

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Features:

- Halogens free.
- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{ V rms}$)
- Creepage distance $> 7.62\text{ mm}$
- Operating temperature up to $+110^\circ\text{C}$
- Compact small outline package
- Pb free and RoHS compliant.
- UL approved (No. E214129)
- VDE approved (No. 132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CSA approved
- CQC approved

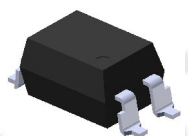
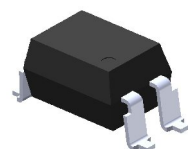
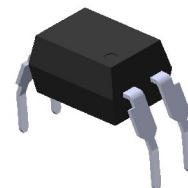
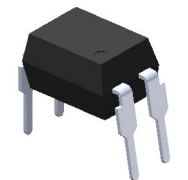
Description

The EL817 series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector encapsulated with green compound.

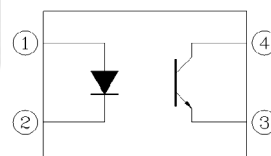
The devices are in a 4-pin DIP package and available in wide-lead spacing and SMD option.

Applications

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances



Schematic



Pin Configuration

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



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Absolute Maximum Ratings ($T_a=25^{\circ}\text{C}$)

| Parameter | | Symbol | Rating | Unit |
|-------------------------------------|--|-----------|------------|------------------------|
| Input | Forward current | I_F | 60 | mA |
| | Peak forward current (1us, pulse) | I_{FP} | 1 | A |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P_D | 100 | mW |
| | Derating factor (above $T_a = 100^{\circ}\text{C}$) | | 2.9 | mW/ $^{\circ}\text{C}$ |
| Output | Power dissipation | P_C | 150 | mW |
| | Derating factor (above $T_a = 100^{\circ}\text{C}$) | | 5.8 | mW/ $^{\circ}\text{C}$ |
| | Collector current | I_C | 50 | mA |
| | Collector-Emitter voltage | V_{CEO} | 80 | V |
| | Emitter-Collector voltage | V_{ECO} | 7 | V |
| Total power dissipation | | P_{TOT} | 200 | mW |
| Isolation voltage ^{*1} | | V_{ISO} | 5000 | V rms |
| Operating temperature | | T_{OPR} | -55 ~ +110 | $^{\circ}\text{C}$ |
| Storage temperature | | T_{STG} | -55 ~ +125 | $^{\circ}\text{C}$ |
| Soldering temperature ^{*2} | | T_{SOL} | 260 | $^{\circ}\text{C}$ |

Notes

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1 & 2 are shorted together, and pins 3 & 4 are shorted together.

*2 For 10 seconds.



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Electrical Characteristics (T_a=25°C unless specified otherwise)

Input

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|-------------------|-----------------|------|-------|------|------|-----------------------|
| Forward voltage | V _F | - | 1.2 | 1.4 | V | I _F = 20mA |
| Reverse current | I _R | - | - | 10 | μA | V _R = 4V |
| Input capacitance | C _{in} | - | 30 | 250 | pF | V = 0, f = 1kHz |

Output

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|-------------------------------------|-------------------|------|-------|------|------|---|
| Collector-Emitter dark current | I _{CEO} | - | - | 100 | nA | V _{CE} = 20V, I _F = 0mA |
| Collector-Emitter breakdown voltage | BV _{CEO} | 80 | - | - | V | I _C = 0.1mA |
| Emitter-Collector breakdown voltage | BV _{ECO} | 7 | - | - | V | I _E = 0.1mA |

Transfer Characteristics (T_a=25°C unless specified otherwise)

