

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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## HIGH COLLECTOR VOLTAGE 6PIN PHOTO COUPLER

### DESCRIPTION

PS2631, PS2631L are optically coupled isolators containing a GaAs light emitting diode and a silicon photo transistor.

PS2631 is in a plastic DIP (Dual In-line Package).

PS2631L is lead bending type (Gull-wing) for surface mount.

### FEATURES

- High input to output isolation voltage. (BV: 5 kV<sub>r.m.s.</sub> MIN.)
- High collector to emitter voltage (V<sub>CEO</sub>). (V<sub>CEO</sub>: 200 V MIN.)
- High speed switching (t<sub>r</sub>, t<sub>f</sub> = 10 μs TYP.)
- UL recognized [File No. E72422 (S)]
- Taping Product number (PS2631L-E3, E4)

### APPLICATIONS

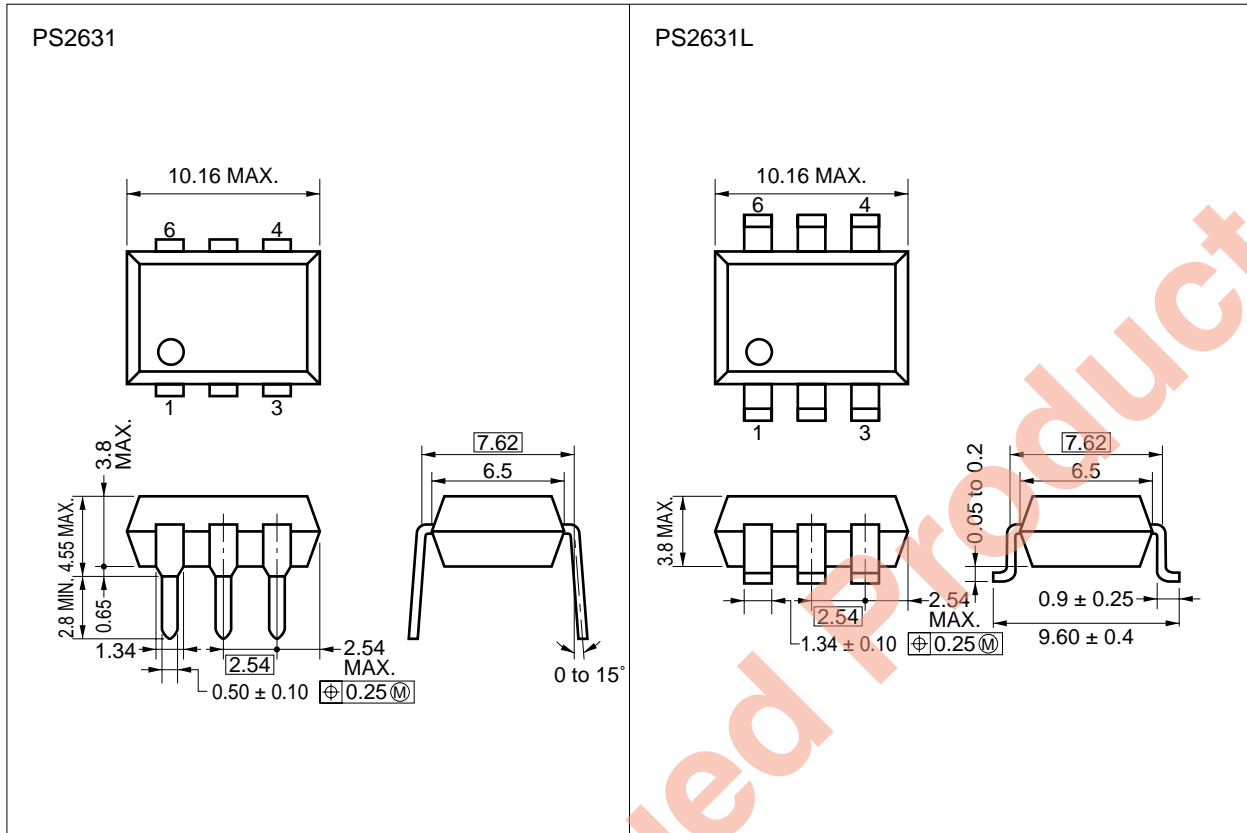
Interface circuit for various instrumentations, control equipments.

