



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

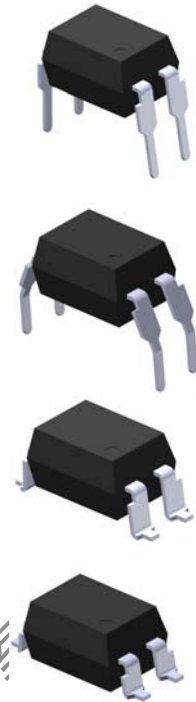
Features:

- 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 (No. 716108)
- NEMKO approved (No. P08209467)
- DEMKO approved (No. 314683)
- FIMKO approved (No. FI 224433)
- CSA approved (No. 1143601)

Description

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

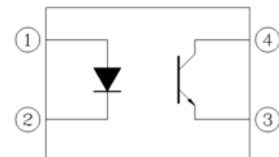
They are packaged in a 4-pin DIP package and available in wide-lead spacing and SMD option.



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

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Absolute Maximum Ratings (T_a=25°C)

| Parameter | | Symbol | Rating | Unit |
|--------------------------|---|------------------|------------|-------|
| Input | Forward current | I _F | 50 | mA |
| | Peak forward current (1us, pulse) | I _{FP} | 1 | A |
| | Reverse voltage | V _R | 6 | V |
| | Power dissipation | P _D | 70 | mW |
| | Derating factor (above T _a = 100°C) | | 2.9 | mW/°C |
| Output | Power dissipation | P _C | 150 | mW |
| | Derating factor (above T _a = 100 °C) | | 5.8 | mW/°C |
| | Collector current | I _C | 50 | mA |
| | Collector-Emitter voltage | V _{CEO} | 35 | V |
| | Emitter-Collector voltage | V _{ECO} | 6 | V |
| Total power dissipation | | P _{TOT} | 200 | mW |
| Isolation voltage *1 | | V _{ISO} | 5000 | V rms |
| Operating temperature | | T _{OPR} | -55 ~ +110 | °C |
| Storage temperature | | T _{STG} | -55 ~ +125 | °C |
| Soldering temperature *2 | | T _{SOL} | 260 | °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.

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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 | μA | V _{CE} = 20V, I _F = 0mA |
| Collector-Emitter breakdown voltage | BV _{CEO} | 35 | - | - | V | I _C = 0.1mA |
| Emitter-Collector breakdown voltage | BV _{ECO} | 6 | - | - | V | I _E = 0.1mA |

