



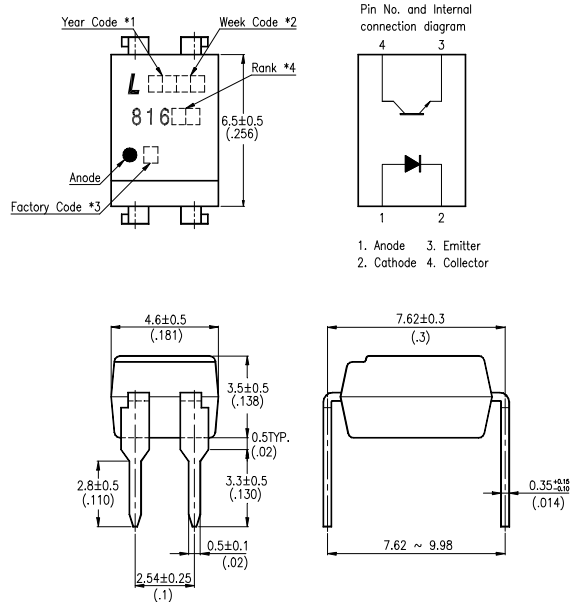
January 2010

FEATURES

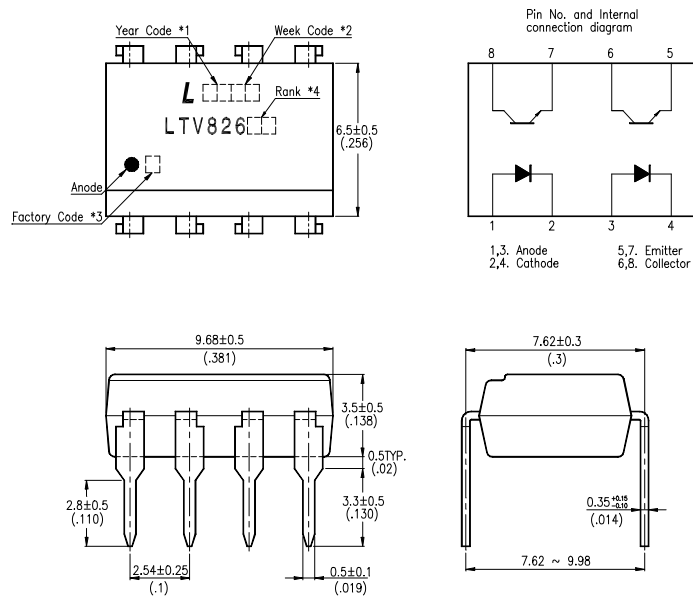
- * Current transfer ratio
(CTR : MIN. 50% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- * High input-output isolation voltage
($V_{iso} = 5,000\text{Vrms}$)
- * Response time
(t_r : TYP. $4\mu\text{s}$ at $V_{CE} = 2\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$)
- * Dual-in-line package :
 - LTV-816 : 1-channel type
 - LTV-826 : 2-channel type
 - LTV-846 : 4-channel type
- * Wide lead spacing package :
 - LTV-816M : 1-channel type
 - LTV-826M : 2-channel type
 - LTV-846M : 4-channel type
- * Surface mounting package :
 - LTV-816S : 1-channel type
 - LTV-826S : 2-channel type
 - LTV-846S : 4-channel type
- * Tape and reel packaging :
 - LTV-816S-TA : 1-channel type
 - LTV-816S-TA1 : 1-channel type
 - LTV-816S-TP : 1-channel type
 - LTV-826S-TA1 : 2-channel type
- * Safety approval
UL / CSA / FIMKO / NEMKO / DEMKO / SEMKO / VDE* approved
***Required “V” ordering option**
- * RoHS compliance

OUTLINE DIMENSIONS

LTV-816 :



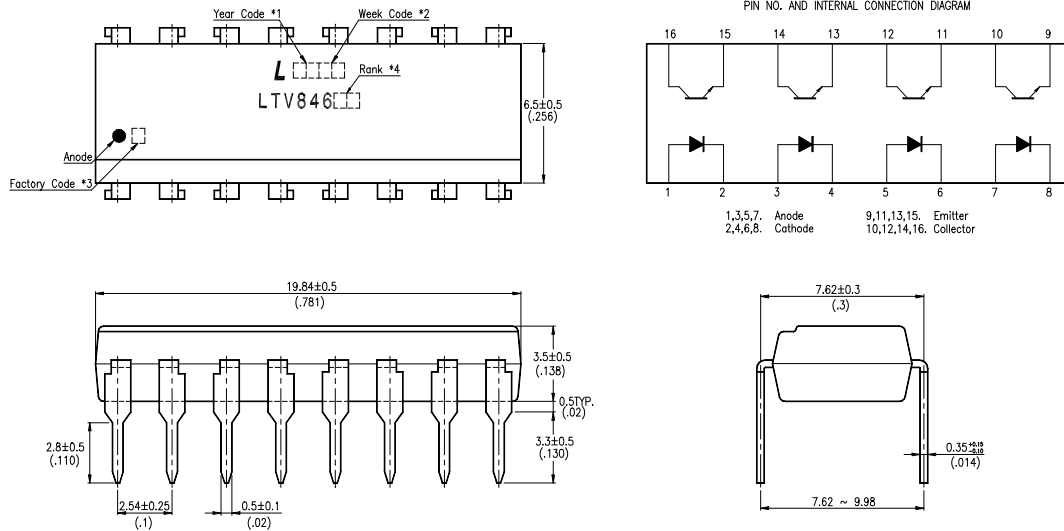
LTV-826 :