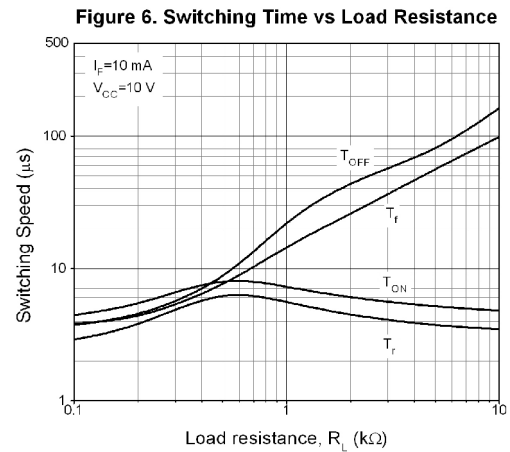
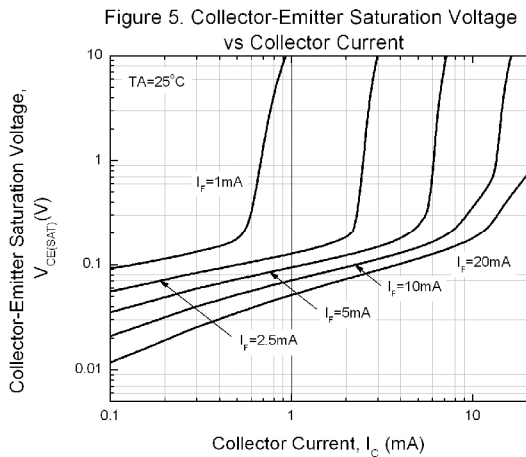
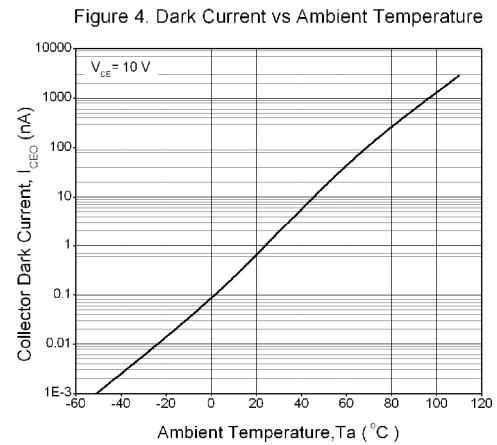
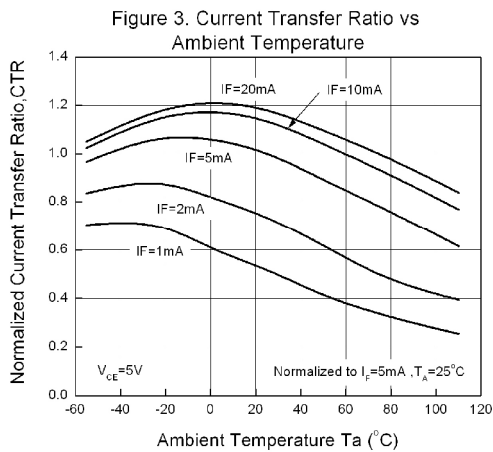
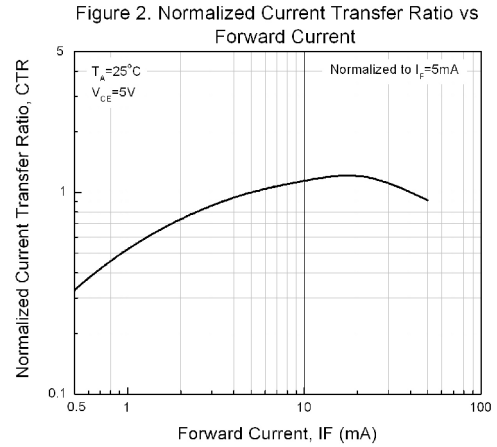
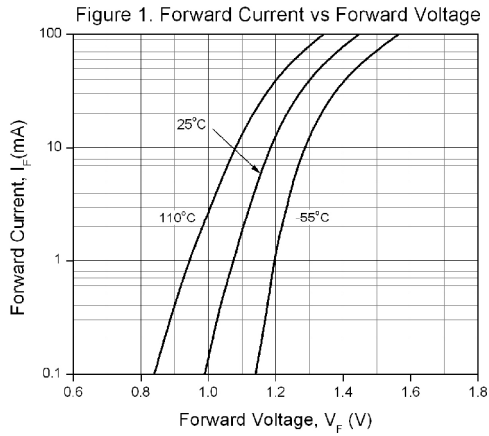
| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|--------------------------------------|----------------------|--------------------|-------|------|------|---|
| Current Transfer ratio | EL817 | 50 | - | 600 | % | I _F = 5mA, V _{CE} = 5V |
| | EL817A | 80 | - | 160 | | |
| | EL817B | 130 | - | 260 | | |
| | EL817C | 200 | - | 400 | | |
| | EL817D | 300 | - | 600 | | |
| | EL817X | 100 | - | 200 | | |
| | EL817Y | 150 | - | 300 | | |
| Collector-Emitter saturation voltage | V _{CE(sat)} | - | 0.1 | 0.2 | V | I _F = 20mA, I _C = 1mA |
| Isolation resistance | R _{IO} | 5×10 ¹⁰ | - | - | Ω | V _{IO} = 500Vdc, 40~60% R.H. |
| Floating capacitance | C _{IO} | - | 0.6 | 1.0 | pF | V _{IO} = 0, f = 1MHz |
| Cut-off frequency | f _c | - | 80 | - | kHz | V _{CE} = 5V, I _C = 2mA R _L = 100Ω, -3dB |
| Rise time | t _r | - | 6 | 18 | μs | V _{CE} = 2V, I _C = 2mA, R _L = 100Ω |
| Fall time | t _f | - | 8 | 18 | μs | |

