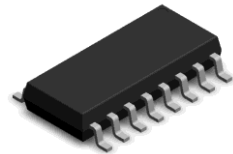
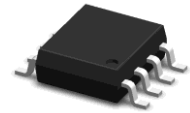


8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

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 ($V_{iso} = 3750\text{ V rms}$)
- Compact 8 Pin SSOP with a 2.0 mm profile
- Pb free and RoHS compliant.
- UL approved (E214129)
- VDE approved (40028116)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved



Description

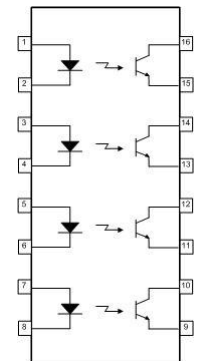
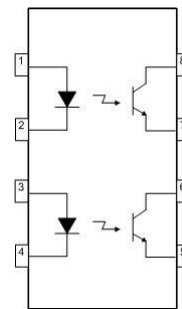
The ELD3H7 and ELQ3H7 contains of an infrared emitting diode optically coupled to a phototransistor detector encapsulated with green compound.

ELD3H7 offers 2 channels in a 8-pin small outline SMD package, while ELQ3H7 offers 4 channels in a 16-pin small outline SMD package.

Applications

- DC-DC Converters
- Programmable controllers
- Telecommunication equipments
- Signal transmission between circuits of different potentials and impedances

Schematic



1, 3 Anode
2, 4 Cathode
5, 7 Emitter
6, 8 Collector

1, 3, 5, 7 Anode
2, 4, 6, 8 Cathode
9, 11, 13, 15 Emitter
10, 12, 14, 16 Collector

8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

Absolute Maximum Ratings (T_a=25°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 | 70 | mW |
| Output | Power dissipation | P _C | 150 | mW |
| | 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} | 3750 | 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, LED side pins shorted together, and detector side pins shorted together.

*2 For 10 seconds.

8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless specified otherwise)

Input

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|-------------------|----------|------|-------|------|---------------|--------------------------|
| Forward voltage | V_F | - | 1.2 | 1.4 | V | $I_F = 20\text{mA}$ |
| Reverse current | I_R | - | - | 10 | μA | $V_R = 4\text{V}$ |
| Input capacitance | C_{in} | - | 30 | 250 | pF | $V = 0, f = 1\text{kHz}$ |

Output

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|-------------------------------------|------------|------|-------|------|------|---|
| Collector-Emitter dark current | I_{CEO} | - | - | 100 | nA | $V_{CE} = 20\text{V}, I_F = 0\text{mA}$ |
| Collector-Emitter breakdown voltage | BV_{CEO} | 80 | - | - | V | $I_C = 0.1\text{mA}$ |
| Emitter-Collector breakdown voltage | BV_{ECO} | 7 | - | - | V | $I_E = 0.1\text{mA}$ |

Transfer Characteristics ($T_a=25^{\circ}\text{C}$ unless specified otherwise)

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|------------------------|--------|------|-------|------|------|--|
| Current Transfer ratio | CTR | 50 | - | 600 | % | $I_F = 5\text{mA}, V_{CE} = 5\text{V}$ |

Transfer Characteristics ($T_a=25^{\circ}\text{C}$ unless specified otherwise)

| Parameter | Symbol | Min. | Typ.* | Max. | Unit | Condition |
|--------------------------------------|---------------|--------------------|-------|------|---------------|---|
| Collector-Emitter saturation voltage | $V_{CE(sat)}$ | - | 0.1 | 0.2 | V | $I_F = 10\text{mA}, I_C = 1\text{mA}$ |
| Isolation resistance | R_{IO} | 5×10^{10} | - | - | Ω | $V_{IO} = 500\text{Vdc}, 40\sim 60\% \text{ R.H.}$ |
| Floating capacitance | C_{IO} | - | 0.3 | 1.0 | pF | $V_{IO} = 0, f = 1\text{MHz}$ |
| Rise time | t_r | - | 5 | 18 | μs | $V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$ |
| Fall time | t_f | - | 3 | 18 | μs | |

