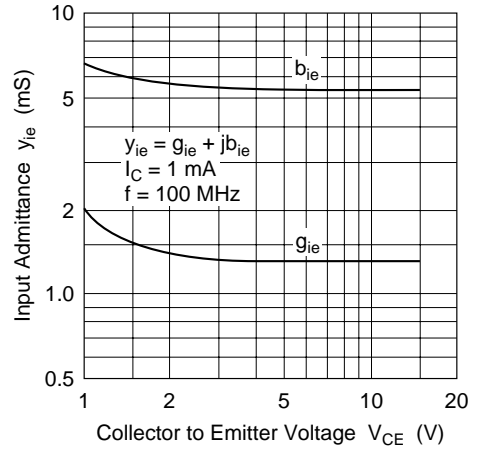
Forward Transfer Conductance g_{fe} (mS)
 0 20 40 60 80 100 120

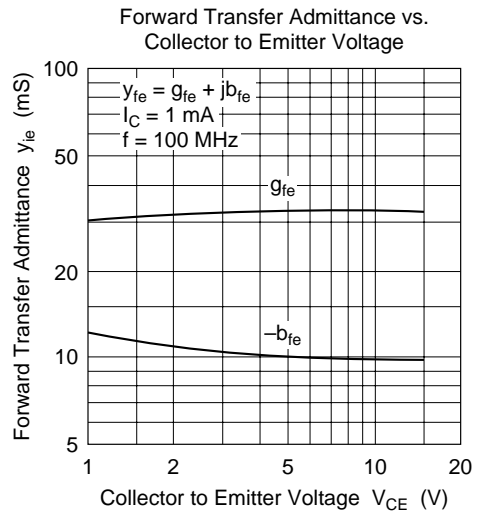
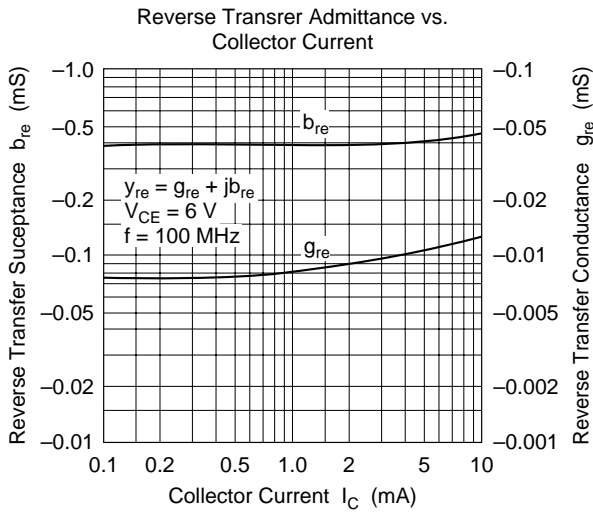
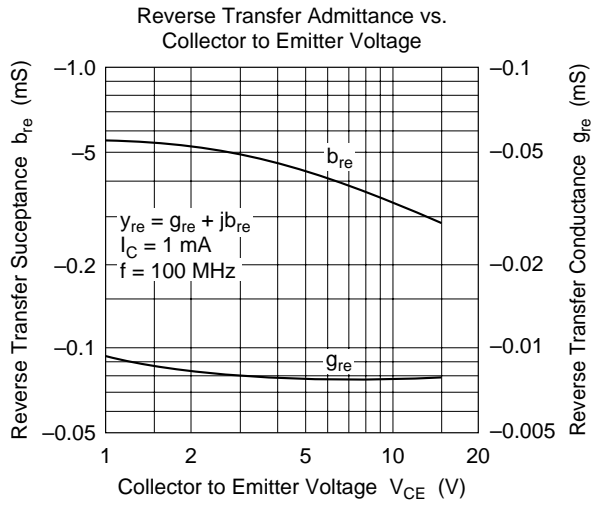
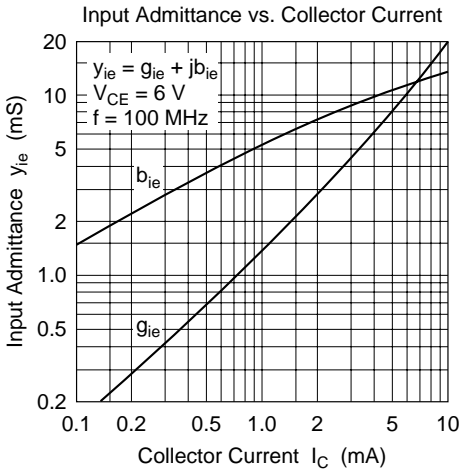


