



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 ($V_{iso}=3750$ 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

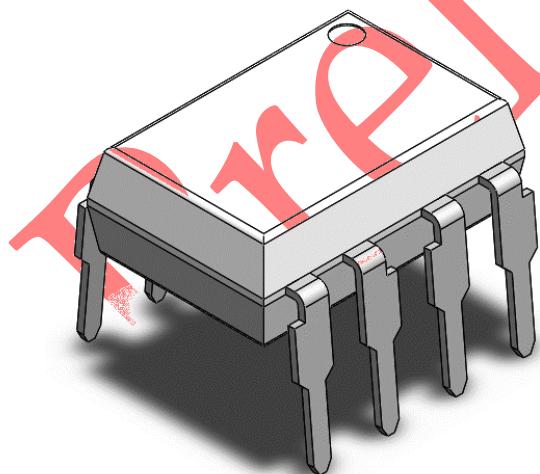
The CT2630-W, CT2631-W, devices each consist of an infrared emitting diode, optically coupled to a very high speed integrated photo-detector logic gate with a strobeable output. This output features an open collector, thereby permitting wired OR outputs.

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

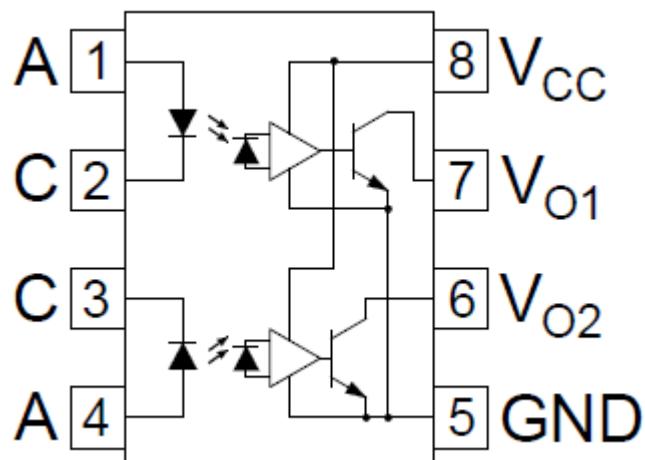
Applications

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

Package Outline



Schematic



Note: Different bending options available. See package dimension.



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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 _{TSG}	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



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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	-	$\text{mV}/^\circ\text{C}$	

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_{CH}	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	uA	
I_{IT}	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



