

2SK3147(L),2SK3147(S)

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

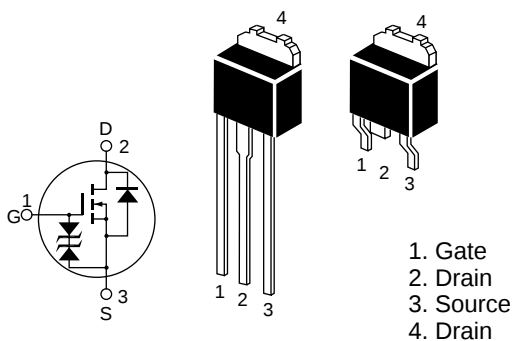
ADE-208-731 (Z)
1st. Edition
February 1999

Features

- Low on-resistance
 $R_{DS} = 0.1 \Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

DPAK-2



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	100	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	5	A
Drain peak current	I _{D(pulse)} ^{Note1}	20	A
Body-drain diode reverse drain current	I _{DR}	5	A
Avalanche current	I _{AP} ^{Note3}	5	A
Avalanche energy	E _{AR} ^{Note3}	2.5	mJ
Channel dissipation	P _{ch} ^{Note2}	20	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

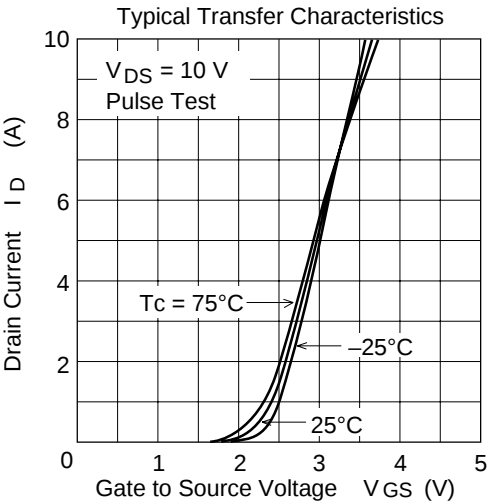
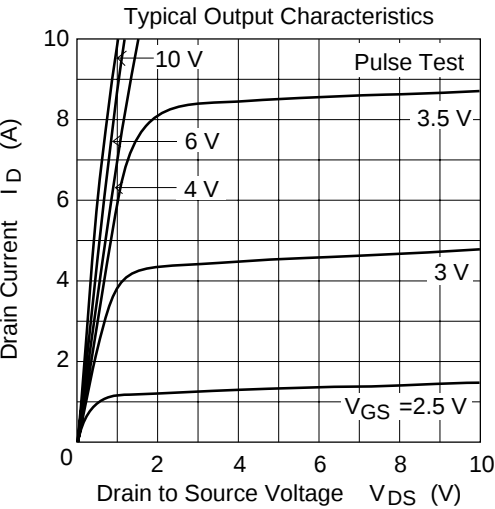
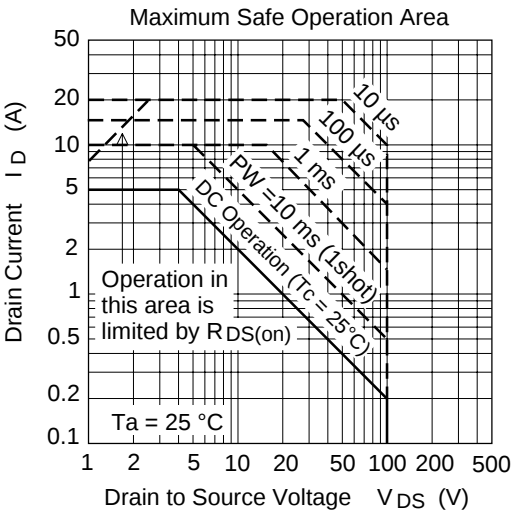
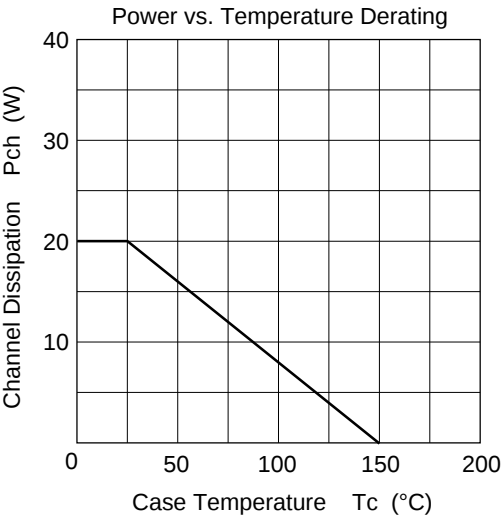
Note: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