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

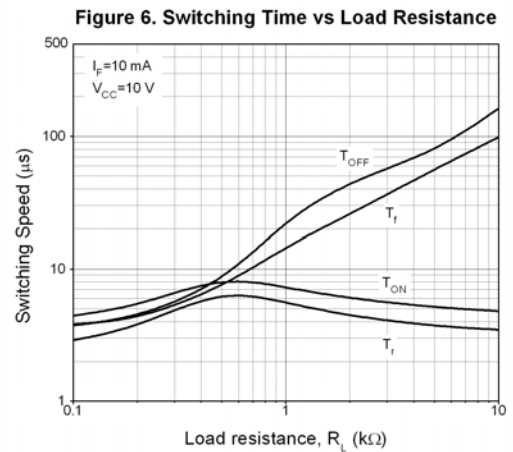
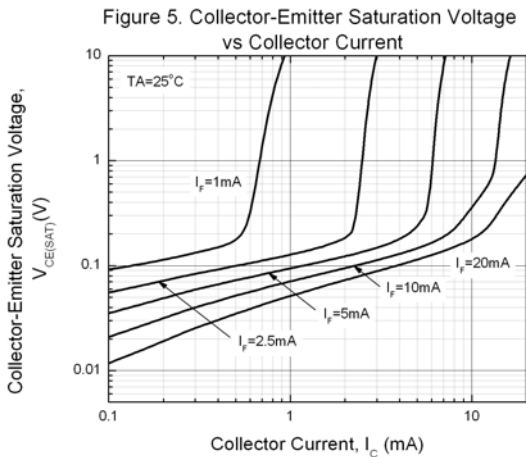
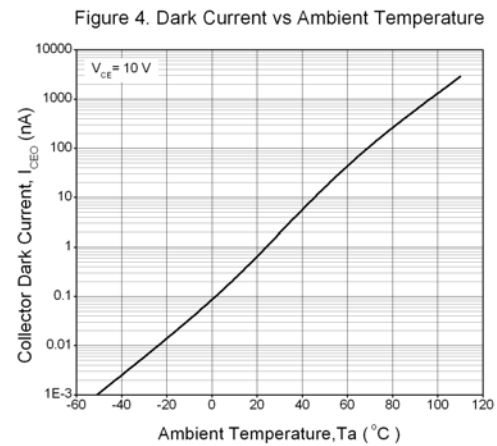
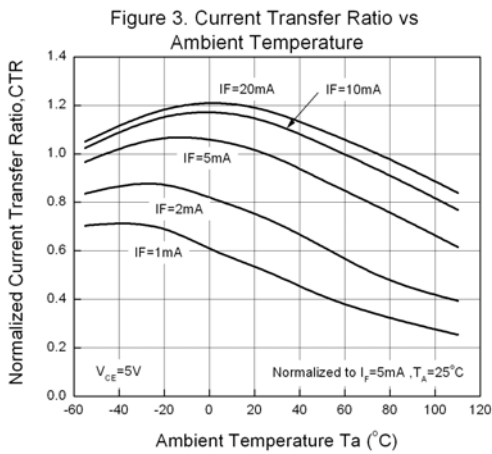
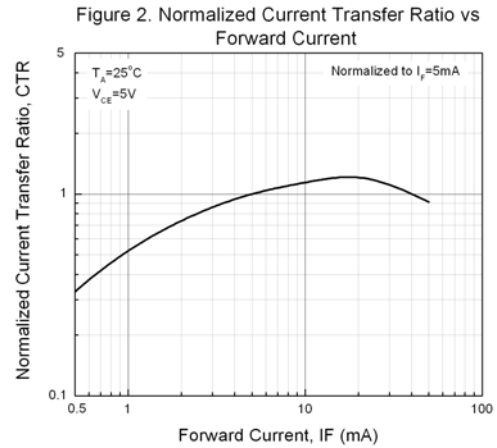
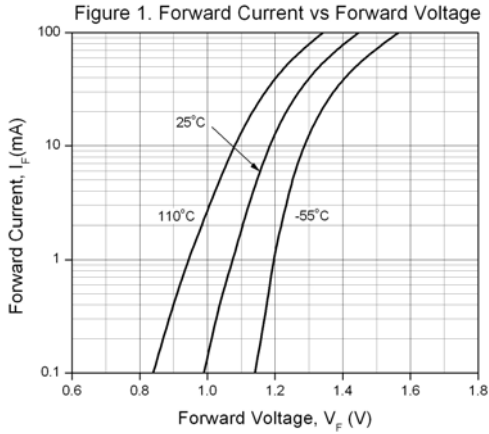
| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|--------------------------------------|----------------------|--------------------|-------|------|------|---|
| Current Transfer ratio | EL817 | 50 | - | 600 | % | I _F = 5mA, V _{CE} = 5V |
| | EL817A | 80 | - | 160 | | |
| | EL817B | 130 | - | 260 | | |
| | EL817C | 200 | - | 400 | | |
| | EL817D | 300 | - | 600 | | |
| Collector-Emitter saturation voltage | V _{CE(sat)} | 0.1 | 0.1 | 0.2 | V | I _F = 1mA, I _C = 20mA |
| 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 | - | 4 | 18 | μs | V _{CE} = 2V, I _C = 2mA, R _L = 100Ω |
| Fall time | t _f | - | 3 | 18 | μs | |

* Typical values at T_a = 25°C

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Typical Performance Curves



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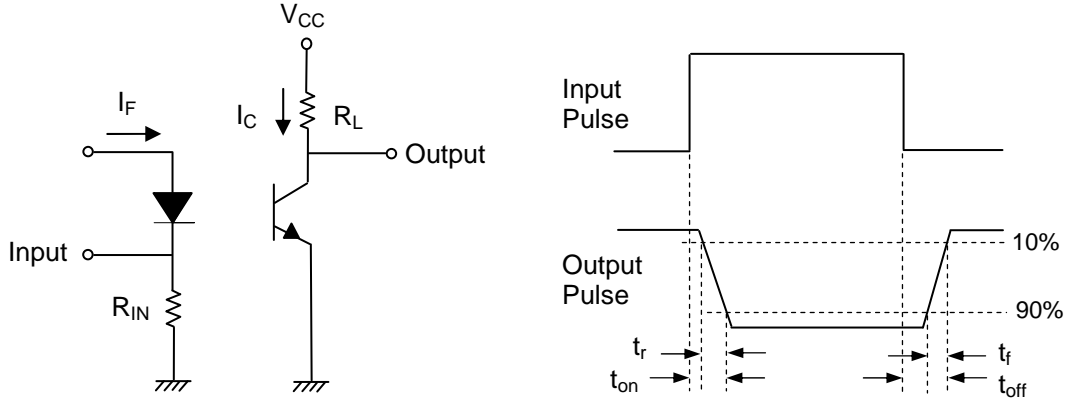


