

PRODUCT SPECIFICATION

DATE:06/16/2011

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|---|-----------------------------------|--------------|-----------|
| cosmo ELECTRONICS CORPORATION | Photocoupler : KPC357NT | NO.61P04115 | REV. 2 |
| | | SHEET 1 OF 7 | |

Mini-Flat package

General purpose Photocoupler

● Features

1. Opaque type, mini-flat package.
2. Subminiature type
(The volume is smaller than that of our conventional DIP type by as far as 30%)
3. Current transfer ratio
(CTR : MIN.50% at $I_F=5\text{mA}$ $V_{ce}=5\text{V}$)
4. Isolation voltage between input and output (Viso : 3750vrms).

● Applications

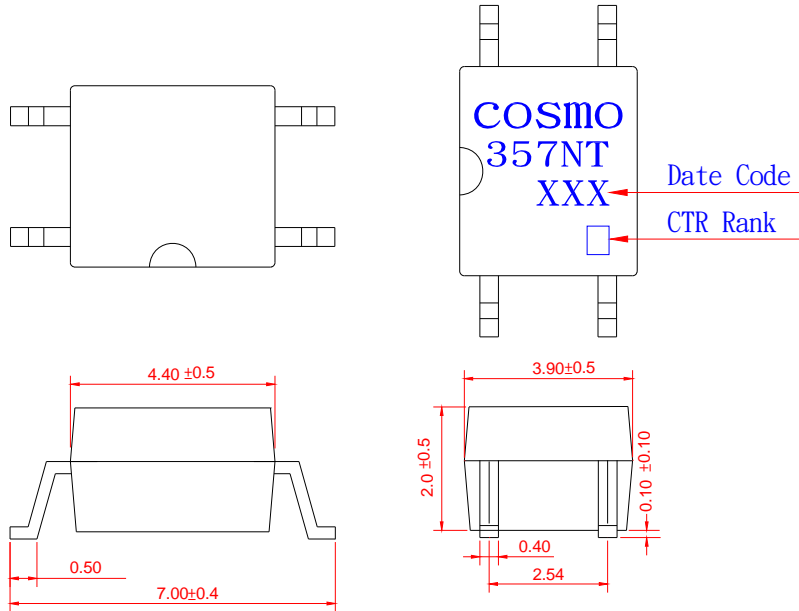
1. Hybrid substrates that require high density mounting.
2. Programmable controllers.

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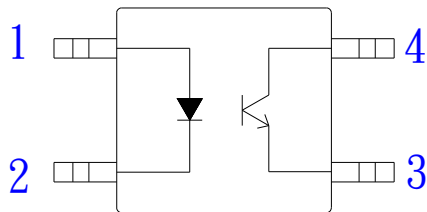
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1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : ± 0.2 mm

2. SCHEMATIC : TOP VIEW



1. Anode
2. Cathode
3. Emitter
4. Collector

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●Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit | |
|---------------------------------|-----------------------------|-------------|-----------|----|
| Input | Forward current | I_F | 50 | mA |
| | Peak forward current | I_{FM} | 1 | A |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P | 70 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 60 | V |
| | Emitter-collector voltage | V_{ECO} | 5 | V |
| | Collector current | I_C | 50 | mA |
| | Collector power dissipation | P_C | 150 | mW |
| Total power dissipation | P_{tot} | 170 | mW | |
| Isolation voltage 1 minute | V_{iso} | 3750 | V_{rms} | |
| Operating temperature | T_{opr} | -55 to +115 | °C | |
| Storage temperature | T_{stg} | -55 to +125 | °C | |
| Soldering temperature 10 second | T_{sol} | 260 | °C | |

