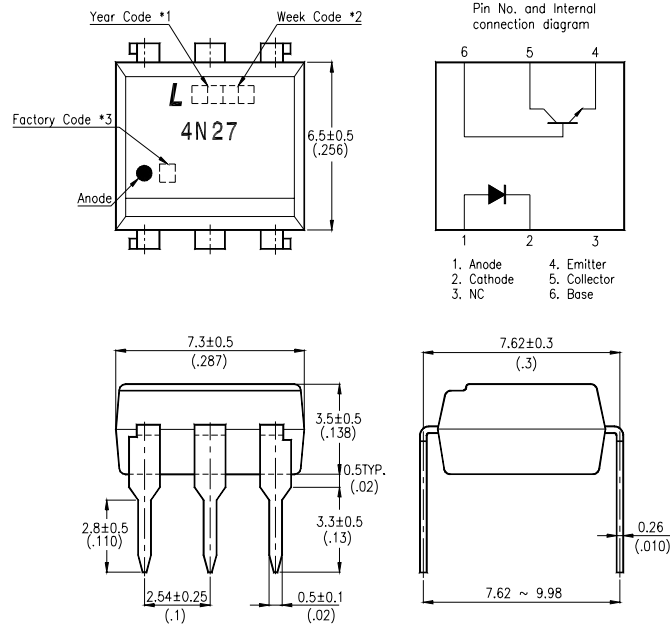


FEATURES

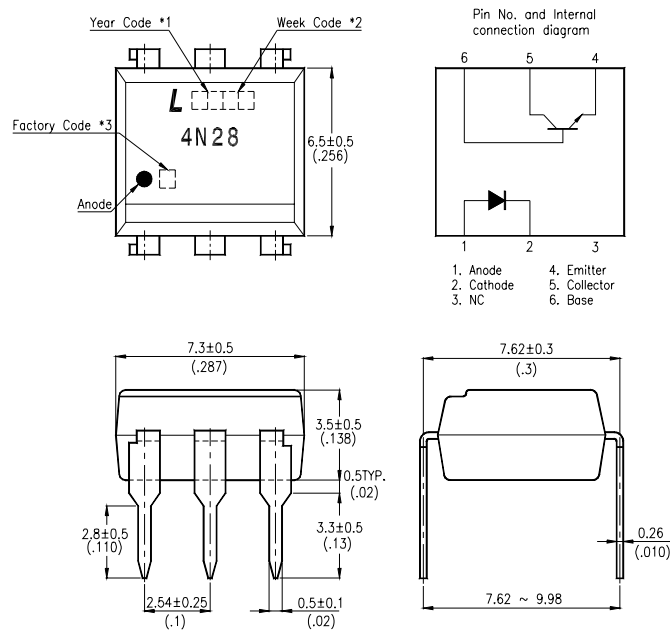
- * Response time
(t_r : TYP. $3\mu\text{s}$ at $V_{CE} = 10\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$)
- * Current transfer ratio
(CTR : MIN. 10% at $I_F = 10\text{mA}$, $V_{CE} = 10\text{V}$)
- * Input-output isolation voltage
4N27 series : $V_{iso} = 1,500\text{Vrms}$
4N28 series : $V_{iso} = 500\text{Vrms}$
- * Dual-in-line package :
4N27, 4N28
- * Wide lead spacing package :
4N27M, 4N28M
- * Surface mounting package :
4N27S, 4N28S
- * Tape and reel packaging :
4N27S-TA1, 4N28S-TA1
- * UL approved (No. E113898)
- * TUV approved (No. R9653630)
- * DEMKO approved (No. 303985)

OUTLINE DIMENSIONS

4N27 :



4N28 :



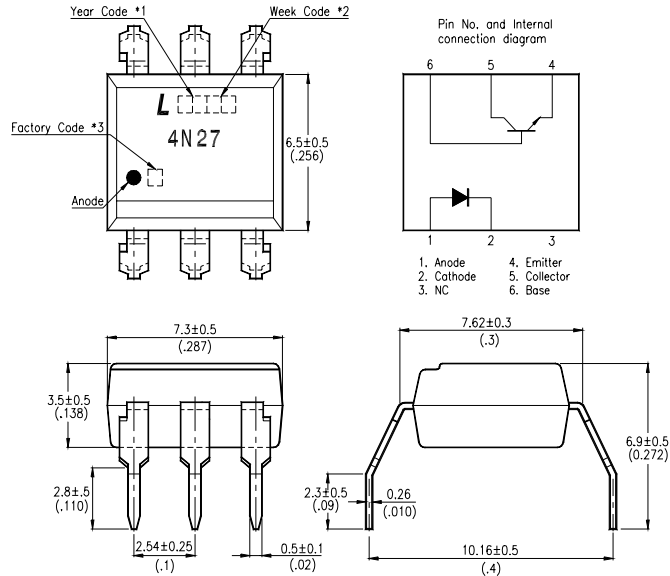
*1. Year date code.