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Switching Characteristics

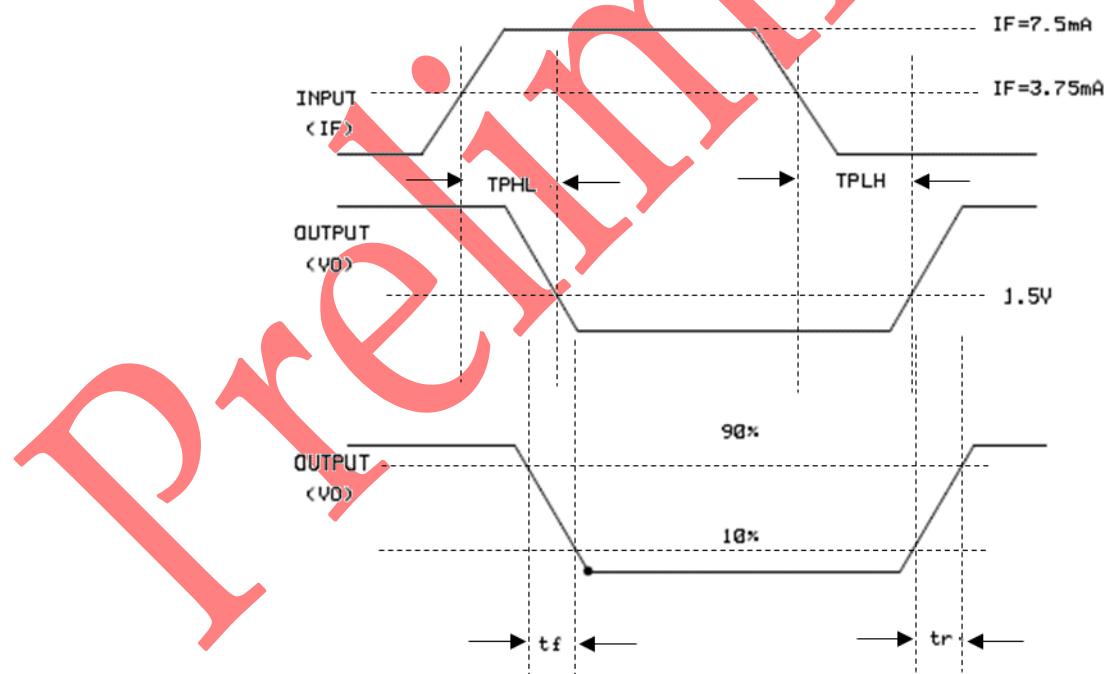
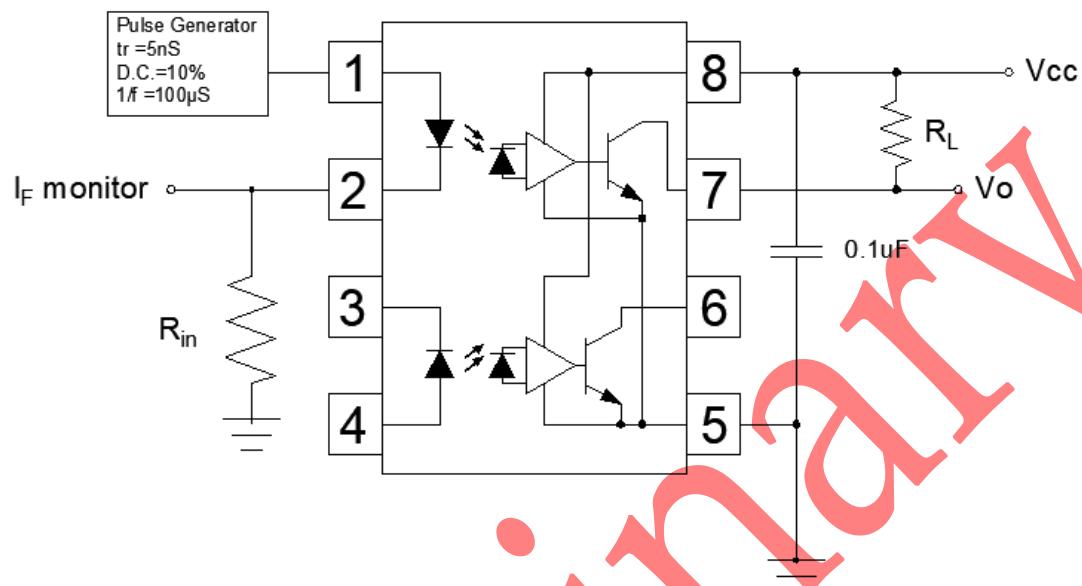
Symbol	Parameters		Test Conditions	Min	Typ	Max	Units	Notes	
T_{PHL}	Propagation Delay Time Logic High to Logic Low		$C_L = 15\text{pF}, R_L = 350\Omega$	-	40	75	ns		
T_{PLH}	Propagation Delay Time Logic Low to Logic High			-	35	75	ns		
P_{WD}	Pulse Width Distortion			-	5	34	ns		
Tr	Output Rise Time			-	40	-	ns		
T_f	Output Fall Time			-	10	-	ns		
CM_H	Common Mode Transient Immunity at Logic High	CT2630	$I_F = 7.5\text{mA}, V_{OH} = 2.0\text{V}, R_L = 350\Omega, TA = 25^\circ\text{C}, V_{CM} = 10\text{Vp-p}$	-	-	-	$\text{V}/\mu\text{s}$		
		CT2631	$I_F = 7.5\text{mA}, V_{OH} = 2.0\text{V}, R_L = 350\Omega, TA = 25^\circ\text{C}, V_{CM} = 50\text{Vp-p}$	5000	-	-			
CM_L	Common Mode Transient Immunity at Logic Low	CT2630	$I_F = 0\text{mA}, V_{OL} = 0.8\text{V}, R_L = 350\Omega, TA = 25^\circ\text{C}, V_{CM} = 10\text{Vp-p}$	-	-	-	$\text{V}/\mu\text{s}$		
		CT2631	$I_F = 0\text{mA}, V_{OL} = 0.8\text{V}, R_L = 350\Omega, TA = 25^\circ\text{C}, V_{CM} = 50\text{Vp-p}$	5000	-	-			



