



CT2630-W, CT2631-W

10M Bit/s High Speed Logic Gate Optocoupler

Features

- High speed 10M Bit/s
- High isolation voltage between input and output (Viso=3750 Vrms)
- Wide operating temperature range of -55°C to 100°C
- RoHS compliance
- REACH compliance
- Halogen free compliance
- Regulatory Approvals
 - UL - UL1577 (E364000)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950

Description

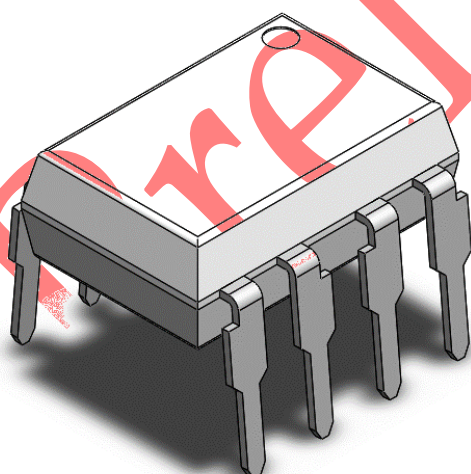
The CT2630-W, CT2631-W, devices each consist of an infrared emitting diode, optically coupled to a very high speed integrated photo-detector logic gate with a strobable output. This output features an open collector,there by permitting wired OR outputs.

The devices are packaged in an 8-pin DIP package and also available in gullwing (400mil) and surface mount lead forming.

Applications

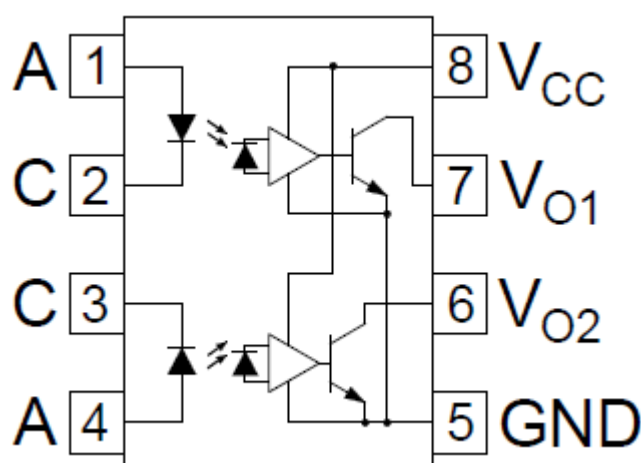
- Line receivers
- Telecommunication equipment
- High speed logic ground isolation
- Feedback loop in switch-mode power supplies
- Home appliances

Package Outline



Note: Different bending options available. See package dimension.

Schematic





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Absolute Maximum Rating at 25°C

| Symbol | Parameters | Ratings | Units | Notes |
|------------------|------------------------|------------|------------------|-------|
| V _{ISO} | Isolation voltage | 5000 | V _{RMS} | 1 |
| T _{OPR} | Operating temperature | -55 ~ +100 | °C | |
| T _{STG} | Storage temperature | -55 ~ +150 | °C | |
| T _{SOL} | Soldering temperature | 260 | °C | 2 |
| Emitter | | | | |
| I _F | Forward current | 25 | mA | 3 |
| V _R | Reverse voltage | 5 | V | 3 |
| P _D | Power dissipation | 40 | mW | 3 |
| Detector | | | | |
| P _D | Power dissipation | 85 | mW | 3 |
| I _O | Average Output current | 50 | mA | 3 |
| V _{CC} | Supply voltage | 7 | V | |
| V _O | Output voltage | 7 | V | |

Notes

1. AC for 1 minute, RH = 40 ~ 60%.
2. For reflow process
3. Each Channel



Electrical Characteristics

$T_A = -40 - 85^{\circ}\text{C}$ (unless otherwise specified). Typical values are measured at $T_A = 25^{\circ}\text{C}$ and $V_{CC} = 5\text{V}$

Emitter Characteristics

| Symbol | Parameters | Test Conditions | Min | Typ | Max | Units | Notes |
|---------------------------|--|----------------------|-----|------|-----|------------------------|-------|
| V_F | Forward voltage | $I_F = 10\text{mA}$ | - | 1.4 | 1.6 | V | |
| V_R | Reverse Voltage | $I_R = 5\mu\text{A}$ | 5.0 | - | - | V | |
| $\Delta V_F / \Delta T_A$ | Temperature coefficient of forward voltage | $I_F = 10\text{mA}$ | - | -1.6 | - | mV/ $^{\circ}\text{C}$ | |

Detector Characteristics

| Symbol | Parameters | Test Conditions | Min | Typ | Max | Units | Notes |
|-----------|---------------------------|--|-----|-----|-----|-------|-------|
| I_{CCL} | Logic Low Supply Current | $I_F = 10\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$ | - | 15 | 20 | mA | 1 |
| | | $I_{F1} = I_{F2} = 10\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$ | | | 25 | | 2 |
| I_{CCH} | Logic High Supply Current | $I_F = 0\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$ | - | 10 | 15 | mA | |