Figure 7. Switching Time Test Circuit & Waveforms

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Order Information

Part Number

EL817(X)(Y)(Z)-FV

Note

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

| 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 |
| 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 |

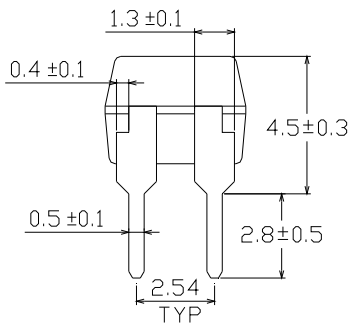
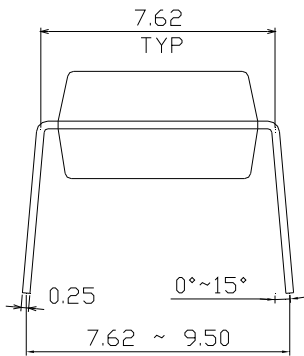
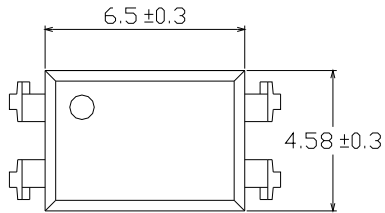
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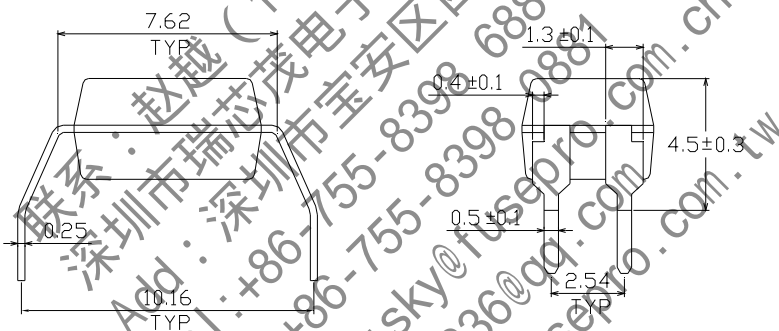
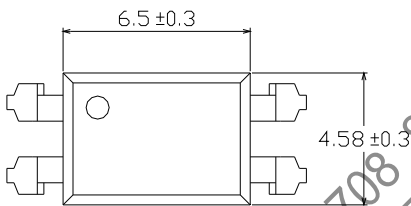
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Package Drawing (Dimensions in mm)

