2SK1151(L)(S), 2SK1152(L)(S)

Silicon N-Channel MOS FET

HITACHI

Application

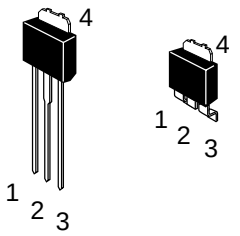
High speed power switching

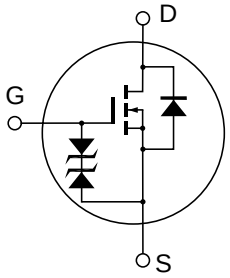
Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

Outline

DPAK-1





1. Gate
2. Drain
3. Source
4. Drain

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Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1151	V_{DSS}	450	V
	2SK1152		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	1.5	A
Drain peak current		$I_{D(pulse)}$*[1]	6	A
Body to drain diode reverse drain current		I_{DR}	1.5	A
Channel dissipation		Pch*[2]	20	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	–55 to +150	°C

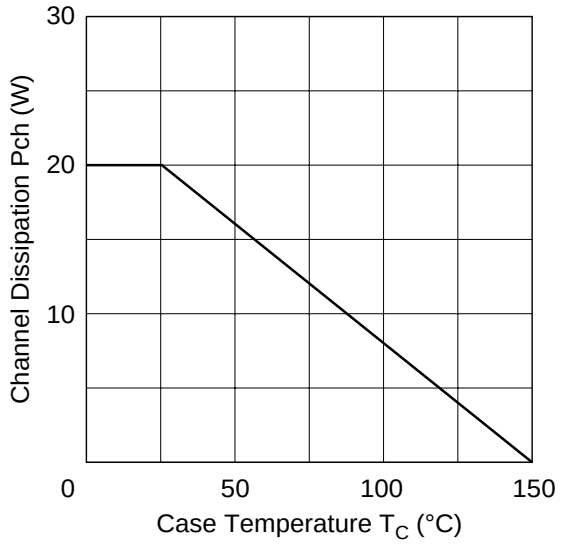
Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at T_C = 25°C

Electrical Characteristics (Ta = 25°C)

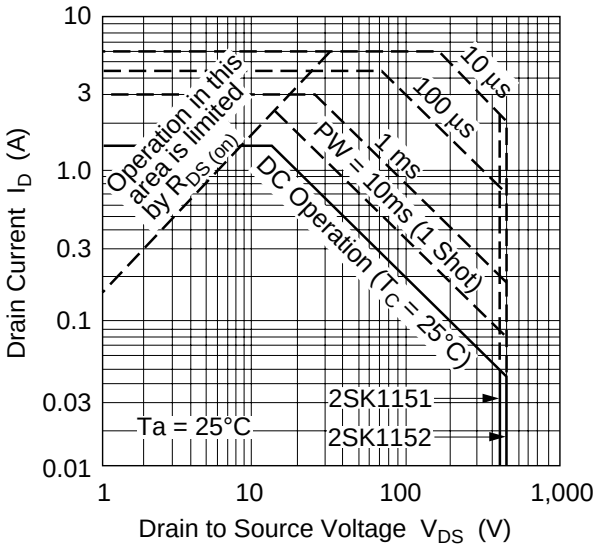
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1151	$V_{(BR)DSS}$	450	—	—	V	I_D = 10 mA, V_{GS} = 0
	2SK1152		500				
Gate to source breakdown voltage		$V_{(BR)GSS}$	±30	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current		I_{GSS}	—	—	±10	µA	V_{GS} = ±25 V, V_{DS} = 0
Zero gate voltage drain current	2SK1151	I_{DSS}	—	—	100	µA	V_{DS} = 360 V, V_{GS} = 0
	2SK1152						V_{DS} = 400 V, V_{GS} = 0
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	I_D = 1 mA, V_{DS} = 10 V
Static Drain to source on stateresistance	2SK1151	$R_{DS(on)}$	—	3.5	5.5	Ω	I_D = 1 A, V_{GS} = 10 V *[1]
	2SK1152		—	4.0	6.0		
Forward transfer admittance		|yfs|	0.6	1.1	—	S	I_D = 1 A, V_{DS} = 20 V *[1]
Input capacitance		Ciss	—	160	—	pF	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz
Output capacitance		Coss	—	45	—	pF	
Reverse transfer capacitance		Crss	—	5	—	pF	
Turn-on delay time		$t_{d(on)}$	—	5	—	ns	I_D = 1 A, V_{GS} = 10 V, R_L = 30 Ω
Rise time		t_r	—	10	—	ns	
Turn-off delay time		$t_{d(off)}$	—	20	—	ns	
Fall time		t_f	—	10	—	ns	
Body to drain diode forward voltage		V_{DF}	—	1.0	—	V	I_F = 1.5 A, V_{GS} = 0
Body to drain diode reverse recovery time		t_{rr}	—	220	—	ns	I_F = 1.5 A, V_{GS} = 0, di_F/dt = 100 A/µs