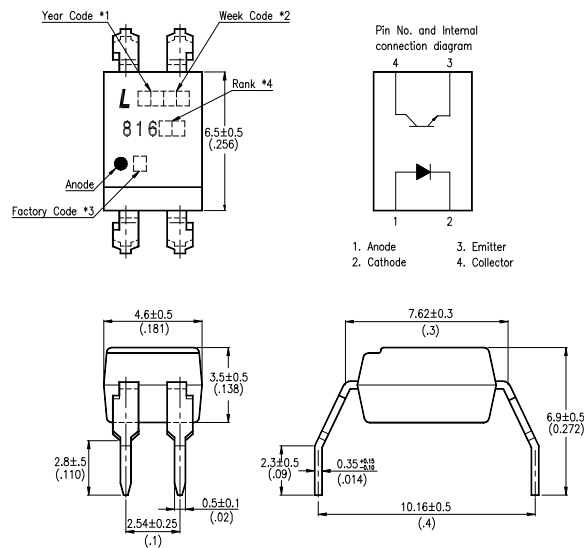
- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked.
(Z : Taiwan, Y : Thailand, X : China-TJ, W : China-CZ)
- *4. Rank shall be or shall not be marked.

OUTLINE DIMENSIONS

LTV-846 :



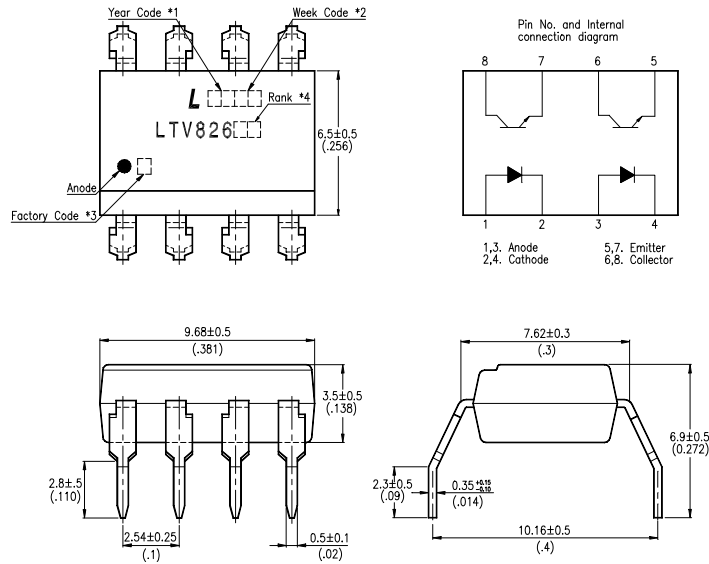
LTV-816M :



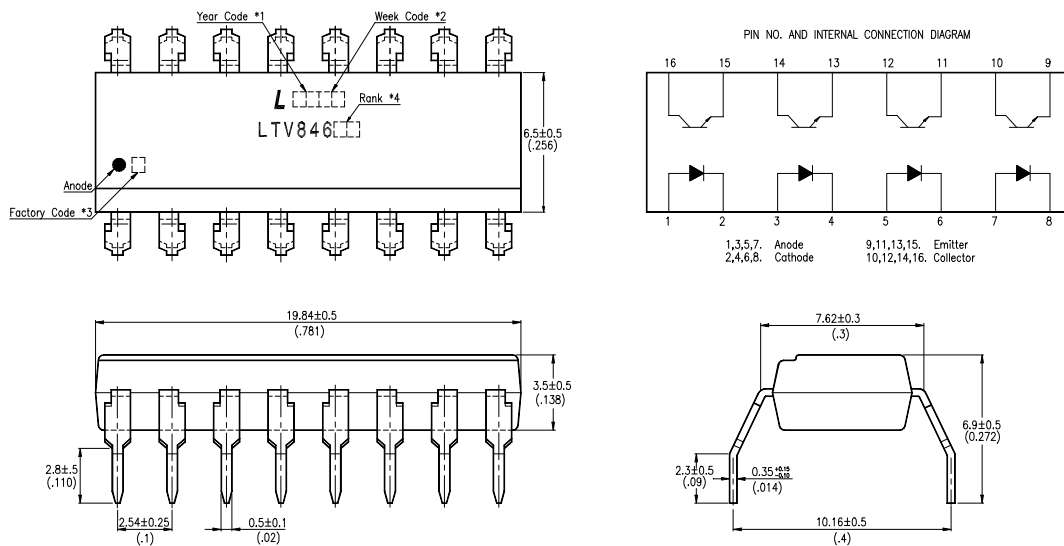
- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked.
(Z : Taiwan, Y : Thailand, X : China-TJ, W : China-CZ)
- *4. Rank shall be or shall not be marked.