* Typical values at $T_a = 25^{\circ}\text{C}$

8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

Typical Performance Curves

Figure 1. Forward Current vs Forward Voltage

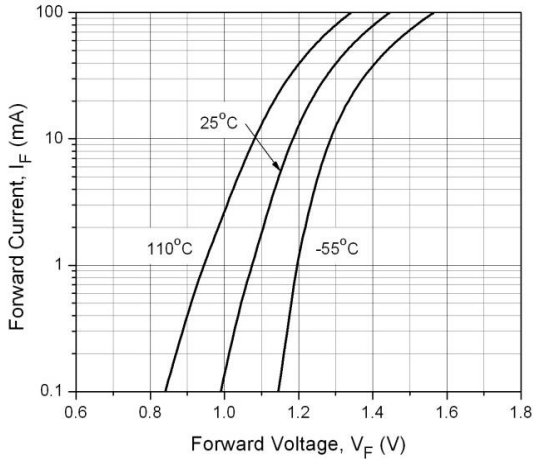


Figure 2. Normalized Collector Current vs Forward Current

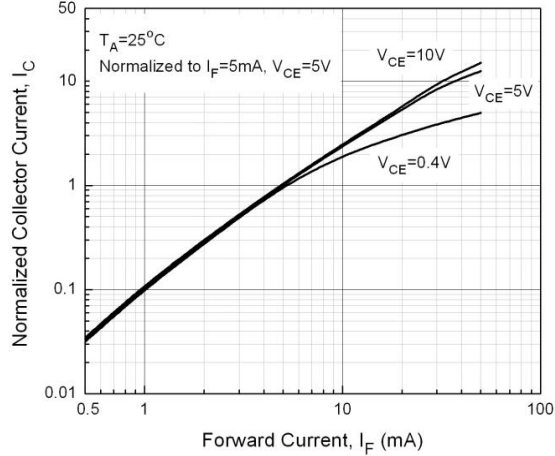


Figure 3. Normalized Current Transfer Ratio vs Forward Current

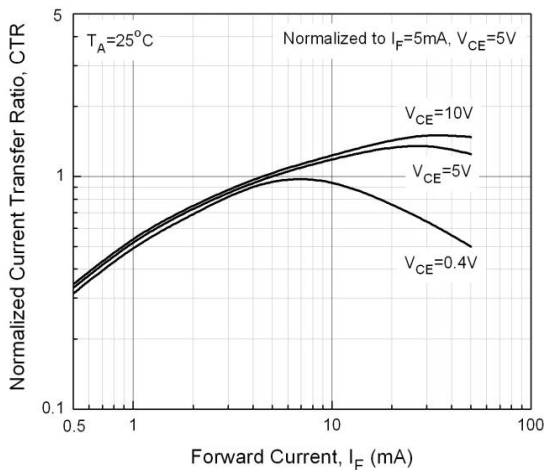


Figure 4. Normalized Collector Current vs Ambient Temperature

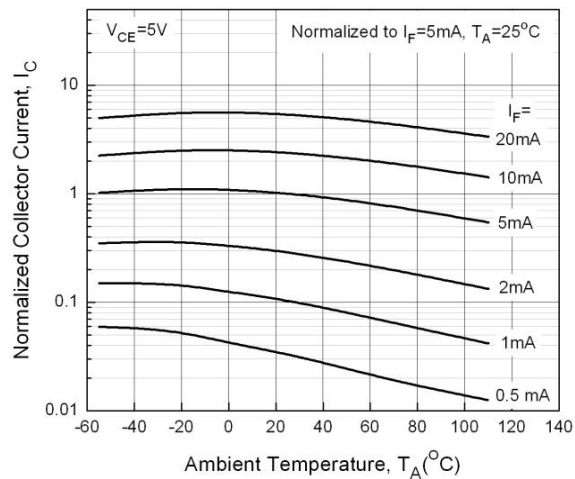


Figure 5. Normalized Current Transfer Ratio vs Ambient Temperature

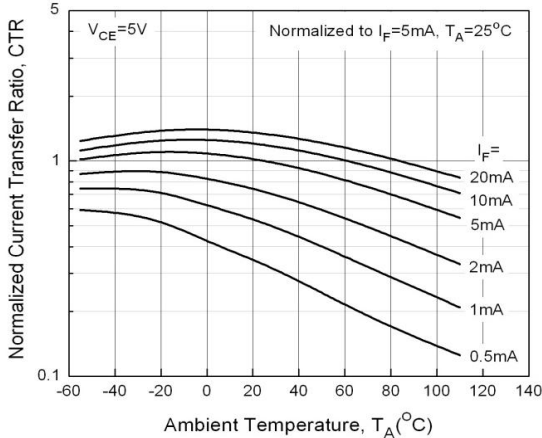
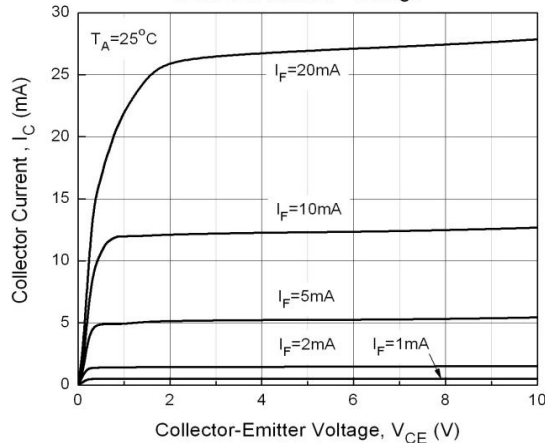


