

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_{r.m.s.} MIN.)
- High collector to emitter voltage (V_{CEO}). (V_{CEO} : 200 V MIN.)
- High speed switching ($t_r, t_f = 10 \mu s$ TYP.)
- UL recognized [File No. E72422 (S)]
- Taping Product number (PS2631L-E3, E4)

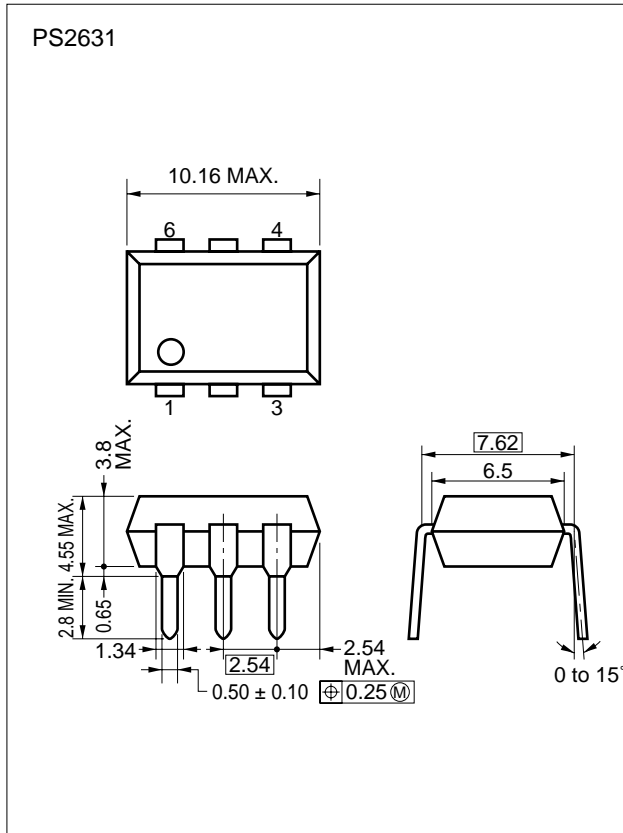
APPLICATIONS

Interface circuit for various instrumentations, control equipments.

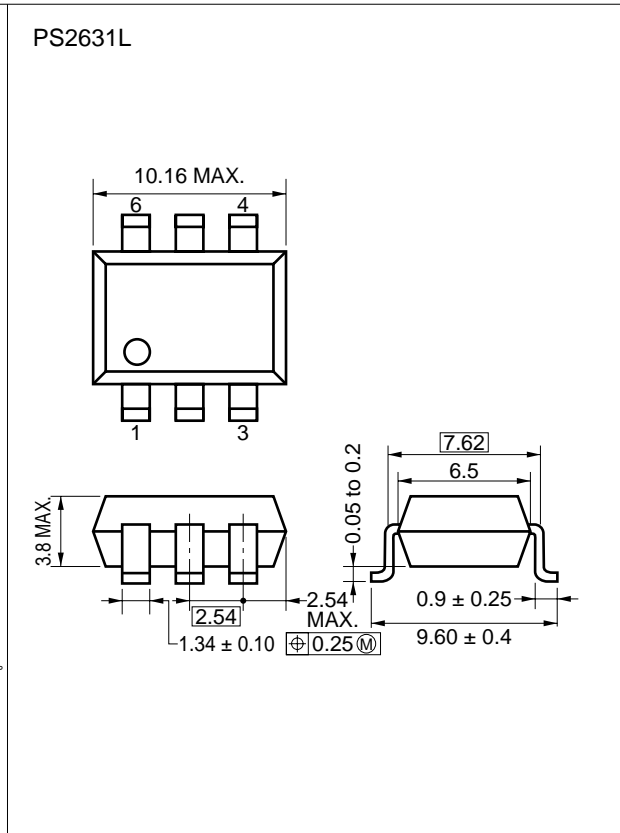
- AC Line/Digital Logic Isolate high voltage transient
- Digital Logic/Digital Logic Eliminate spurious ground loops
- Twisted Pair line receiver Eliminate ground loop pick-up
- Telephone/Telegraph line receiver Isolate high voltage transient
- High Frequency Power Supply Feedback Control Maintain floating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

PACKAGE DIMENSIONS (Unit: mm)