*2. 2-digit work week.

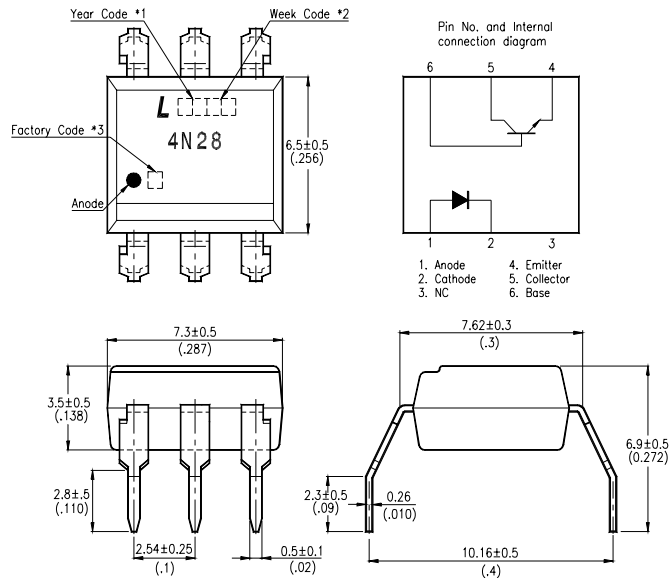
*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).

OUTLINE DIMENSIONS

4N27M :



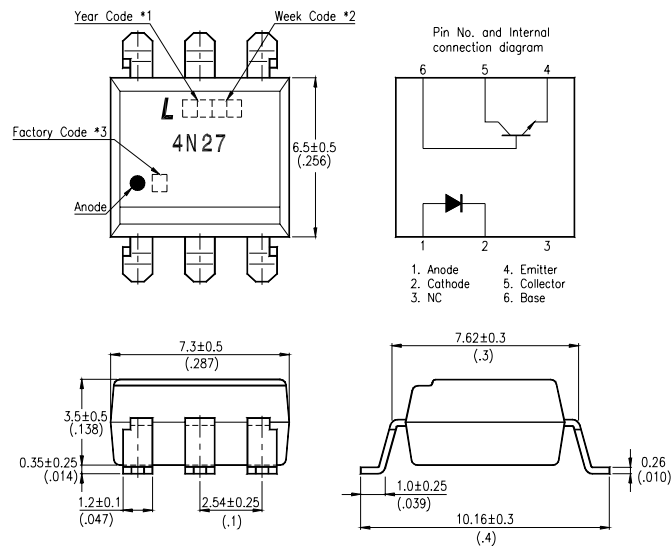
4N28M :



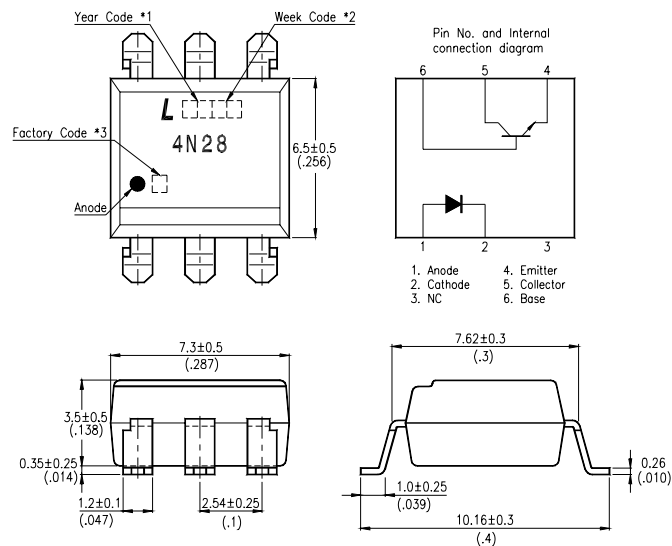
- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).