Transfer Characteristics

| Symbol | Parameters | Test Conditions | Min | Typ | Max | Units | Notes |
|----------|---------------------------|--|-----|------|-----|---------------|-------|
| I_{OH} | Logic High Output Current | $I_F = 250\mu\text{A}$, $V_O = 5.5\text{V}$ | | 2 | 100 | μA | |
| I_{FT} | Input Threshold Current | $V_{CC} = 5.5\text{V}$, $V_O = 0.6\text{V}$, $I_O = 13\text{mA}$ | - | 3.3 | 5 | mA | |
| V_{OL} | Logic Low Output Voltage | $I_F = 5\text{mA}$, $I_O = 13\text{mA}$, $V_{CC} = 5.5\text{V}$ | - | 0.35 | 0.6 | V | |

Notes

1. Single Channel
2. Dual Channel



Electrical Characteristics

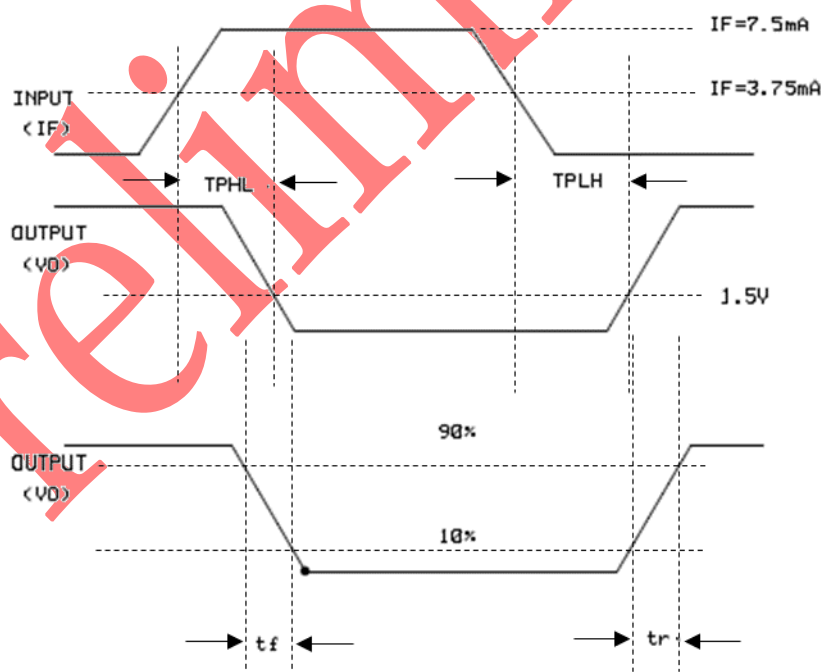
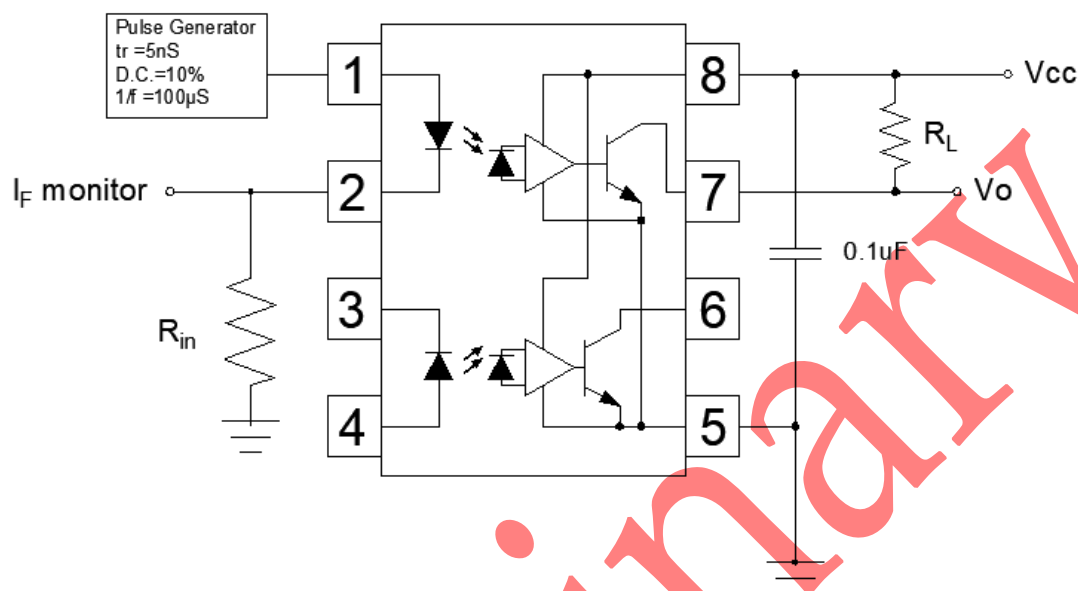
$T_A = -40 - 85^\circ\text{C}$ (unless otherwise specified). Typical values are measured at $T_A = 25^\circ\text{C}$ and $V_{CC} = 5\text{V}$