●Electro-optical Characteristics

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | |
|--------------------------|--------------------------------------|---------------|----------------------------------|--------------------|-----------|---------|---------|
| Input | Forward voltage | V_F | $I_F=20mA$ | - | 1.2 | 1.4 | V |
| | Reverse current | I_R | $V_R=4V$ | - | - | 10 | μA |
| | Terminal capacitance | C_t | $V=0, f=1kHz$ | - | 30 | 250 | pF |
| Output | Collector dark current | I_{CEO} | $V_{CE}=20V, I_F=0$ | - | - | 0.1 | μA |
| | Collector-emitter breakdown voltage | BV_{CEO} | $I_C=0.1mA, I_F=0$ | 60 | - | - | V |
| | Emitter-collector breakdown voltage | BV_{ECO} | $I_F=100\mu A, I_F=0$ | 5 | - | - | V |
| Transfer characteristics | Current transfer ratio | CTR | $I_F=5mA, V_{CE}=5V$ | 50 | - | 600 | % |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F=20mA, I_C=1mA$ | - | 0.1 | 0.3 | V |
| | Isolation resistance | R_{iso} | DC500V, 40 to 60%RH | 5×10^{10} | 10^{11} | - | ohm |
| | Floating capacitance | C_f | $V=0, f=1MHz$ | - | 0.6 | 1.0 | pF |
| | Response time (Rise) | t_r | $V_{ce}=2V, I_C=2mA, R_L=100ohm$ | - | 5 | 20 | μs |
| Response time (Fall) | t_f | - | | 4 | 20 | μs | |

●Classification table of current transfer ratio is shown below.

| CTR RANK | CTR(%) |
|------------|------------|
| KPC357NT0A | 80 TO 160 |
| KPC357NT0B | 130 TO 260 |
| KPC357NT0C | 200 TO 400 |
| KPC357NT0D | 300 TO 600 |
| KPC357NT0E | 50 TO 600 |

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Fig.1 Forward Current vs. Ambient Temperature