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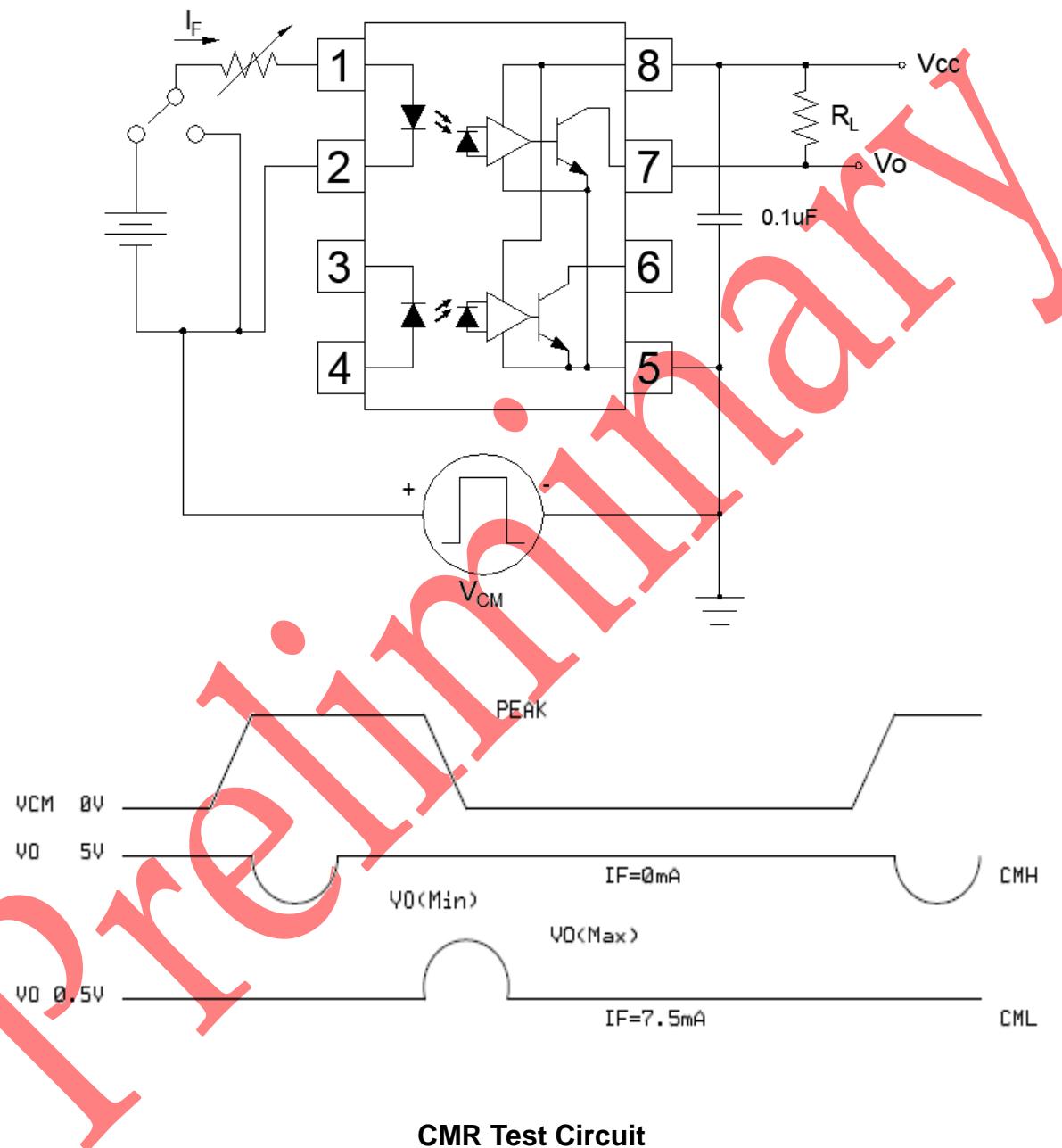
Test Circuit