Switching Characteristics

| Symbol | Parameters | | Test Conditions | Min | Typ | Max | Units | Notes |
|------------------|--|--------|---|------|-----|-----|-------|-------|
| T _{PHL} | Propagation Delay Time Logic High to Logic Low | | C _L =15pF,R _L =350Ω | - | 40 | 75 | ns | |
| T _{PLH} | Propagation Delay Time Logic Low to Logic High | | | - | 35 | 75 | ns | |
| P _{WD} | Pulse Width Distortion | | | - | 5 | 34 | ns | |
| Tr | Output Rise Time | | | - | 40 | - | ns | |
| Tf | Output Fall Time | | | - | 10 | - | ns | |
| CM _H | Common Mode Transient Immunity at Logic High | CT2630 | I _F = 7.5mA , V _{OH} =2.0V, R _L =350Ω, T _A =25°C, V _{CM} =10Vp-p | - | - | - | V/μs | |
| | | CT2631 | I _F = 7.5mA , V _{OH} =2.0V, R _L =350Ω, T _A =25°C, V _{CM} =50Vp-p | 5000 | - | - | | |
| CM _L | Common Mode Transient Immunity at Logic Low | CT2630 | I _F = 0mA , V _{OL} =0.8V, R _L =350Ω, T _A =25°C, V _{CM} =10Vp-p | - | - | - | V/μs | |
| | | CT2631 | I _F = 0mA , V _{OL} =0.8V, R _L =350Ω, T _A =25°C, V _{CM} =50Vp-p | 5000 | - | - | | |