OUTLINE DIMENSIONS

4N27S :



4N28S :



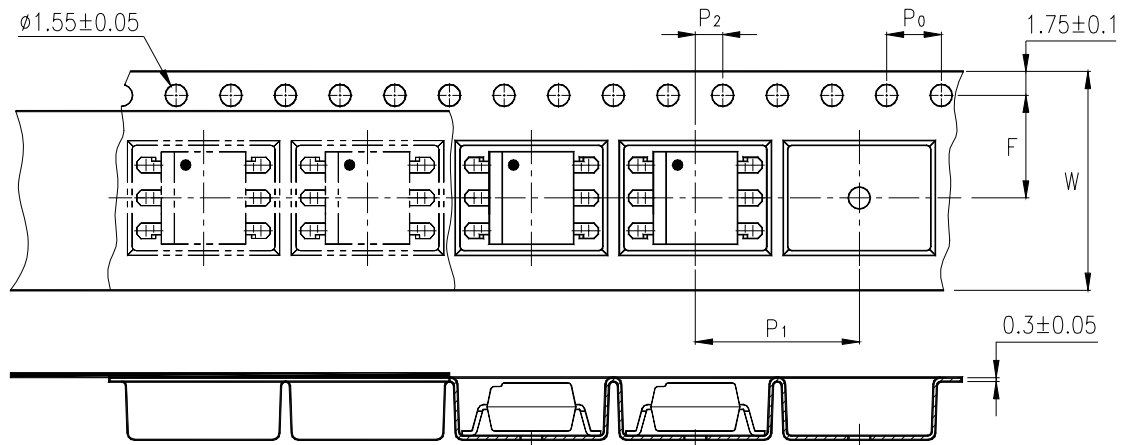
*1. Year date code.

*2. 2-digit work week.

*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).

TAPING DIMENSIONS

4N27S-TA1, 4N28S-TA1 :



| Description | Symbol | Dimensions in mm (inches) |
|--|----------------|-----------------------------|
| Tape wide | W | 16 ± 0.3 (.63) |
| Pitch of sprocket holes | P ₀ | 4 ± 0.1 (.15) |
| Distance of compartment | F | 7.5 ± 0.1 (.295) |
| Distance of compartment to compartment | P ₁ | 2 ± 0.1 (.079) |
| Distance of compartment to compartment | P ₂ | 12 ± 0.1 (.472) |

ABSOLUTE MAXIMUM RATING

(Ta = 25°C)

| PARAMETER | | SYMBOL | RATING | UNIT |
|--------------------------|-----------------------------|------------------|------------|------------------|
| INPUT | Forward Current | I _F | 80 | mA |
| | Reverse Voltage | V _R | 6 | V |
| | Power Dissipation | P | 150 | mW |
| OUTPUT | Collector - Emitter Voltage | V _{CEO} | 30 | V |
| | Emitter - Collector Voltage | V _{ECO} | 7 | V |
| | Collector - Base Voltage | V _{CBO} | 70 | V |
| | Collector Current | I _C | 100 | mA |
| | Collector Power Dissipation | P _C | 150 | mW |
| Total Power Dissipation | | P _{tot} | 250 | mW |
| *1 Isolation Voltage | 4N27 series | V _{iso} | 1,500 | V _{rms} |
| | 4N28 series | | 500 | |
| Operating Temperature | | T _{opr} | -55 ~ +100 | °C |
| Storage Temperature | | T _{stg} | -55 ~ +150 | °C |
| *2 Soldering Temperature | | T _{sol} | 260 | °C |

*1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector, emitter and base on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

*2. For 10 Seconds

ELECTRICAL - OPTICAL CHARACTERISTICS

(Ta = 25°C)