Standard DIP Type



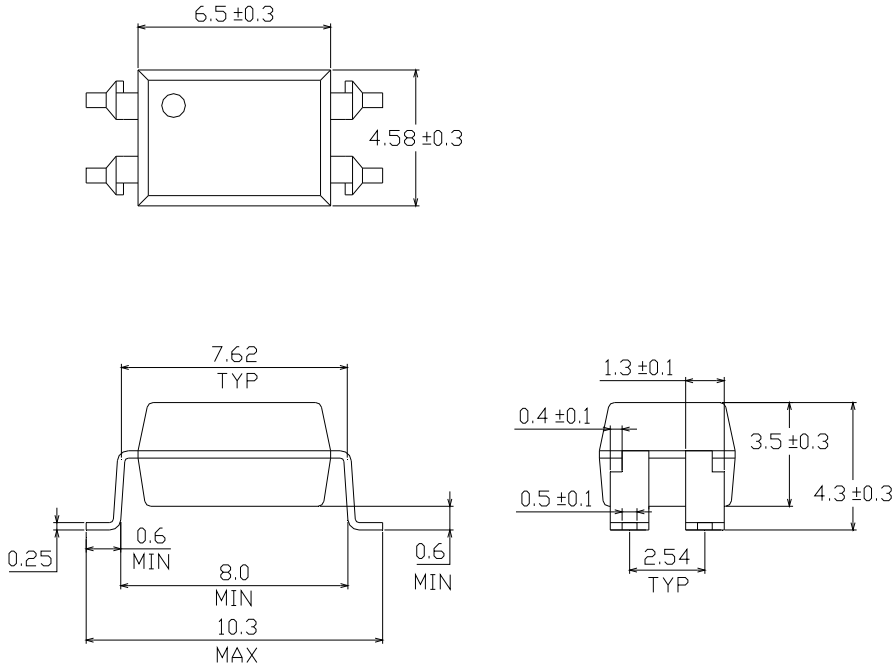
Option M Type



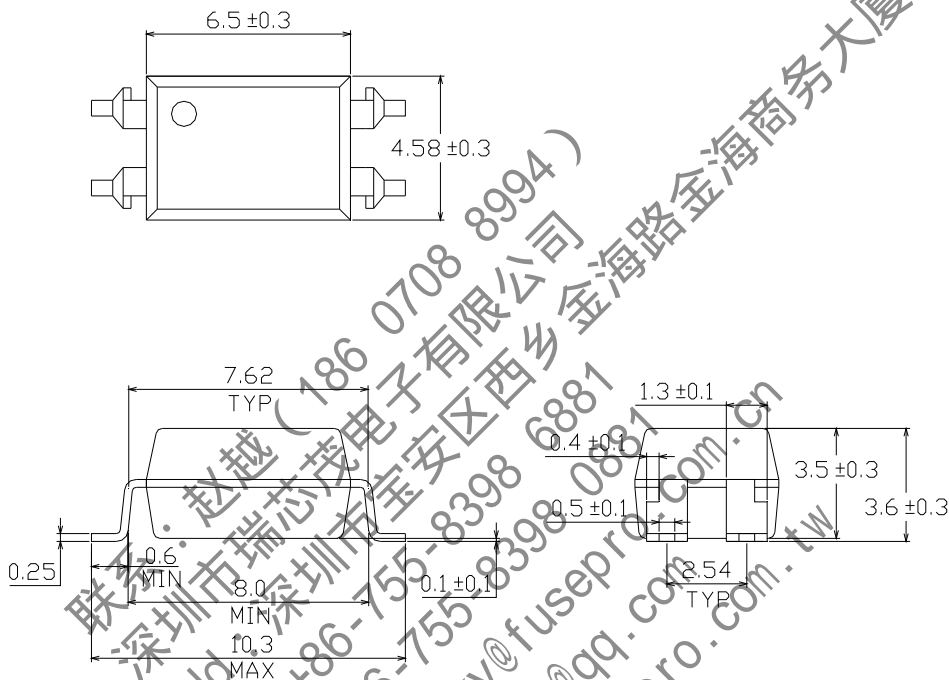
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Option S Type



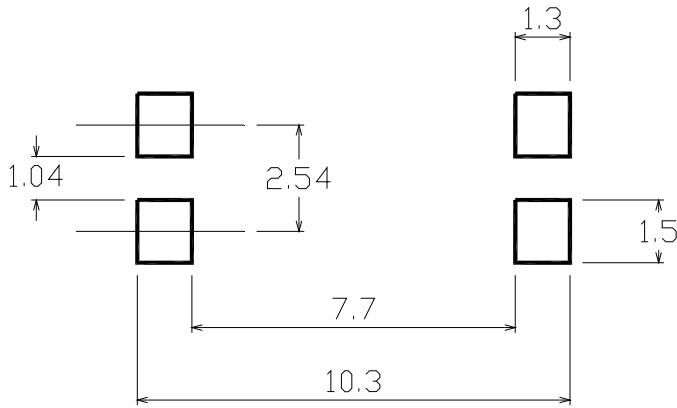
Option S1 Type



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Recommended pad layout for surface mount leadform



