

# 2SJ506(L), 2SJ506(S)

Silicon P Channel MOS FET  
High Speed Power Switching

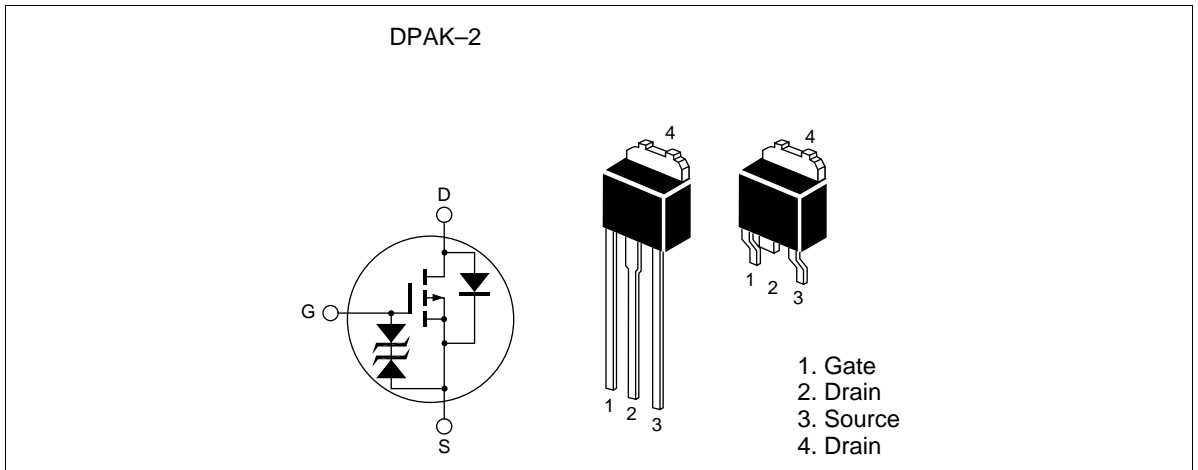
# HITACHI

ADE-208-548  
Target Specification 1st. Edition

## Features

- Low on-resistance  
 $R_{DS(on)} = 0.065 \Omega$  typ. (at  $V_{GS} = -10V$ ,  $I_D = -5A$ )
- Low drive current
- High speed switching
- 4V gate drive devices.

## Outline



## 2SJ506(L), 2SJ506(S)

### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	-30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	-10	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note1</sup>	-40	A
Body to drain diode reverse drain current	I <sub>DR</sub>	-10	A
Channel dissipation	Pch <sup>Note2</sup>	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. PW ≤ 10μs, duty cycle ≤ 1 %

