GREATECS 冠偉科技

SENSOR SWITCHES

- >> Small size & compact space
- >> Increased strength between housing and base
- >> High temperature and fire proof
- >> Suitable to IC trigger signal
- >> Complete replacement of mercury switches
- >> Meet environmental protection
- >> RoHS compliant

Vibration Sensor Switches


NV1 Series


NV2 Series

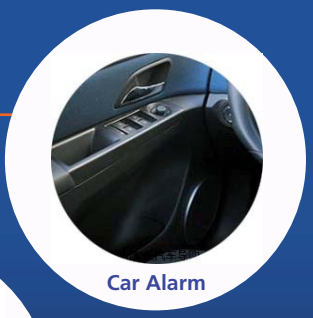

NV3 Series


NV4 Series


Industrial Control


Building Alarm


Bicycle Lighting

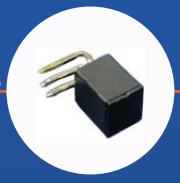

Car Alarm


Power Saving TPMS

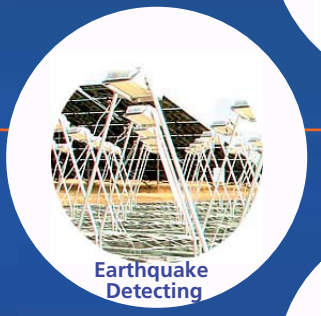
Roll Ball Sensor Switches


NR1 Series


NR2 Series


NR3 Series


Tablet PC


Earthquake Detecting

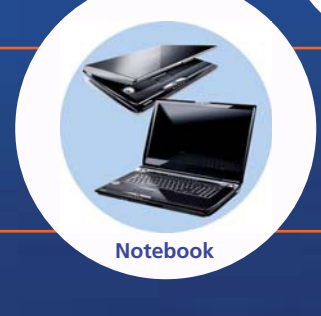

Car Monitor


Power Saving

Optical Roll Ball Sensor Switches


NP1 Series


NP2 Series


Notebook


Car Boots Lighting

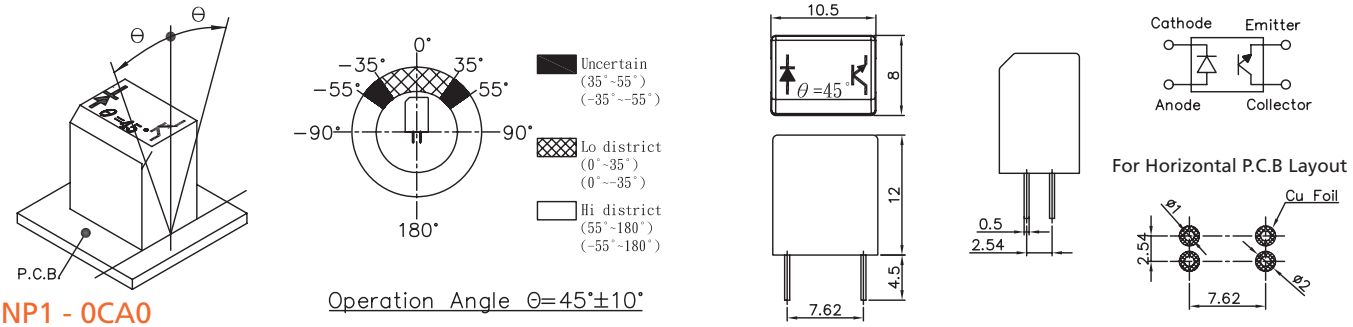
Optical Roll Ball Switch

NP1 Series

Applications:

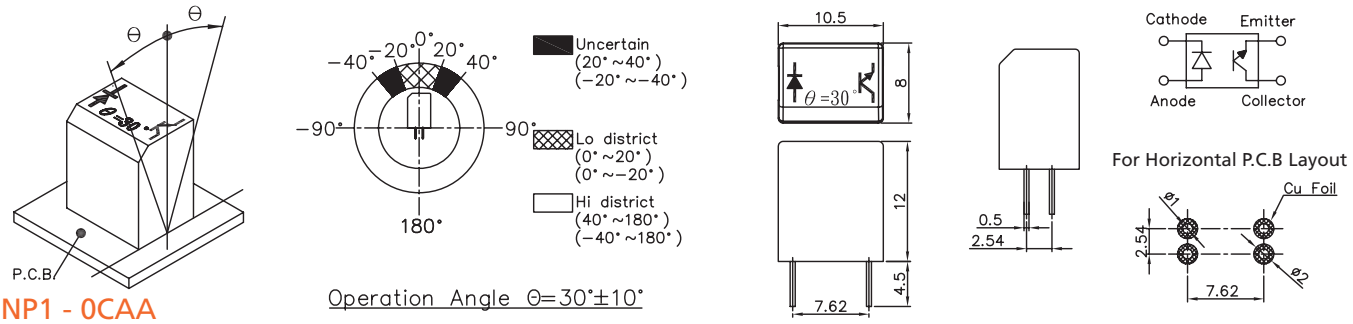
1. 45° Tilt Detecting within a 360° radius:
   Home Appliance Tilt Off function
2. Slight Vibration Detecting:Earthquake Alarm

Dimensions/ Operation/ P.C.B. Layout(Unit:mm,Tolerance: ±0.25mm)



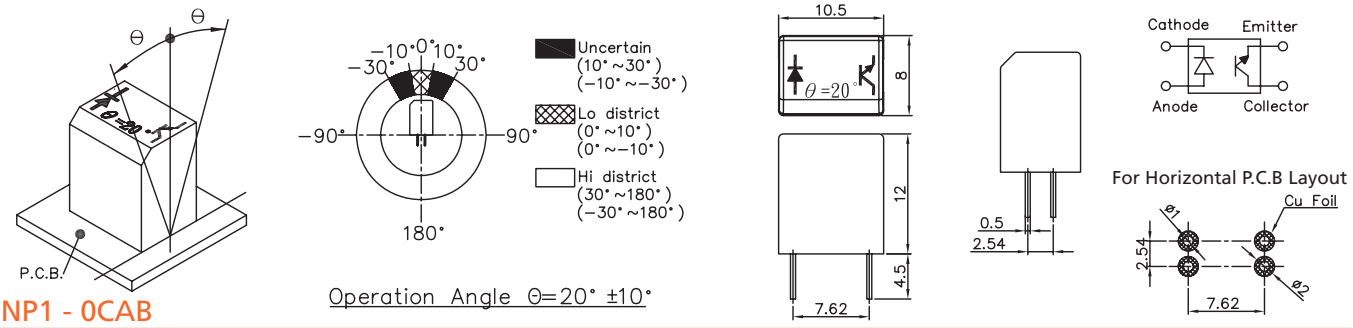
NP1 - 0CA0

Operation Angle Θ=45°±10°



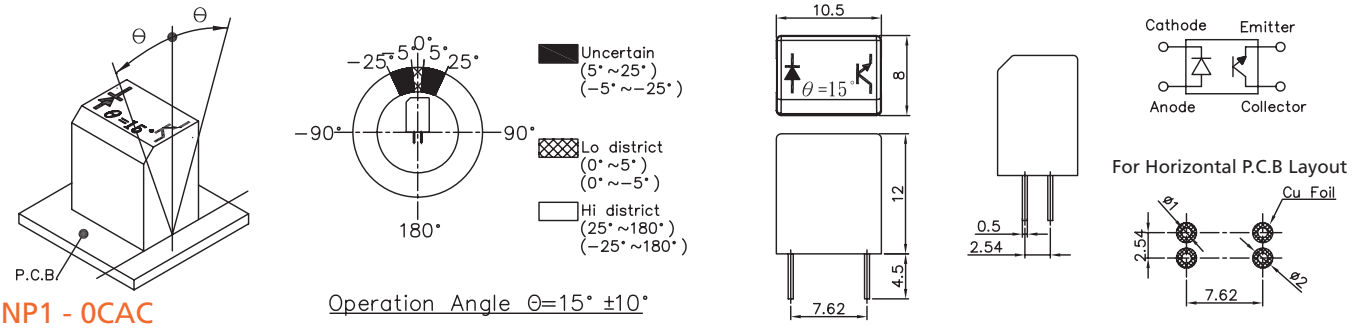
NP1 - 0CAA

Operation Angle Θ=30°±10°



NP1 - 0CAB

Operation Angle Θ=20° ±10°



NP1 - 0CAC

Operation Angle Θ=15° ±10°

Optical Roll Ball Switch

NP1 Series

GENERAL SPECIFICATIONS

Features:

1. Small size & compact space.
2. Housing made of high insulation plastics material, free from electric conduction and rust problem.
3. Using photo transistors to detect signal makes the signal highly reliable and stable.
4. All plastic material subject to industrial purpose meets with UL94V grade; high temperature and fireproof function
5. Suitable to IC trigger singnal.
6. Suitable to horizontal PCB.
7. Tilt Angles: 15°,20°,30° and 45° within a 360° radius.
8. Complete replacement of mercury switch and meet with environmental protection

Bill Of Material:

1. Housing: Class-Fiber Polyamide,UL 94-0
2. Base: Class-Fiber Polyamide, UL 94-0
3. Ball :Stainless Steel
4. Infrared Emitting Diodes: -
5. Silicon Photo Transistors: -
6. Inside part: Copper Alloy,Nickel Plated

Mechanical Characteristics:

1. Temperature Range: Operating: -25°C to +85°C ; Storage : -40°C to +85°C
2. Pull Force of Terminal: 500 gf for 1 minute
3. Operation Life: 30,000 Hours
4. Humidity: 95% RH,40°C for 96 hrs.
5. Solder ability : After flux 260±5°C for 5±0.5 seconds 95% coverage

Absolute Maximum Rating(Ta=25°C)

Item		Symbol	Rating	Unit
Input	Power Dissipation	Pd	75	mW
	Reverse Voltage	Vr	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current (*)	I_{FP}	1	A
Output	Collector Power Dissipation	Pc	100	mW
	Collector Current	Ic	20	mA
	C-E Voltage	V_{CEO}	30	V
	E-C Voltage	V_{ECO}	5	V

(*) tw=100 uSec. T=10 mSec.

ELECTRICAL CHARACTERISTICS(Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=20mA	—	—	1.5	V
Reverse Current	I_R	V_R=5V	—	—	10	μA
Peak Wavelength	λp	I_F=10mA		940		nm
Dark Current	I_D	V_{CE}=10V	—	—	2	μA
C-E Saturation Voltage	$V_{CE\ (sat)}$	I_C=0.25mA I_F=20mA	—	—	0.4	V
Light Current	I_L	V_{CE}=5V I_F=20mA	0.5	5	—	mA
Rise Time	Tr	I_C=0.8mA Vcc=30v R_L=1KΩ	—	5	—	μsec
Fall Time	Tf		—	5	—	μsec

Character: When tilt degree: Θ< 45°± 10°, Output current= Iceo (Lo);
Θ> 45°± 10°,Output current= Ic (Hi).

Typical Electrical / Optical Characteristics Curves (Ta=25°C)