| PARAMETER | | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|--------------------------|--------------------------------------|----------------------|--------------------|--------------------|------|------|---|
| INPUT | Forward Voltage | V _F | — | 1.2 | 1.5 | V | I _F =10mA |
| | Reverse Current | I _R | — | — | 10 | μA | V _R =4V |
| | Terminal Capacitance | C _t | — | 50 | — | pF | V=0, f=1KHz |
| OUTPUT | Collector Dark Current | I _{CEO} | — | — | 50 | nA | V _{CE} =10V, I _F =0 |
| | Collector-Emitter Breakdown Voltage | BV _{CEO} | 30 | — | — | V | I _C =0.1mA I _F =0 |
| | Emitter-Collector Breakdown Voltage | BV _{ECO} | 7 | — | — | V | I _E =10μA I _F =0 |
| | Collector-Base Breakdown Voltage | BV _{CBO} | 70 | — | — | V | I _C =0.1mA I _F =0 |
| TRANSFER CHARACTERISTICS | Collector Current | I _C | 1 | — | — | mA | I _F =10mA V _{CE} =10V |
| | * Current Transfer Ratio | CTR | 10 | — | — | % | |
| | Collector-Emitter Saturation Voltage | V _{CE(sat)} | — | 0.1 | 0.5 | V | I _F =50mA I _C =2mA |
| | Isolation Resistance | R _{iso} | 5×10 ¹⁰ | 1×10 ¹¹ | — | Ω | DC500V 40 ~ 60% R.H. |
| | Floating Capacitance | C _f | — | 1 | — | pF | V=0, f=1MHz |
| | Response Time (Rise) | t _r | — | 3 | — | μs | V _{CE} =10V, I _C =2mA R _L =100Ω |
| | Response Time (Fall) | t _f | — | 3 | — | μs | |

$$* \text{CTR} = \frac{I_C}{I_F} \times 100\%$$

CHARACTERISTICS CURVES

Fig.1 Forward Current vs. Ambient Temperature

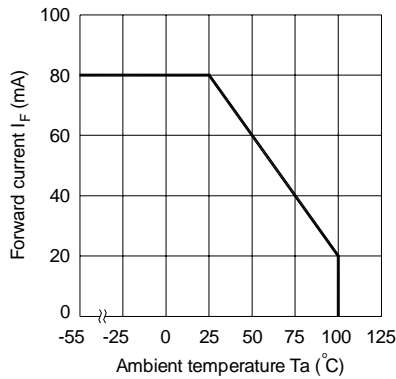


Fig.2 Collector Power Dissipation vs. Ambient Temperature

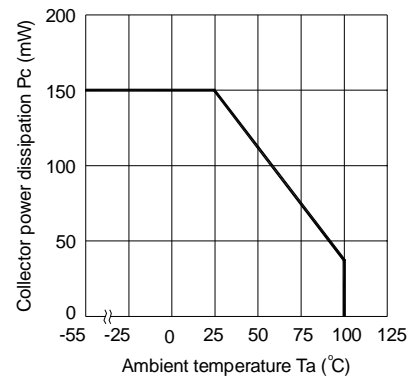


Fig.3 Forward Current vs. Forward Voltage

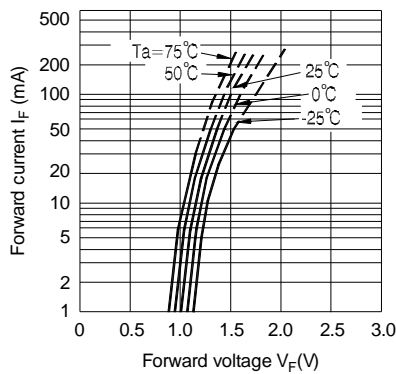


Fig.4 Current Transfer Ratio vs. Forward Current

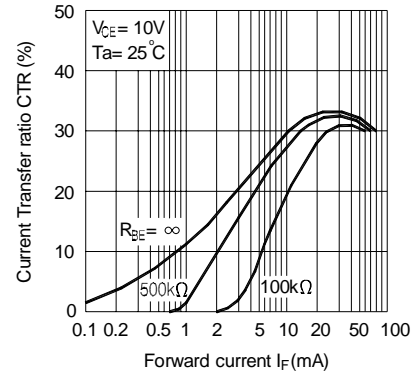


Fig.5 Collector Current vs. Collector-emitter Voltage

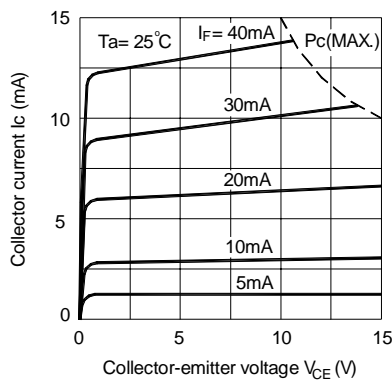
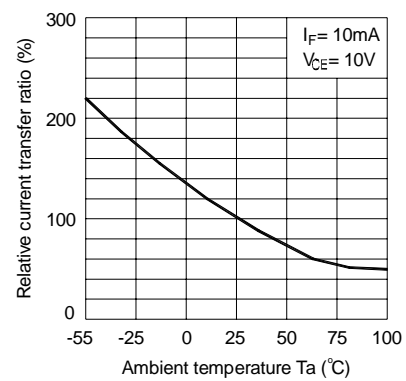