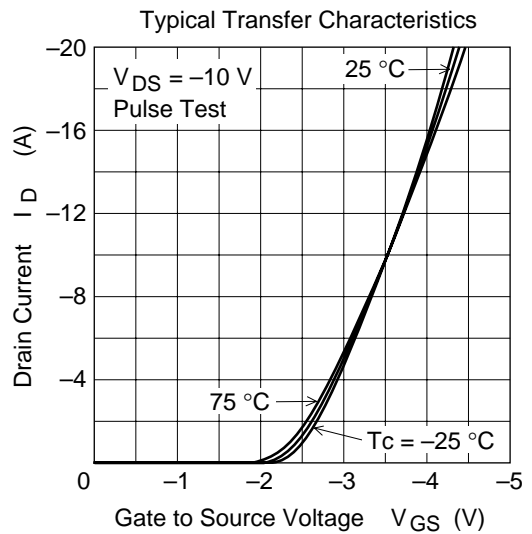
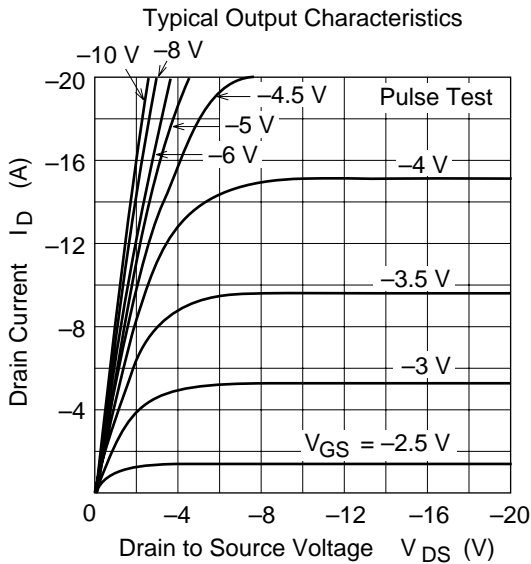
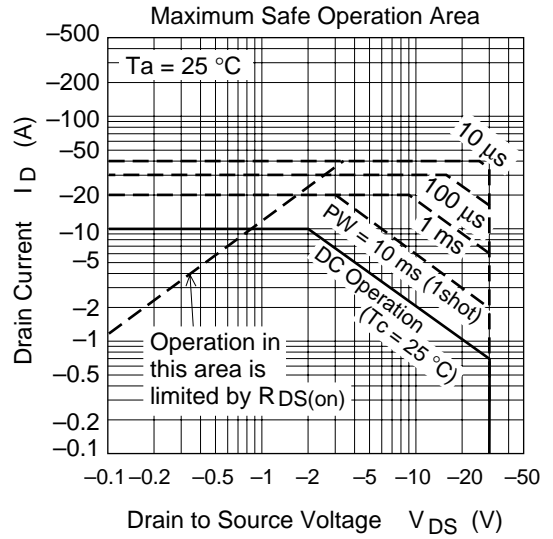
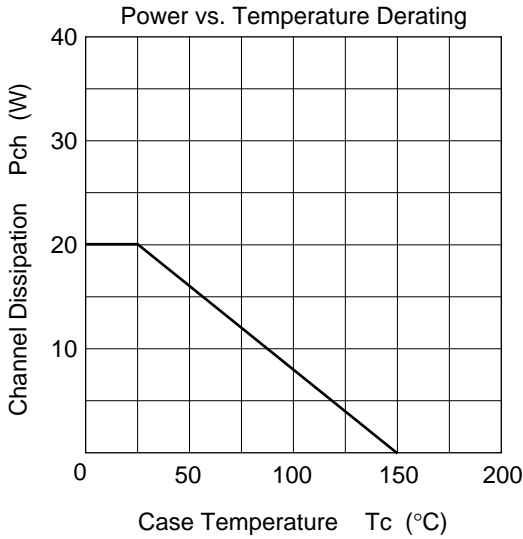
2. Value at Tc = 25°C