Fig.1 Power Dissipation vs. Ambient Temperature

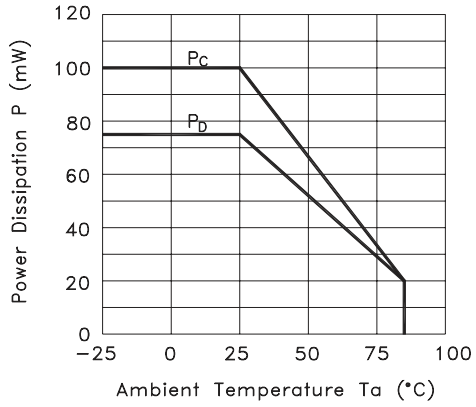


Fig.2 Forward Current vs. Forward Voltage

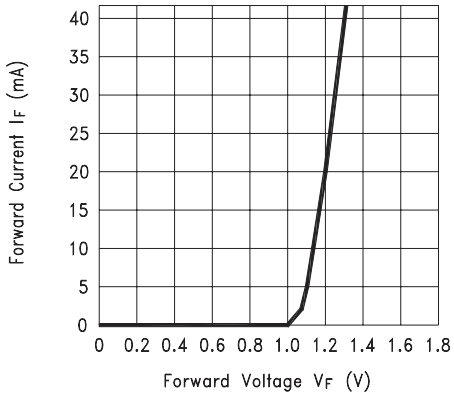


Fig.3 Collector Current vs. Collector−emitter Voltage

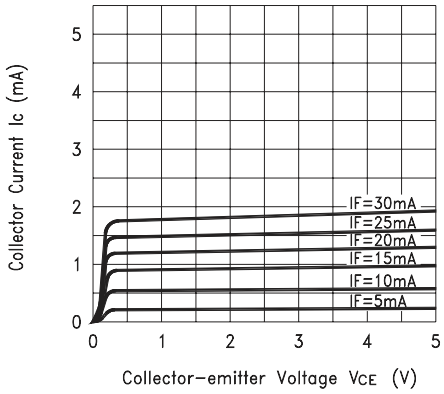


Fig.4 Collector Current vs. Ambient Temperature

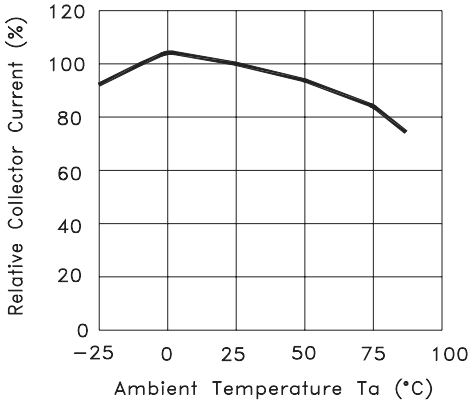


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

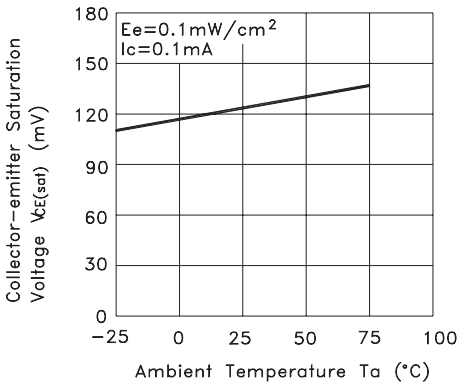


Fig.6 Response Time vs. Load Resistance

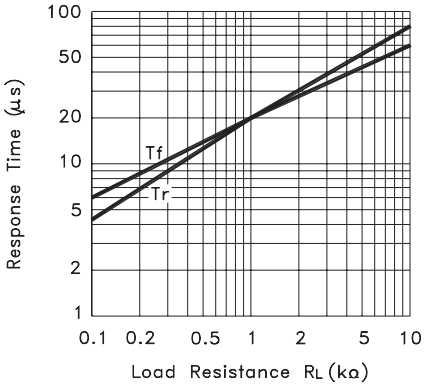
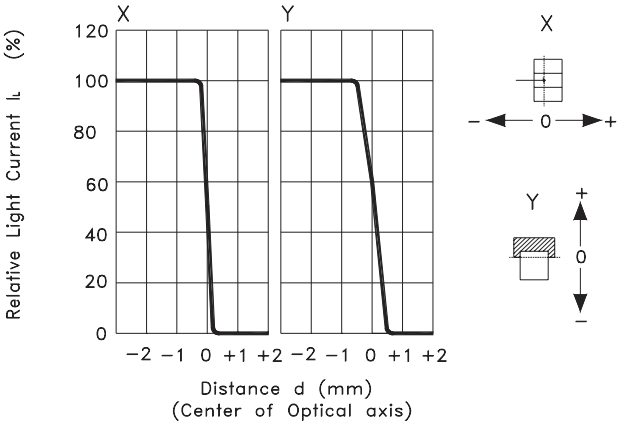


Fig.7 Sensing Position Characteristics (Typical)



» NOTE

1. Strongly recommend that us ing 20mA as input current.
2. For the continued product improvement as one of the company policy, specifications may change or update without notice. The latest information can be obtained through our sales offices. Normally, all products are supplied under our standard conditions.

» PRECAUTIONS FOR USE

1. The product is used mainly in electronic devices such as automotive devices, visual devices, home electrical appliances, information devices and communication settings. If the products is intended to be used for other endurance equipments requiring higher safety and reliability such as life support system, space and aviations devices, disaster and safety system, it's necessary to make verification of conformity or contact us for the details before using.
2. Don't try to clean the switch with a solvent or similar substance after the solderring process
3. The switch might be damaged if using the water-soluble flux.