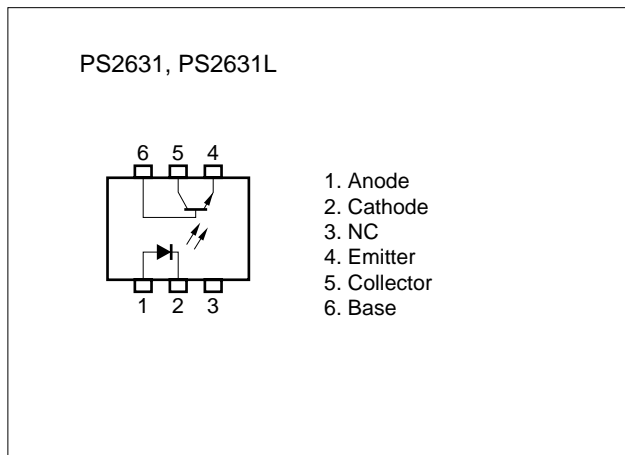
DIP (Dual In-line Package)



Lead Bending type (Gull-wing)



PIN CONNECTION (Top View)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Diode

Reverse Voltage	V _R	6	V
Forward Current	I _F	80	mA
Power Dissipation Temperature Coefficient	ΔP _D /°C	1.5	mW/°C
Power Dissipation	P _D	150	mW

Transistor

Collector to Emitter Voltage	V _{CEO}	200	V
Emitter to Collector Voltage	V _{ECO}	6	V
Collector Current	I _C	50	mA
Power Dissipation Temperature Coefficient	ΔP _C /°C	3.0	mW/°C
Power Dissipation	P _C	300	mW

Isolation Voltage*1)

BV	5 000	V _{ac}
----	-------	-----------------

Storage Temperature

T _{stg}	-55 to +150	°C
------------------	-------------	----

Operating Temperature

T _{opt}	-55 to +100	°C
------------------	-------------	----

*1) AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output.

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

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

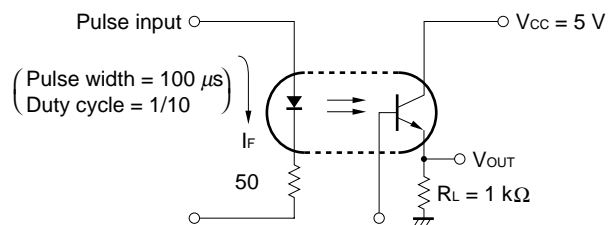
*2) CTR rank (%)