Test Circuit



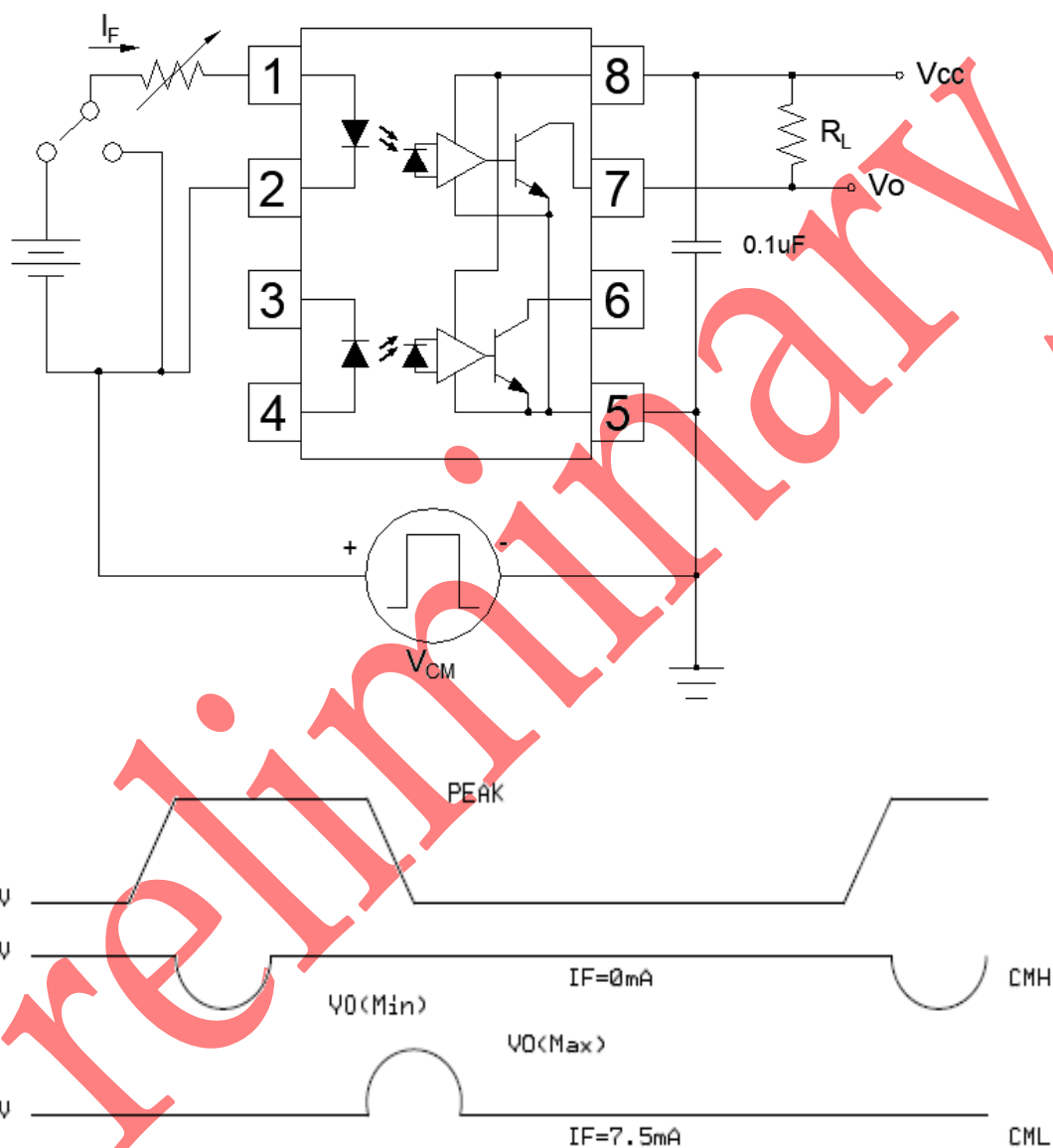
Switching Time Test Circuit



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Test Circuits



CMR Test Circuit

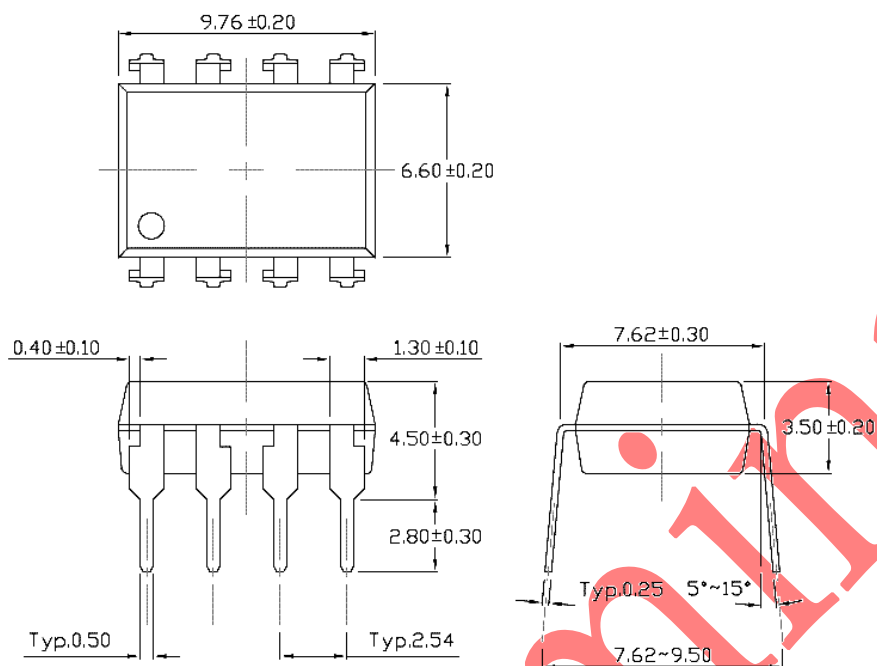


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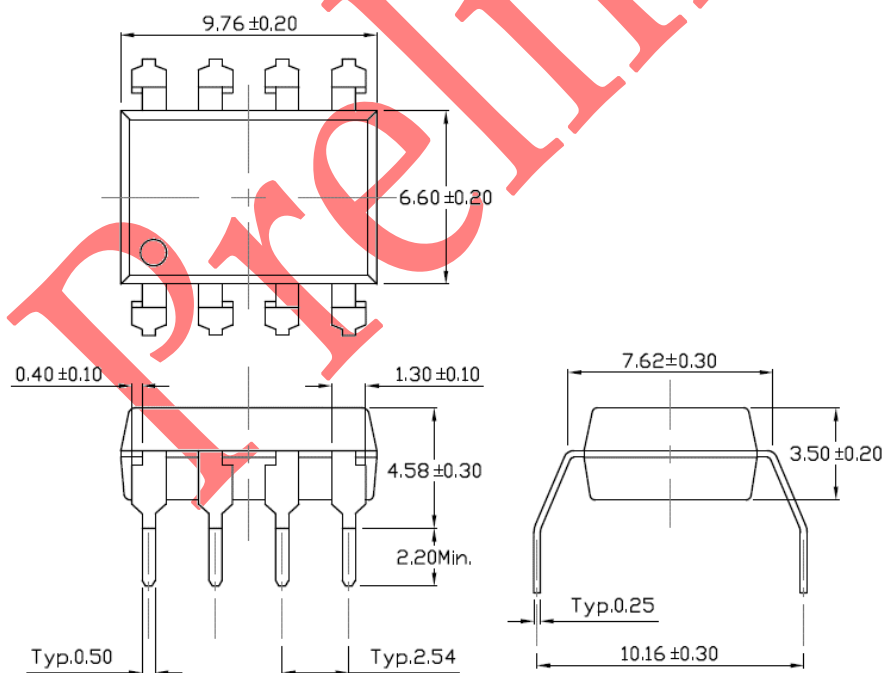
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Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole