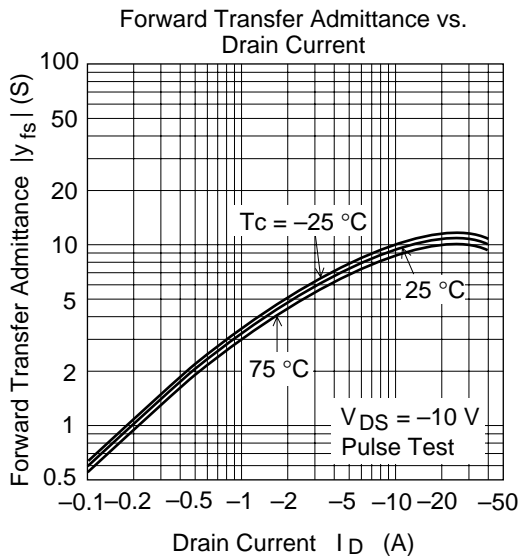
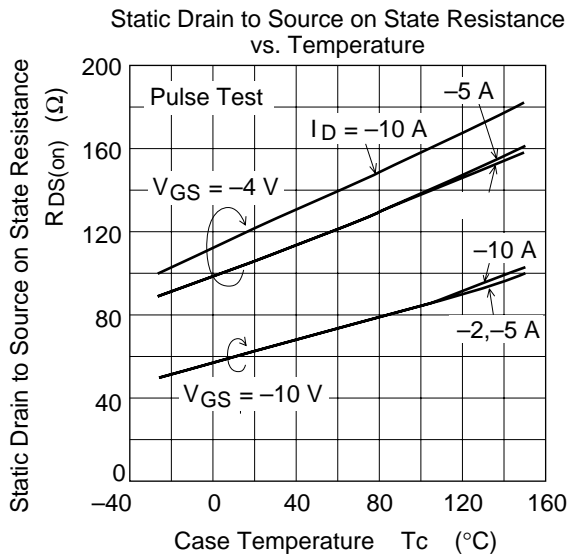
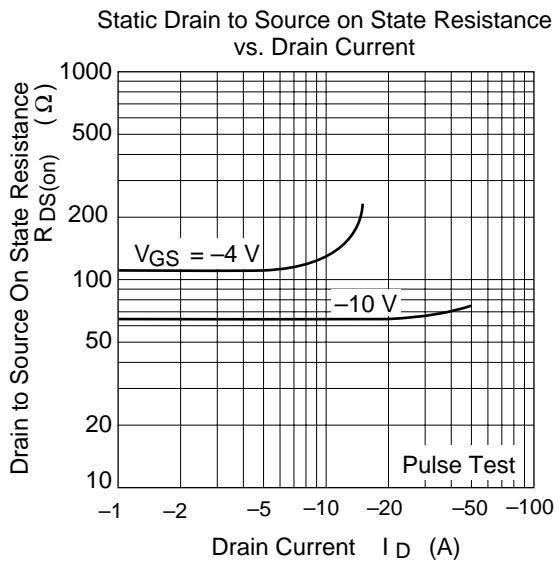
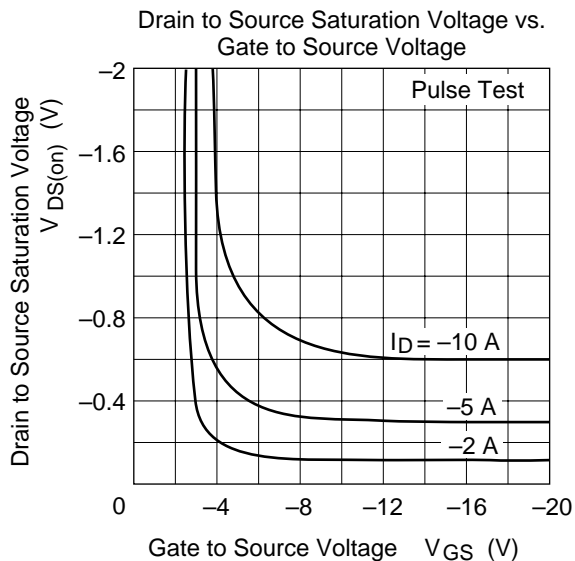
**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-30	—	—	V	$I_D = -10\text{mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	-10	μA	$V_{DS} = -30\text{V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16\text{V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.0	V	$I_D = -1\text{mA}$ , $V_{DS} = -10\text{V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	65	85	mΩ	$I_D = -5\text{A}$ , $V_{GS} = -10\text{V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	110	180	mΩ	$I_D = -5\text{A}$ , $V_{GS} = -4\text{V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	10	16	—	S	$I_D = -5\text{A}$ , $V_{DS} = -10\text{V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	660	—	pF	$V_{DS} = -10\text{V}$
Output capacitance	$C_{oss}$	—	440	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	140	—	pF	$f = 1\text{MHz}$
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$I_D = -5\text{A}$ , $R_L = 2\Omega$
Rise time	$t_r$	—	65	—	ns	$V_{GS} = -10\text{V}$
Turn-off delay time	$t_{d(off)}$	—	85	—	ns	
Fall time	$t_f$	—	65	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	-1.05	—	V	$I_F = -10\text{A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	65	—	ns	$I_F = -10\text{A}$ , $V_{GS} = 0$ $diF/dt = 50\text{A}/\mu\text{s}$