- AC Line/Digital Logic ..... Isolate high voltage transient
- Digital Logic/Digital Logic ..... Eliminate spurious ground loops
- Twisted Pair line receiver ..... Eliminate ground loop pick-up
- Telephone/Telegraph line receiver ..... Isolate high voltage transient
- High Frequency Power Supply Feedback Control .... Maintain floating ground

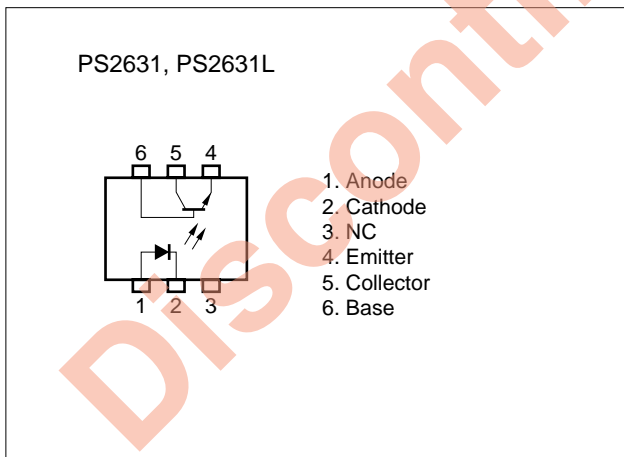
PACKAGE DIMENSIONS (Unit: mm)

DIP (Dual In-line Package)

Lead Bending type (Gull-wing)



PIN CONNECTION (Top View)



**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C)**

Diode

Reverse Voltage	V <sub>R</sub>	6	V
Forward Current	I <sub>F</sub>	80	mA
Power Dissipation Temperature Coefficient	ΔP <sub>D</sub> /°C	1.5	mW/°C
Power Dissipation	P <sub>D</sub>	150	mW

Transistor

Collector to Emitter Voltage	V <sub>CEO</sub>	200	V
Emitter to Collector Voltage	V <sub>ECO</sub>	6	V
Collector Current	I <sub>C</sub>	50	mA
Power Dissipation Temperature Coefficient	ΔP <sub>C</sub> /°C	3.0	mW/°C
Power Dissipation	P <sub>C</sub>	300	mW

Isolation Voltage\*1)

BV	5 000	V <sub>ac</sub>
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Storage Temperature

T <sub>stg</sub>	-55 to +150	°C
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Operating Temperature

T <sub>opt</sub>	-55 to +100	°C
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\*1) AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V <sub>F</sub>		1.1	1.4	V	I <sub>F</sub> = 10 mA
	Reverse Current	I <sub>R</sub>			5	μA	V <sub>R</sub> = 5 V
	Capacitance	C <sub>t</sub>		50		pF	V = 0, f = 1.0 MHz
Transistor	Collector to Emitter Dark Current	I <sub>CEO</sub>			200	nA	V <sub>CE</sub> = 200 V, I <sub>F</sub> = 0
	DC Current Gain	h <sub>FE</sub>		300			I <sub>C</sub> = 2 mA, V <sub>CE</sub> = 5.0 V
Coupled	Current Transfer Ratio*2)	CTR (I <sub>C</sub> /I <sub>F</sub> )	50		280	%	I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 5.0 V
	Collector Saturation Voltage	V <sub>CE(sat)</sub>			0.25	V	I <sub>F</sub> = 10 mA, I <sub>C</sub> = 2.0 mA
	Isolation Resistance	R <sub>1-2</sub>	10 <sup>11</sup>			Ω	V <sub>in-out</sub> = 1.0 kV
	Isolation Capacitance	C <sub>1-2</sub>		0.5		pF	V = 0, f = 1.0 MHz
	Rise Time*3)	t <sub>r</sub>		10		μs	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 10 mA, R <sub>L</sub> = 1 kΩ
	Fall Time*3)	t <sub>f</sub>		10		μs	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 10 mA, R <sub>L</sub> = 1 kΩ