Note: 1. Pulse test

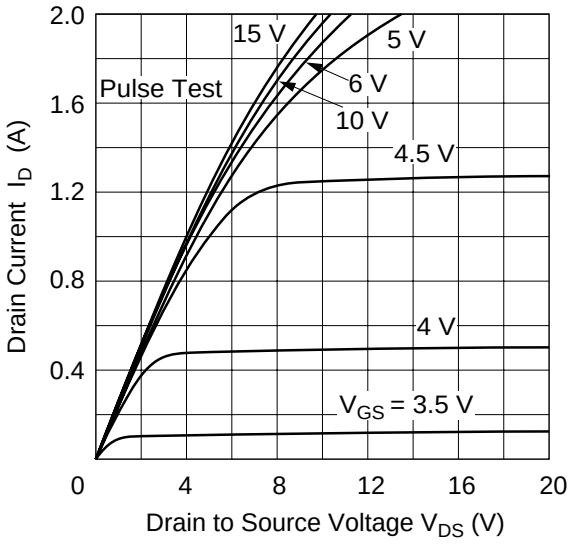
Power vs. Temperature Derating



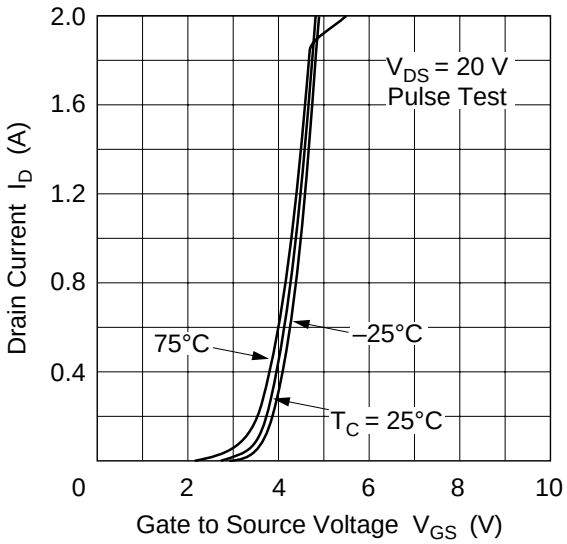
Maximum Safe Operation Area



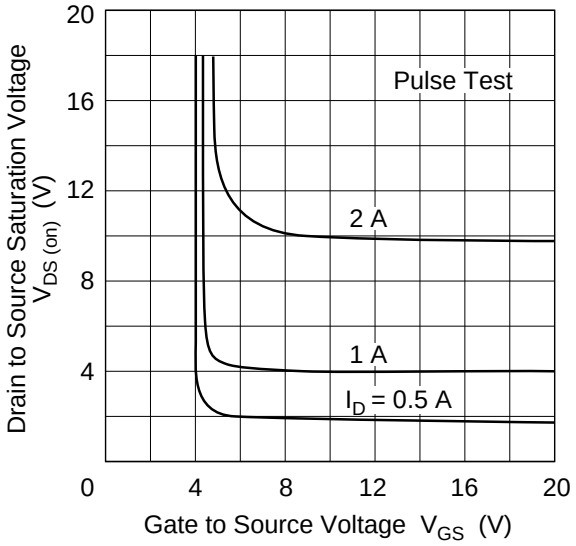
Typical Output Characteristics



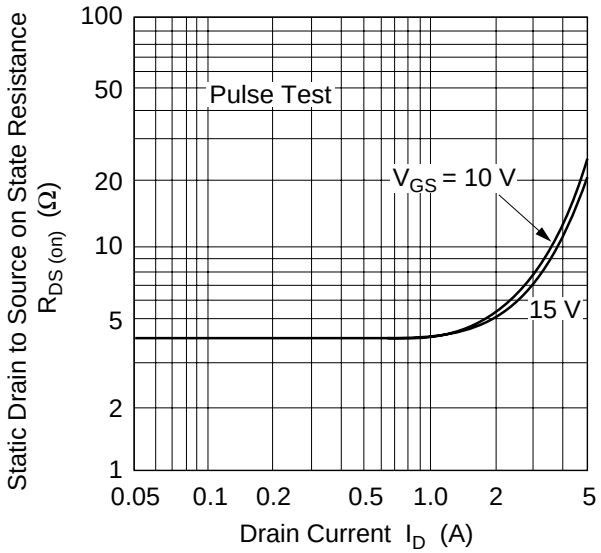
