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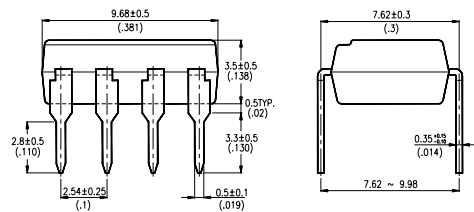
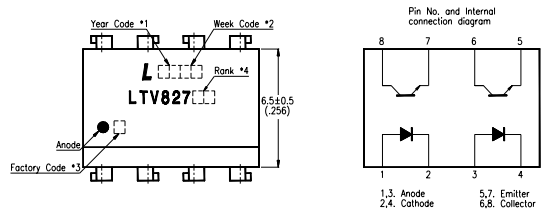
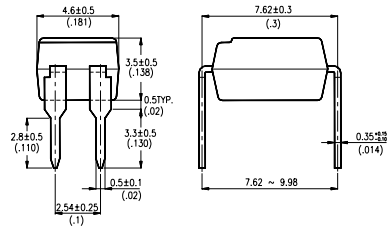
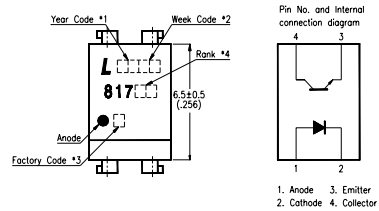
### Features

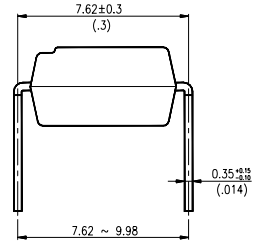
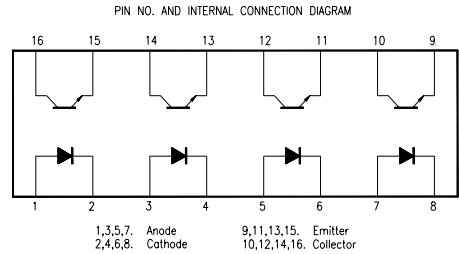
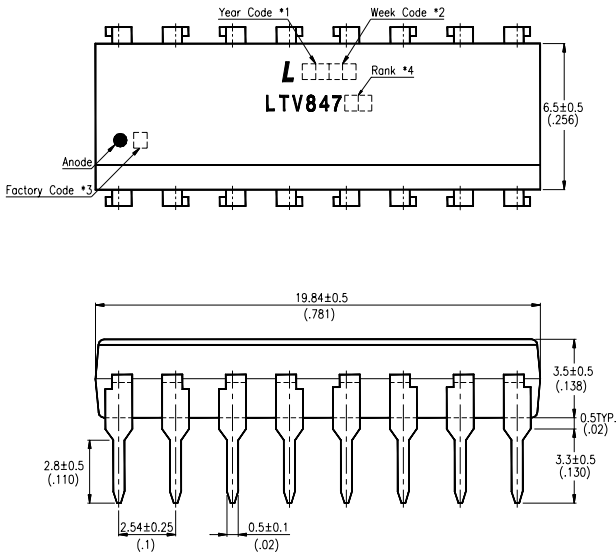
- Current transfer ratio  
(CTR : MIN. 50% at  $I_F=5\text{mA}$ ,  $V_{CE}=5\text{V}$ )
- High input-output isolation voltage:  
( $V_{ISO}$  :  $5,000V_{rms}$ )
- Compact dual-in-line package  
LTV-817 : 1-channel type  
LTV-827 : 2-channel type  
LTV-847 : 4-channel type
- UL approved (No. E113898)
- TUV approved (No. R9653630)
- CSA approved (No. CA91533-1)
- FIMKO approved (No. 202634)
- NEMKO approved (No. P98101945)
- DEMKO approved (No. 307857)
- SEMKO approved (No. 9832157/01-03)
- VDE approved (No. 094722)
- Options available :
  - Leads with 0.4"(10.16mm)spacing (M Type)
  - Leads bends for surface mounting(S Type)
  - Tape and Reel of Type I for SMD(Add"-TA"Suffix)
  - Tape and Reel of Type II for SMD(Add"-TA1"Suffix)
  - VDE 0884 approvals (Add"-V"Suffix)

### Applications

1. Computer terminals.
2. System appliances, measuring instruments.
3. Registers, copiers, automatic vending machines.
4. Electric home appliances such as fan heaters, etc.
5. Signal transmission between circuits of different potentials and impedances.

### Package Dimensions





Note:

1. Year date code.
2. 2-digit work week.
3. Factory code shall be marked (Z : Taiwan, Y : Thailand).
4. Rank shall be or shall not be marked.
5. All dimensions are in millimeters (inches).
6. Tolerance is  $\pm 0.25\text{mm}$  (.010") unless otherwise noted.
7. Specifications are subject to change without notice.