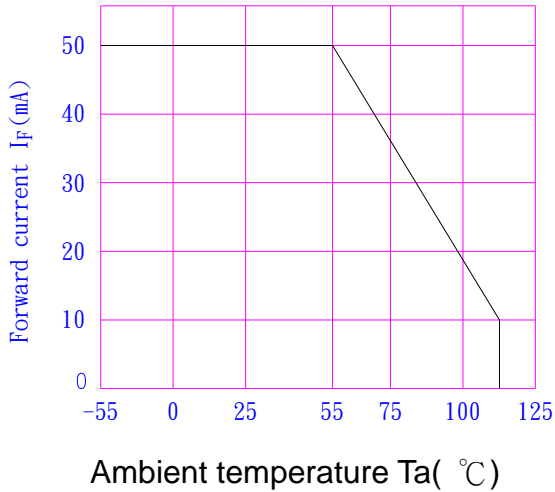


Fig.2 Diode Power Dissipation vs. Ambient Temperature

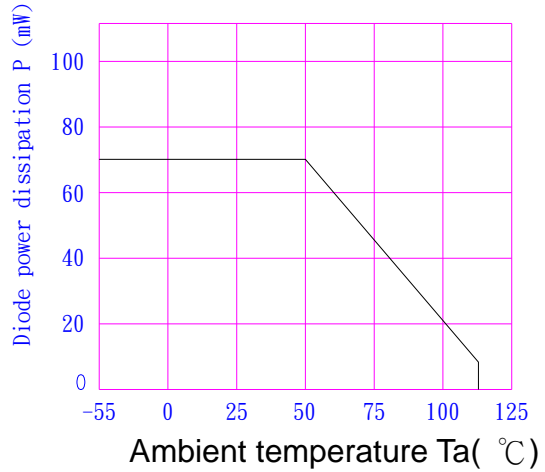


Fig.3 Collector Power Dissipation vs. Ambient Temperature

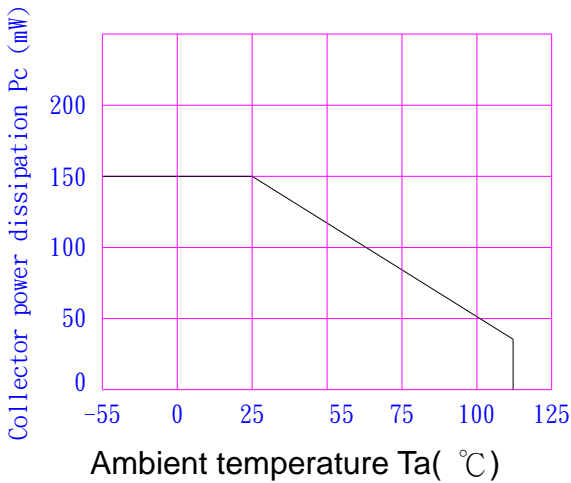


Fig.4 Total Power Dissipation vs. Ambient Temperature

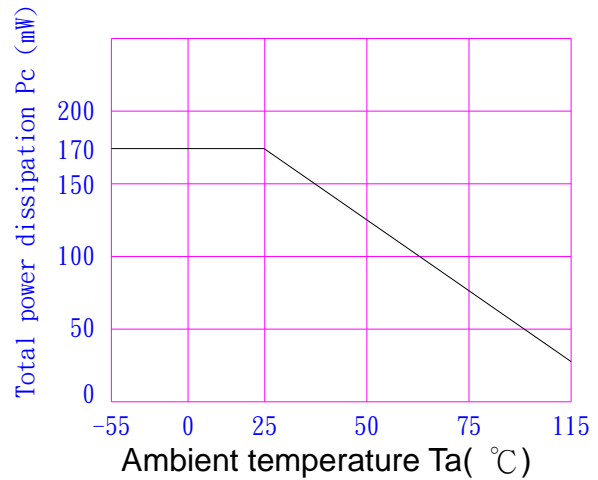


Fig.5 Peak Forward Current vs. Duty Ratio

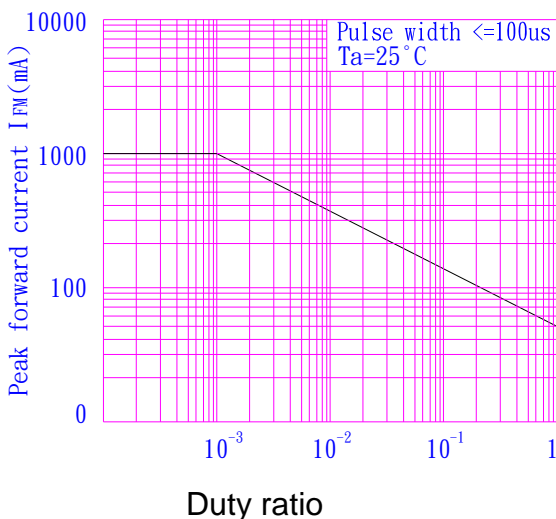
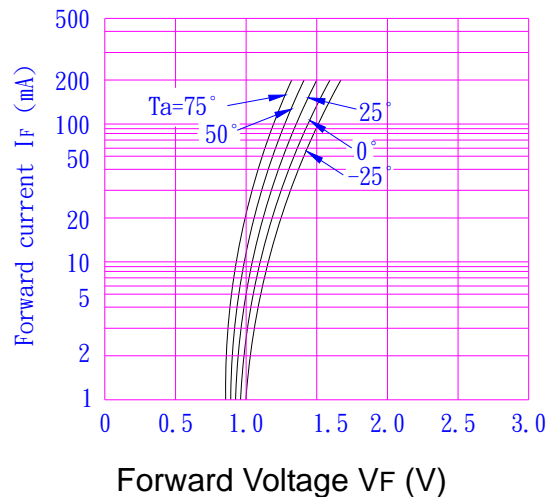


Fig.6 Forward Current vs. Forward Voltage



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Fig.7 Forward Current vs. Forward Current Fig.8 Current Transfer Ratio vs. Forward Current