PACKAGE (Minimum Order Quantity: One Bag / One Box)

	Part Number	Package	Quantity	Total	Size
1.	NP1-0CA0 NP1-0CAA NP1-0CAB NP1-0CAC	PE Bag	200 pcs	200 pcs	12.7 x 17.8 cm
		Inner Box	8 Bags	1,600 pcs	36 x 20 x 9 cm
		Carton	3 Boxes	4,800 pcs	36 x 28 x 23 cm
2.	NP1-0CA0 NP1-0CAA NP1-0CAB NP1-0CAC	IC tube	48 pcs	48 pcs	52.5 x 1 x 1.75 cm
		Inner Box	72 tubes	3,456 pcs	54 x 13 x 13 cm
		Carton	4 Boxes	13,824 pcs	55 x 29 x 29 cm

Optical Roll Ball Switch

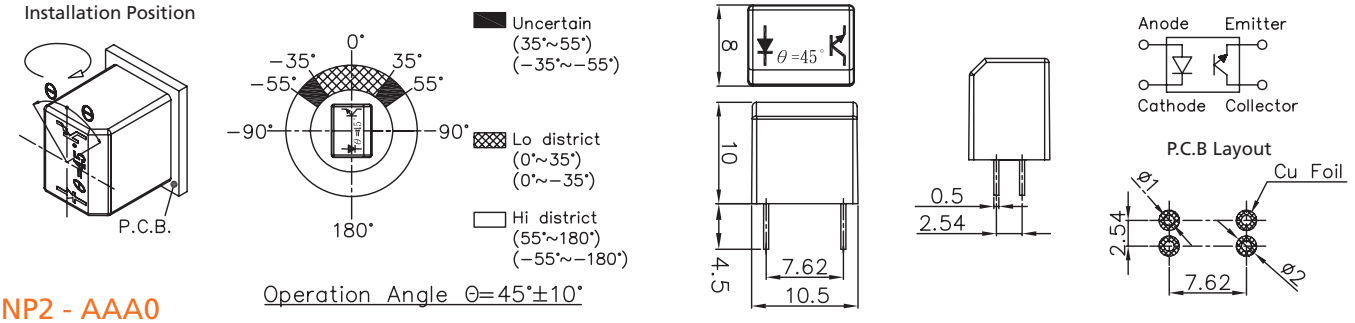
NP2 Series

Applications:

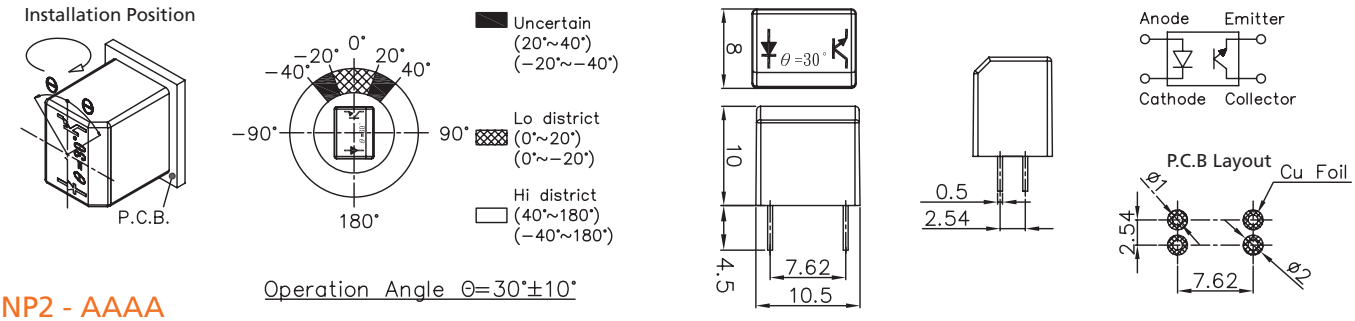
1. Detecting within a 360° radius:
   LCD Monitor Rotation
   Home Appliance Tilt Off function
2. Slight Vibration Detecting: Earthquake Alarm

Dimensions/ Operation/ P.C.B. Layout (Unit:mm,Tolerance: ±0.25mm)