Figure 6. Collector Current vs Collector-Emitter Voltage



8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

Figure 7. Collector Current vs Collector-Emitter Voltage

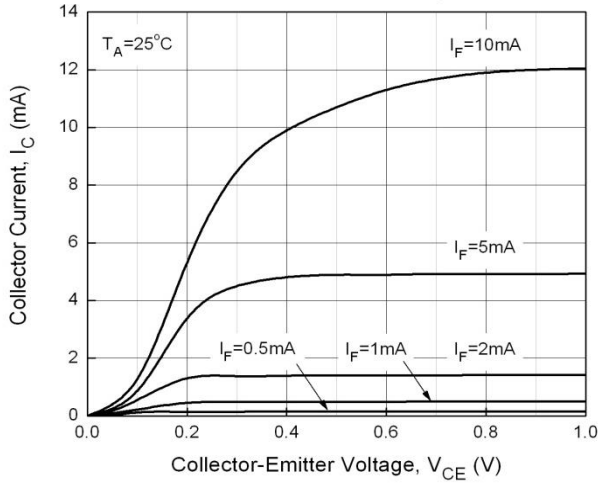


Figure 8. Collector Dark Current vs Ambient Temperature

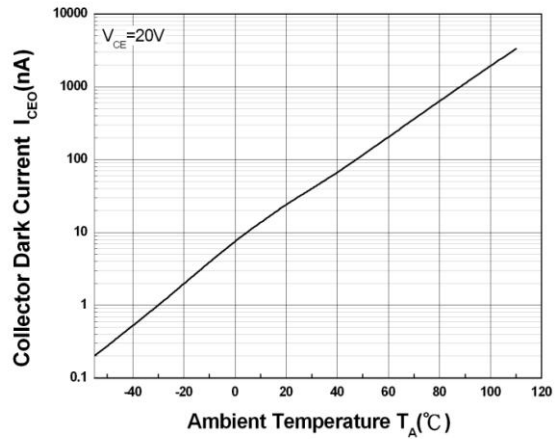


Figure 9. Collector-Emitter Saturation Voltage vs Ambient Temperature

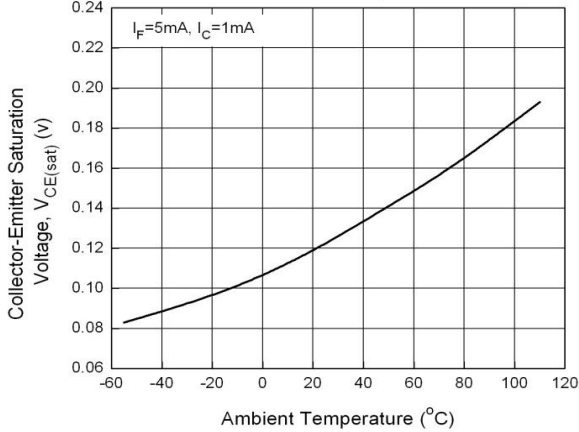


Figure 10. Switching Time vs Load Resistance

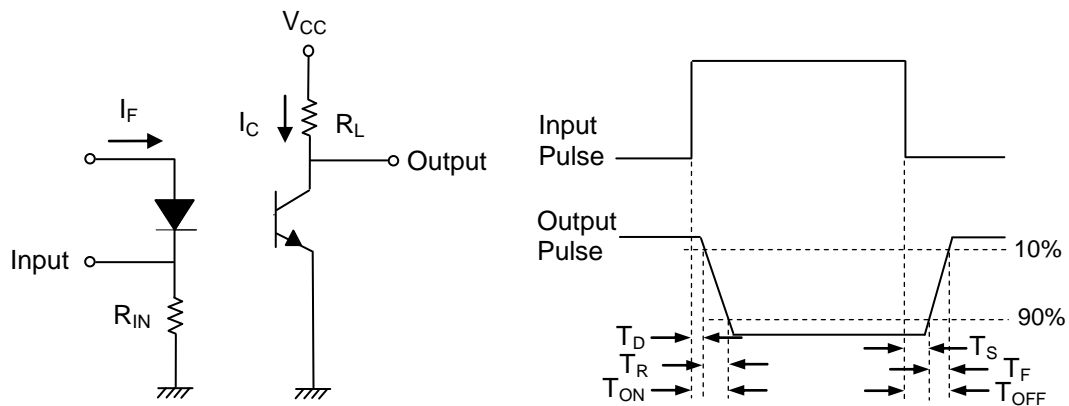
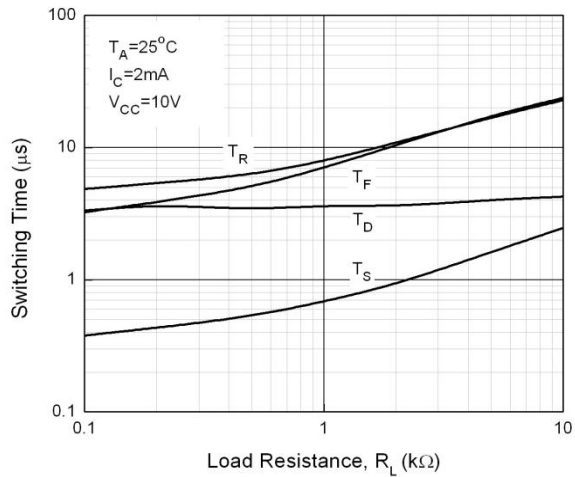


Figure 11. Switching Time Test Circuit & Waveforms