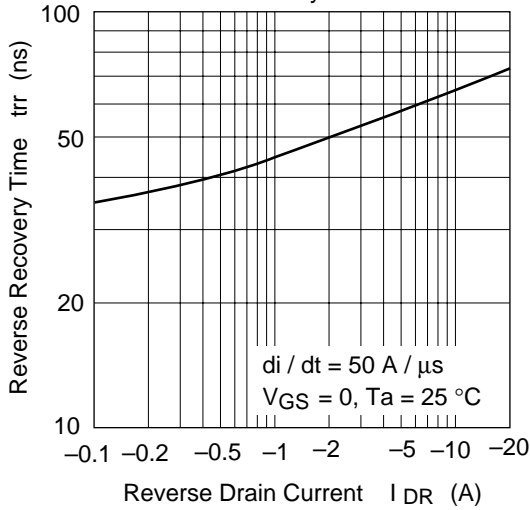
Note: 3. Pulse test

## Main Characteristics

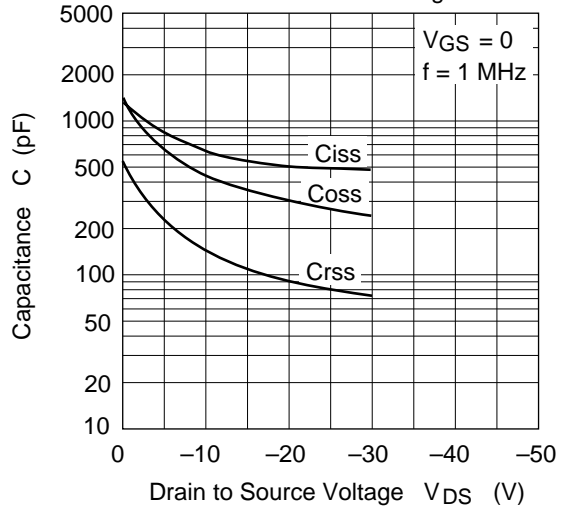




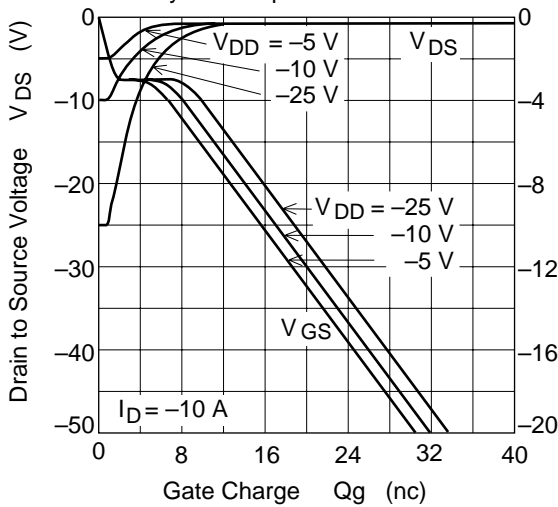
Body to Drain Diode Reverse Recovery Time



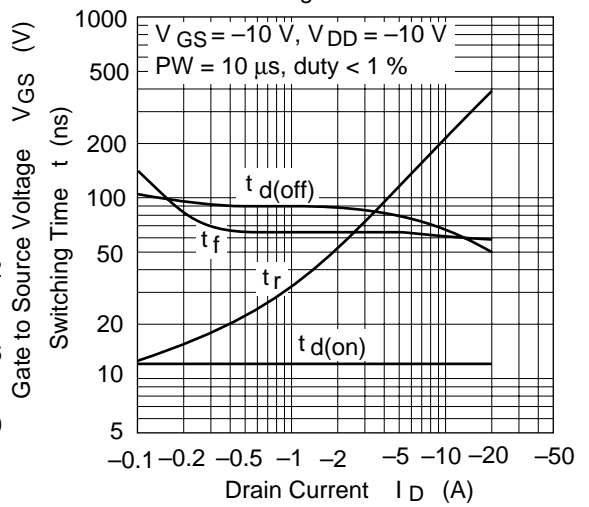
Typical Capacitance vs. Drain to Source Voltage