OUTLINE DIMENSIONS

LTV-826M :



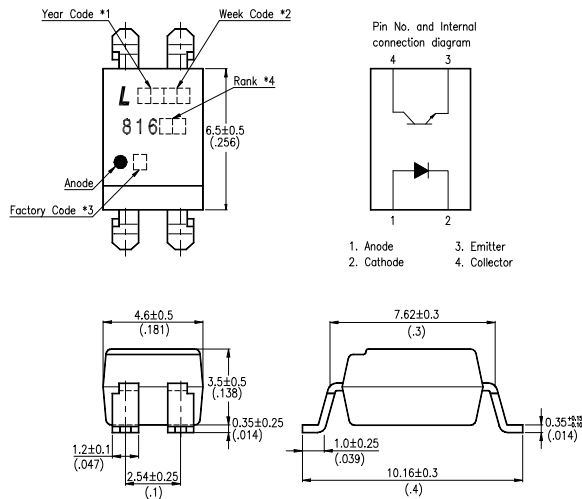
LTV-846M :



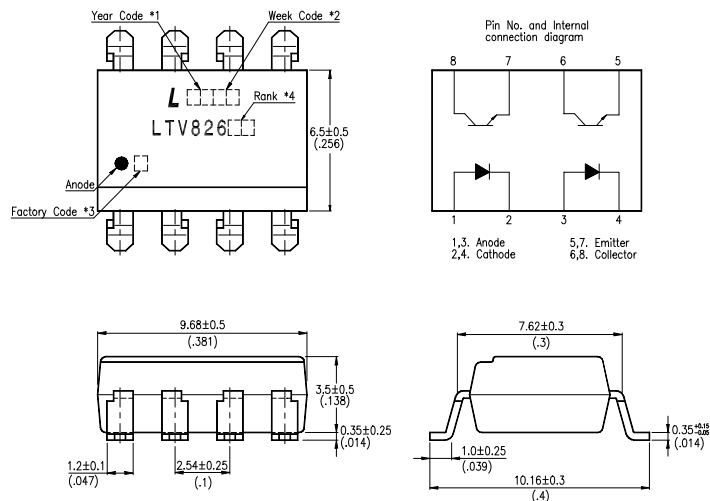
- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked.
(Z : Taiwan, Y : Thailand, X : China-TJ, W : China-CZ)
- *4. Rank shall be or shall not be marked.

OUTLINE DIMENSIONS

LTV-816S :



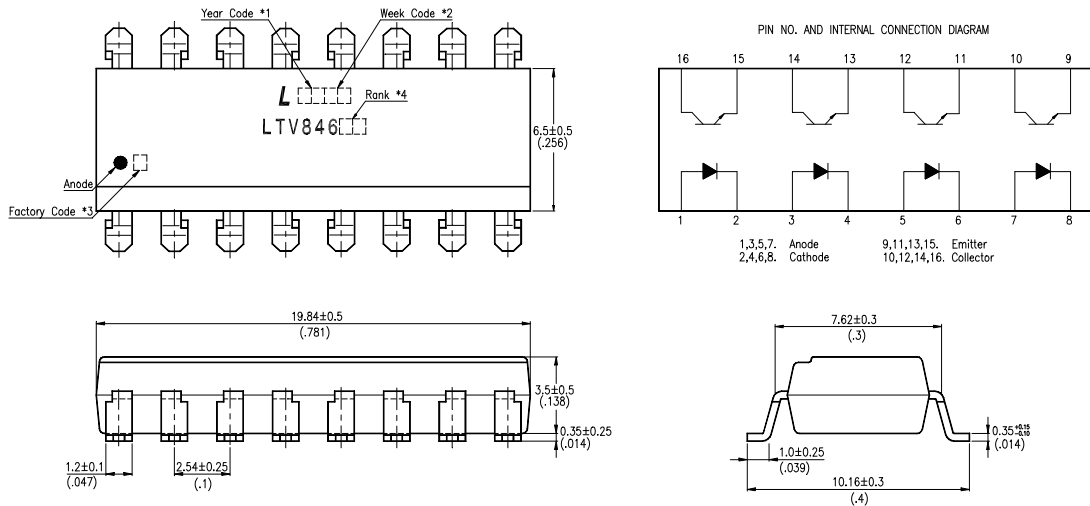
LTV-826S :



- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked.
(Z : Taiwan, Y : Thailand, X : China-TJ, W : China-CZ)
- *4. Rank shall be or shall not be marked.