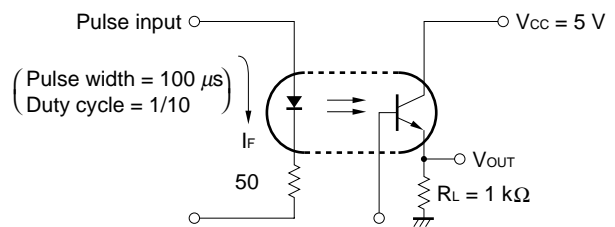
\*2) CTR rank (%)

K : 130 to 280

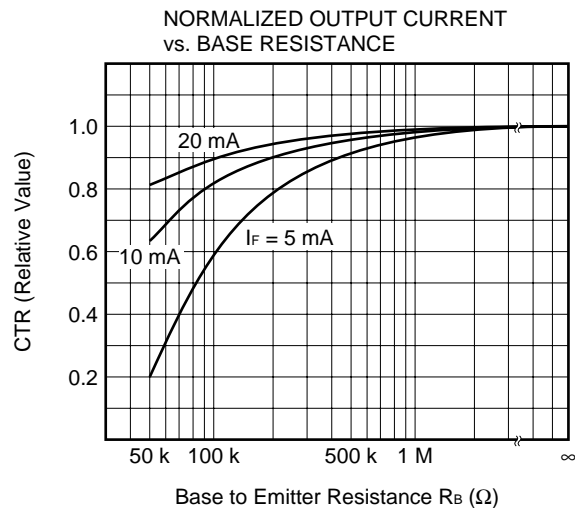
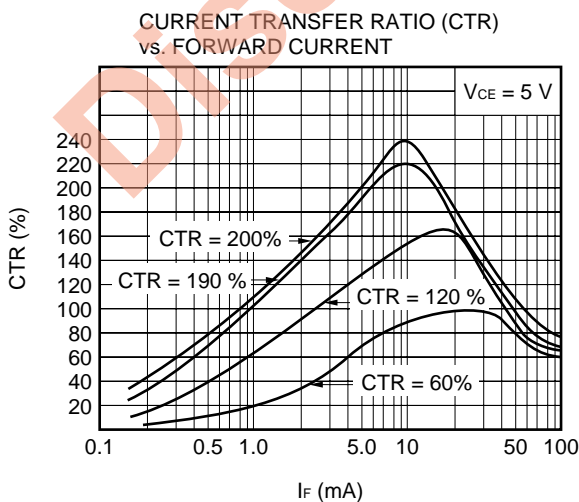