Typical Transfer Characteristics



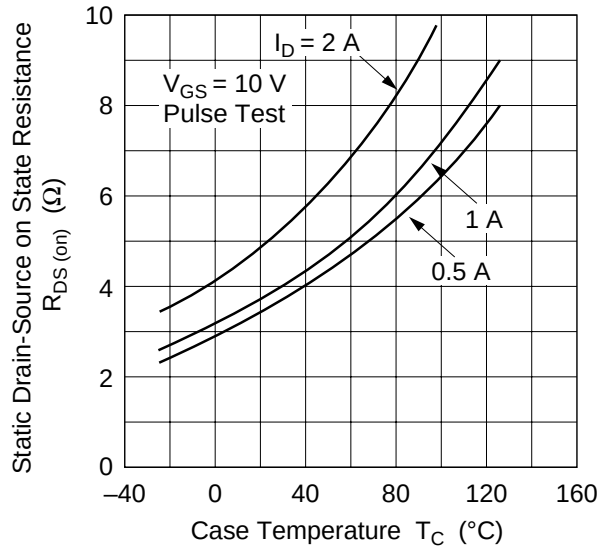
Drain to Source Saturation Voltage vs. Gate to Source Voltage



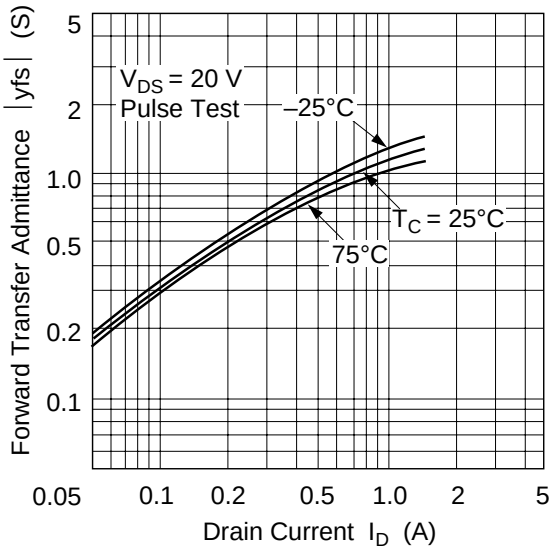
Static Drain to Source on State Resistance vs. Drain Current