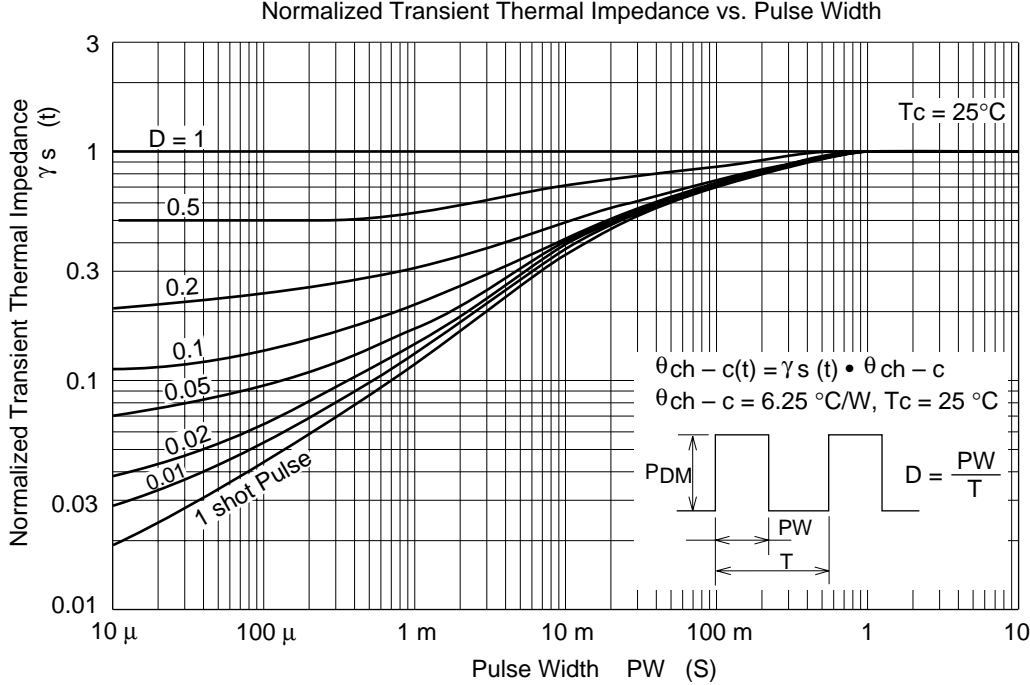
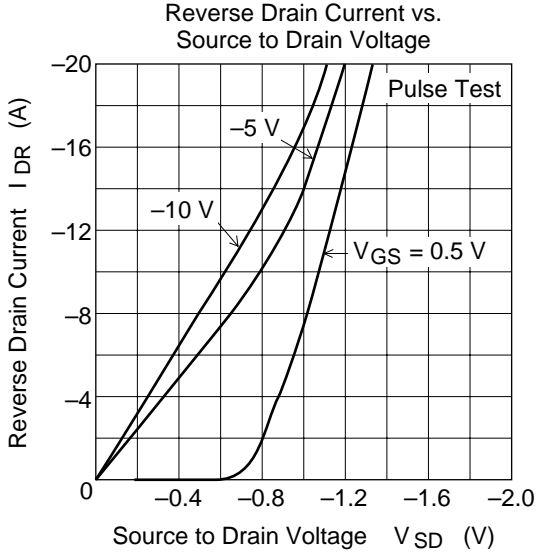