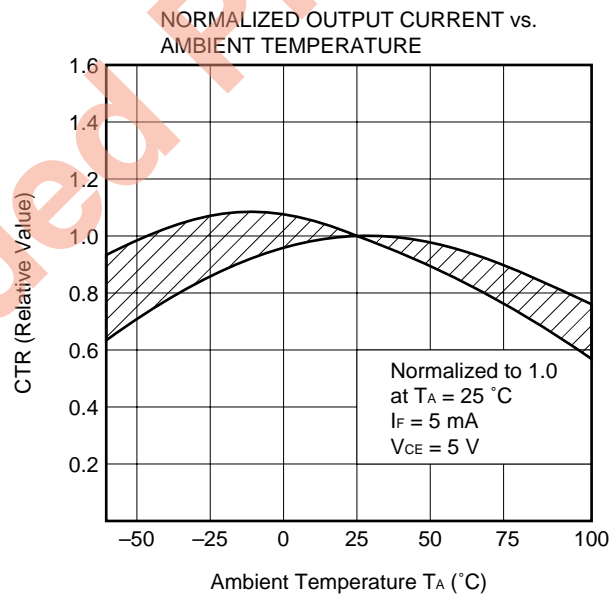
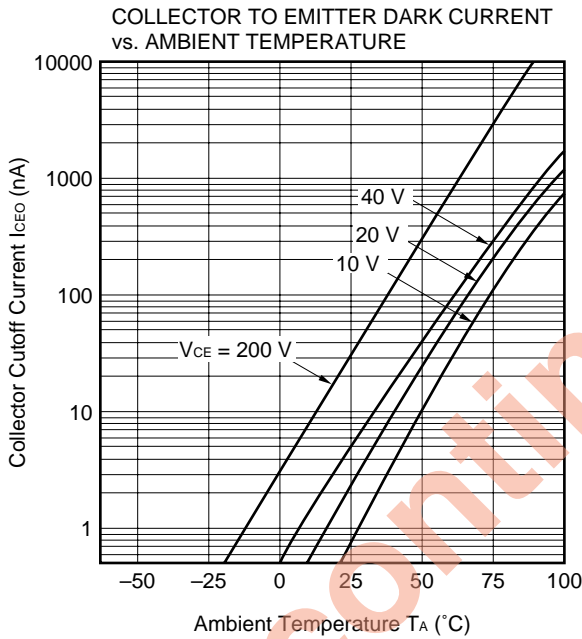
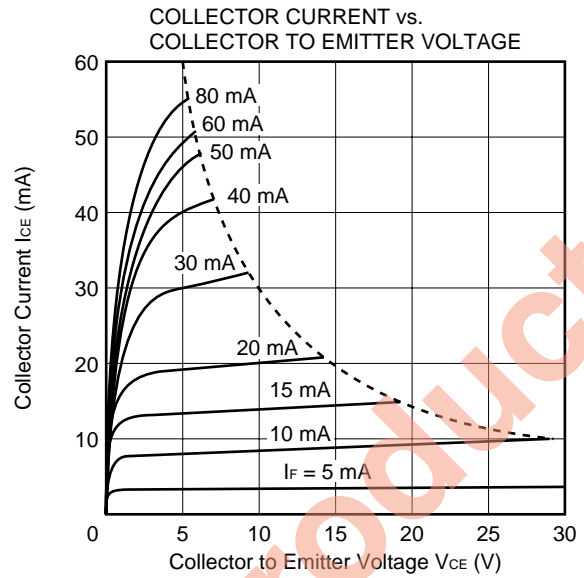
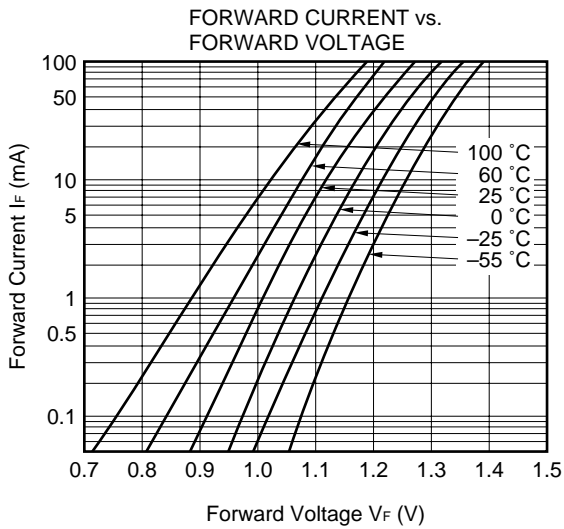
L : 80 to 150