OUTLINE DIMENSIONS

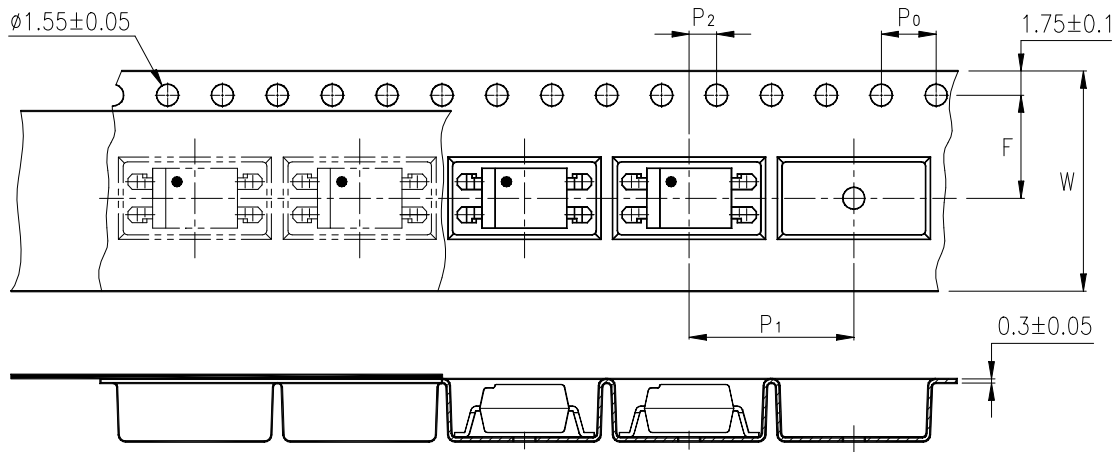
LTV-846S :



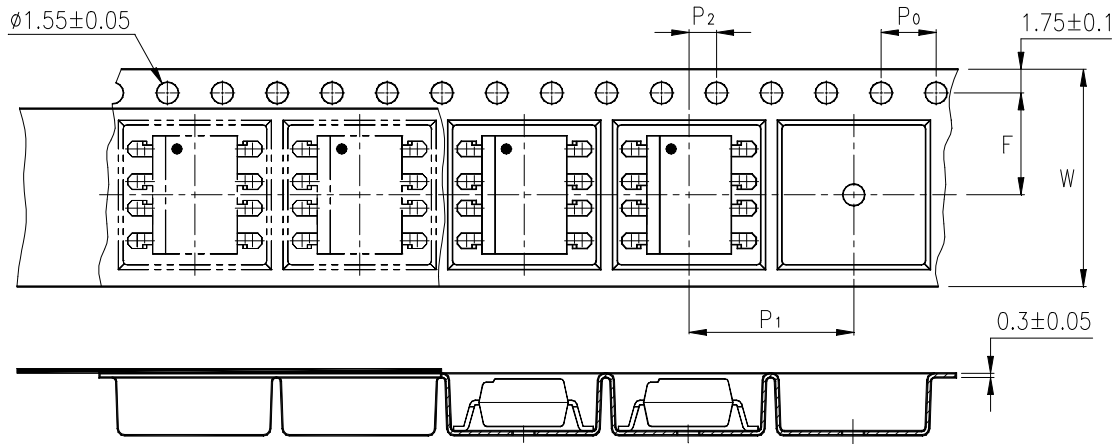
- *1. Year date code.
- *2. 2-digit work week.
- *3. Factory identification mark shall be marked.
(Z : Taiwan, Y : Thailand, X : China-TJ, W : China-CZ)
- *4. Rank shall be or shall not be marked.