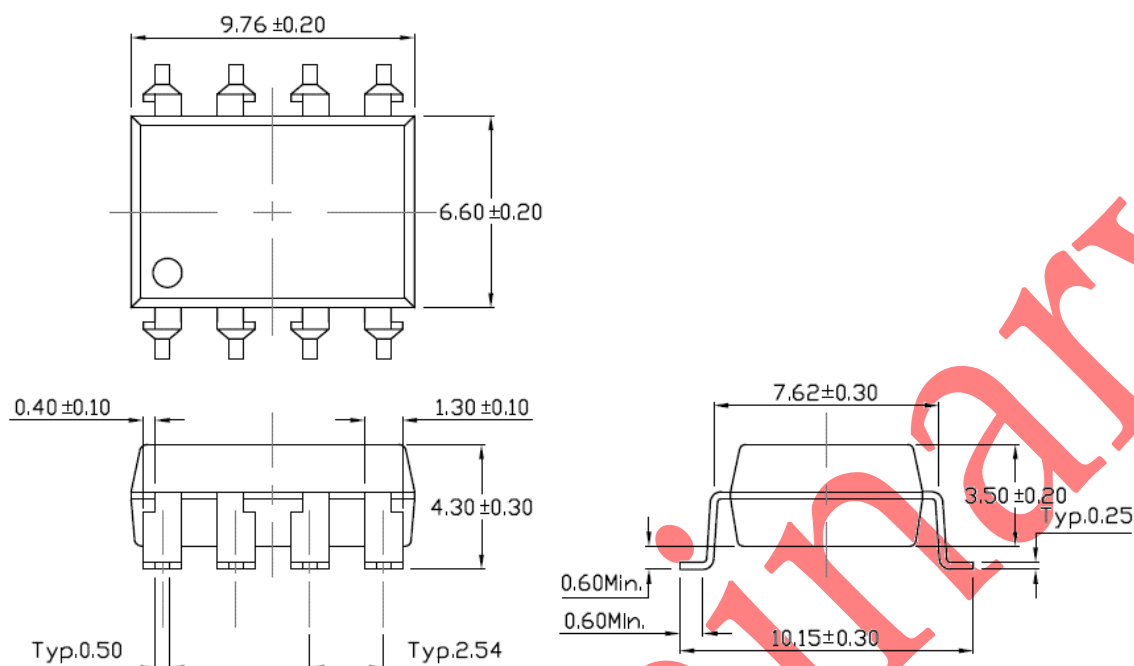


Gullwing (400mil) Lead Forming – Through Hole (M Type)

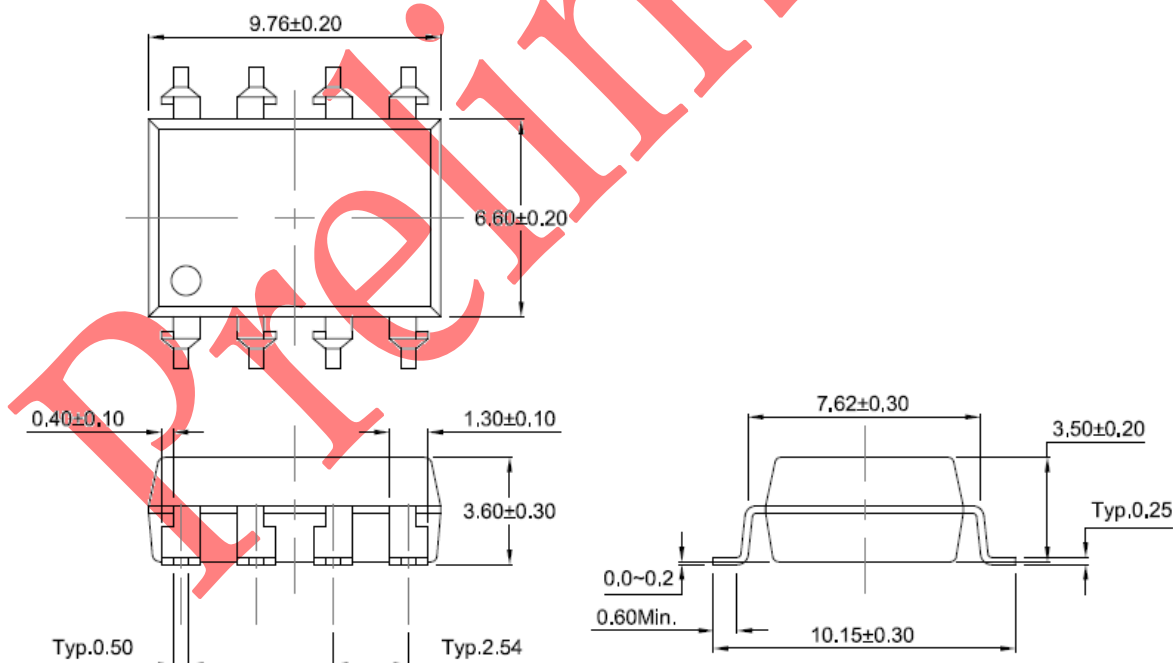




Surface Mount Lead Forming (S Type)