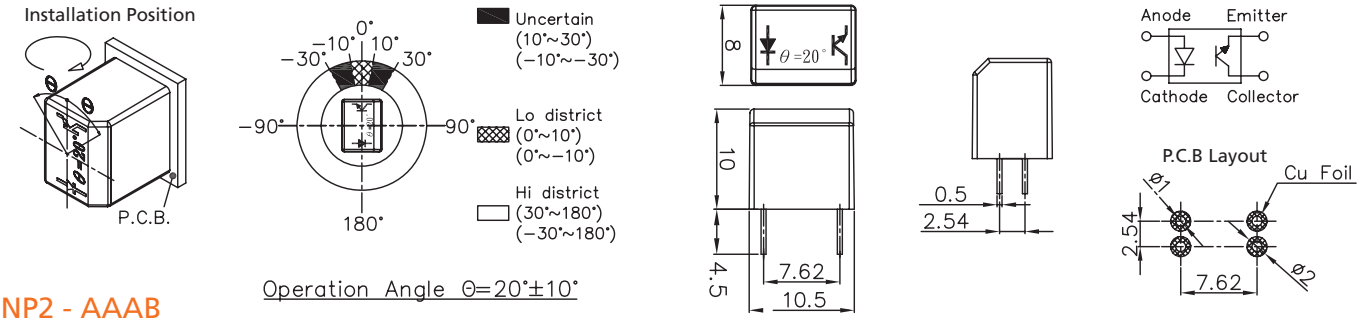
NP2 - AAA0



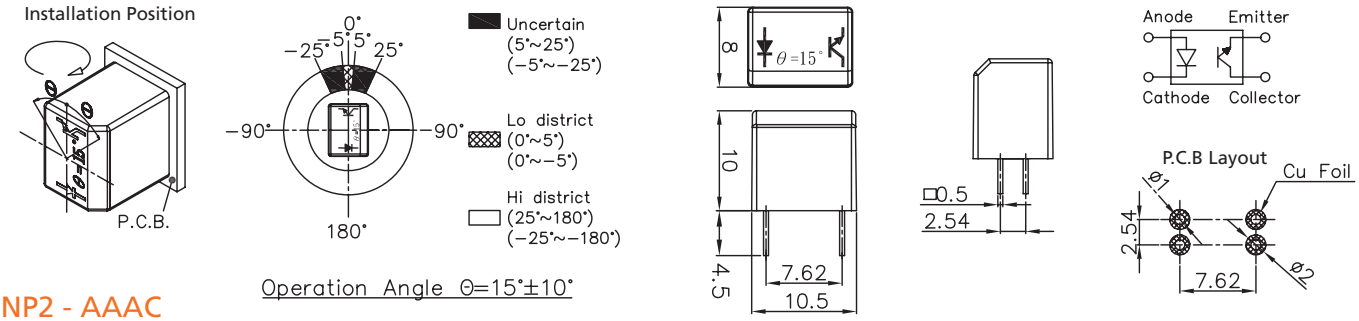
NP2 - AAAA



NP2 - AAAB



NP2 - AAAC



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	Peak Forward Current (*)	I_{FP}	1	A
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	C-E Voltage	V_{CEO}	30	V
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(*) tw=100 uSec. T=10 mSec.

ELECTRICAL CHARACTERISTICS(Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
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C-E Saturation Voltage	$V_{CE\ (sat)}$	I_C=0.25mA I_F=20mA	–	–	0.4	V
Light Current	I_L	V_{CE}=5V I_F=20mA	0.5	5	–	mA
Rise Time	Tr	I_C=0.8mA Vcc=30v R_L=1KΩ	–	5	–	μsec
Fall Time	Tf		–	5	–	μsec

Character: When tilt degree: Θ< 45°± 10°, Output current= Iceo (Lo);
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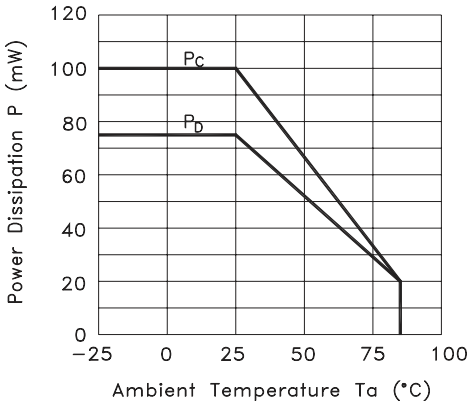