TAPING DIMENSIONS

LTV-816S-TA1 :



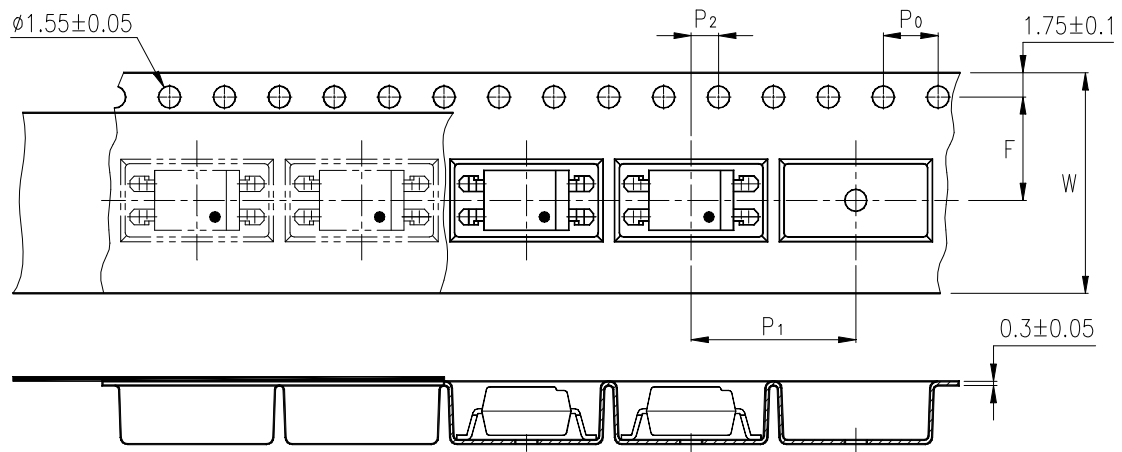
LTV-826S-TA1 :



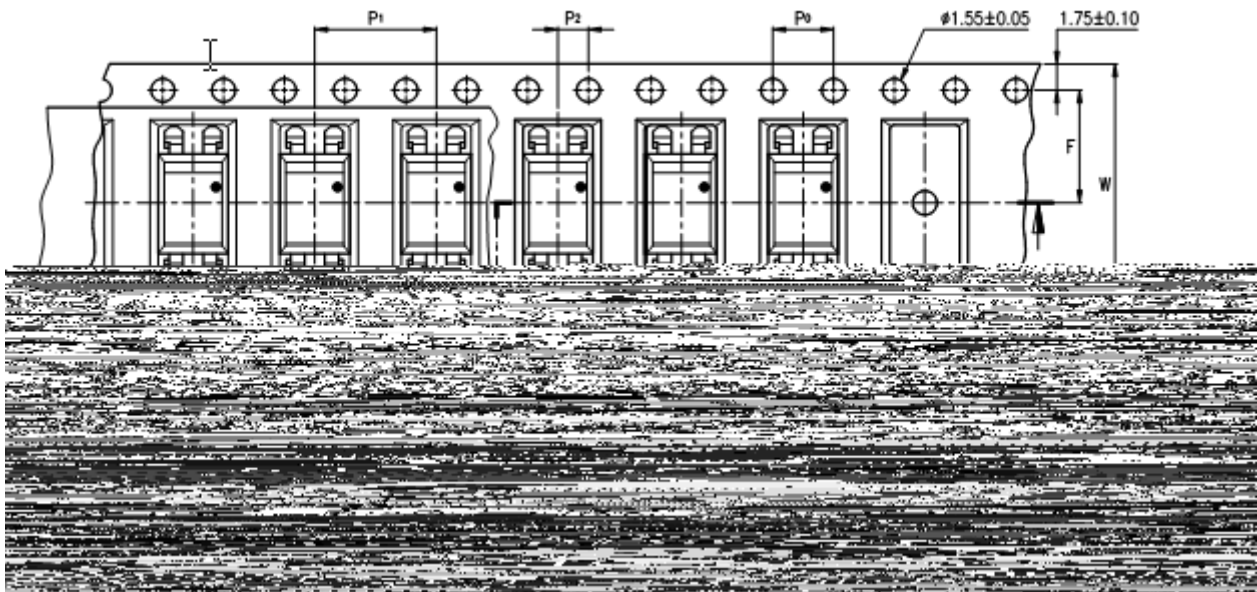
| Description | Symbol | Dimensions in mm (inches) |
|--|--------|-----------------------------|
| Tape wide | W | 16 ± 0.3 (.63) |
| Pitch of sprocket holes | P_0 | 4 ± 0.1 (.15) |
| Distance of compartment | F | 7.5 ± 0.1 (.295) |
| | P_2 | 2 ± 0.1 (.079) |
| Distance of compartment to compartment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

TAPING DIMENSIONS

LTV-816S-TA :



LTV-816S-TP :



| Description | Symbol | Dimensions in mm (inches) |
|--|----------|-----------------------------|
| Tape wide | W | 16 ± 0.3 (.63) |
| Pitch of sprocket holes | ϕP | 4 ± 0.1 (.15) |
| Distance of compartment | F | 7.5 ± 0.1 (.295) |
| | P_2 | 2 ± 0.1 (.079) |
| Distance of compartment to compartment | $1 P$ | 12 ± 0.1 (.472) |