Device Marking



Notes

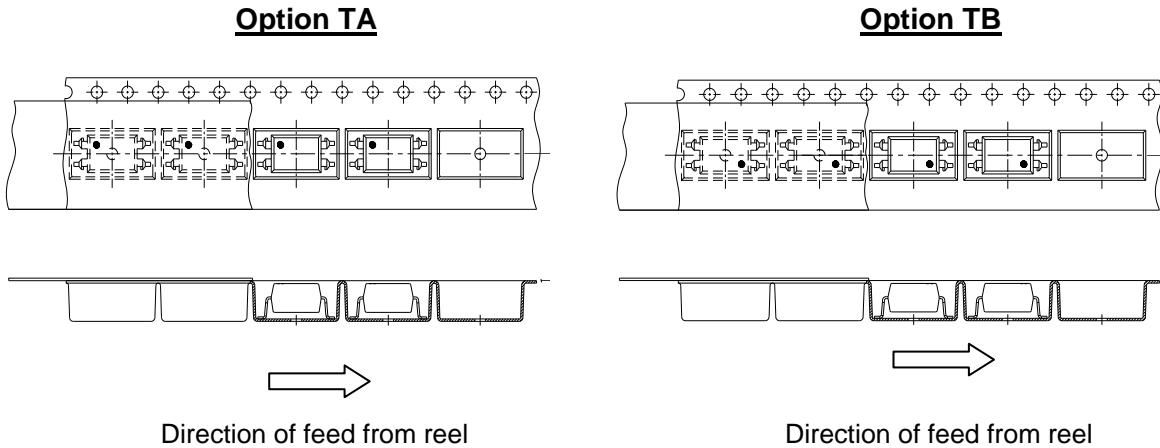
- EL denotes EVERLIGHT
- 817 denotes Device Number
- F denotes Factory Code (None, China, T. Taiwan)
- R denotes CTR Rank (A, B, C, D or none)
- Y denotes 1 digit Year code
- WW denotes 2 digit Week code
- V denotes VDE (option)

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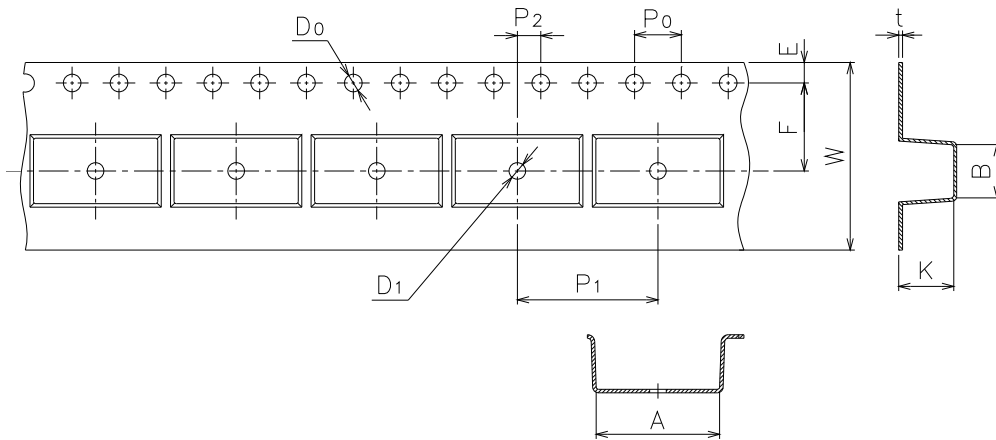
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Tape & Reel Packing Specifications



Tape dimensions

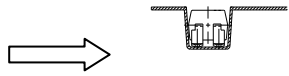
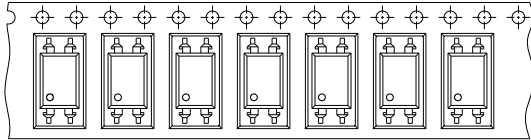


| | | | | | | |
|---------------|-----------|-----------|-----------|-----------|-------------------|----------|
| Dimension No. | A | B | Do | D1 | E | F |
| Dimension(mm) | 10.4±0.1 | 4.55±0.1 | 1.5±0.1 | 1.5±0.05 | 1.75±0.1 | 7.5±0.1 |
| Dimension No. | Po | P1 | P2 | t | W | K |
| Dimension(mm) | 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 |

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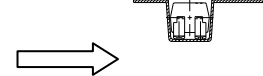
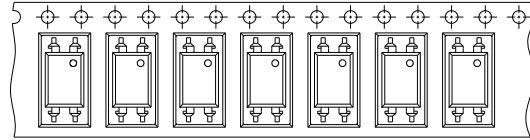
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Option TD