* Typical values at T_a = 25°C

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Typical Performance Curves



**4 PIN DIP PHOTOTRANSISTOR
PHOTOCOUPLER**

EL817-G Series

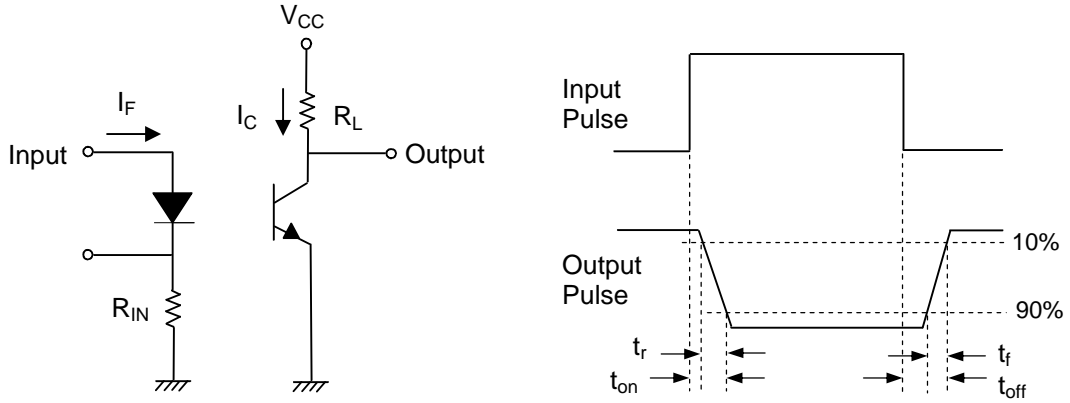


Figure 7. Switching Time Test Circuit & Waveforms

EVERLIGHT



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Order Information

Part Number

EL817(X)(Y)(Z)-FVG

Note

- X = Lead form option (S, S1, M or none)
- Y = CTR Rank (A, B, C, D, X, Y or none)
- Z = Tape and reel option (TA, TB, TU, TD or none).
- F = Lead frame option (F: Iron, None: copper)
- V = VDE (optional)
- G = Halogens free