8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

Order Information

Part Number

ELD3H7(Z)-V, ELQ3H7(Z)-V

Note

D3H7, Q3H7 = Part No.

Z = Tape and reel option (TA or none).

V = VDE (optional)

| Option | Description | Packing quantity |
|--------|------------------------------|---------------------|
| None | Tube option of ELD3H7 | 80 units per tube |
| (TA) | Tape & reel option of ELD3H7 | 1000 units per reel |
| None | Tube option of ELQ3H7 | 40 units per tube |
| (TA) | Tape & reel option of ELQ3H7 | 1000 units per reel |

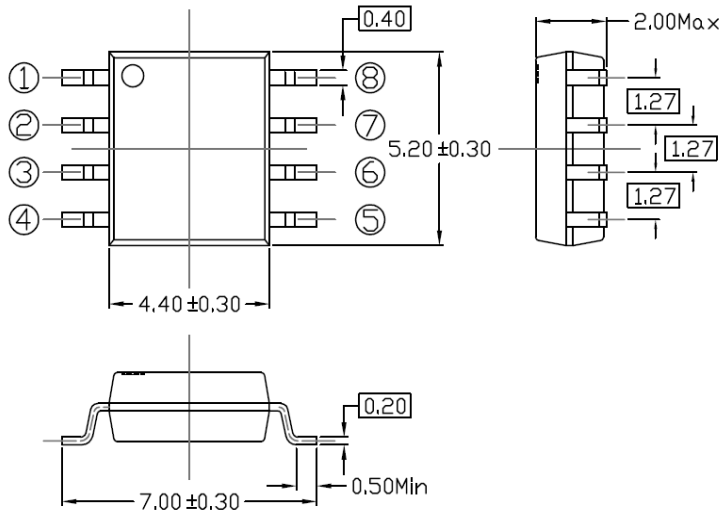
8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