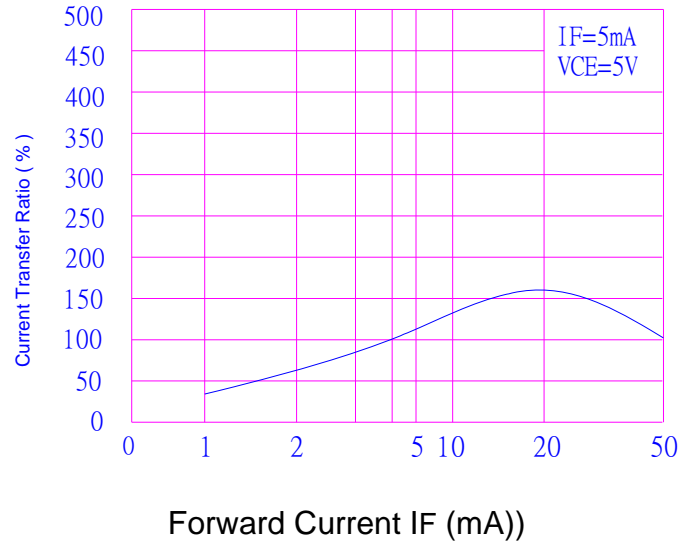
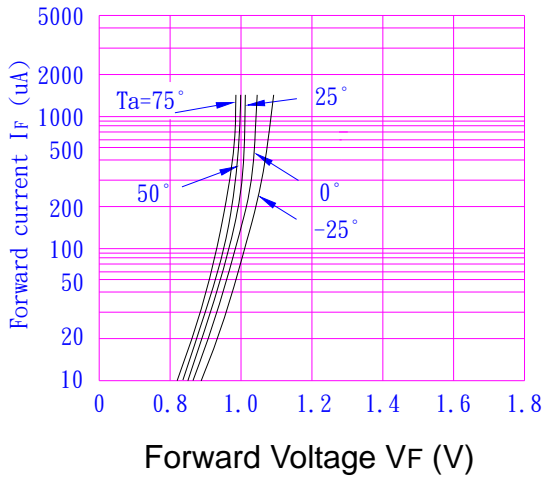


Fig.9 Collector Current vs. Collector-Emitter Voltage

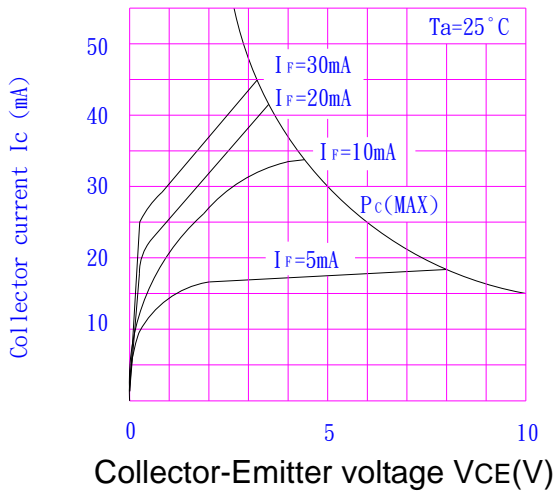
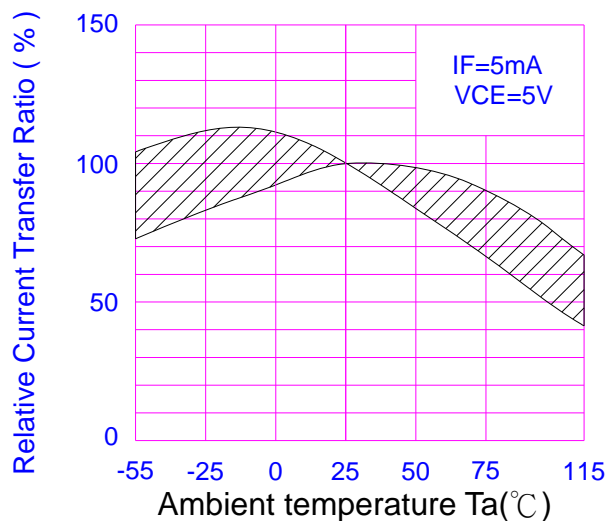