Switching Time Test Circuit



Test Circuits



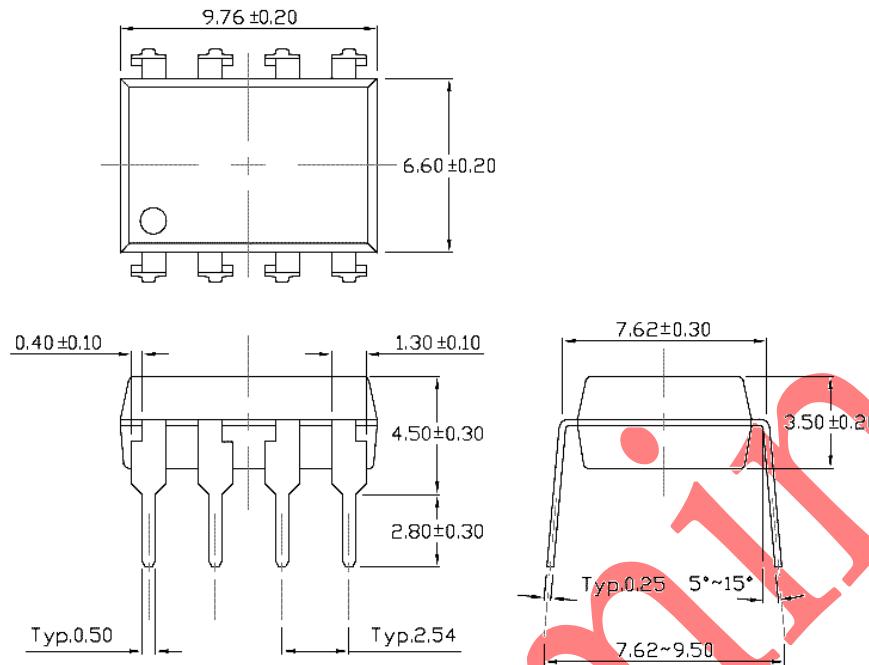


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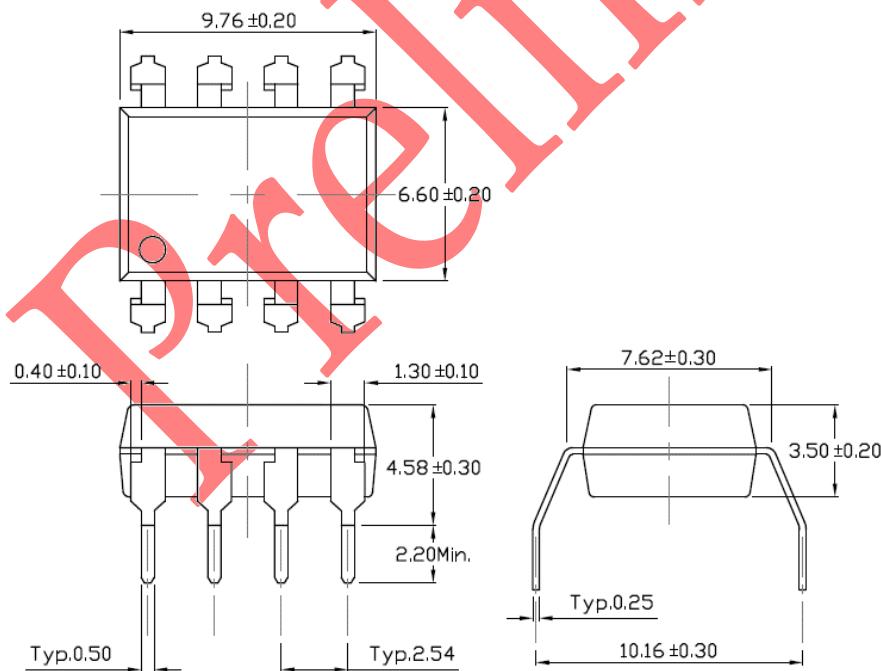
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Package Dimension Dimensions in mm unless otherwise stated