Dynamic Input Characteristics

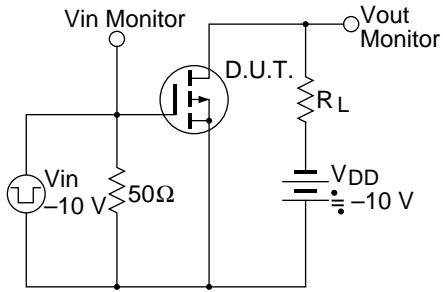


Switching Characteristics

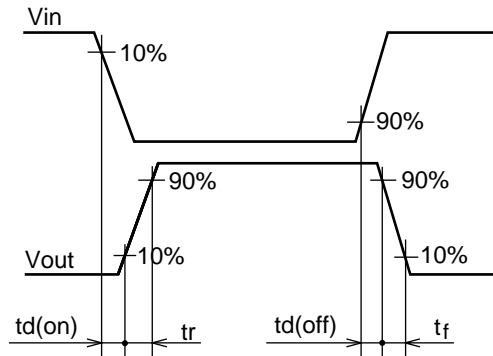




### Switching Time Test Circuit



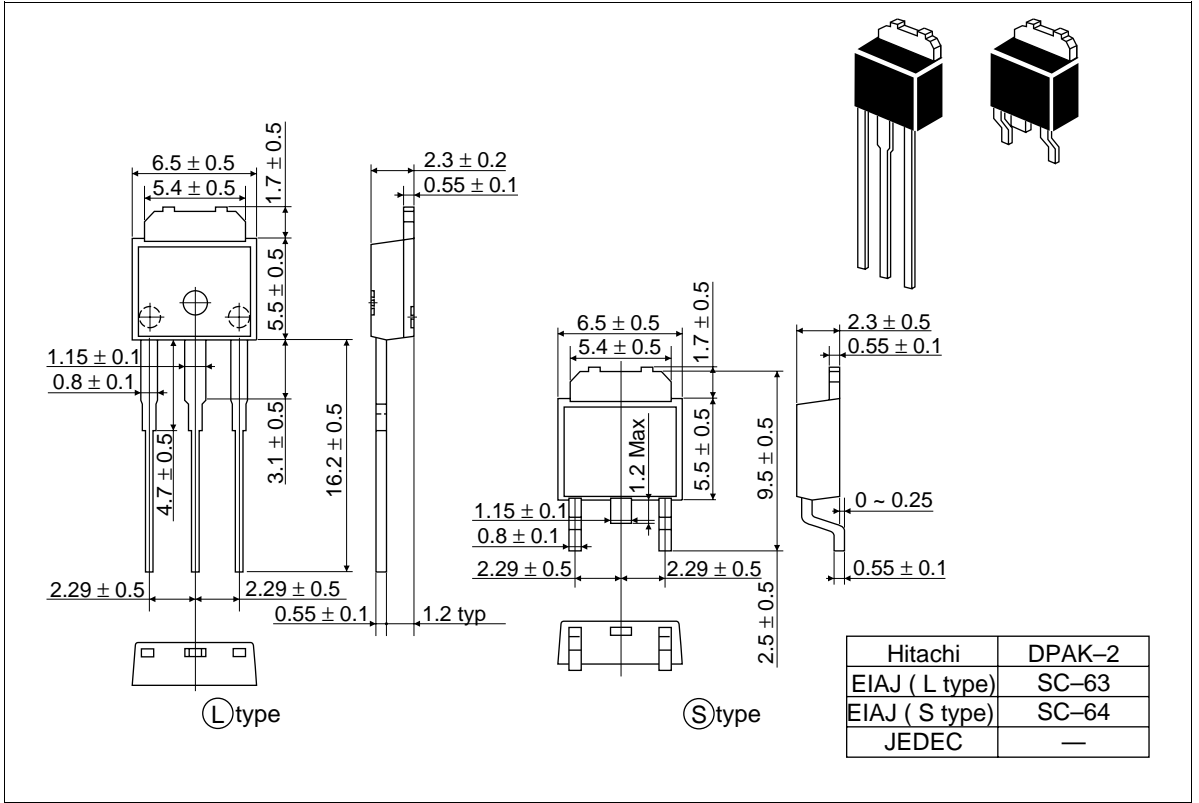
### Waveforms





Package Dimensions

Unit: mm



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## 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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