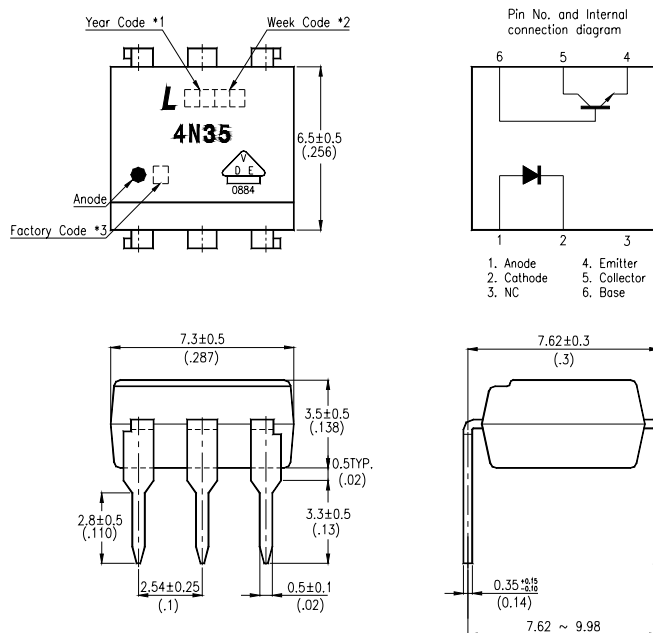


## FEATURES

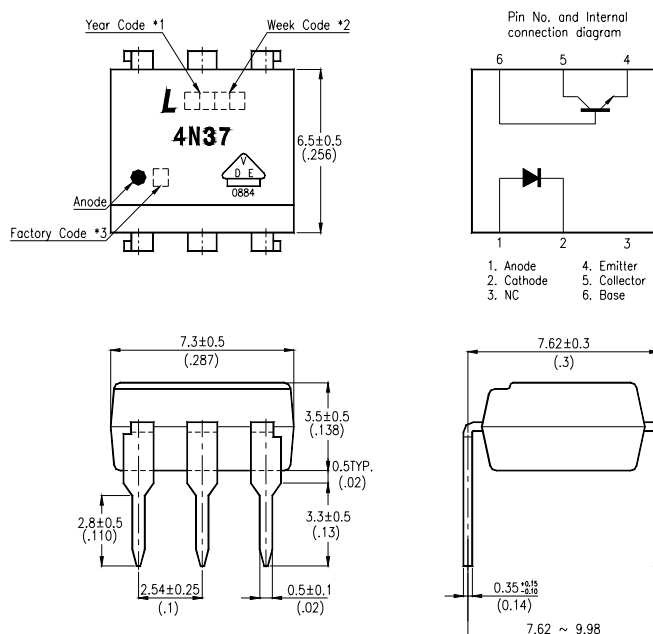
- \* High current transfer ratio  
( CTR : MIN. 100% at  $I_F = 10\text{mA}$ ,  $V_{CE} = 10\text{V}$  )
- \* Response time  
(  $t_{on}$  : TYP.  $3\mu\text{s}$  at  $V_{CC} = 10\text{V}$ ,  $I_C = 2\text{mA}$ ,  $R_L = 100\Omega$  )
- \* Input-output isolation voltage  
4N35-V series :  $V_{iso} = 3,550\text{Vrms}$   
4N37-V series :  $V_{iso} = 1,500\text{Vrms}$
- \* Dual-in-line package :  
4N35-V, 4N37-V
- \* Wide lead spacing package :  
4N35M-V, 4N37M-V
- \* Surface mounting package :  
4N35S-V, 4N37S-V
- \* Tape and reel packaging :  
4N35STA1-V, 4N37STA1-V
- \* UL approved ( No. E113898 )
- \* TUV approved ( No. R9653630 )
- \* VDE approved ( No. 094722 )
- \* CSA approved ( No. CA91533-1 )
- \* FIMKO approved ( No. 193422 )
- \* NEMKO approved ( No. P96103013 )
- \* DEMKO approved ( No. 303985 )
- \* SEMKO approved ( No. 9646047 / 01-30 )