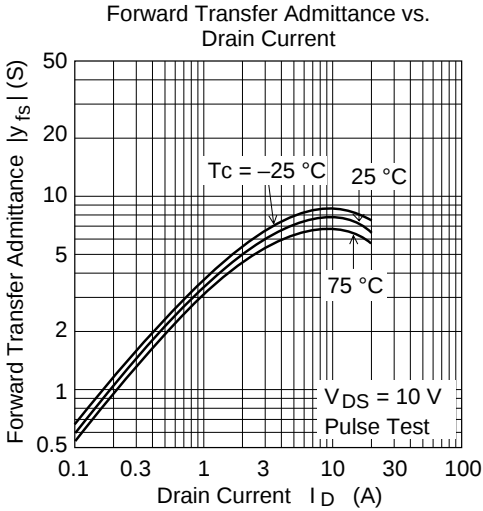
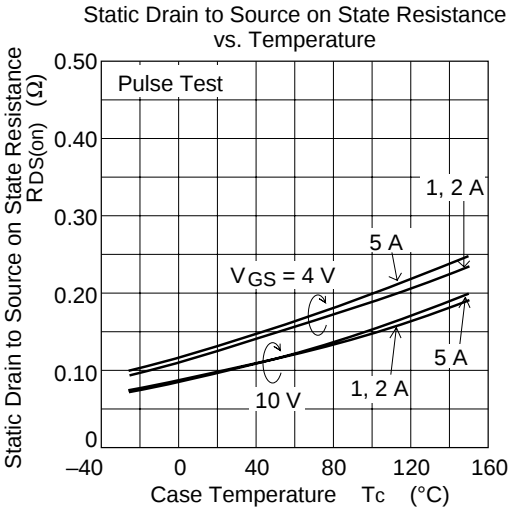
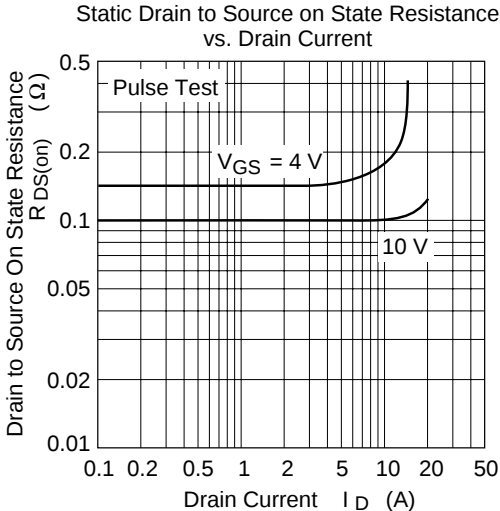
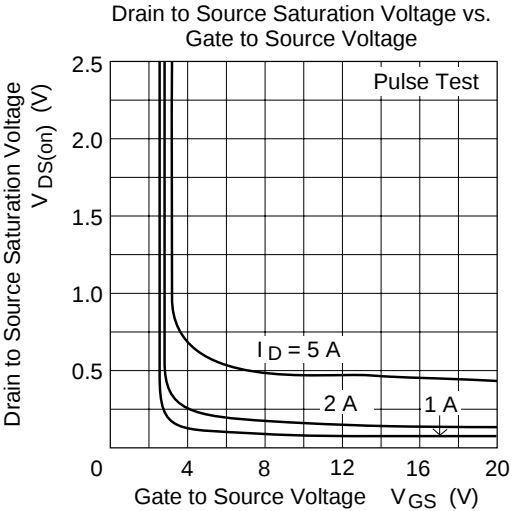
Electrical Characteristics (Ta = 25°C)