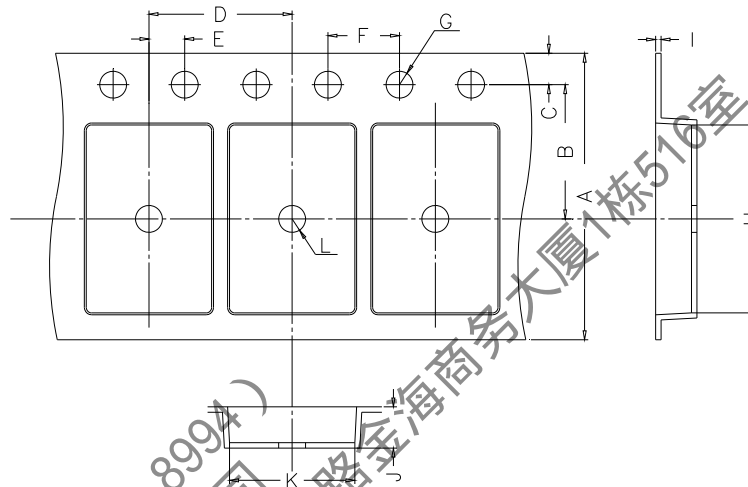
Direction of feed from reel

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 | L |
| Dimension(mm) | 1.5±0.1/-0 | 10.4±0.1 | 0.4±0.05 | 4.55±0.1 | 5.1±0.1 | 1.5±0.05 |

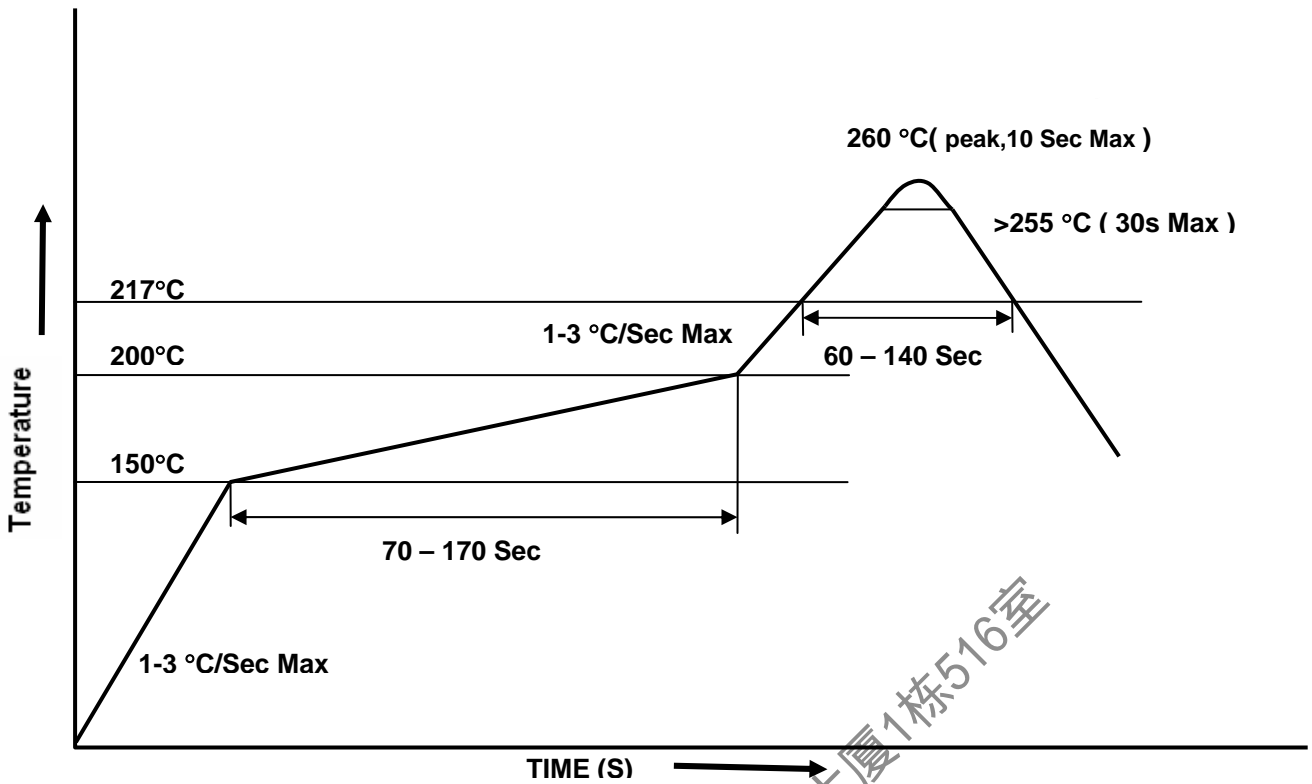


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Solder Reflow Temperature Profile



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