## OUTLINE DIMENSIONS

### 4N35-V :



### 4N37 -V:



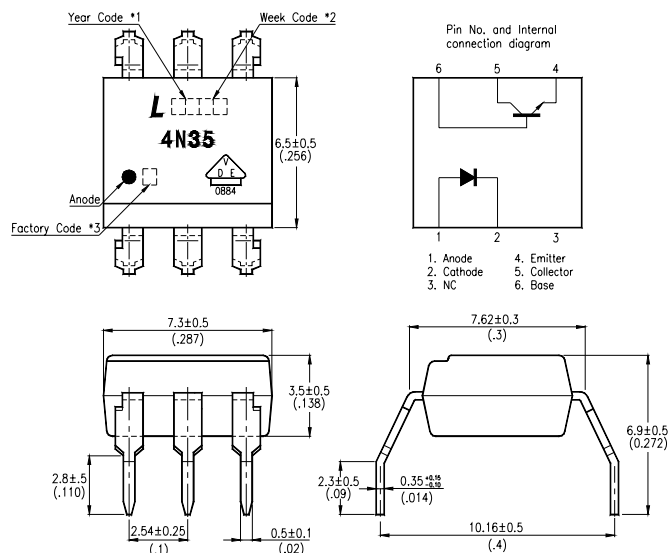
\*1. Year date code.

\*2. 2-digit work week.

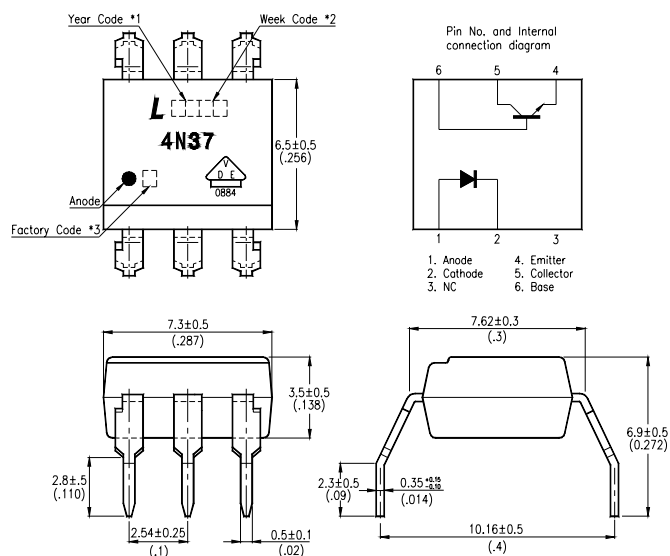
\*3. Factory identification mark shall be marked(Z : Taiwan, Y : Thailand, X : China).

## OUTLINE DIMENSIONS

### 4N35M-V :



### 4N37M-V :



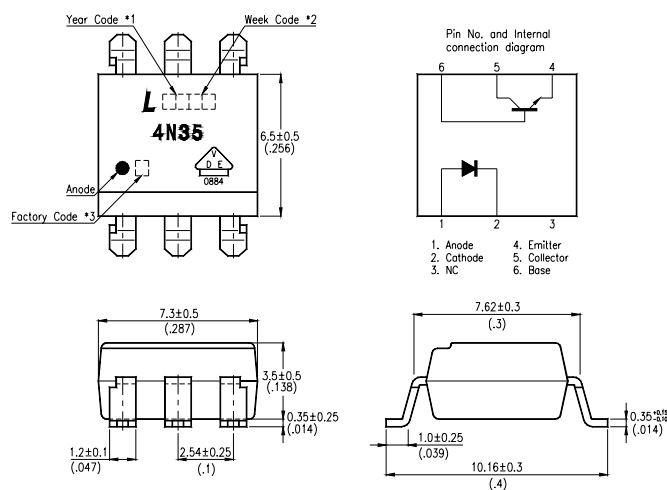
\*1. Year date code.

\*2. 2-digit work week.

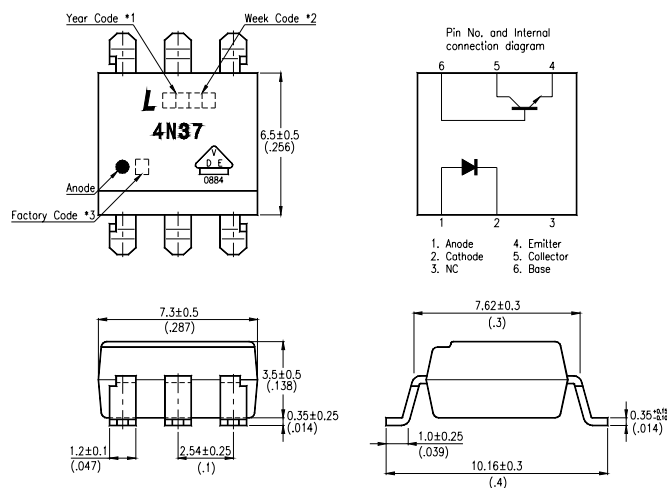
\*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).