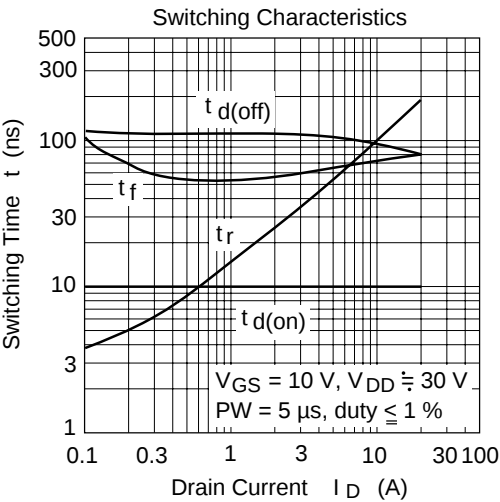
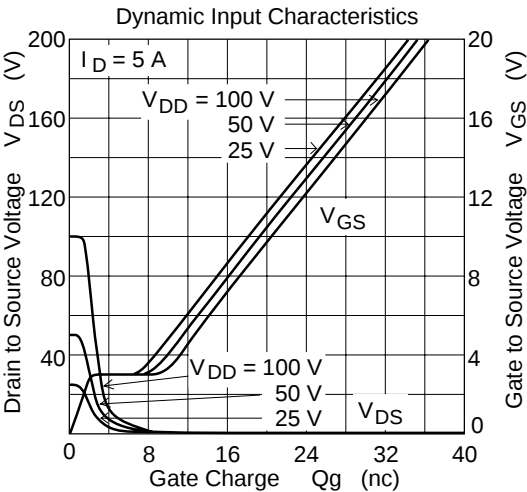
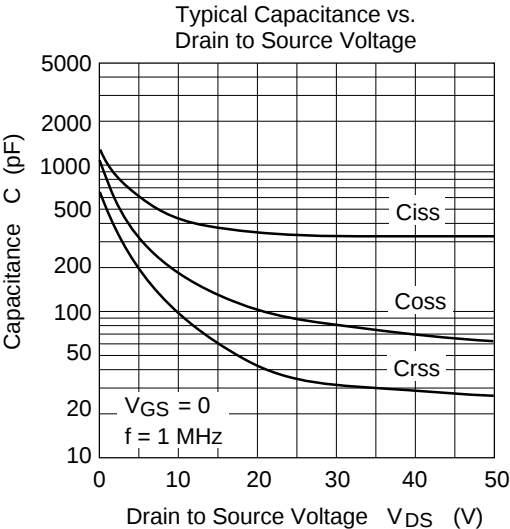
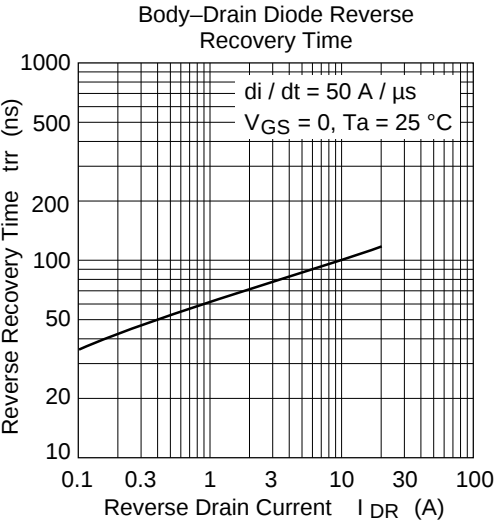
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	100	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 100 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.0	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS(on)}	—	0.1	0.13	Ω	I _D = 3 A, V _{GS} = 10 V ^{Note4}
	R _{DS(on)}	—	0.13	0.18	Ω	I _D = 3 A, V _{GS} = 4 V ^{Note4}
Forward transfer admittance	y _{fs}	3.5	6	—	S	I _D = 3 A, V _{DS} = 10 V ^{Note4}
Input capacitance	Ciss	—	420	—	pF	V _{DS} = 10 V
Output capacitance	Coss	—	185	—	pF	V _{GS} = 0
Reverse transfer capacitance	Crss	—	100	—	pF	f = 1 MHz
Turn-on delay time	t _{d(on)}	—	10	—	ns	I _D = 3 A, V _{GS} = 10 V
Rise time	t _r	—	35	—	ns	R _L = 10 Ω
Turn-off delay time	t _{d(off)}	—	110	—	ns	
Fall time	t _f	—	60	—	ns	
Body–drain diode forward voltage	V _{DF}	—	0.85	—	V	I _F = 5 A, V _{GS} = 0
Body–drain diode reverse recovery time	t _{rr}	—	85	—	ns	I _F = 5 A, V _{GS} = 0 diF/ dt = 50 A/ μs