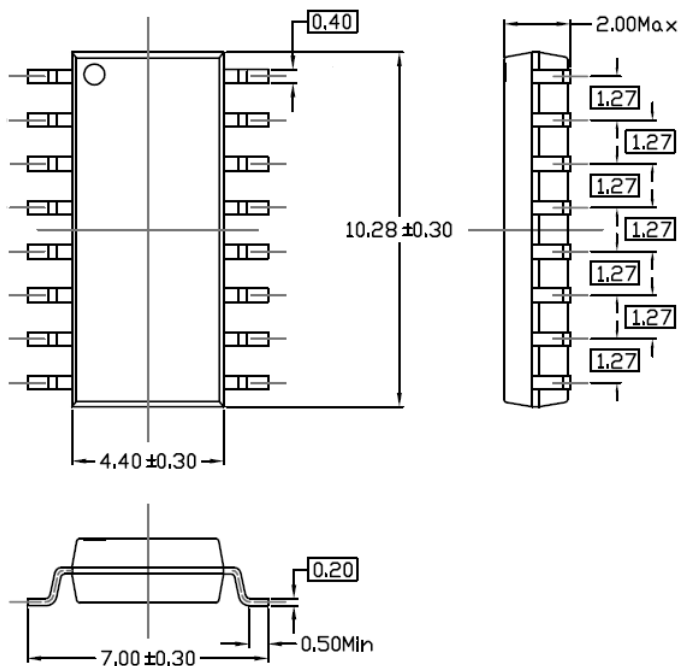
Package Drawing

(Dimensions in mm)

ELD3H7



ELQ3H7

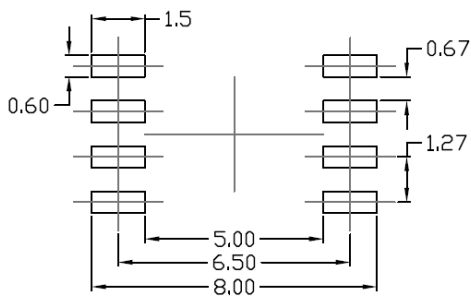


8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

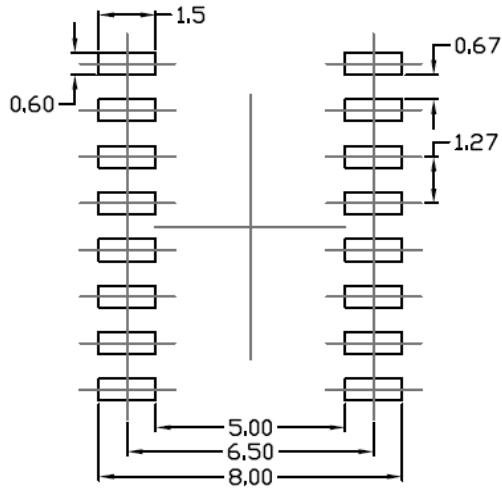
ELD3H7 ELQ3H7 Series

Recommended pad layout for surface mount leadform

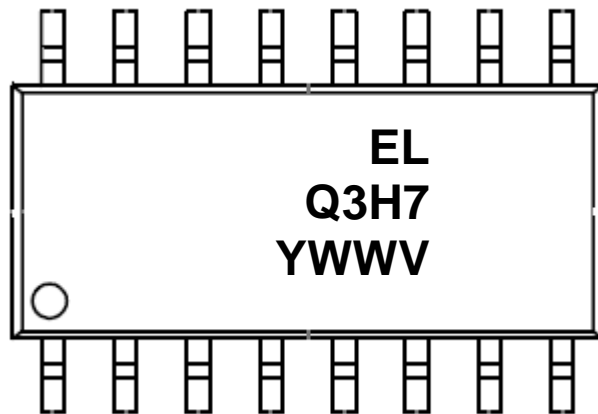
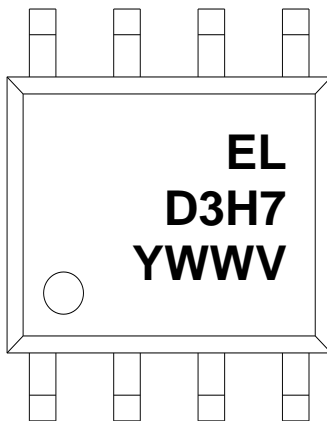
ELD3H7