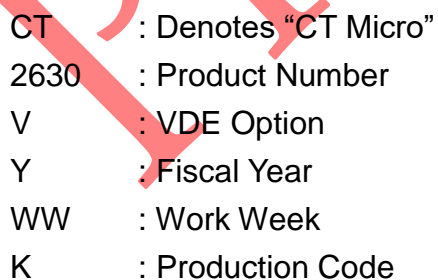


Surface Mount (Low Profile) Lead Forming (SL Type)





Recommended Solder Mask Dimensions in mm unless otherwise stated





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Ordering Information

CT263X(V)(Z)-W

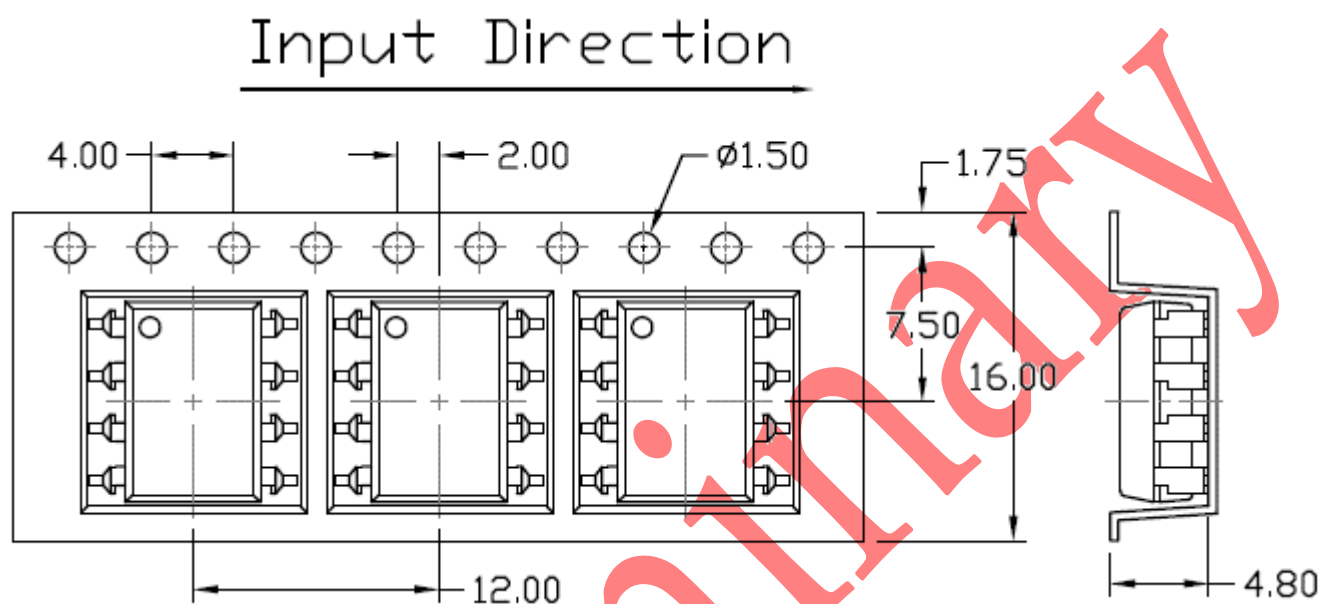
- CT = Denotes "CT Micro"
X = Part No. (0 or 1)
V = VDE Option (V or None)
Y = Lead form option (S , SL , M or none)
Z = Tape and reel option (T1, T2 or none)

| Option | Description | Quantity |
|---------------|--|-----------------|
| None | Standard 8 Pin Dip | 40 Units/Tube |
| M | Gullwing (400mil) Lead Forming | 40 Units/Tube |
| S(T1) | Surface Mount Lead Forming – With Option 1 Taping | 1000 Units/Reel |
| S(T2) | Surface Mount Lead Forming – With Option 2 Taping | 1000 Units/Reel |
| SL(T1) | Surface Mount (Low Profile) Lead Forming– With Option 1 Taping | 1000 Units/Reel |
| SL(T2) | Surface Mount (Low Profile) Lead Forming– With Option 2 Taping | 1000 Units/Reel |