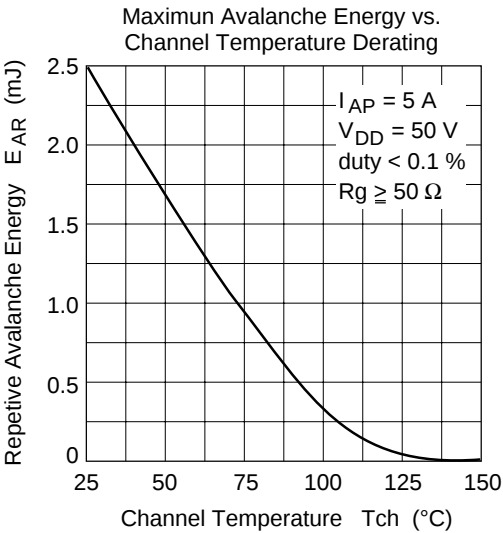
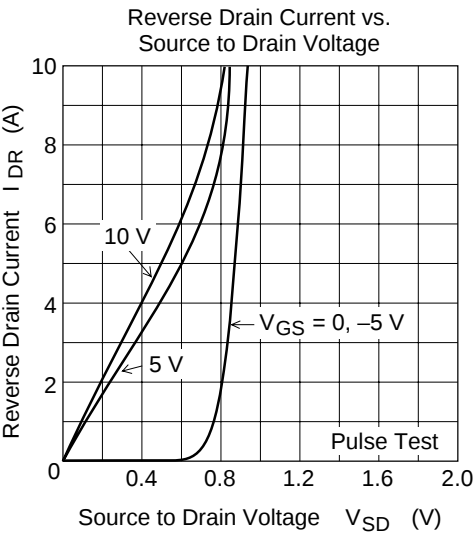
Note: 4. Pulse test