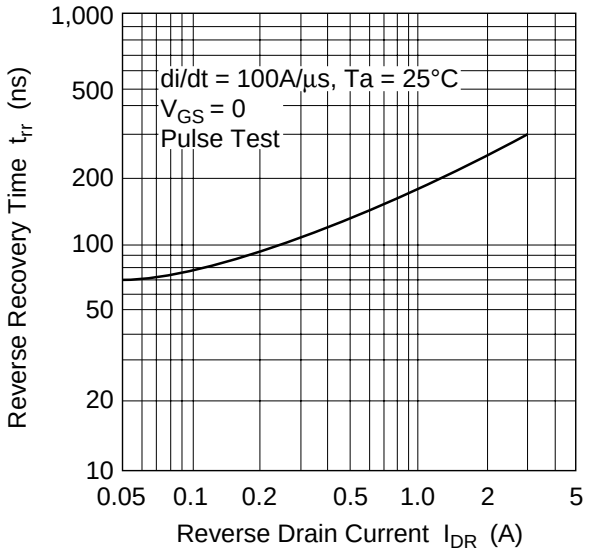
Static Drain to Source on State Resistance vs. Temperature



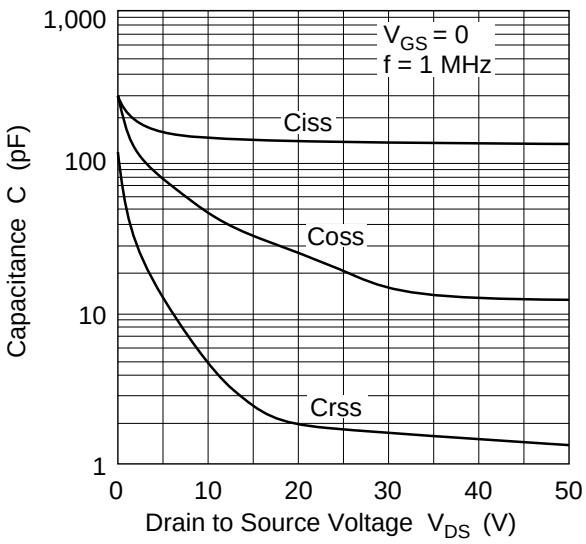
Forward Transfer Admittance vs. Drain Current



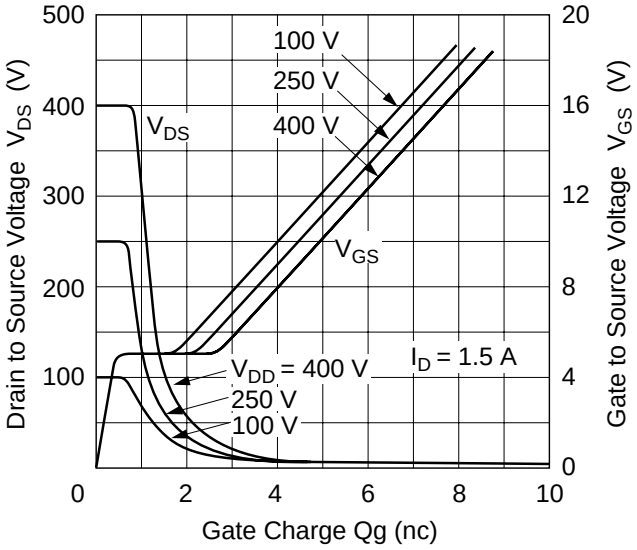
Body to Drain Diode Reverse Recovery Time