## OUTLINE DIMENSIONS

### 4N35S-V :



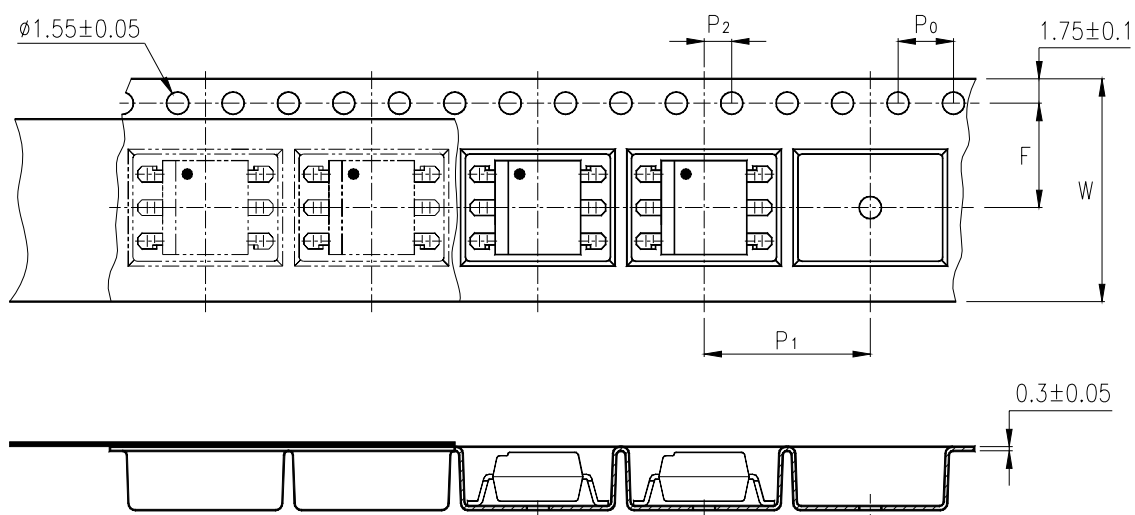
### 4N37S-V :



\*1. Year date code.

\*2. 2-digit work week.

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

**TAPING DIMENSIONS**
**4N35STA1-V , 4N37STA1-V :**


| Description                            | Symbol | Dimensions in mm ( inches ) |
|----------------------------------------|--------|-----------------------------|
| Tape wide                              | W      | $16 \pm 0.3$ ( .63 )        |
| Pitch of sprocket holes                | $P_0$  | $4 \pm 0.1$ ( .15 )         |
| Distance of compartment                | F      | $7.5 \pm 0.1$ ( .295 )      |
|                                        | $P_2$  | $2 \pm 0.1$ ( .079 )        |
| Distance of compartment to compartment | $P_1$  | $12 \pm 0.1$ ( .472 )       |

**ABSOLUTE MAXIMUM RATING**

( Ta = 25°C )