Fig.6 Relative Current Transfer Ratio vs. Ambient Temperature



CHARACTERISTICS CURVES

Fig.7 Collector-emitter Saturation Voltage vs. Ambient Temperature

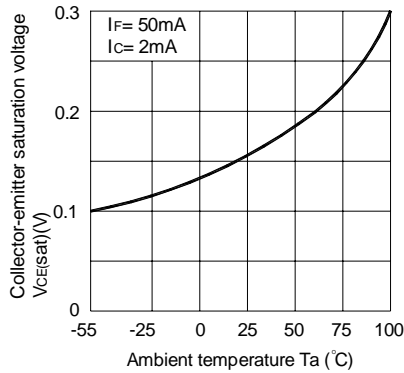


Fig.8 Collector Dark Current vs. Ambient Temperature

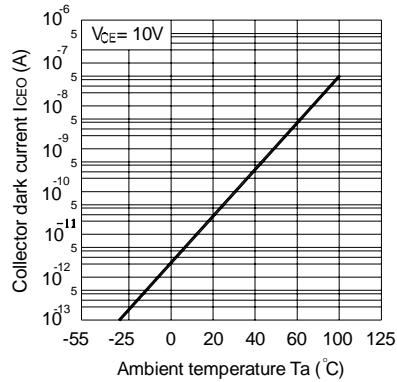


Fig.9 Response Time vs. Load Resistance

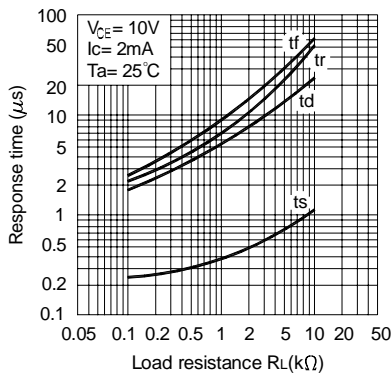


Fig.10 Frequency Response

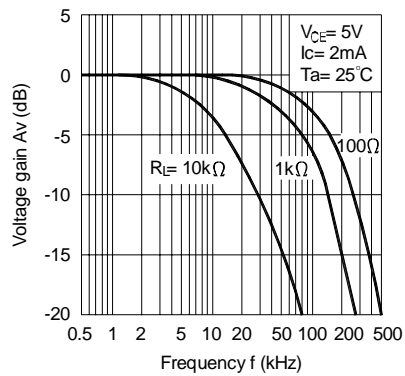
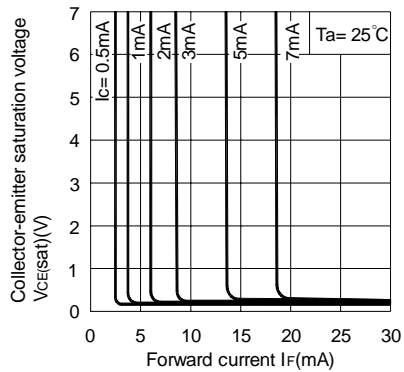
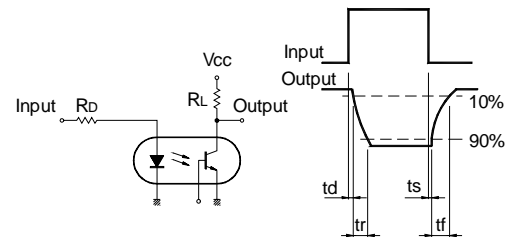


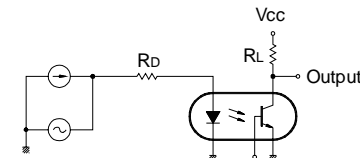
Fig.11 Collector-emitter Saturation Voltage vs. Forward Current



Test Circuit for Response Time



Test Circuit for Frequency Response



RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit : mm