Main Characteristics

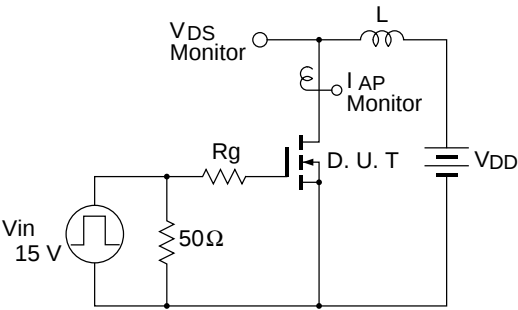




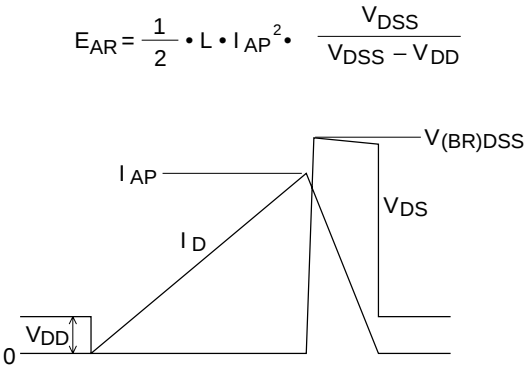


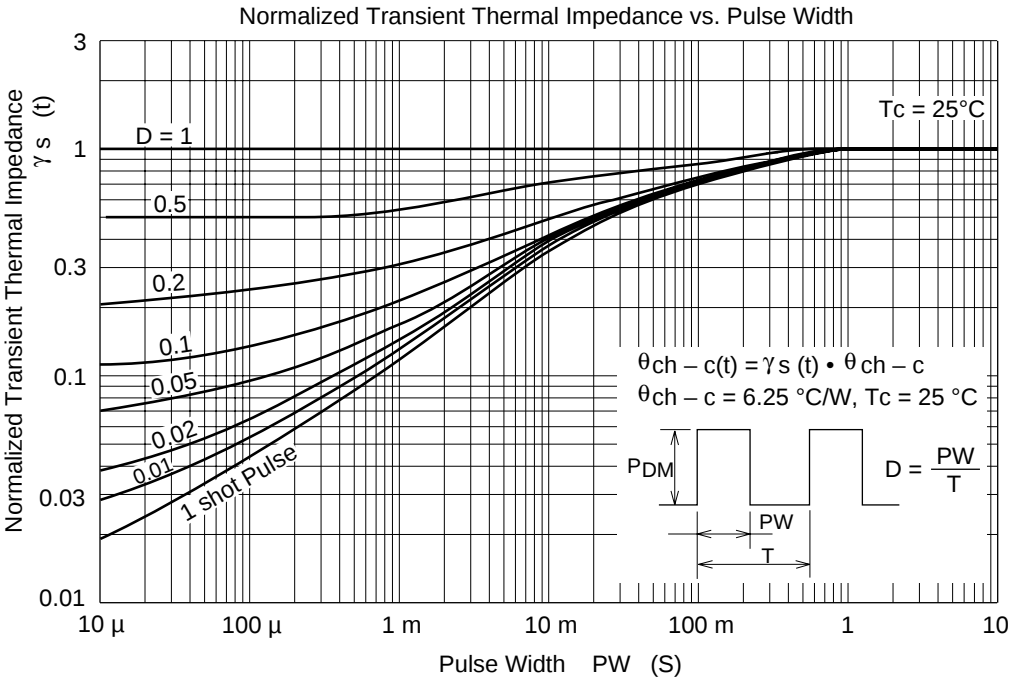


Avalanche Test Circuit

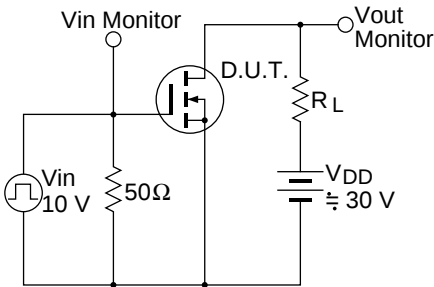


Avalanche Waveform

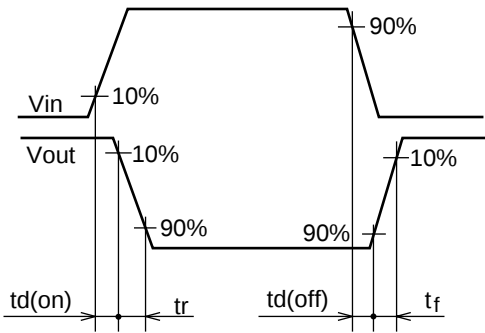




Switching Time Test Circuit

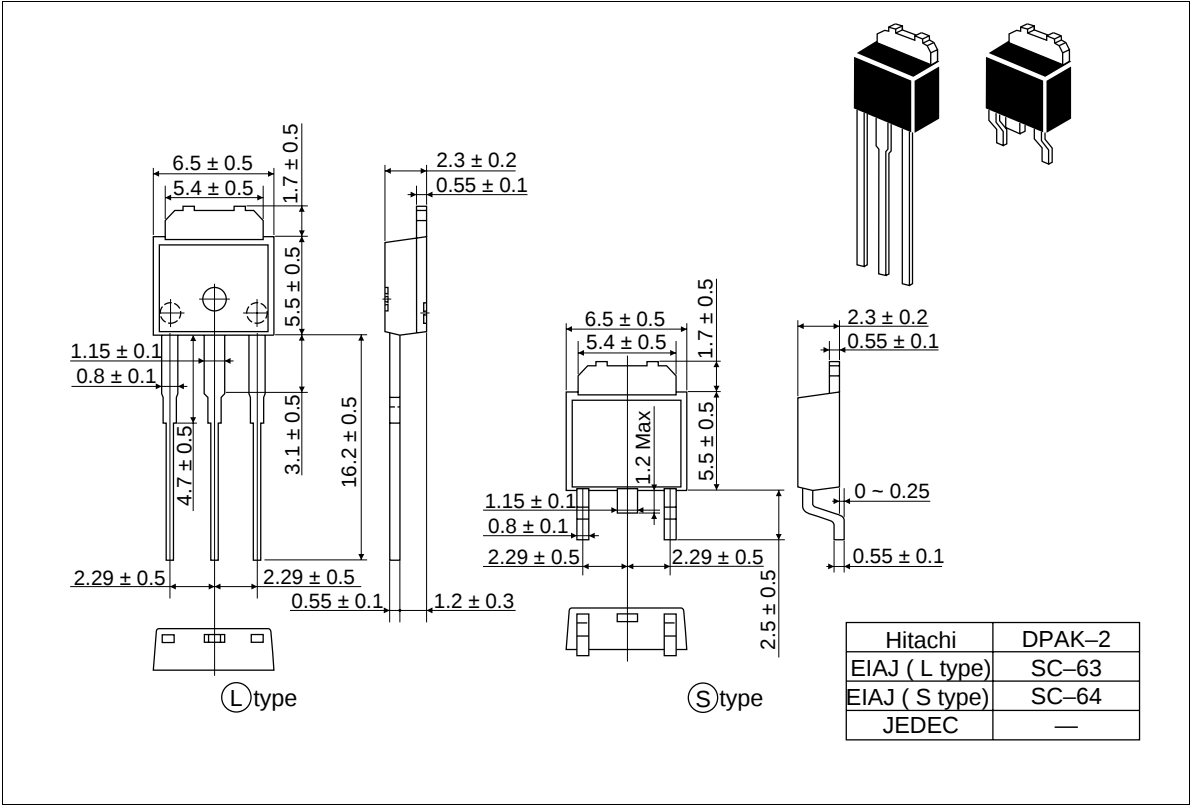


Waveform



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

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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
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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
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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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