| PARAMETER                |                             | SYMBOL           | RATING     | UNIT             |
|--------------------------|-----------------------------|------------------|------------|------------------|
| INPUT                    | Forward Current             | I <sub>F</sub>   | 60         | mA               |
|                          | Reverse Voltage             | V <sub>R</sub>   | 6          | V                |
|                          | Power Dissipation           | P                | 100        | mW               |
| OUTPUT                   | Collector - Emitter Voltage | V <sub>CEO</sub> | 30         | V                |
|                          | Emitter - Collector Voltage | V <sub>ECO</sub> | 7          | V                |
|                          | Collector - Base Voltage    | V <sub>CBO</sub> | 70         | V                |
|                          | Collector Current           | I <sub>C</sub>   | 100        | mA               |
|                          | Collector Power Dissipation | P <sub>C</sub>   | 300        | mW               |
| Total Power Dissipation  |                             | P <sub>tot</sub> | 350        | mW               |
| *1 Isolation Voltage     | 4N35-V series               | V <sub>iso</sub> | 3,550      | V <sub>rms</sub> |
|                          | 4N37-V series               |                  | 1,500      |                  |
| Operating Temperature    |                             | T <sub>opr</sub> | -55 ~ +100 | °C               |
| Storage Temperature      |                             | T <sub>stg</sub> | -55 ~ +150 | °C               |
| *2 Soldering Temperature |                             | T <sub>sol</sub> | 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 <sub>F</sub>       | —                  | 1.2                | 1.5  | V    | I <sub>F</sub> =10mA                                              |
|                          | Reverse Current                      |          | I <sub>R</sub>       | —                  | —                  | 10   | μA   | V <sub>R</sub> =4V                                                |
|                          | Terminal Capacitance                 |          | C <sub>t</sub>       | —                  | 50                 | —    | pF   | V=0, f=1KHz                                                       |
| OUTPUT                   | Collector Dark Current               | Ta=25°C  | I <sub>CEO</sub>     | —                  | —                  | 50   | nA   | V <sub>CE</sub> =10V, I <sub>F</sub> =0                           |
|                          |                                      | Ta=100°C |                      | —                  | —                  | 500  | μA   | V <sub>CE</sub> =30V, I <sub>F</sub> =0                           |
|                          | Collector-Emitter Breakdown Voltage  |          | BV <sub>CEO</sub>    | 30                 | —                  | —    | V    | I <sub>C</sub> =0.1mA<br>I <sub>F</sub> =0                        |
|                          | Emitter-Collector Breakdown Voltage  |          | BV <sub>ECO</sub>    | 7                  | —                  | —    | V    | I <sub>E</sub> =10μA<br>I <sub>F</sub> =0                         |
|                          | Collector-Base Breakdown Voltage     |          | BV <sub>CBO</sub>    | 70                 | —                  | —    | V    | I <sub>C</sub> =0.1mA<br>I <sub>F</sub> =0                        |
|                          |                                      |          |                      |                    |                    |      |      |                                                                   |
| TRANSFER CHARACTERISTICS | Collector Current                    |          | I <sub>C</sub>       | 10                 | —                  | —    | mA   | I <sub>F</sub> =10mA<br>V <sub>CE</sub> =10V                      |
|                          | * Current Transfer Ratio             |          | CTR                  | 100                | —                  | —    | %    |                                                                   |
|                          | Collector-Emitter Saturation Voltage |          | V <sub>CE(sat)</sub> | —                  | —                  | 0.3  | V    | I <sub>F</sub> =50mA<br>I <sub>C</sub> =2mA                       |
|                          | Isolation Resistance                 |          | R <sub>iso</sub>     | 5×10 <sup>10</sup> | 1×10 <sup>11</sup> | —    | Ω    | DC500V<br>40 ~ 60% R.H.                                           |
|                          | Floating Capacitance                 |          | C <sub>f</sub>       | —                  | 1                  | 2.5  | pF   | V=0, f=1MHz                                                       |
|                          | Response Time (Turn-on)              |          | t <sub>on</sub>      | —                  | 3                  | 10   | μs   | V <sub>CC</sub> =10V, I <sub>C</sub> =2mA<br>R <sub>L</sub> =100Ω |
|                          | Response Time (Turn-off)             |          | t <sub>off</sub>     | —                  | 3                  | 10   | μs   |                                                                   |