ELQ3H7



Device Marking



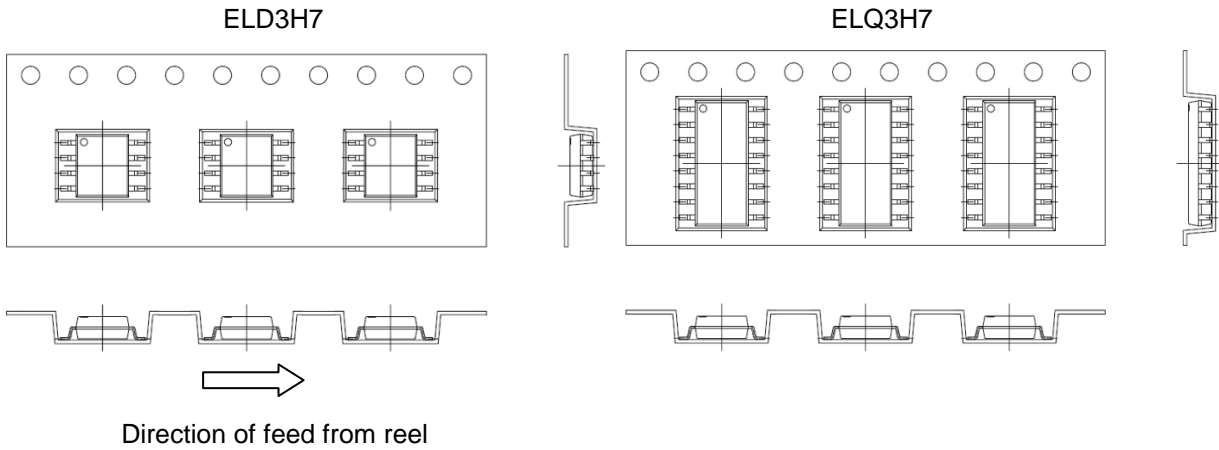
Notes

EL denotes Everlight
 Q3H7 D3H7 denotes Device Number
 Y denotes 1 digit Year code
 WW denotes 2 digit Week code
 V denotes VDE (optional)

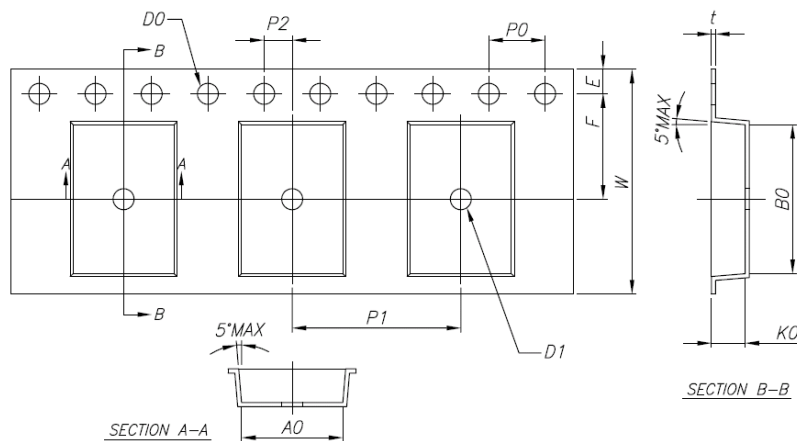
8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

