



DC Input 5-Pin Mini-Flat Phototransistor Optocoupler

Features

- High isolation 3750 V_{RMS}
- Multiple CTR selection available
- DC input with transistor output
- Creepage distance $\geq 5\text{mm}$
- >0.4
- Operating temperature range - 55 °C to 110 °C
- Halogen free compliance

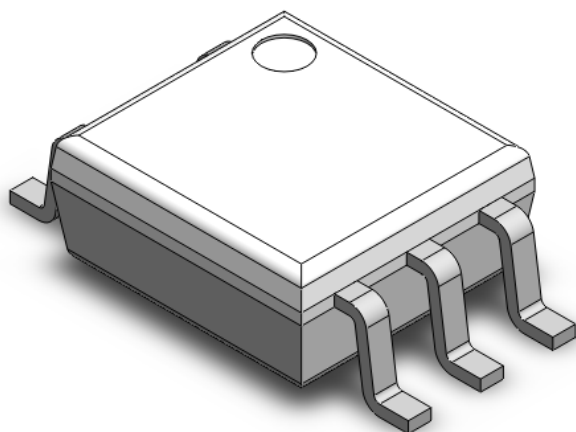
Description

These series of general purpose optocoupler consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 5-lead Mini-Flat package.

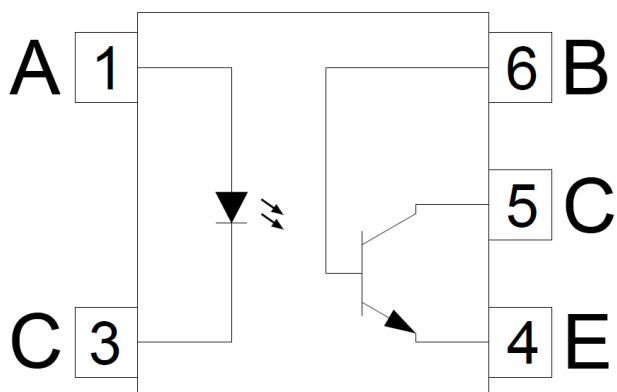
Applications

- DC-DC Converters
- Programmable controllers
- Telecommunication equipment
- Hybrid substrates that require high density mounting

Package Outline



Schematic





CTM131 Series

DC Input 5-Pin Mini-Flat Phototransistor Optocoupler

Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	3750	V _{RMS}	
T _{OPR}	Operating temperature	-55 ~ +110	°C	
T _{STG}	Storage temperature	-55 ~ +150	°C	
T _{SOL}	Soldering temperature	260	°C	
P _{TOT}	Total power dissipation	200	mW	
Emitter				
I _F	Forward current	50	mA	
I _{F(TRANS)}	Peak transient current (≤1μs P.W,300pps)	1	A	
V _R	Reverse voltage	6	V	
P _D	Power dissipation	70	mW	
Detector				
P _C	Power dissipation	150	mW	
B _{VCEO}	Collector-Emitter Breakdown Voltage	80	V	
B _{VECO}	Emitter-Collector Breakdown Voltage	7	V	
B _{VCBO}	Collector-Base Breakdown	80	V	
B _{VEBO}	Emitter-Base Breakdown	7	V	
I _C	Collector Current	50	mA	

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

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	$I_F = 10\text{mA}$	-	1.24	1.4	V	
I_R	Reverse Current	$V_R = 6\text{V}$	-	-	5	μA	
C_{IN}	Input Capacitance	$f = 1\text{MHz}$	-	10	250	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C = 500\mu\text{A}$	80	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E = 100\mu\text{A}$	7	-	-	V	
$B_{V_{CBO}}$	Collector-Base Breakdown	$I_{CB} = 0.1\text{mA}$	80			V	
$B_{V_{EBO}}$	Emitter-Base Breakdown	$I_{EB} = 0.1\text{mA}$	7			V	
I_{CEO}	Collector-Emitter Dark Current	$V_{CE} = 48\text{V}, I_F = 0\text{mA}$	-	-	100	nA	
		$V_{CE} = 48\text{V}, I_F = 0\text{mA}, T_A = 85^\circ\text{C}$			50	μA	