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

## CHARACTERISTICS CURVES

Fig. 1 Forward Current vs. Ambient Temperature

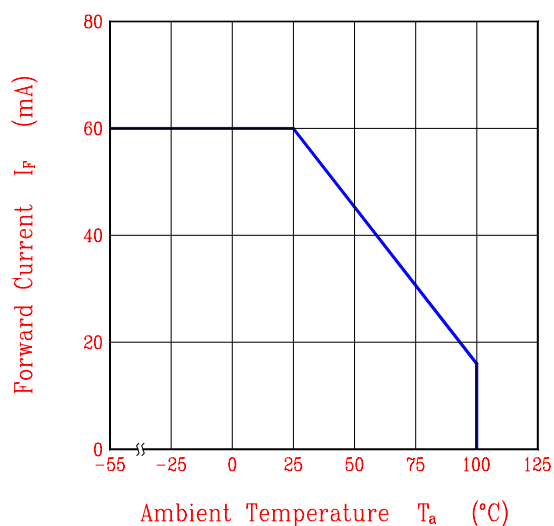


Fig. 2 Diode Power Dissipation vs. Ambient Temperature

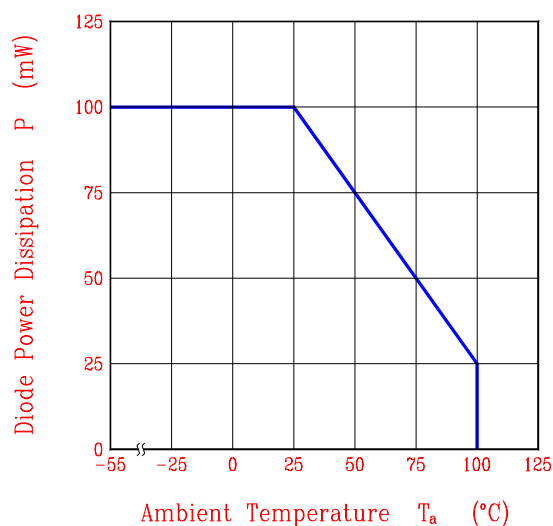


Fig. 3 Collector Power Dissipation vs. Ambient Temperature

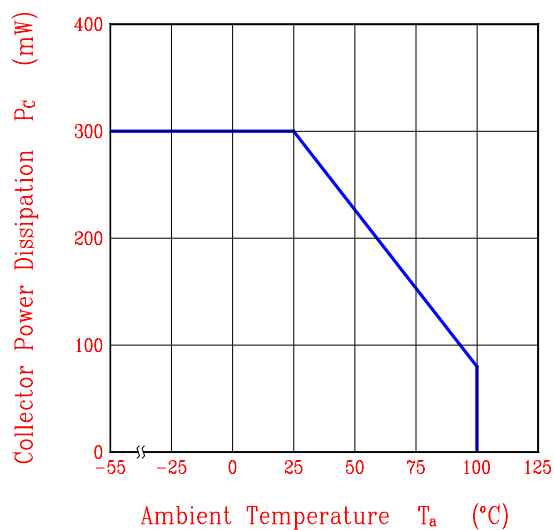
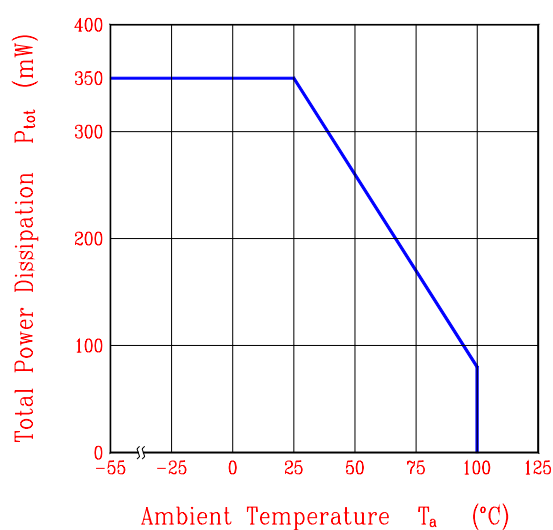


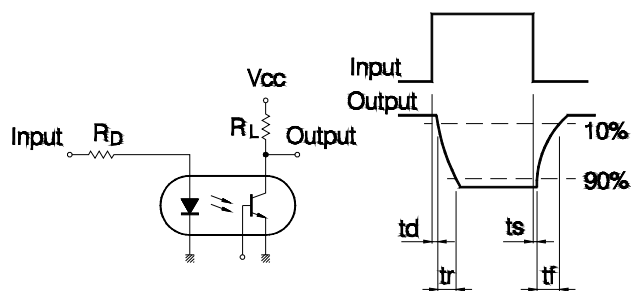
Fig. 4 Total Power Dissipation vs. Ambient Temperature





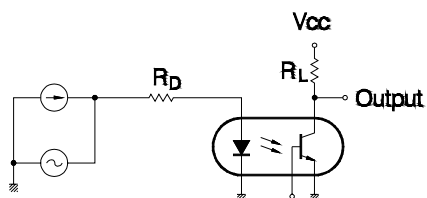
## TEST CIRCUITS

Test Circuit for Response Time



$$t_{on} = t_d + t_r, \quad t_{off} = t_s + t_f.$$

Test Circuit for Frequency Response



**RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)**

Unit : mm