ELD3H7 ELQ3H7 Series

Tape & Reel Packing Specifications



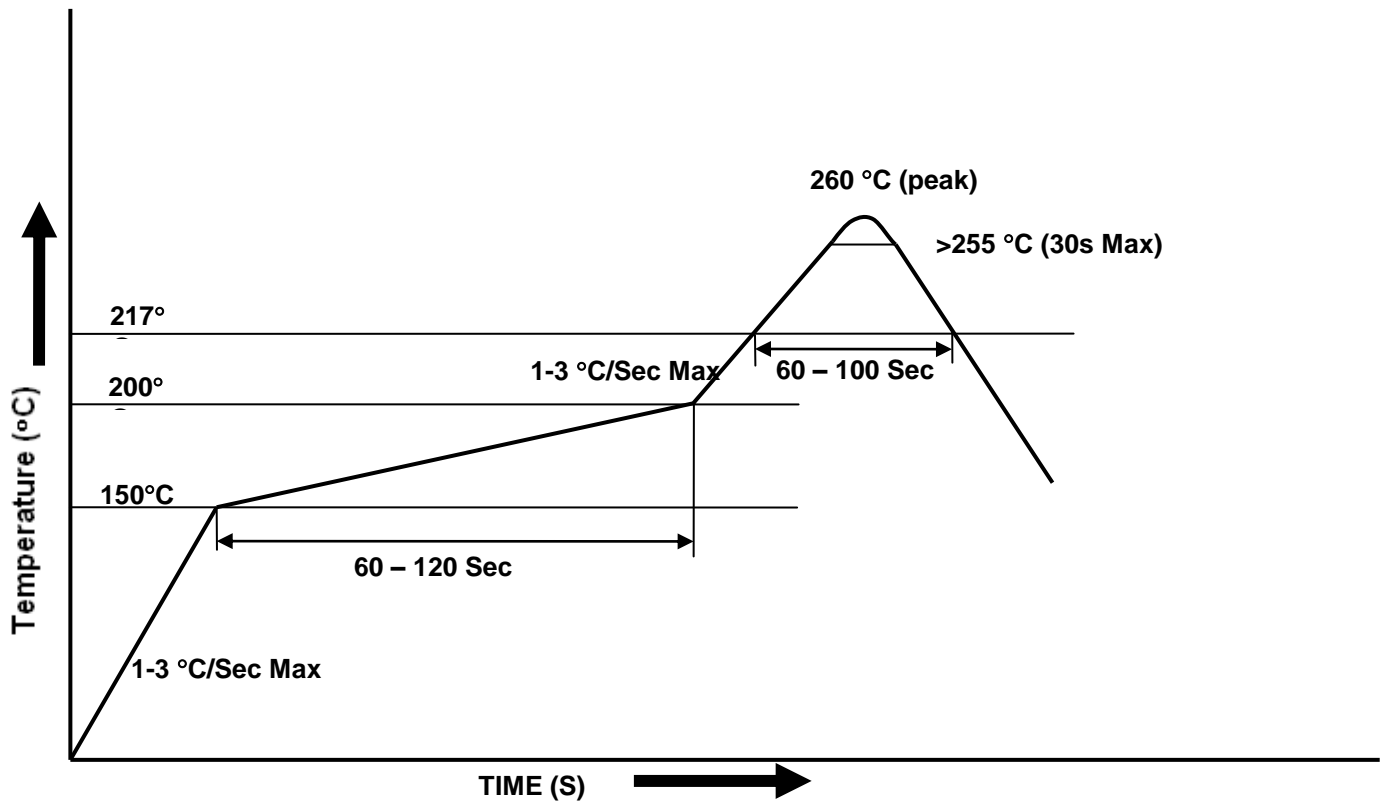
Tape dimensions



| Dimension No. | | A0 | B0 | D0 | D1 | E | F |
|----------------|------|-----------|-----------|---------------|---------------|----------|-----------|
| Dimension (mm) | D3H7 | 7.4±0.1 | 5.6±0.1 | 1.5+0.1 -0 | 1.5+0.1 -0 | 1.75±0.1 | 7.5±0.1 |
| | Q3H7 | 7.2±0.1 | 10.6±0.1 | 1.5+0.1 -0 | 1.5+0.1 -0 | 1.75±0.1 | 7.5±0.1 |
| Dimension No. | | P0 | P1 | P2 | t | W | K0 |
| Dimension (mm) | D3H7 | 4.0±0.1 | 12.0±0.1 | 2.0±0.1 | 0.3±0.05 | 16.0±0.3 | 2.4±0.1 |
| | Q3H7 | 4.0±0.1 | 12.0±0.1 | 2.0±0.1 | 0.3±0.05 | 16.0±0.3 | 2.4±0.1 |

8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

Solder Reflow Temperature Profile



8PIN 16 PIN ULTRA SMALL SSOP PHOTOTRANSISTOR PHOTOCOUPLER

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