Standard DIP – Through Hole



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

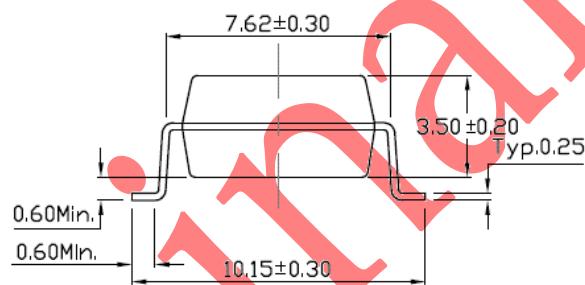
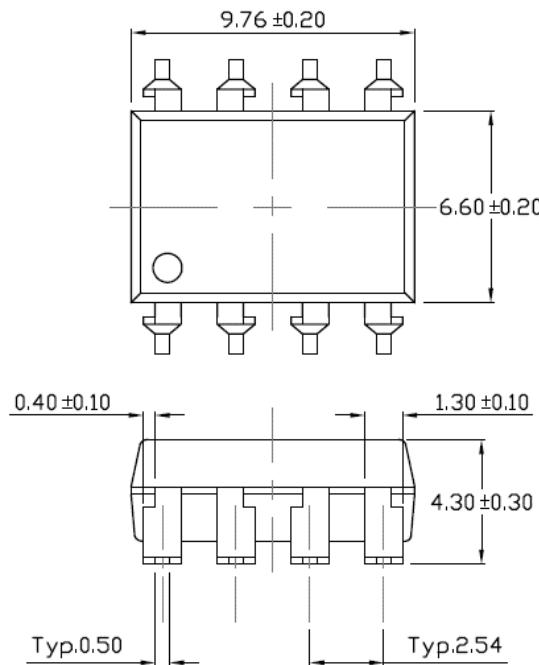




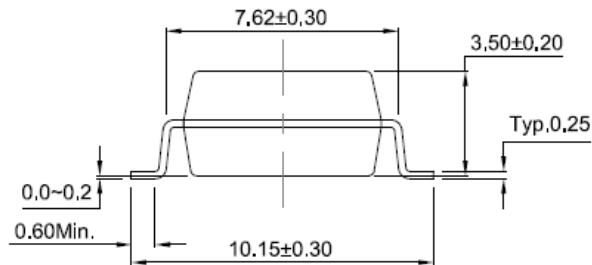
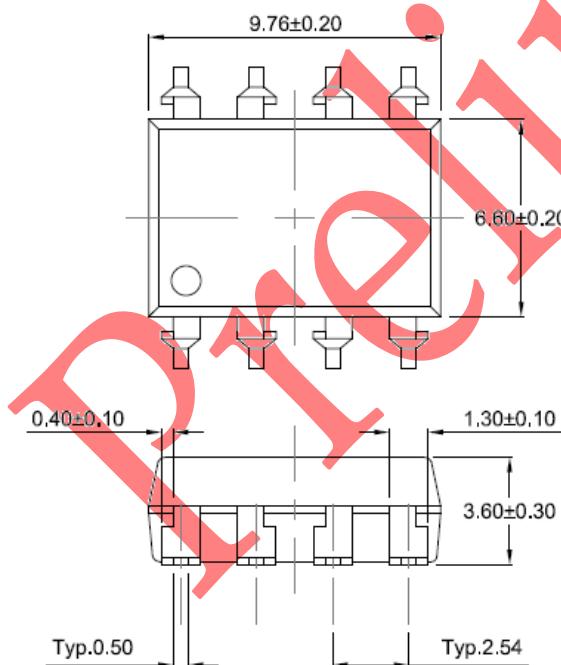
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Surface Mount Lead Forming (S Type)