## Ordering Information

| Part Number                                                       | Package                                                                                                                                                                              | Safety Standard Approval                                                                                                                                                                                                | Application part number |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| LTV-817<br>LTV-817M<br>LTV-817S<br>LTV-817S-TA<br>LTV-817S-TA1    | 4-pin DIP<br>4-pin (leads with 0.4" spacing)<br>4-pin (lead bends for surface mount)<br>4-pin (tape and reel packaging of type I)<br>4-pin (tape and reel packaging of type II)      | <ul style="list-style-type: none"> <li>• UL approved</li> <li>• TUV approved</li> <li>• CSA approved</li> <li>• FIMKO approved</li> <li>• NEMKO approved</li> <li>• SEMKO approved</li> <li>• DEMKO approved</li> </ul> | LTV-817                 |
| LTV-827<br>LTV-827M<br>LTV-827S<br>LTV-827S-TA<br>LTV-827S-TA1    | 8-pin DIP<br>8-pin (leads with 0.4" spacing)<br>8-pin (lead bends for surface mount)<br>8-pin (tape and reel packaging of type I)<br>8-pin (tape and reel packaging of type II)      |                                                                                                                                                                                                                         | LTV-827                 |
| LTV-847<br>LTV-847M<br>LTV-847S<br>LTV-847S-TA<br>LTV-847S-TA1    | 16-pin DIP<br>16-pin (leads with 0.4" spacing)<br>16-pin (lead bends for surface mount)<br>16-pin (tape and reel packaging of type I)<br>16-pin (tape and reel packaging of type II) |                                                                                                                                                                                                                         | LTV-847                 |
| LTV817-V<br>LTV817M-V<br>LTV817S-V<br>LTV817STA-V<br>LTV817STA1-V | 4-pin DIP<br>4-pin (leads with 0.4" spacing)<br>4-pin (lead bends for surface mount)<br>4-pin (tape and reel packaging of type I)<br>4-pin (tape and reel packaging of type II)      | <ul style="list-style-type: none"> <li>• VDE approved</li> </ul>                                                                                                                                                        | LTV-817                 |
| LTV827-V<br>LTV827M-V<br>LTV827S-V<br>LTV827STA-V<br>LTV827STA1-V | 8-pin DIP<br>8-pin (leads with 0.4" spacing)<br>8-pin (lead bends for surface mount)<br>8-pin (tape and reel packaging of type I)<br>8-pin (tape and reel packaging of type II)      |                                                                                                                                                                                                                         | LTV-827                 |
| LTV847-V<br>LTV847M-V<br>LTV847S-V<br>LTV847STA-V<br>LTV847STA1-V | 16-pin DIP<br>16-pin (leads with 0.4" spacing)<br>16-pin (lead bends for surface mount)<br>16-pin (tape and reel packaging of type I)<br>16-pin (tape and reel packaging of type II) |                                                                                                                                                                                                                         | LTV-847                 |

## Absolute Maximum Ratings

(Ta=25°C)