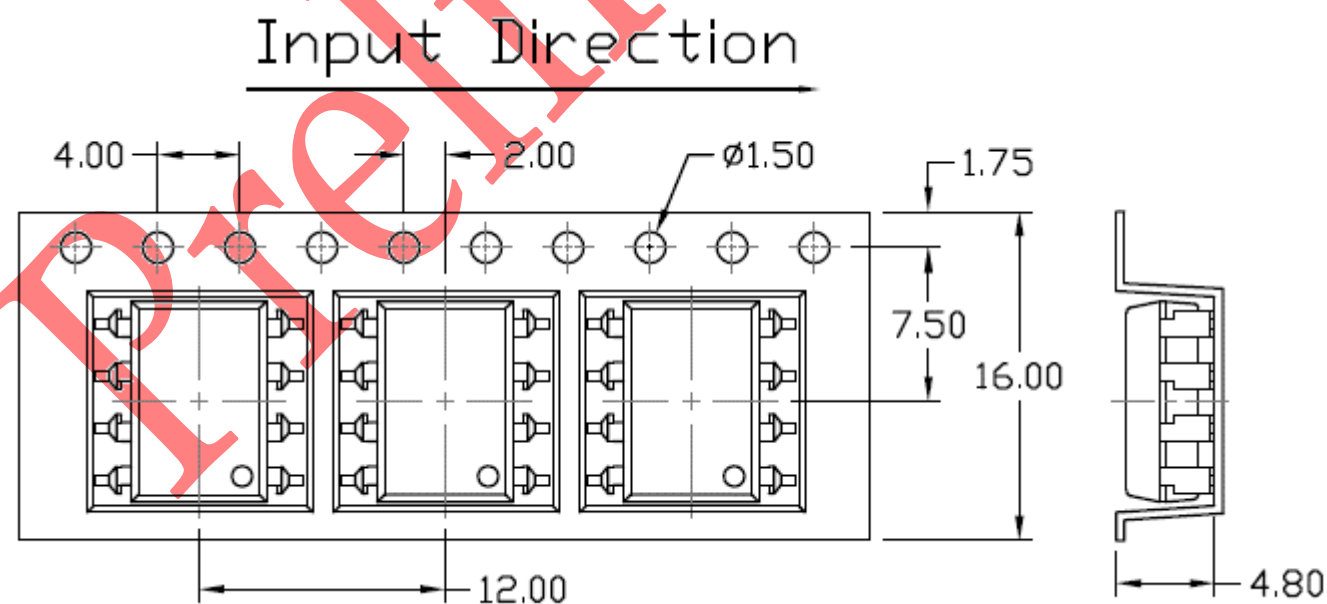


Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)





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Wave soldering (follow the JEDEC standard JESD22-A111)

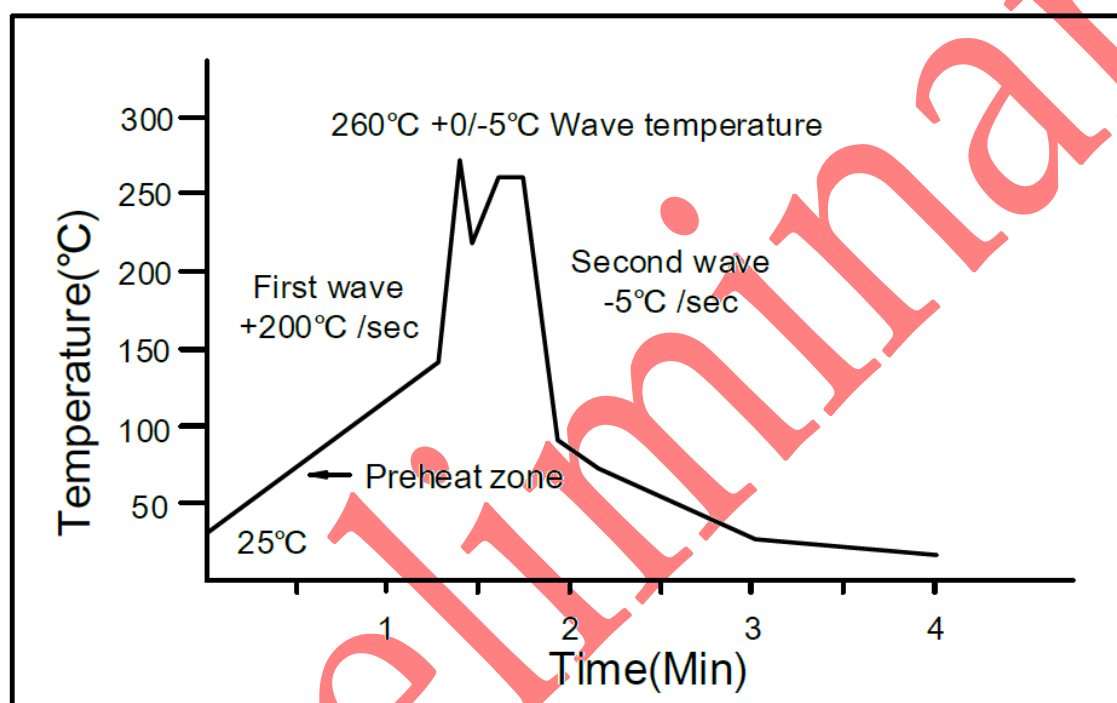
One time soldering is recommended within the condition of temperature.