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

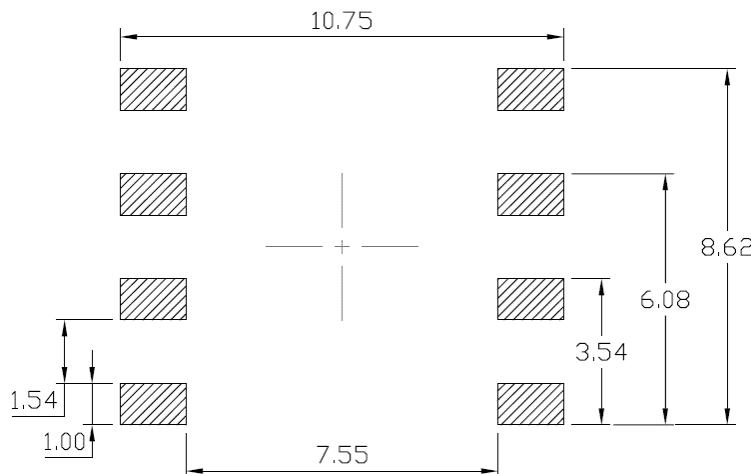




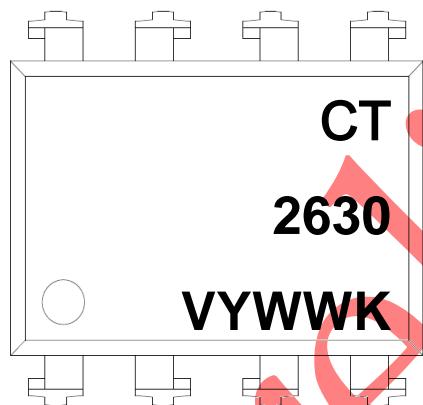
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Recommended Solder Mask Dimensions in mm unless otherwise stated



Device Marking



~~Preliminary~~

CT	: Denotes "CT Micro"
2630	: Product Number
V	: VDE Option
Y	: Fiscal Year
WW	: Work Week
K	: Production Code



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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