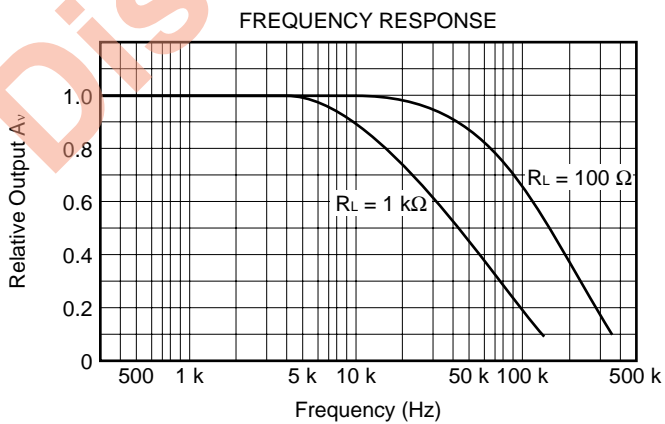
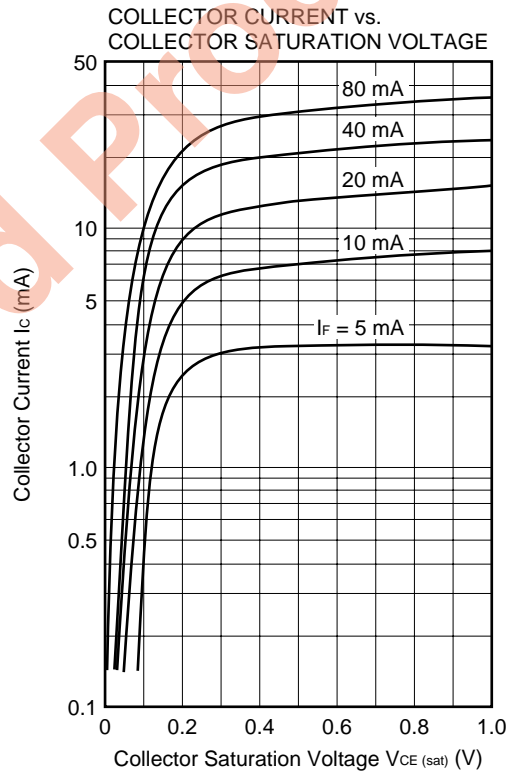
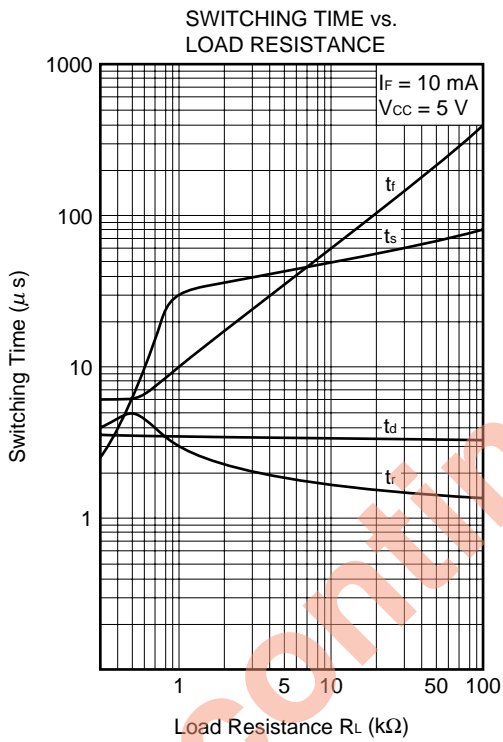
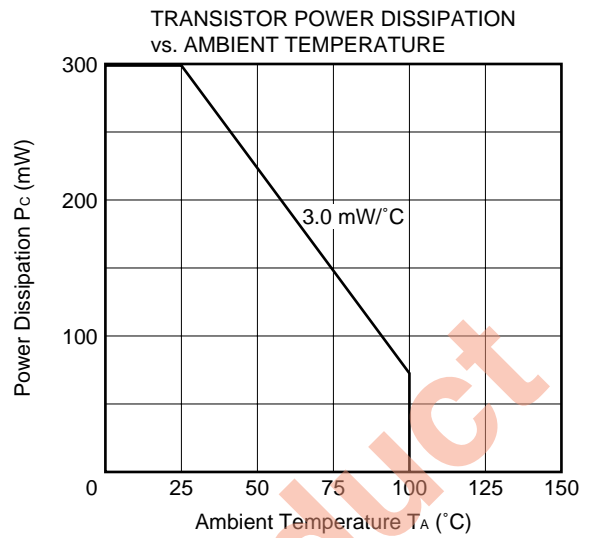
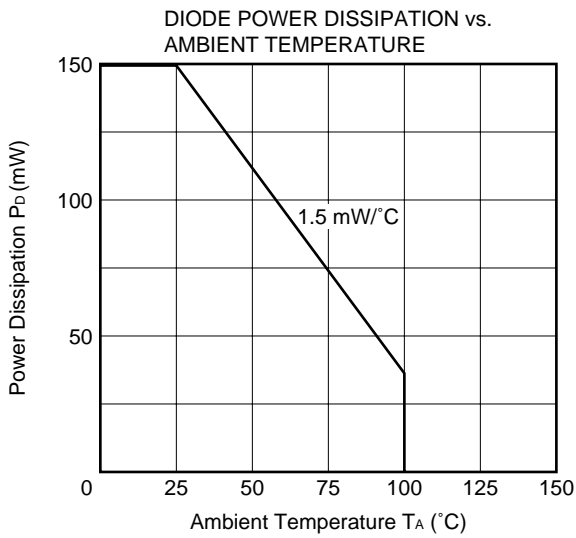
M : 50 to 100