ABSOLUTE MAXIMUM RATING

(Ta = 25°C)

| PARAMETER | | SYMBOL | RATING | UNIT |
|---------------------------------------|-----------------------------|-----------|------------|------|
| INPUT | Forward Current | I_F | 50 | mA |
| | Reverse Voltage | V_R | 6 | V |
| | Power Dissipation | P | 70 | mW |
| OUTPUT | Collector - Emitter Voltage | V_{CE} | 80 | V |
| | Emitter - Collector Voltage | V_{EC} | 6 | V |
| | Collector Current | I_C | 50 | mA |
| | Collector Power Dissipation | P_C | 150 | mW |
| Total Power Dissipation | | P_T | 200 | mW |
| *1 | Isolation Voltage | V_{iso} | 5,000 | Vrms |
| Operating Temperature LTV- 826 / 846± | | T_{opr} | -30 ~ +100 | °C |
| Operating Temperature LTV-816 ± | | T_{opr} | -30 ~ +110 | °C |
| Storage Temperature | | T_{stg} | -55 ~ +125 | °C |
| *2 | Soldering Temperature | T_{sol} | 260 | °C |

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

Isolation voltage shall be measured using the **winding** method.

(1) Short between anode and cathode on the **primary** and between collector and emitter on the secondary side.

(2) The isolation voltage tester with zero-cross **suit** shall be used.

(3) The waveform of applied voltage shall be a **sine**.

*2. For 10 Seconds

ELECTRICAL - OPTICAL CHARACTERISTICS

(Ta = 25°C)

| PARAMETER | | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|--------------------------|--------------------------------------|----------------------|----------------------|----------------------|------|------|--|
| INPUT | Forward Voltage | V _F | — | 1.2 | 1.4 | V | I _F =20mA |
| | Reverse Current | I _R | — | — | 10 | mA | V _R =4V |
| | Terminal Capacitance | C _T | — | 30 | 250 | pF | V=0, f=1KHz |
| OUTPUT | Collector Dark Current | I _{CEO} | — | — | 100 | nA | V _{CE} =20V, I _F =0 |
| | Collector-Emitter Breakdown Voltage | BV _{CEO} | 80 | — | — | V | I _C =0.1mA I _F =0 |
| | Emitter-Collector Breakdown Voltage | BV _{ECO} | 6 | — | — | V | I _E =10mA I _F =0 |
| TRANSFER CHARACTERISTICS | Collector Current | I _C | 2.5 | — | 30 | mA | I _F =5mA V _{CE} =5V |
| | *1 Current Transfer Ratio | CTR | 50 | — | 600 | % | |
| | Collector-Emitter Saturation Voltage | V _{CE(sat)} | — | 0.1 | 0.2 | V | I _F =20mA I _C =1mA |
| | Isolation Resistance | R _{is} | 5 × 10 ¹⁰ | 1 × 10 ¹¹ | — | W | DC500V 40 ~ 60% R.H. |
| | Floating Capacitance | C _F | — | 0.6 | 1 | pF | V=0, f=1MHz |
| | Cut-Off Frequency | f _c | — | 80 | — | kHz | V _{CE} =5V, I _C =2mA R _L =100W, -3dB |
| | Response Time (Rise) | t _r | — | 4 | 18 | ns | V _{CE} =2V, I _C =2mA R _L =100W |
| | Response Time (Fall) | t _f | — | 3 | 18 | ns | |

$$*1 \text{ CTR} = \frac{I_C}{I_F} \cdot 100\%$$

RANK TABLE OF CURRENT TRANSFER RATIO CTR

| MODEL NO. | RANK MARK | CTR (%) |
|-----------|----------------------------|-----------|
| LTV-816 | L | 50 ~ 100 |
| LTV-816 | A | 80 ~ 160 |
| LTV-816 | B | 130 ~ 260 |
| LTV-816 | C | 200 ~ 400 |
| LTV-816 | D | 300 ~ 600 |
| LTV-816 | L or A or B or C or D | 50 ~ 600 |
| LTV-8 á6 | B | 130 ~ 260 |
| LTV-8 á6 | B or C or BC | 130 ~ 400 |
| LTV-8 á6 | C | 200 ~ 400 |
| LTV-8 á6 | C or D or CD | 200 ~ 600 |
| LTV-8 á6 | B • BC • C • CD or No mark | 50 ~ 600 |

á = 2 or 4

| | |
|------------|--|
| CONDITIONS | $I_F = 5 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $T_a = 25^\circ\text{C}$ |
|------------|--|