Fig.10 Relative Current Transfer Ratio vs. Ambient Temperature



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Fig.11 Collector-Emitter Saturation Voltage vs. Ambient Temperature

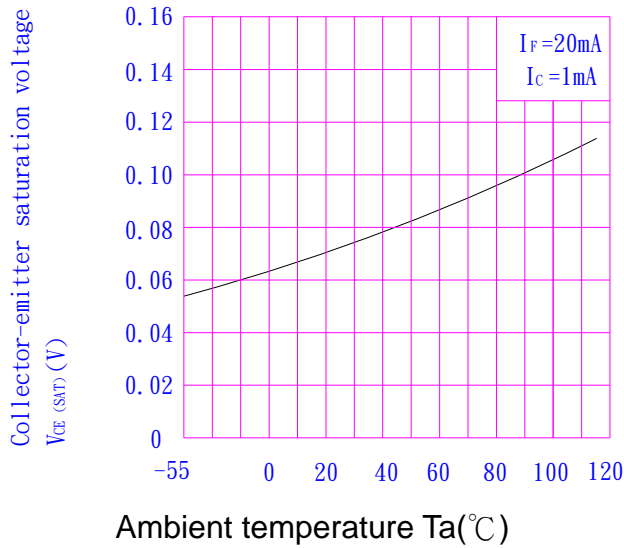


Fig.12 Collector Dark Current vs. Ambient Temperature

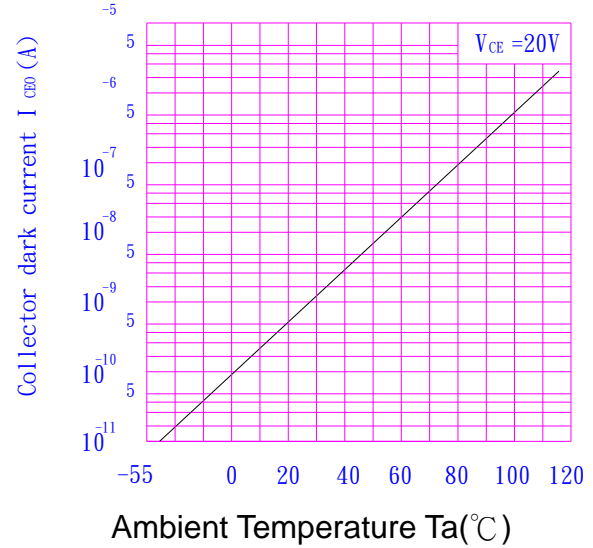
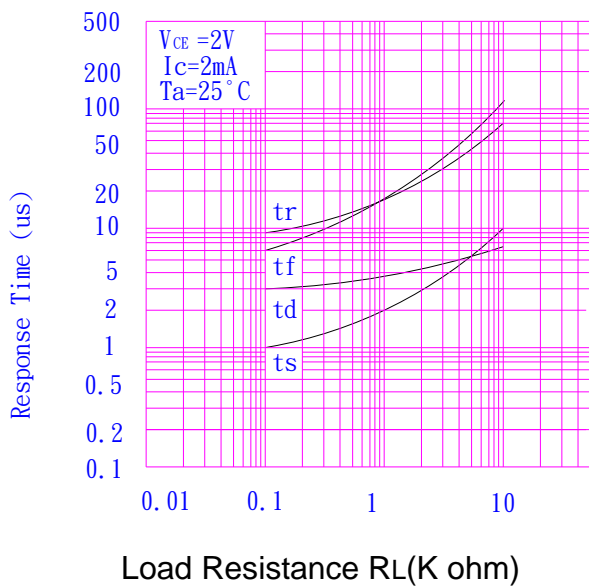


Fig.13 Response Time vs. Load Resistance



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