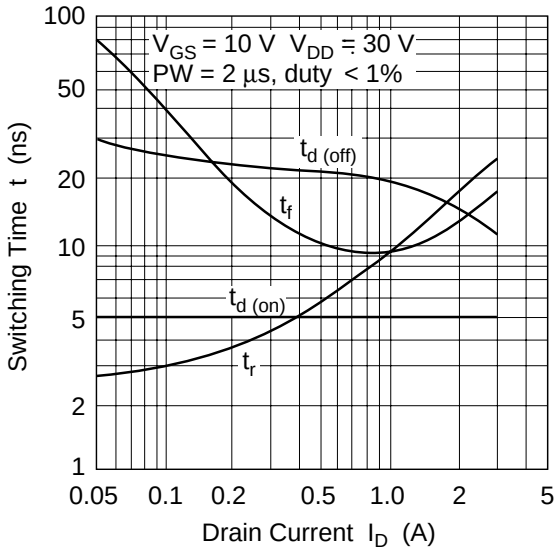
Typical Capacitance vs. Drain to Source Voltage



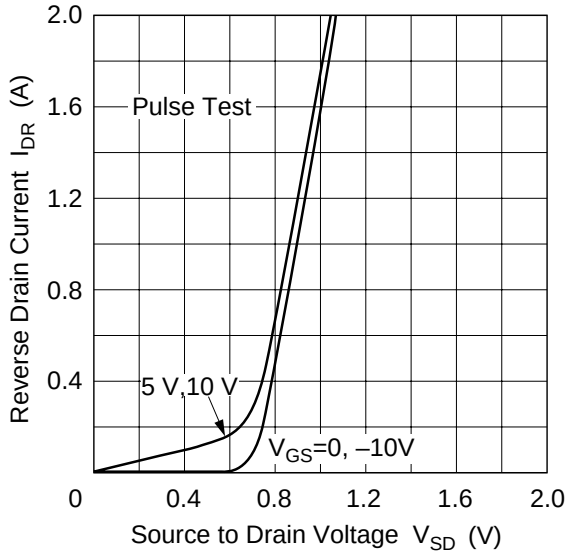
Dynamic Input Characteristics



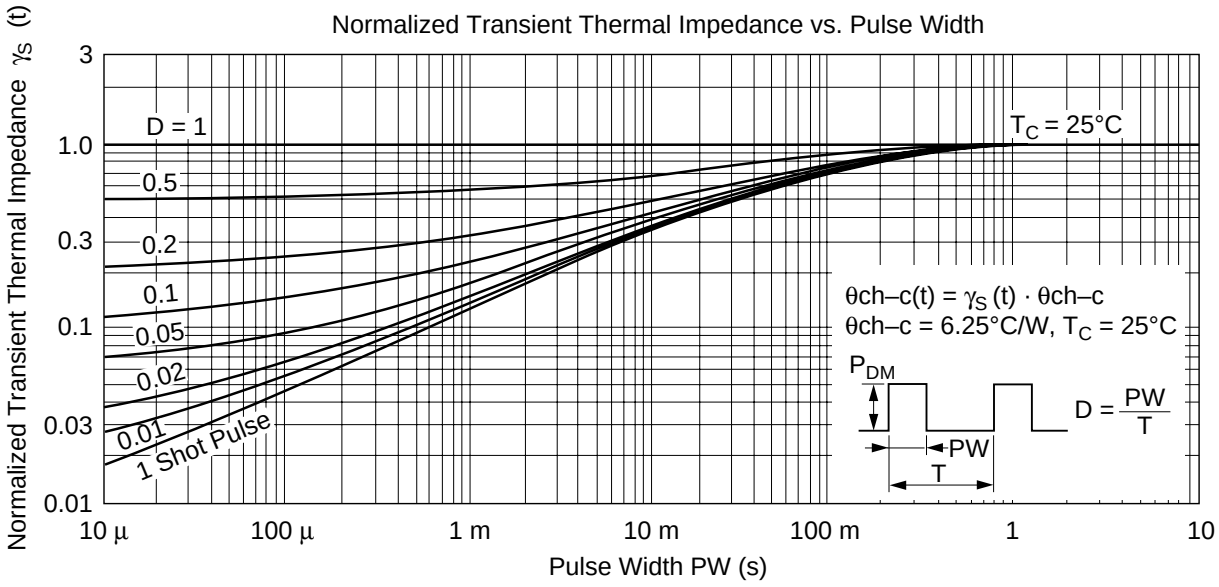
Switching Characteristics



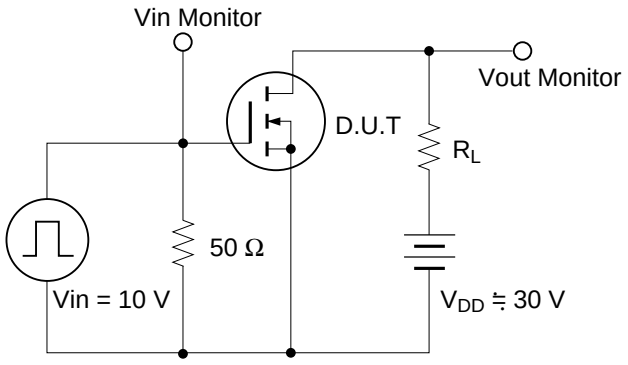
Reverse Drain Current vs.
Source to Drain Voltage



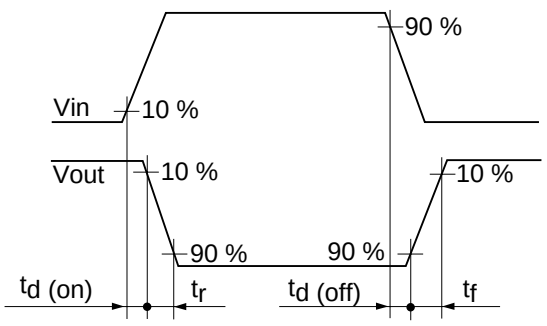
Normalized Transient Thermal Impedance vs. Pulse Width



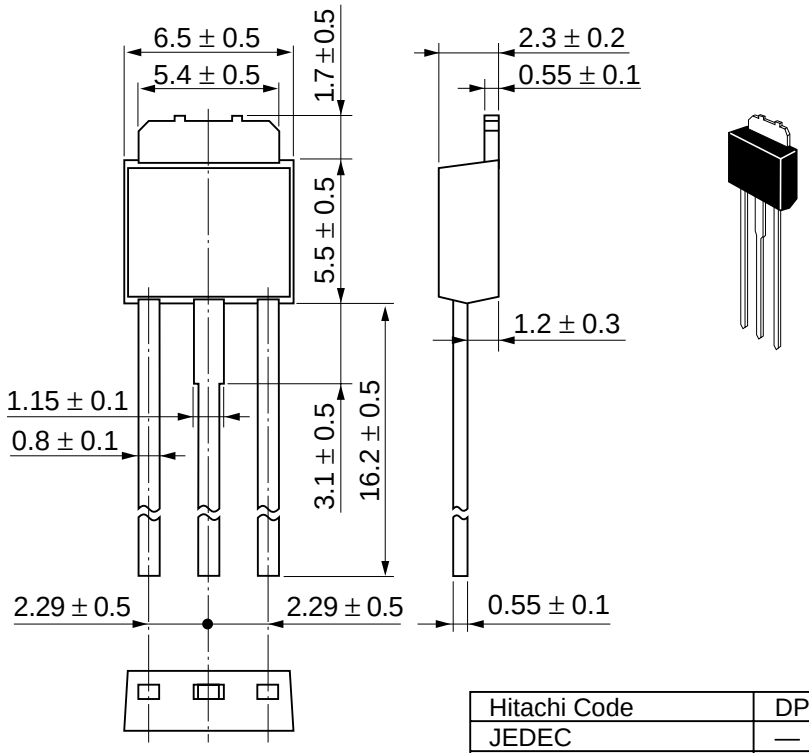
Switching Time Test Circuit



Wavewforms



Unit: mm



Hitachi Code	DPAK (L)-(1)
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.42 g

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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/
Europe : http://www.hitachi-eu.com/hel/ecg
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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 Stra§e 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