Output Admittance Characteristics

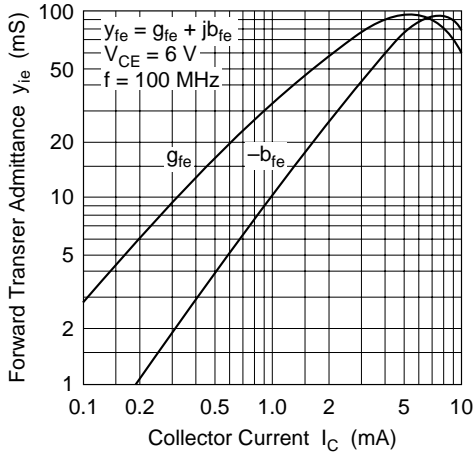


Input Admittance vs. Collector to Emitter Voltage

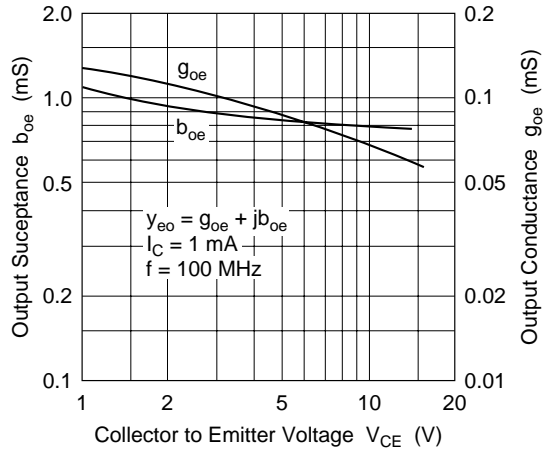




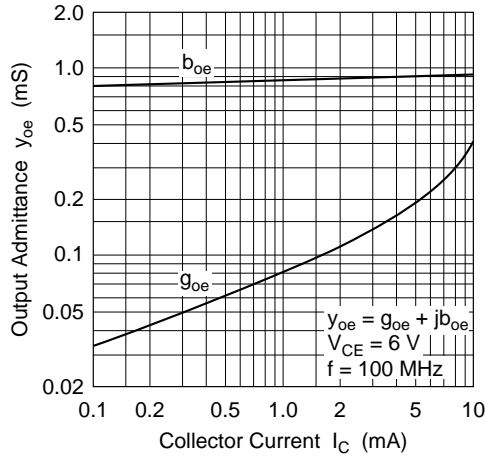
Forward Transfer Admittance vs. Collector Current



Output Admittance vs. Collector to Emitter Voltage



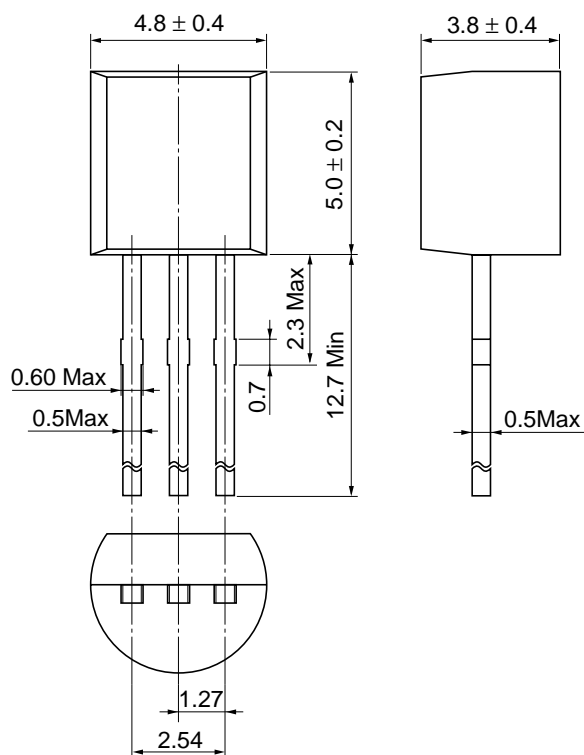
Output Admittance vs. Collector Current



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

Cautions

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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	NorthAmerica	: 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) 585160

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00,
Singapore 049318
Tel : <65>-538-6533/538-8577
Fax : <65>-538-6933/538-3877
URL : <http://www.hitachi.com.sg>

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road,
Hung-Kuo Building,
Taipei (105), Taiwan
Tel : <886>-(2)-2718-3666
Fax : <886>-(2)-2718-8180
Telex : 23222 HAS-TP
URL : <http://www.hitachi.com.tw>

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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