K : 130 to 280

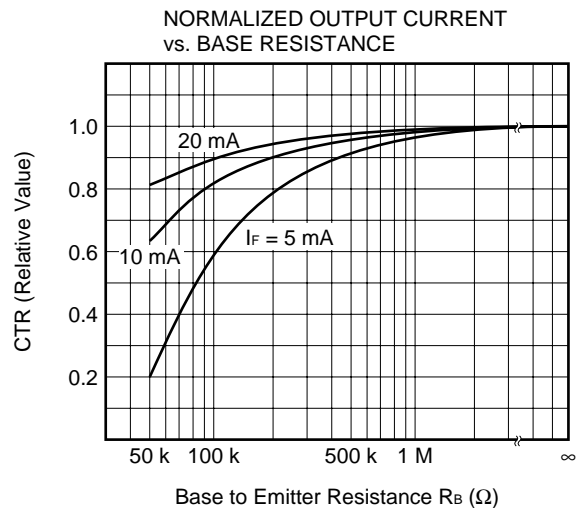
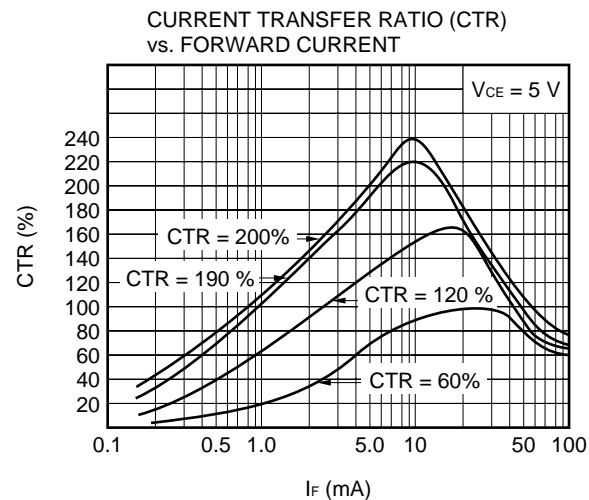
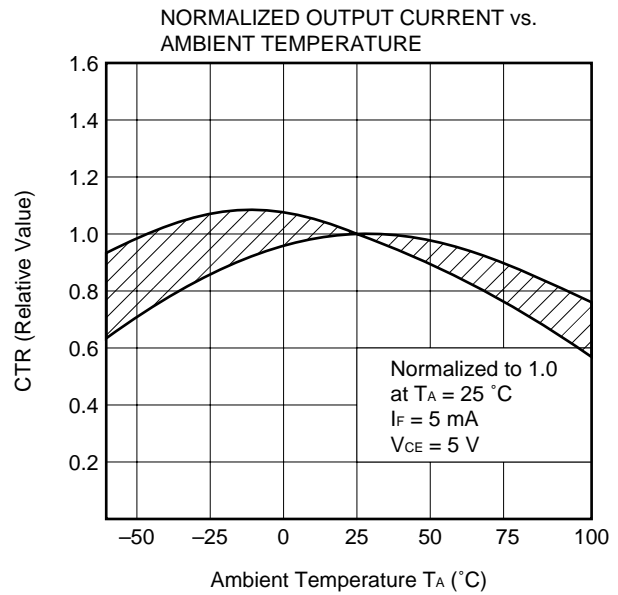
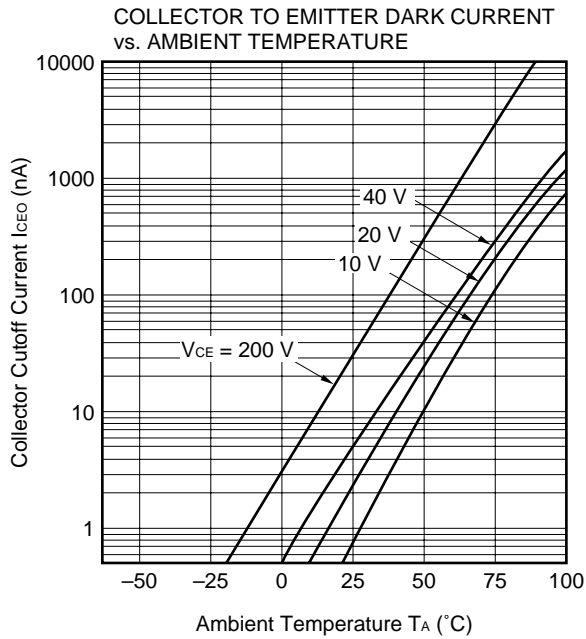
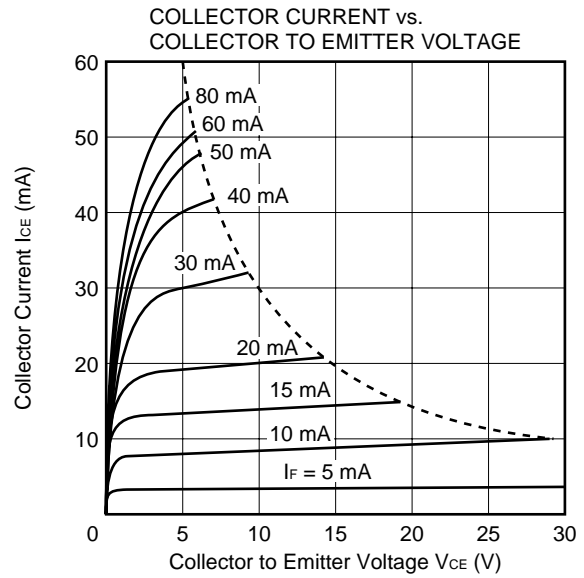
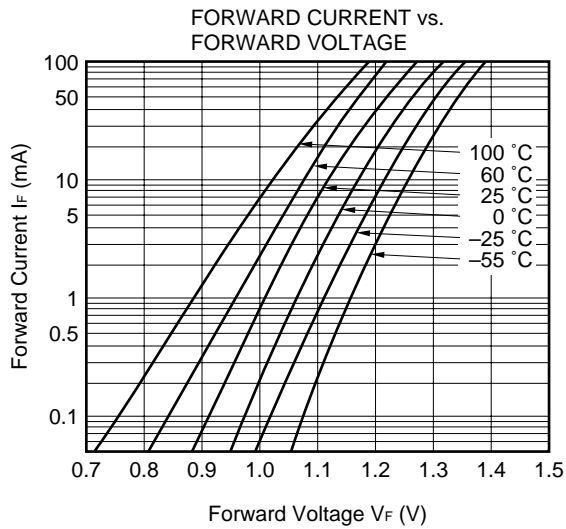
L : 80 to 150