CHARACTERISTICS CURVES

Fig.1 Forward Current vs. Ambient Temperature

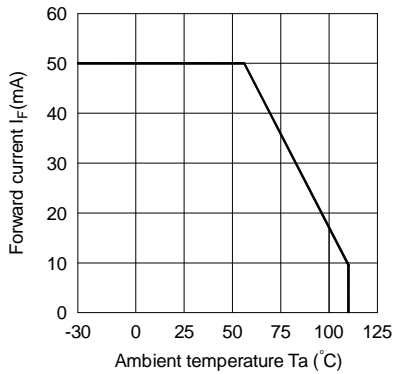


Fig.2 Collector Power Dissipation vs. Ambient Temperature

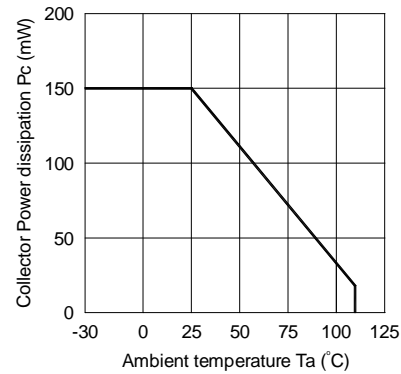


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

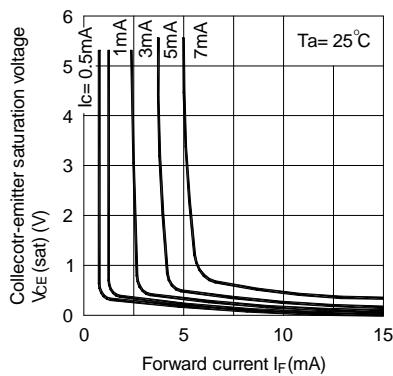


Fig.4 Forward Current vs. Forward Voltage

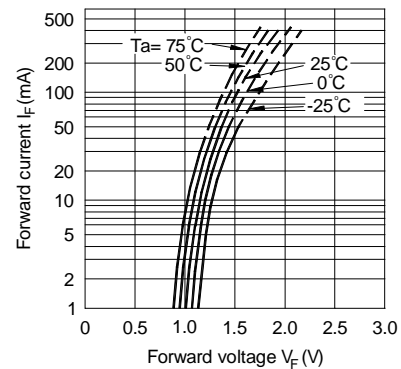


Fig.5 Current Transfer Ratio vs. Forward Current

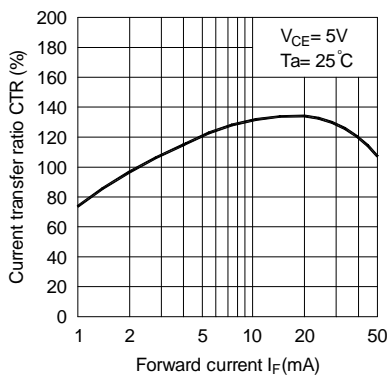
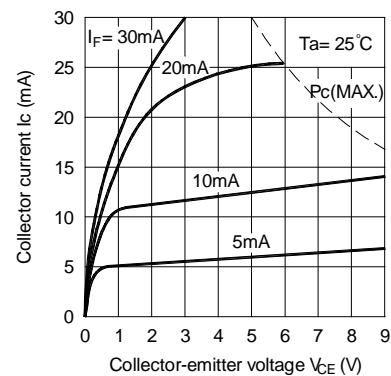