Transfer Characteristics

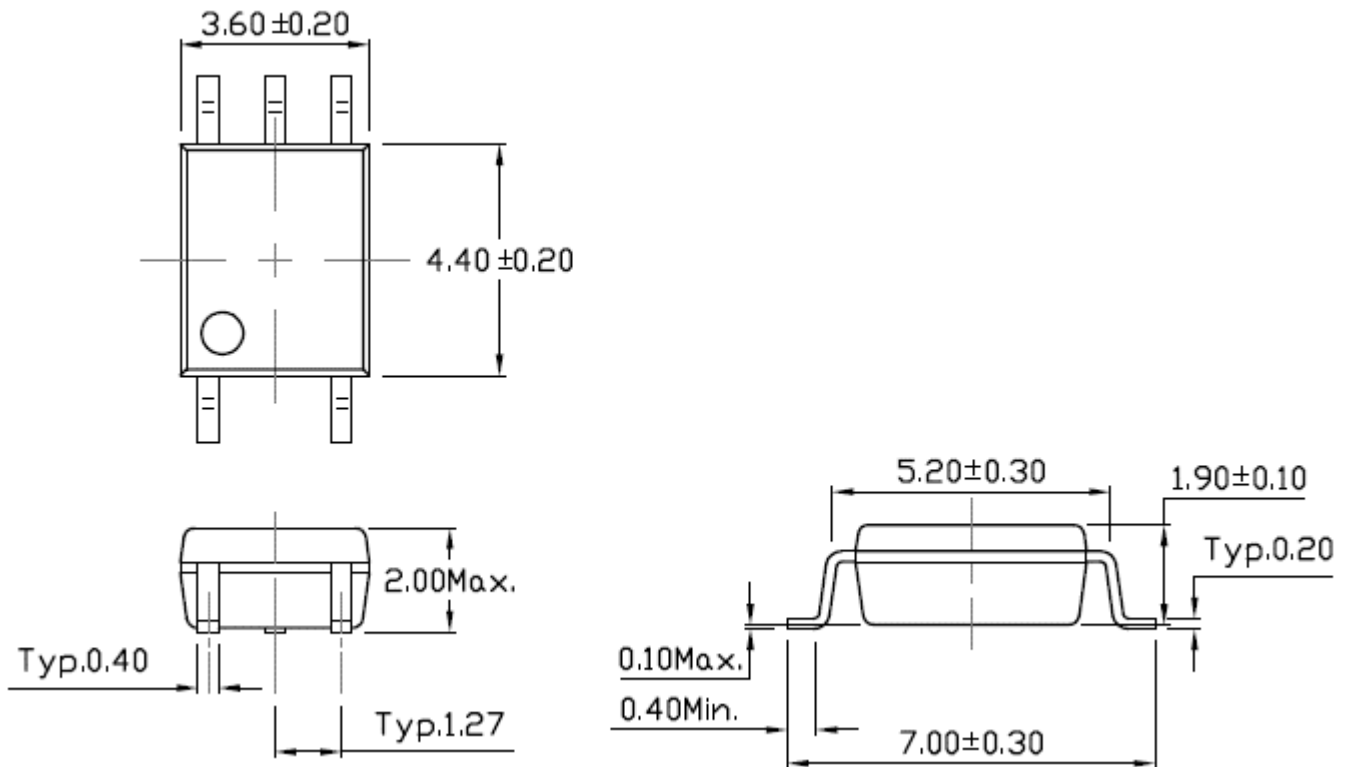
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes	
CTR	Current Transfer Ratio	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	CTM131	50	-	600	%	
			CTM131A	50	-	150		
			CTM131B	100	-	300		
			CTM131C	100	-	600		
			CTM131D	200	-	600		
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	$I_F = 8\text{mA}, I_C = 2.4\text{mA}$	-	-	0.4	V		
		$I_F = 1\text{mA}, I_C = 0.2\text{mA}$			0.4			
R_{IO}	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	5×10^{10}	-	-	Ω		
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$	-	0.5	1	pF		

Switching Characteristics

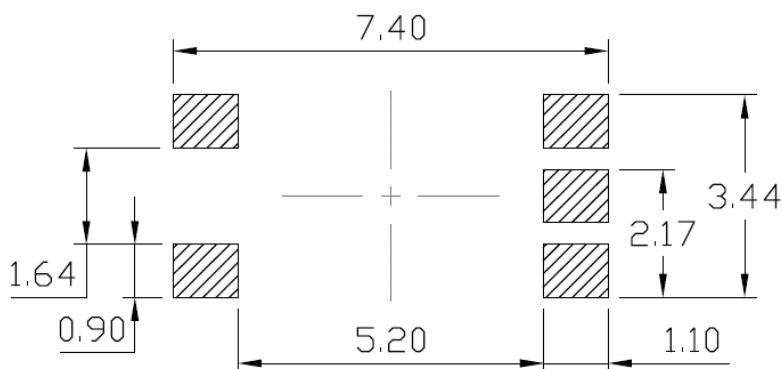
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_r	Rise Time	$I_C = 2\text{mA}, V_{CE} = 2\text{V}, R_L = 100\Omega$	-	6	18	μs	
t_f	Fall Time		-	8	18		