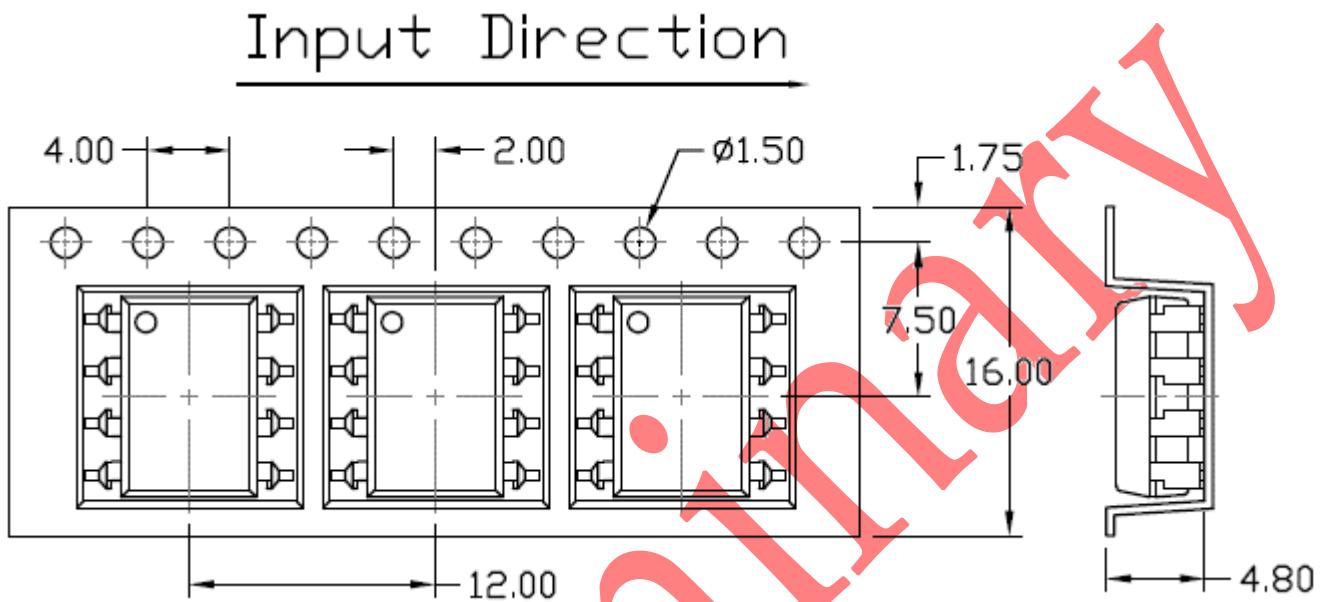


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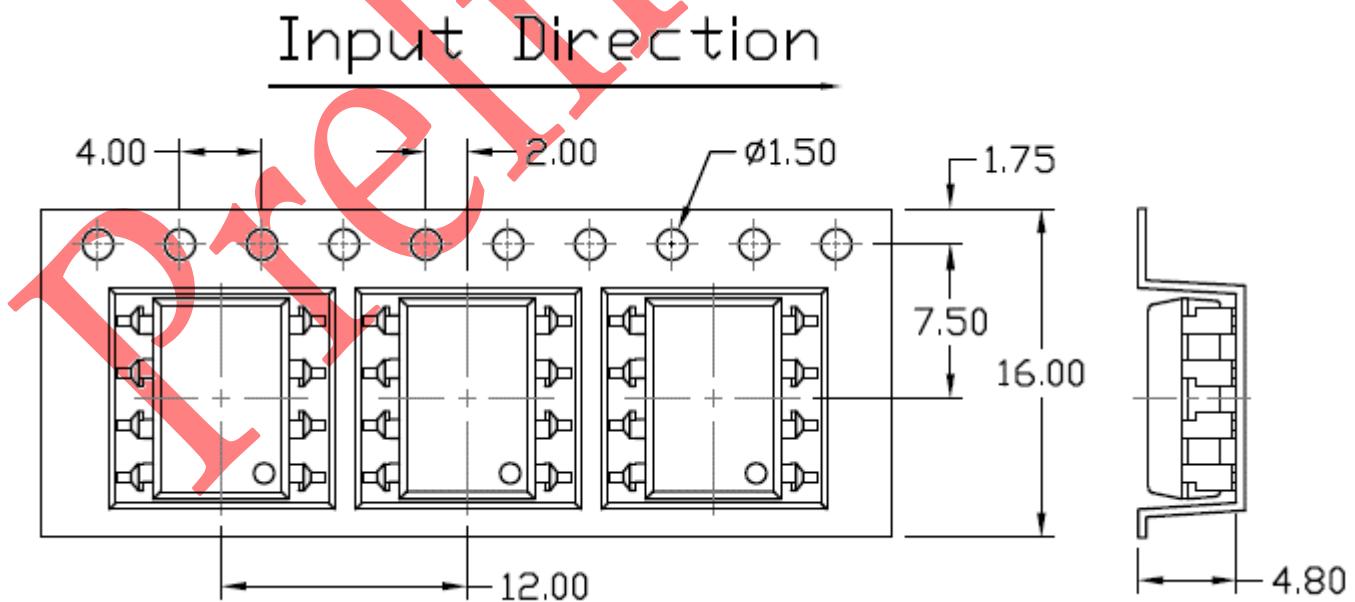
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)





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Wave soldering (follow the JEDEC standard JESD22-A111)

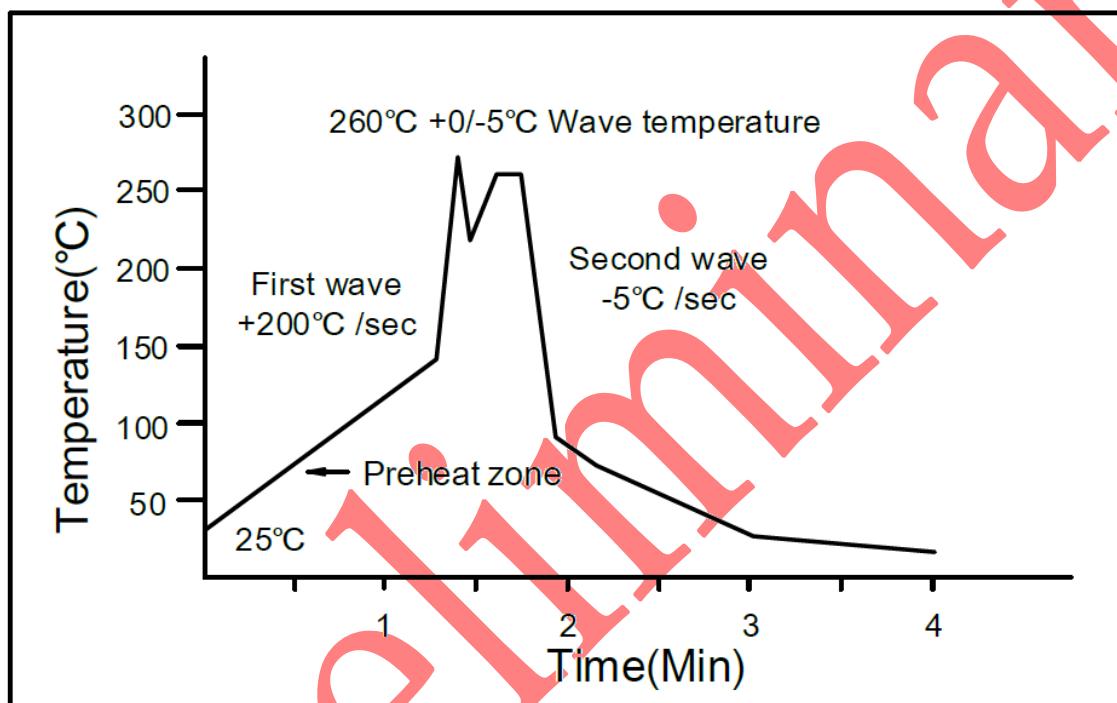
One time soldering is recommended within the condition of temperature.