| Option | Description | Packing quantity |
|---------|---|---------------------|
| None | Standard DIP-4 | 100 units per tube |
| M | Wide lead bend (0.4 inch spacing) | 100 units per tube |
| S (TA) | Surface mount lead form + TA tape & reel option | 1000 units per reel |
| S (TB) | Surface mount lead form + TB tape & reel option | 1000 units per reel |
| S1 (TA) | Surface mount lead form (low profile) + TA tape & reel option | 1000 units per reel |
| S1 (TB) | Surface mount lead form (low profile) + TB tape & reel option | 1000 units per reel |
| S2 (TA) | Surface mount lead form (Gull-wing) + TA tape & reel option | 500 units per reel |
| S2 (TB) | Surface mount lead form (Gull-wing) + TB tape & reel option | 500 units per reel |
| S (TU) | Surface mount lead form + TU tape & reel option | 1500 units per reel |
| S (TD) | Surface mount lead form + TD tape & reel option | 1500 units per reel |
| S1 (TU) | Surface mount lead form (low profile) + TU tape & reel option | 1500 units per reel |
| S1 (TD) | Surface mount lead form (low profile) + TD tape & reel option | 1500 units per reel |



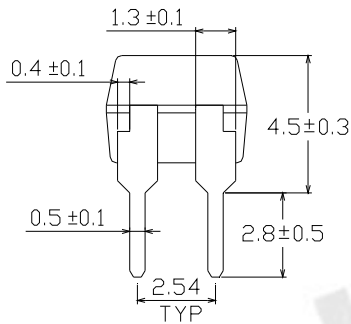
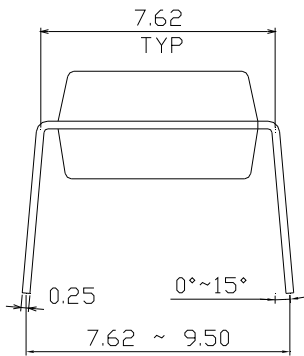
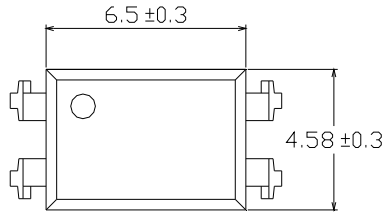
LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

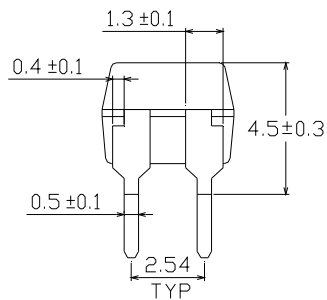
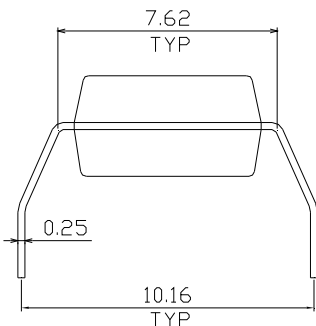
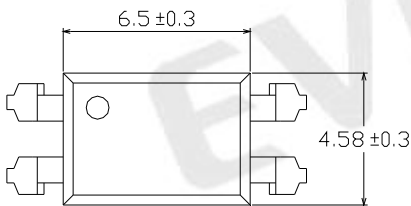
EL817-G Series

Package Drawing (Dimensions in mm)