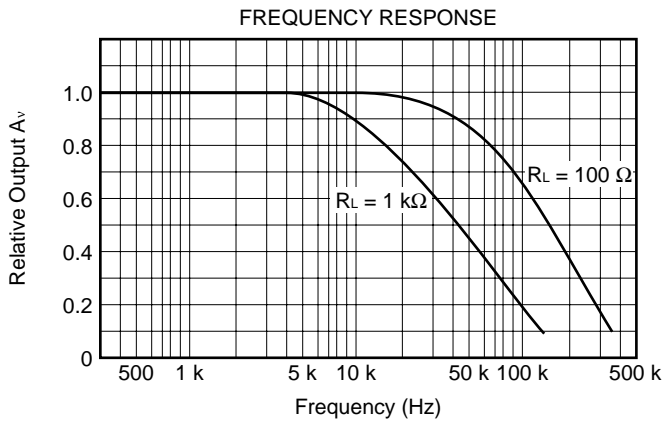
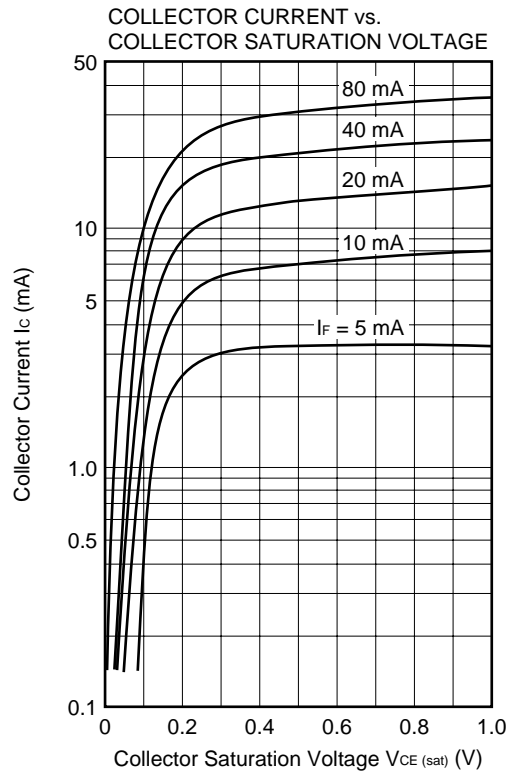
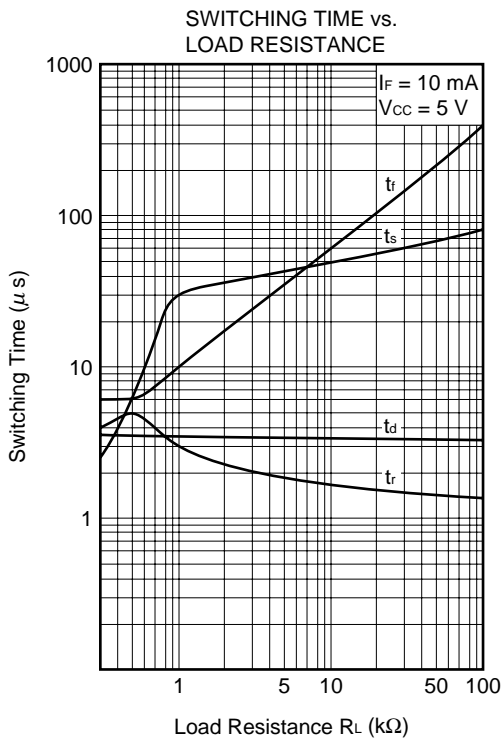
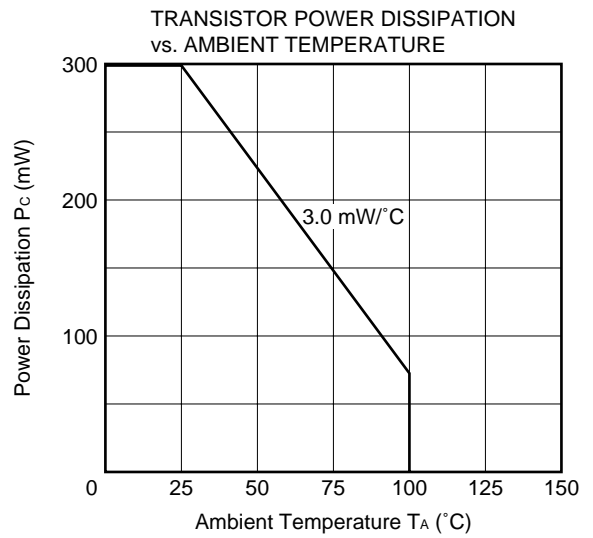
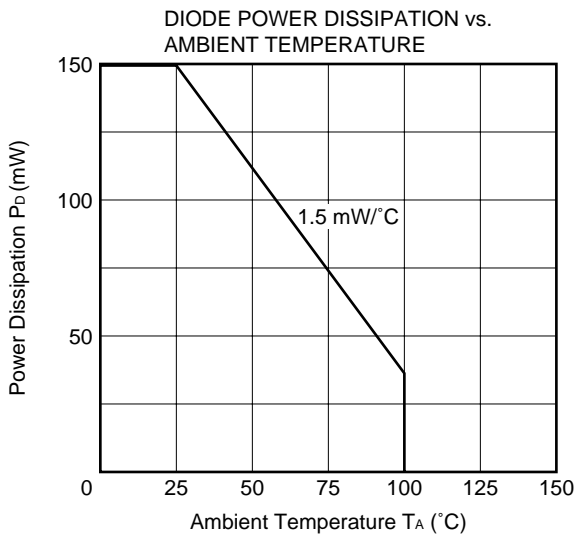
M : 50 to 100