\*3) Test Circuit for Switching Time



TYPICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ )



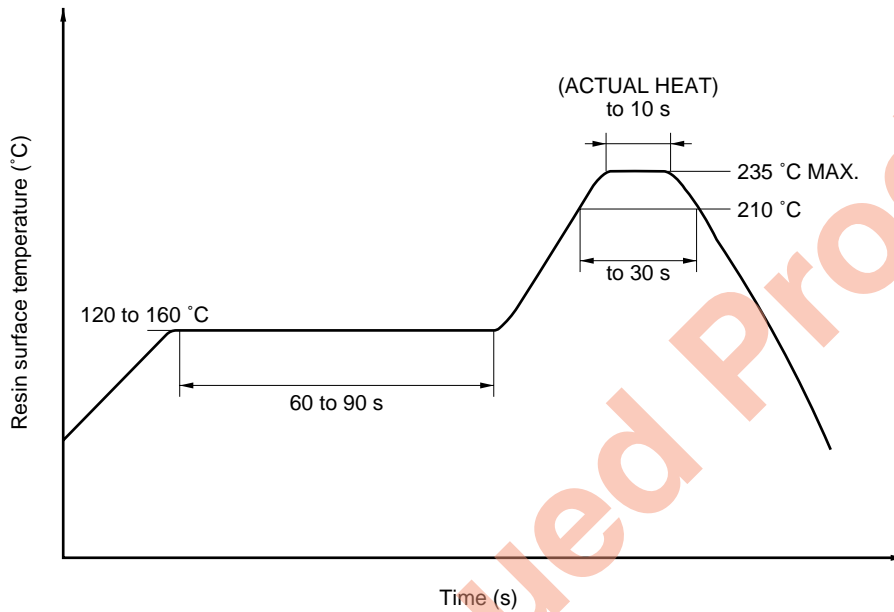


**NOTES AT MOUNTING**

(1) NOTES AT MOUNTING BY INFRARED REFLOW SOLDERING

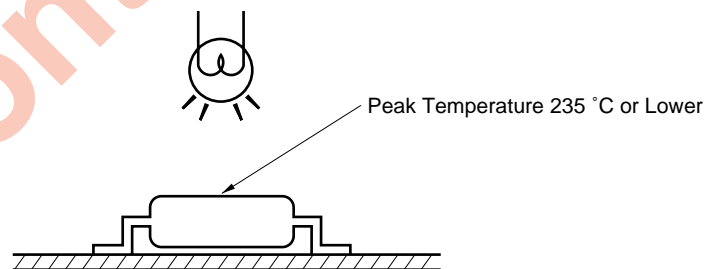
- Peak temperature : 235 °C or less (resin surface temperature)
- Time : Within 30 sec. (timing during which resin surface temperature is 210 °C or more)
- Number of times of reflow : Three
- Flux : Rosin flux with little chlorine is recommended.

**Reflow Temperature Profile**



**<NOTES>**

- (1) Please avoid to be remove the residual flux by water after the first reflow processes.



(2) NOTES AT MOUNTING BY DIP SOLDERING

- Temperature: 260 °C or less
- Time : Within 10 sec.
- Flux : Rosin flux with little chlorine is recommended.



[MEMO]

Discontinued Product

## Caution

**The Great Care must be taken in dealing with the devices in this guide.  
The reason is that the material of the devices is GaAs (Gallium Arsenide), which is  
designated as harmful substance according to the law concerned.  
Keep the Japanese law concerned and so on, especially in case of removal.**

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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

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