Standard DIP Type



Option M Type



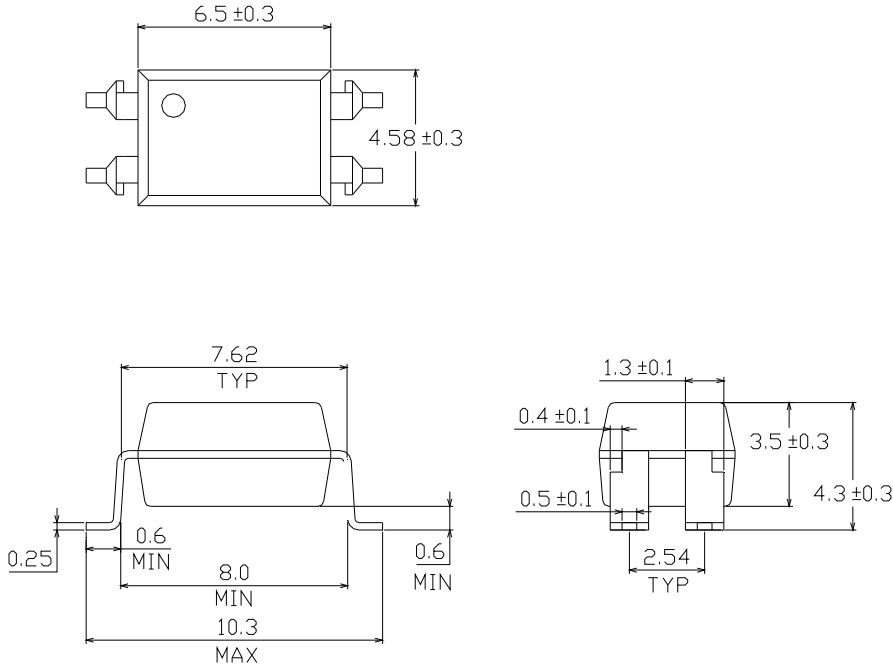


LIGHTING FOREVER

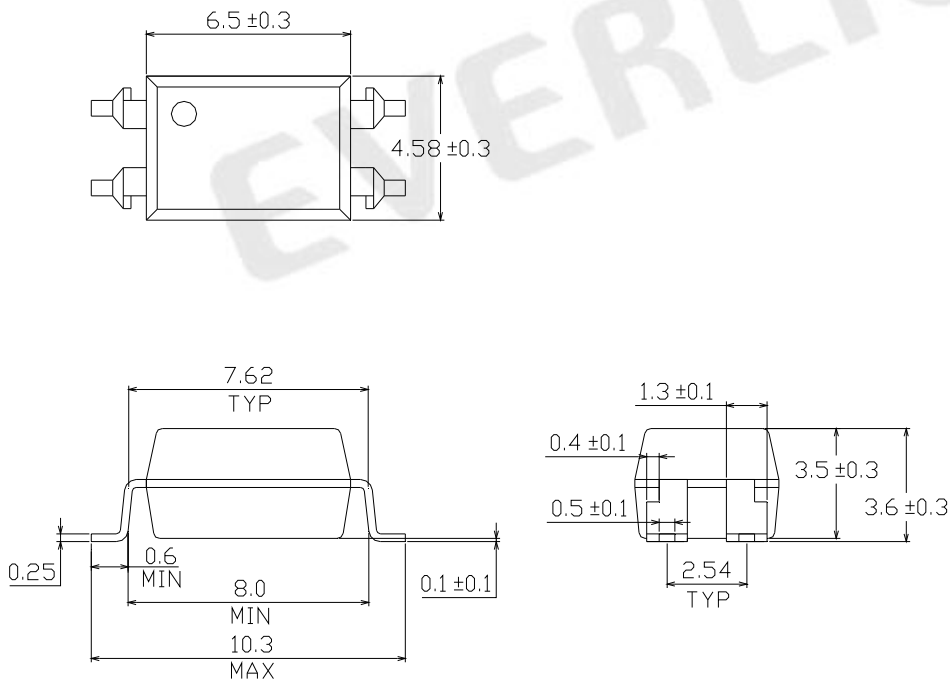
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Option S Type



Option S1 Type



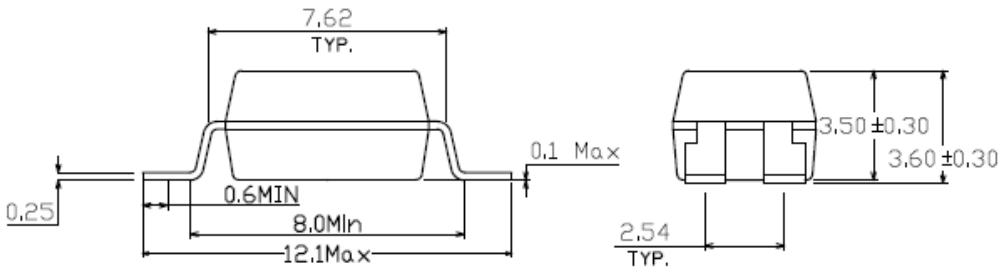
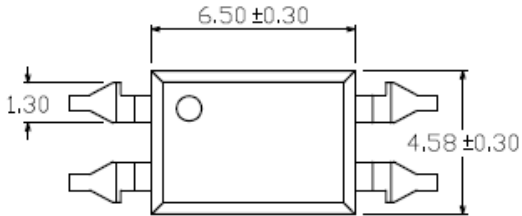


LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

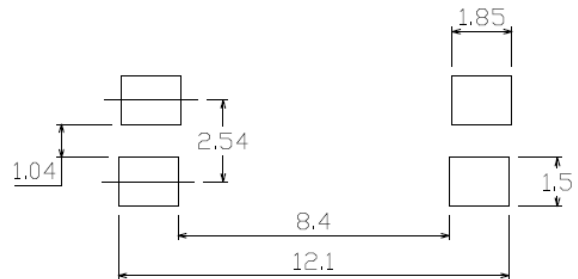
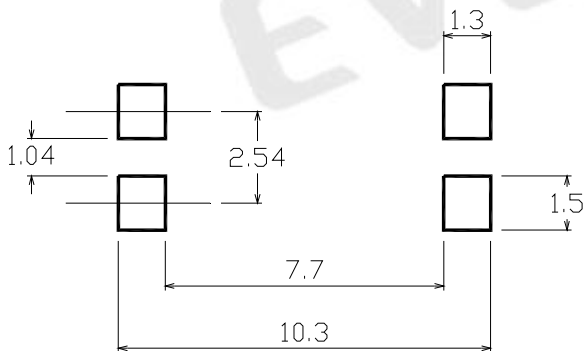
Option S2 Type



Recommended pad layout for surface mount leadform

For S and S1 option

For S2 option



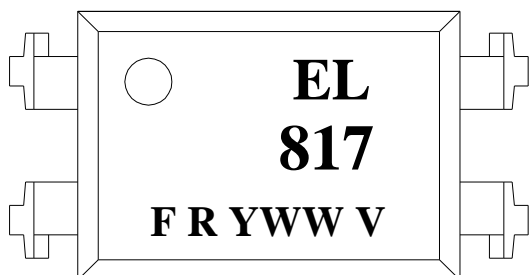


LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Device Marking



Notes

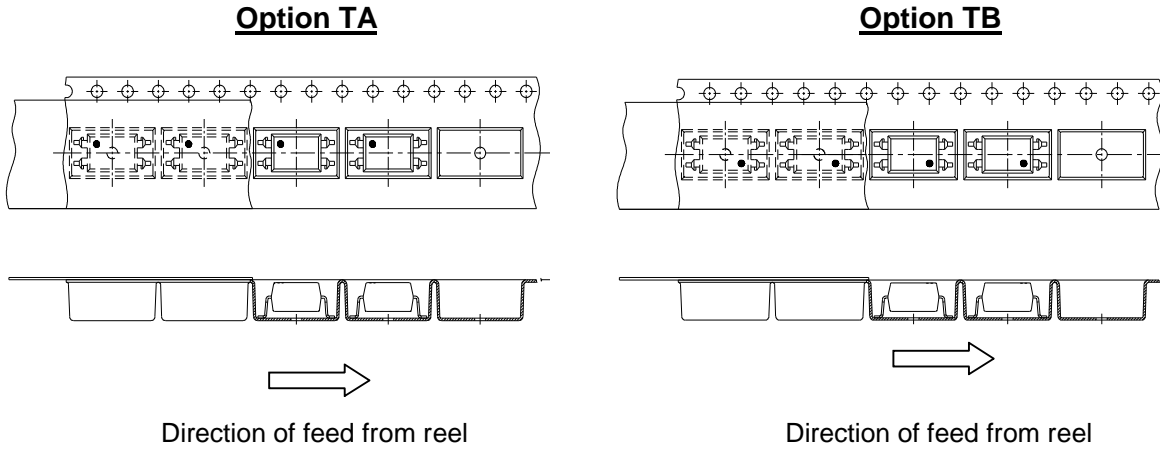
| | |
|-----|--|
| EL | denotes EVERLIGHT |
| 817 | denotes Device Number |
| F | denotes Factory Code (G: China and Green part) |
| R | denotes CTR Rank (A, B, C, D or none) |
| Y | denotes 1 digit Year code |
| WW | denotes 2 digit Week code |
| V | denotes VDE |