| Parameter                |                             | Symbol           | Rating   | Unit              |
|--------------------------|-----------------------------|------------------|----------|-------------------|
| Input                    | Forward Current             | I <sub>F</sub>   | 50       | mA                |
|                          | Reverse Voltage             | V <sub>R</sub>   | 6        | V                 |
|                          | Power Dissipation           | P                | 70       | mW                |
| Output                   | Collector-Emitter Voltage   | V <sub>CEO</sub> | 35       | V                 |
|                          | Emitter-Collector Voltage   | V <sub>ECO</sub> | 6        | V                 |
|                          | Collector Current           | I <sub>C</sub>   | 50       | mA                |
|                          | Collector Power Dissipation | P <sub>C</sub>   | 150      | mW                |
| Total Power Dissipation  |                             | P <sub>tot</sub> | 200      | mW                |
| Operating Temperature    |                             | T <sub>opr</sub> | -30~+100 | °C                |
| Storage Temperature      |                             | T <sub>stg</sub> | -55~+125 | °C                |
| *1.Isolation Voltage     |                             | V <sub>iso</sub> | 5        | KV <sub>rms</sub> |
| *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              | 1.4  | V    | I <sub>F</sub> =20mA                                                    |
|                          | Reverse Current                      | I <sub>R</sub>       | —                    | —                | 10   | μA   | V <sub>R</sub> =4V                                                      |
|                          | Terminal Capacitance                 | C <sub>t</sub>       | —                    | 30               | 250  | pF   | V=0, f=1KHz                                                             |
| Output                   | Collector Dark Current               | I <sub>CEO</sub>     | —                    | —                | 100  | nA   | V <sub>CE</sub> =20V                                                    |
|                          | Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | 35                   | —                | —    | V    | I <sub>C</sub> =0.1mA                                                   |
|                          | Emitter-Collector Breakdown Voltage  | BV <sub>ECO</sub>    | 6                    | —                | —    | V    | I <sub>E</sub> =10 μA                                                   |
| Transfer Characteristics | *Current Transfer Ratio              | CTR                  | 50                   | —                | 600  | %    | I <sub>F</sub> =5mA, V <sub>CE</sub> =5V R <sub>BE</sub> =∞             |
|                          | Collector Current                    | I <sub>C</sub>       | 2.5                  | —                | 30   | mA   |                                                                         |
|                          | Collector-emitter Saturation Voltage | V <sub>CE(sat)</sub> | —                    | 0.1              | 0.2  | V    | I <sub>F</sub> =20mA, I <sub>C</sub> =1mA                               |
|                          | Isolation Resistance                 | R <sub>iso</sub>     | 5 × 10 <sup>10</sup> | 10 <sup>11</sup> | —    | Ω    | DC500V, 40~60% R.H.                                                     |
|                          | Floating Capacitance                 | C <sub>f</sub>       | —                    | 0.6              | 1.0  | pF   | V=0, f=1MHz                                                             |
|                          | Cut-off Frequency                    | f <sub>c</sub>       | —                    | 80               | —    | KHz  | V <sub>CE</sub> =5V, I <sub>C</sub> =2mA<br>R <sub>L</sub> =100 Ω, -3dB |
|                          | Response Time (Rise)                 | t <sub>r</sub>       | —                    | 4                | 18   | μs   | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA                                |
|                          | Response Time (Fall)                 | t <sub>f</sub>       | —                    | 3                | 18   | μs   | R <sub>L</sub> =100 Ω                                                   |

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

## ■ Supplement

### Rank Table of Current Transfer Ratio CTR

| Model No.  | Rank Mark             | CTR(%)                                          |
|------------|-----------------------|-------------------------------------------------|
| LTV-817    | L                     | 50~100                                          |
| LTV-817    | A                     | 80~160                                          |
| LTV-817    | B                     | 130~260                                         |
| LTV-817    | C                     | 200~400                                         |
| LTV-817    | D                     | 300~600                                         |
| LTV-817    | L or A or B or C or D | 50~600                                          |
| Conditions |                       | I <sub>F</sub> =5mA V <sub>CE</sub> =5V Ta=25°C |

Typical Electrical/Optical Characteristic Curves  
(25°C Ambient Temperature Unless Otherwise Noted)