*3) Test Circuit for Switching Time



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



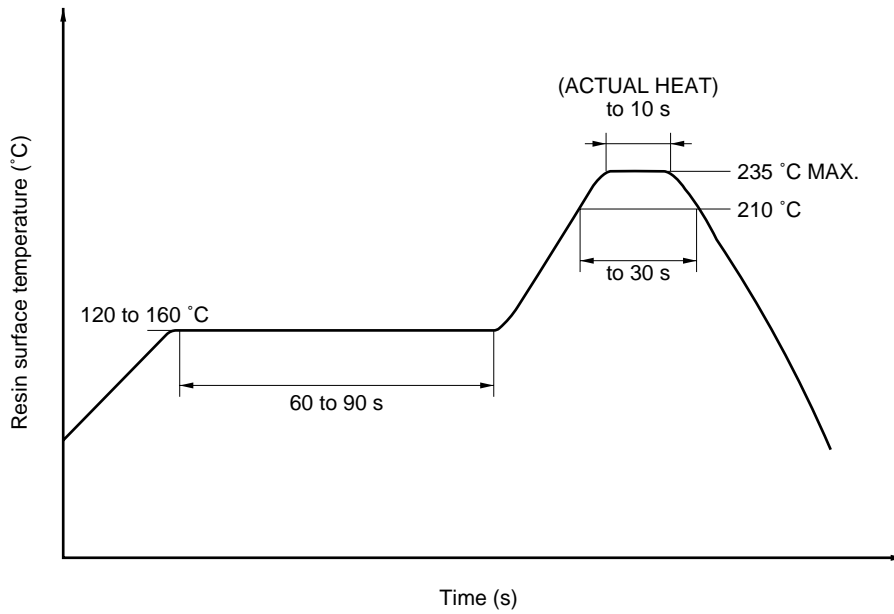


NOTES AT MOUNTING

(1) NOTES AT MOUNTING BY INFRARED REFLOW SOLDERING

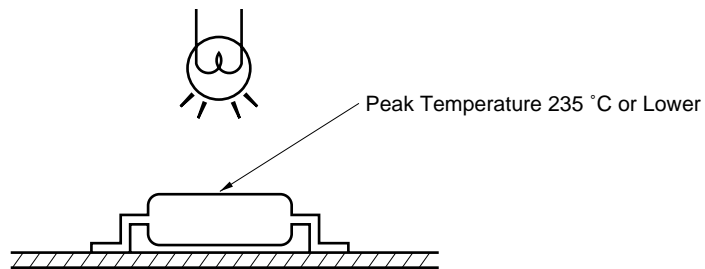
- Peak temperature : 235 °C or less (resin surface temperature)
- Time : Within 30 sec. (timing during which resin surface temperature is 210 °C or more)
- Number of times of reflow : Three
- Flux : Rosin flux with little chlorine is recommended.

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]

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.**

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Corporation. NEC Corporation assumes no responsibility for any errors which may appear in this document.

NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.

While NEC Corporation has been making continuous effort to enhance the reliability of its semiconductor devices, the possibility of defects cannot be eliminated entirely. To minimize risks of damage or injury to persons or property arising from a defect in an NEC semiconductor device, customer must incorporate sufficient safety measures in its design, such as redundancy, fire-containment, and anti-failure features.

NEC devices are classified into the following three quality grades:

“Standard”, “Special”, and “Specific”. The Specific quality grade applies only to devices developed based on a customer designated “quality assurance program” for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

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)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices in “Standard” unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact NEC Sales Representative in advance.

Anti-radioactive design is not implemented in this product.