EVERLIGHT

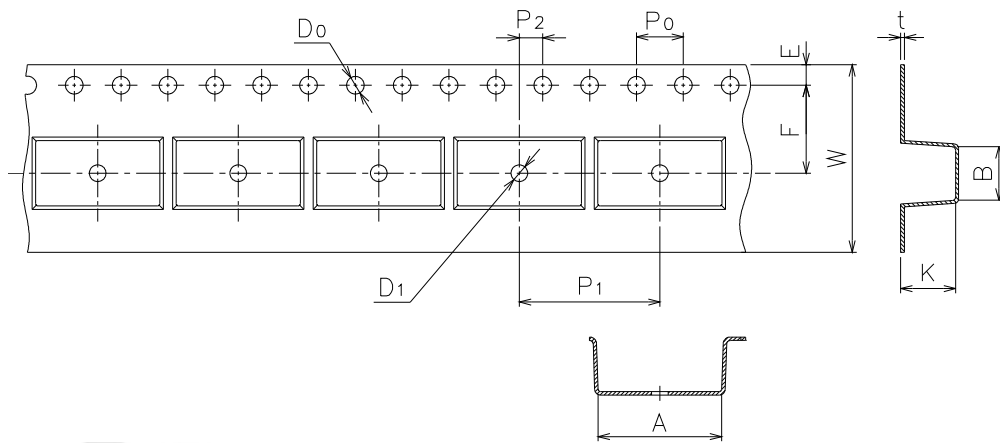
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Tape & Reel Packing Specifications



Tape dimensions

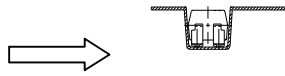
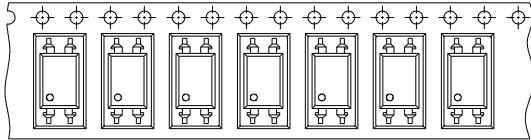


| | | | | | | |
|---------------|-----------|-----------|-----------|-----------|-------------------|----------|
| Dimension No. | A | B | Do | D1 | E | F |
| Dimension(mm) | 10.4±0.1 | 4.55±0.1 | 1.5±0.1 | 1.5±0.05 | 1.75±0.1 | 7.5±0.1 |
| Dimension No. | Po | P1 | P2 | t | W | K |
| Dimension(mm) | 4.0±0.1 | 12.0±0.1 | 2.0±0.1 | 0.33±0.1 | 16.0+0.3/ -0.1 | 4.55±0.1 |

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

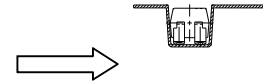
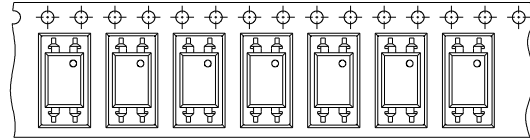
EL817-G Series

Option TD



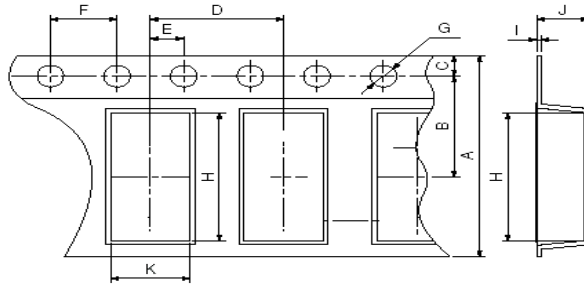
Direction of feed from reel

Option TU



Direction of feed from reel

Tape dimensions



| | | | | | | |
|---------------|------------|----------|----------|----------|----------|----------|
| Dimension No. | A | B | C | D | E | F |
| Dimension(mm) | 16.00±0.3 | 7.5±0.1 | 1.75±0.1 | 8.0±0.1 | 2.0±0.1 | 4.0±0.1 |
| Dimension No. | G | H | I | J | K | |
| Dimension(mm) | 1.5+0.1/-0 | 10.4±0.1 | 0.4±0.05 | 4.55±0.1 | 5.1±0.1 | |