Temperature: $260 \pm 5^\circ\text{C}$.

Time: 10 sec.

Preheat temperature: 25 to 140°C .

Preheat time: 30 to 80 sec.



Iron soldering (follow the standard MIL-STD 202G, Method 210F)

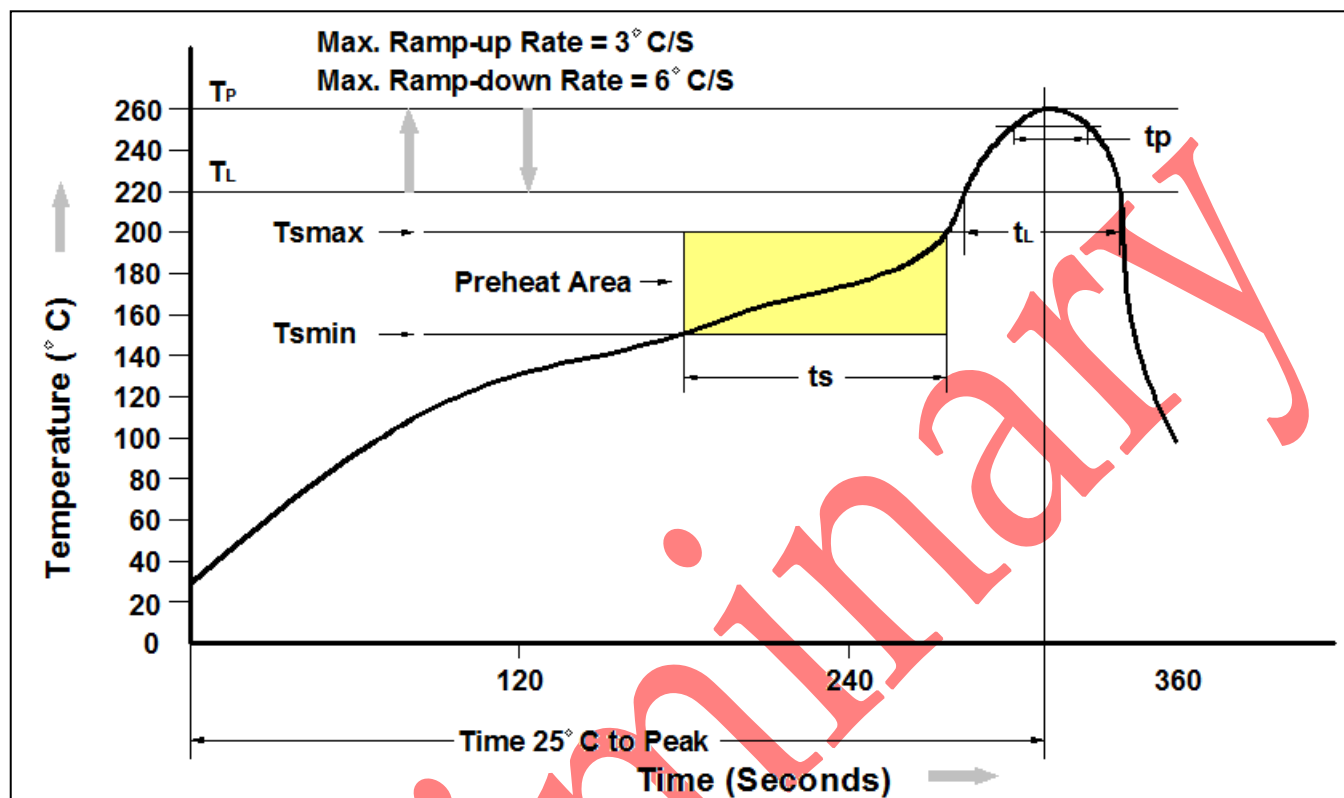
Allow single lead soldering in every single process.

One time soldering is recommended. Temperature: $350 \pm 10^\circ\text{C}$

Time: 5 sec max.



Reflow Profile



| Profile Feature | Pb-Free Assembly Profile |
|---|--------------------------|
| Temperature Min. (T _{smin}) | 150°C |
| Temperature Max. (T _{smax}) | 200°C |
| Time (t _s) from (T _{smin} to T _{smax}) | 60-120 seconds |
| Ramp-up Rate (t _L to t _P) | 3°C/second max. |
| Liquidous Temperature (T _L) | 217°C |
| Time (t _L) Maintained Above (T _L) | 60 – 150 seconds |
| Peak Body Package Temperature | 260°C +0°C / -5°C |
| Time (t _P) within 5°C of 260°C | 30 seconds |
| Ramp-down Rate (T _P to T _L) | 6°C/second max |
| Time 25°C to Peak Temperature | 8 minutes max. |



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