Fig.6 Collector Current vs. Collector-emitter Voltage



CHARACTERISTICS CURVES

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

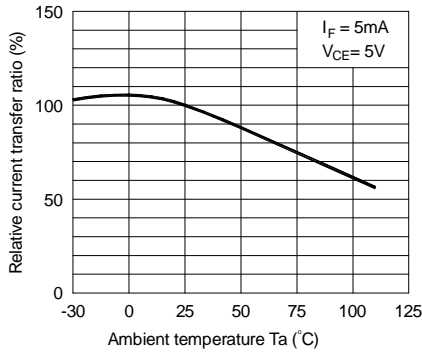


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

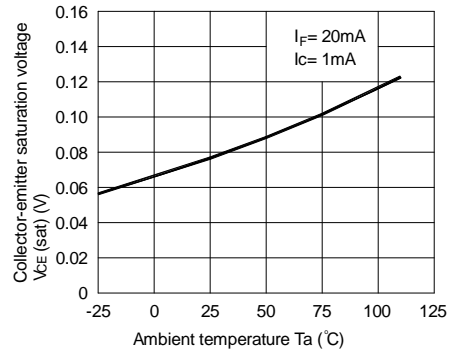


Fig.9 Collector Dark Current vs. Ambient Temperature

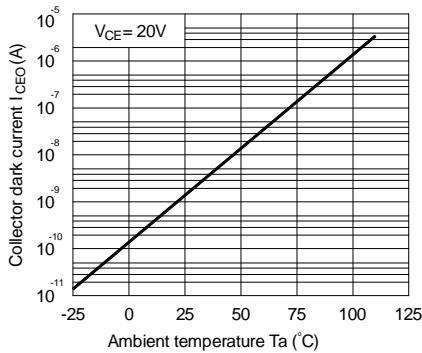


Fig.10 Response Time vs. Load Resistance

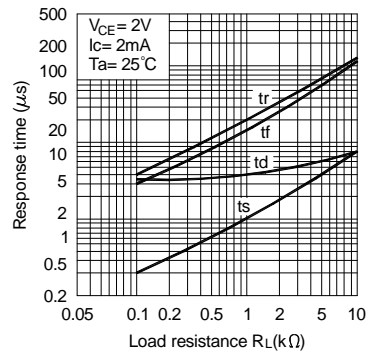
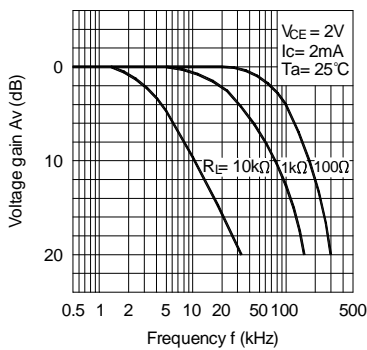
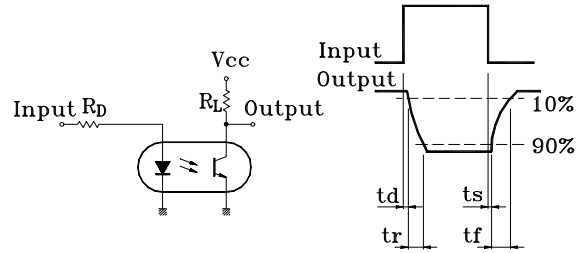


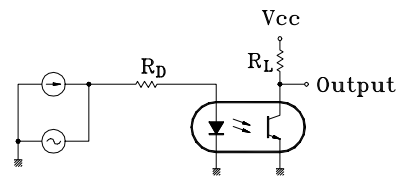
Fig.11 Frequency Response



Test Circuit for Response Time



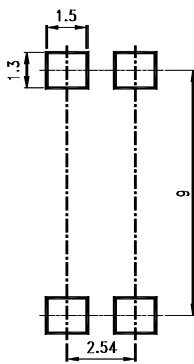
Test Circuit for Frequency Response



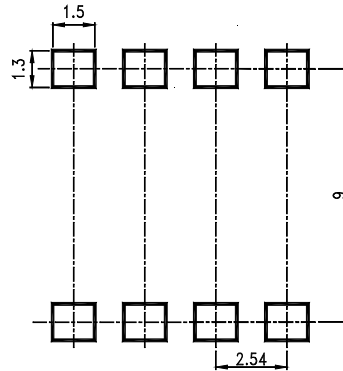
RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit : mm

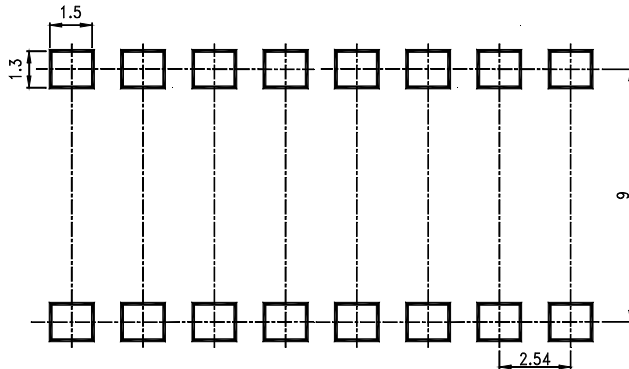
4 PIN



8 PIN



16 PIN



TEMPERATURE PROFILE OF SOLDERING REFLOW

(1) One time soldering reflow is recommended within the condition of temperature and time profile shown below.

1. Wave soldering
 - 260 °C / 10 sec

2. IR reflow

| Profile Item | Condition |
|----------------------------------|------------------|
| Preheat | |
| - Temperature Min (T_{Smin}) | 150 °C |
| - Temperature Max (T_{Smax}) | 180 °C |
| - Time (min to max) (ts) | 90 ± 30 sec |
| Soldering zone | |
| - Temperature (T_L) | 250 °C |
| - Time (t_L) | 10 ~150 sec |
| Peak temperature (T_p) | 260 °C |
| Ramp-down rate | 3 ~ 6 °C/sec |

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