Fig.1 Forward Current  
vs. Ambient Temperature

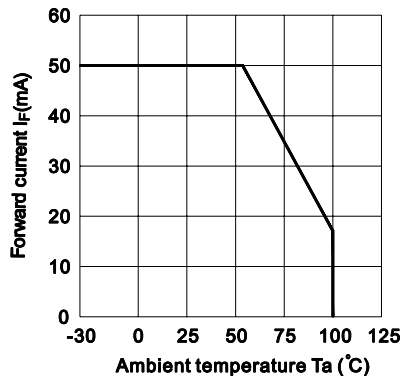


Fig.2 Collector Power Dissipation  
vs. Ambient Temperature

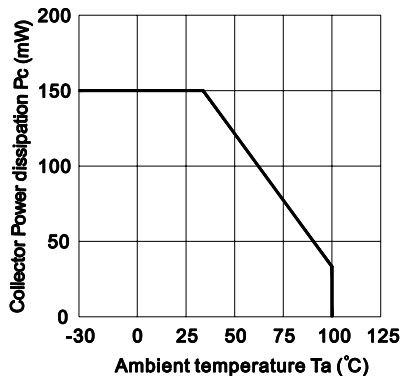


Fig.3 Collector-emitter Saturation  
Voltage vs. Forward Current

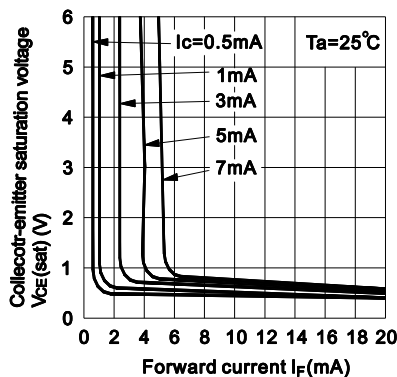


Fig.4 Forward Current vs. Forward  
Voltage

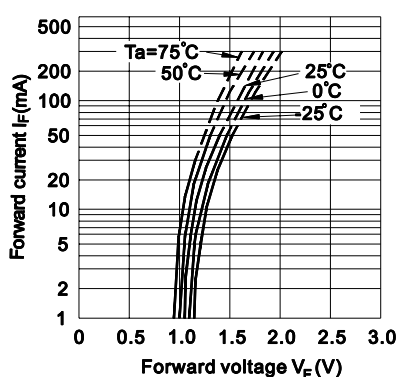


Fig.5 Current Transfer Ratio vs.  
Forward Current

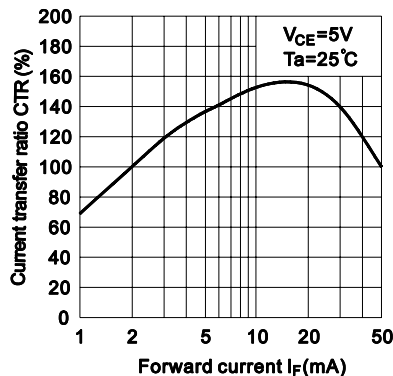
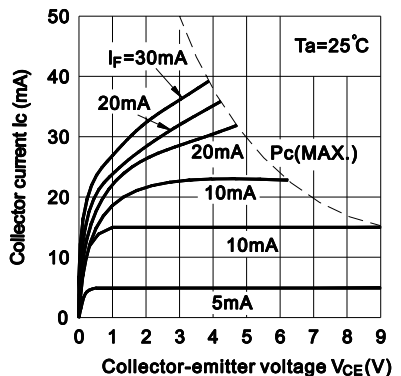
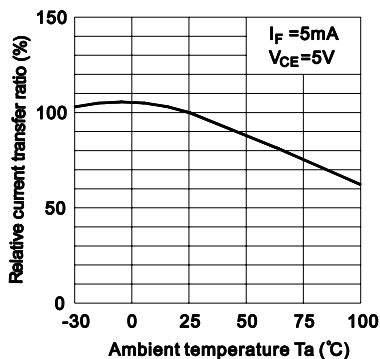


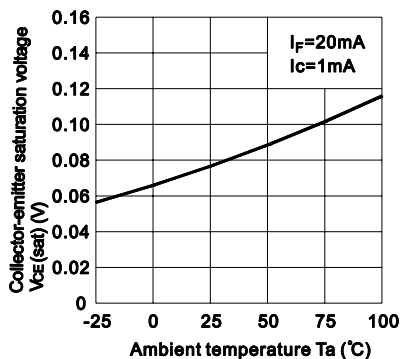
Fig.6 Collector Current vs.  
Collector-emitter Voltage



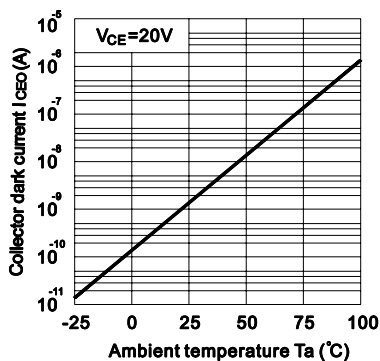
**Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature**



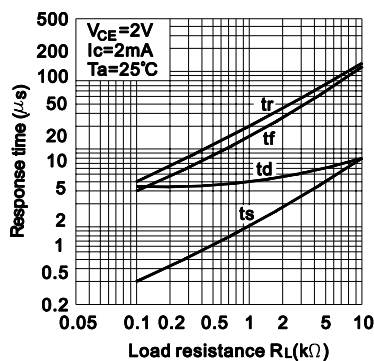
**Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



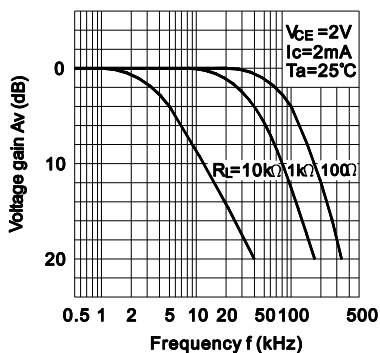
**Fig.9 Collector Dark Current vs. Ambient Temperature**



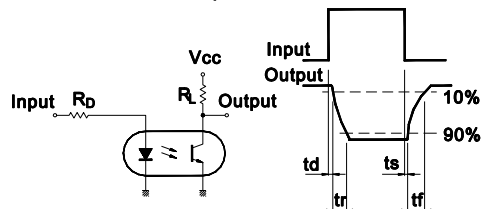
**Fig.10 Response Time vs. Load Resistance**



**Fig.11 Frequency Response**



**Test Circuit for Response Time**



**Test Circuit for Frequency Response**