Temperature: 260+0/-5°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)

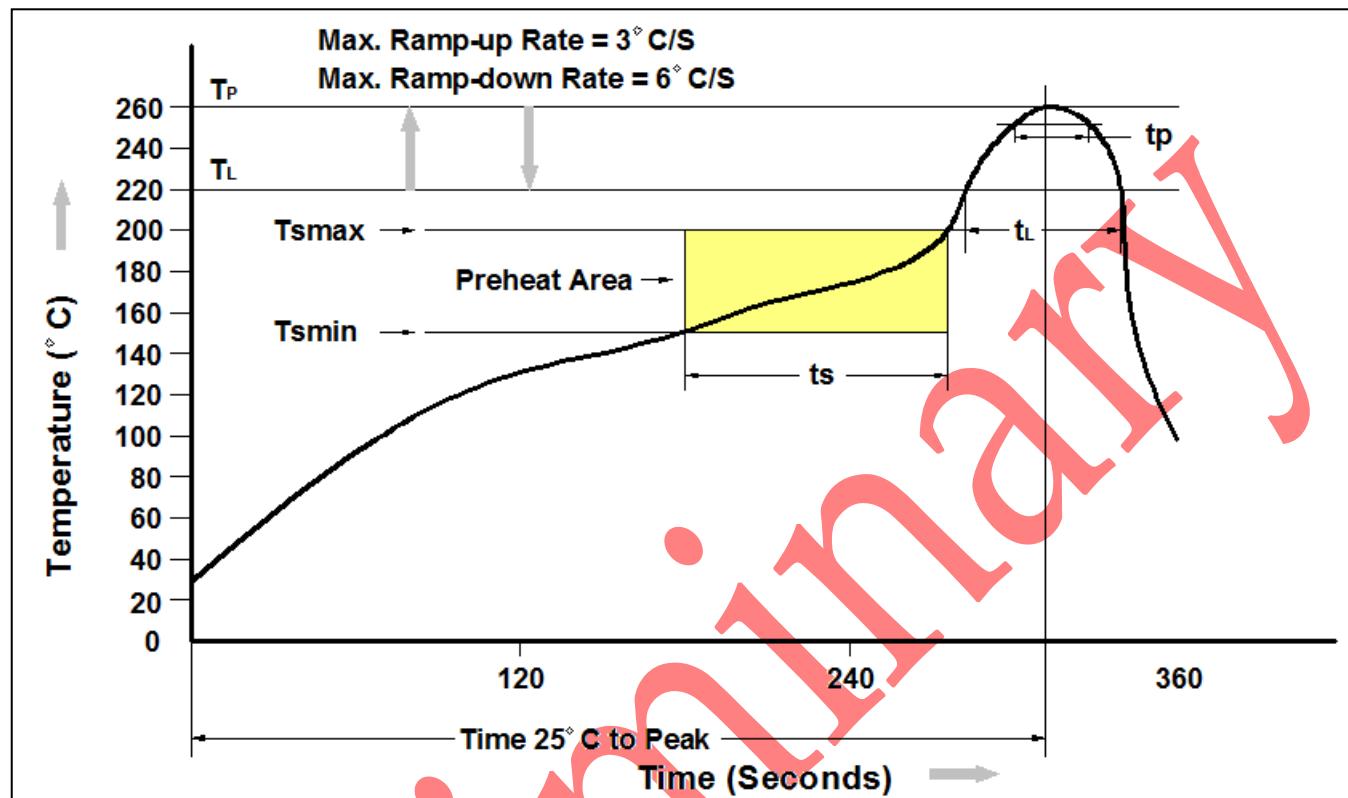
Allow single lead soldering in every single process.

One time soldering is recommended. Temperature: 350+/-10°C

Time: 5 sec max.



Reflow Profile



Preliminary

Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	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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