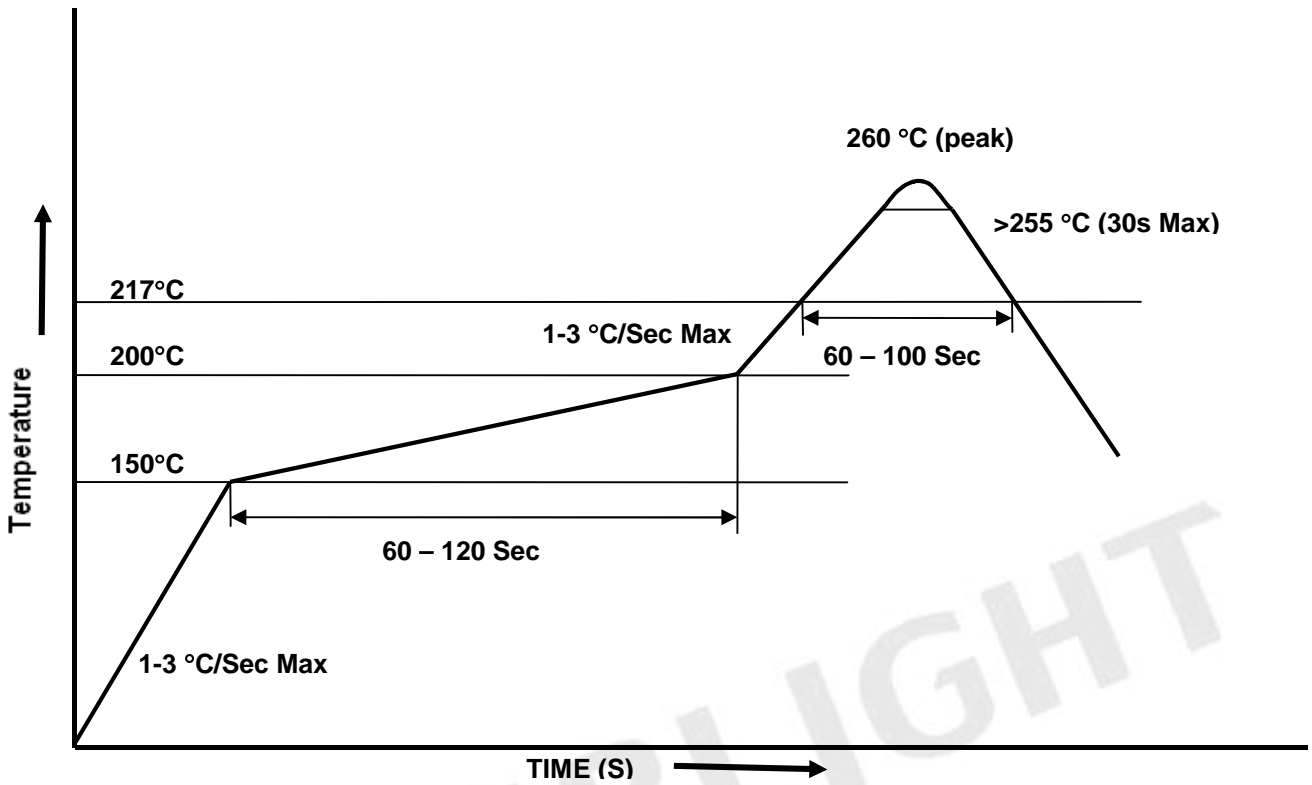


LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

Solder Reflow Temperature Profile





LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817-G Series

DISCLAIMER

1. The specifications in this datasheet may be changed without notice. EVERLIGHT reserves the authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for use as outlined in this datasheet. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in this datasheet.
3. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without the specific consent of EVERLIGHT.

EVERLIGHT