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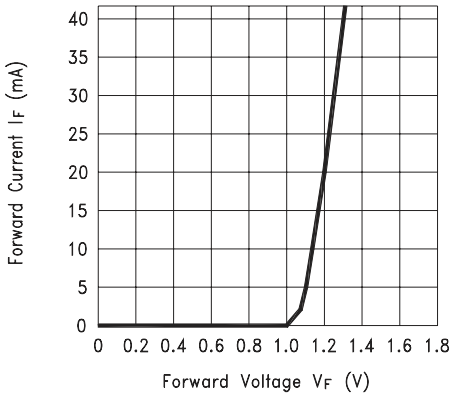
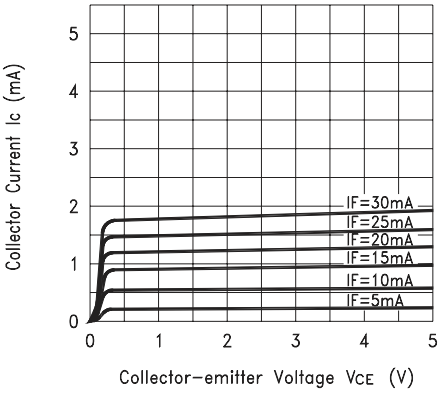


Fig.3 Collector Current vs. Collector−emitter Voltage



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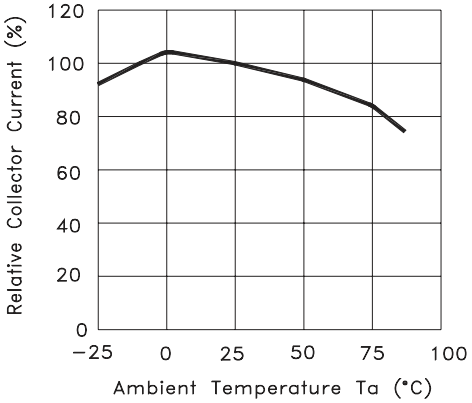

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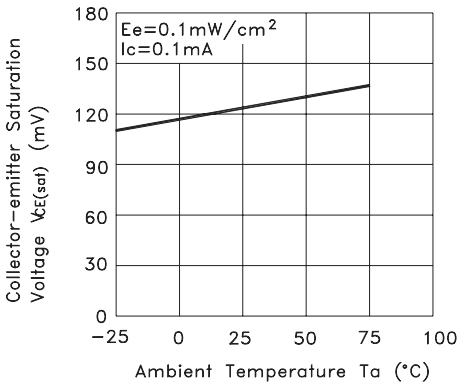

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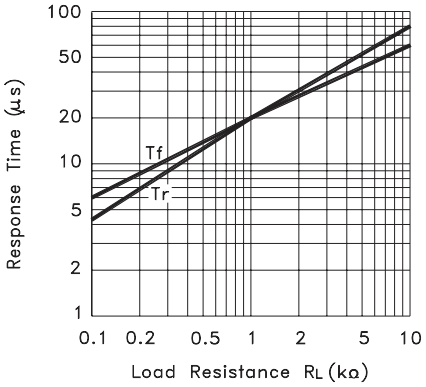

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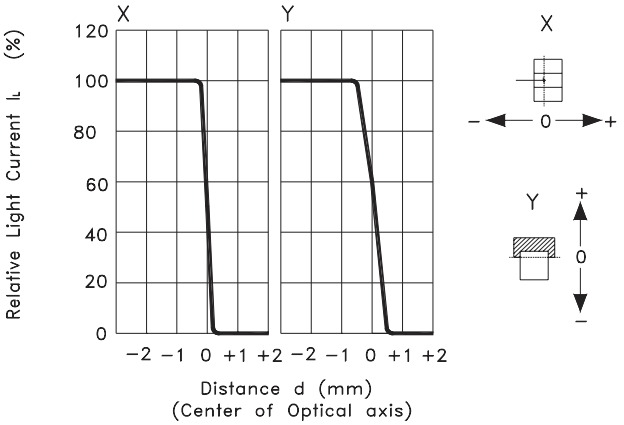

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2.	NP1-0CA0 NP1-0CAA NP1-0CAB NP1-0CAC	IC tube	48 pcs	48 pcs	52.5 x 1 x 1.75 cm
		Inner Box	84 tubes	4,032 pcs	54 x 13 x 13 cm
		Carton	4 Boxes	16,128 pcs	55 x 29 x 29 cm