Package Dimension *Dimensions in mm unless otherwise stated*



Recommended Solder Mask *Dimensions in mm unless otherwise stated*

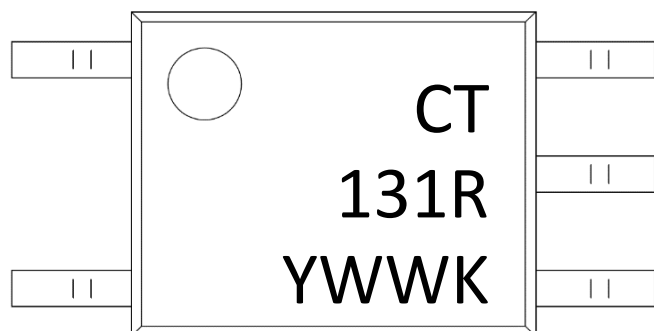




CTM131 Series

DC Input 5-Pin Mini-Flat Phototransistor Optocoupler

Marking Information



Note:

CT : Denotes “CT Micro”
131 : Product Number
R : CTR Rank
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code

Ordering Information

CTM131R(Z)

CT = Denotes “CT Micro”
M131 = Product Number
R = CTR Rank (A,B,C,D or None)
Z = Tape and reel option (T1, T2)

Option	Description	Quantity
T1	Surface Mount Lead Forming – With Option 1 Tapping	3000 Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Tapping	3000 Units/Reel

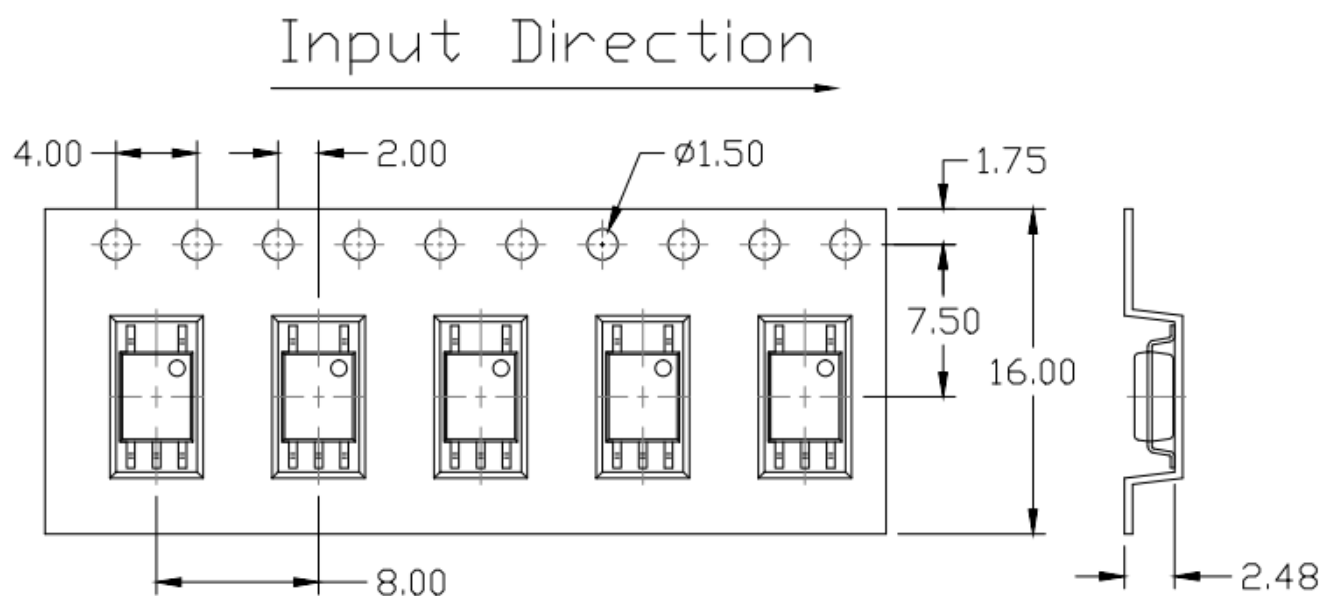


CTM131 Series

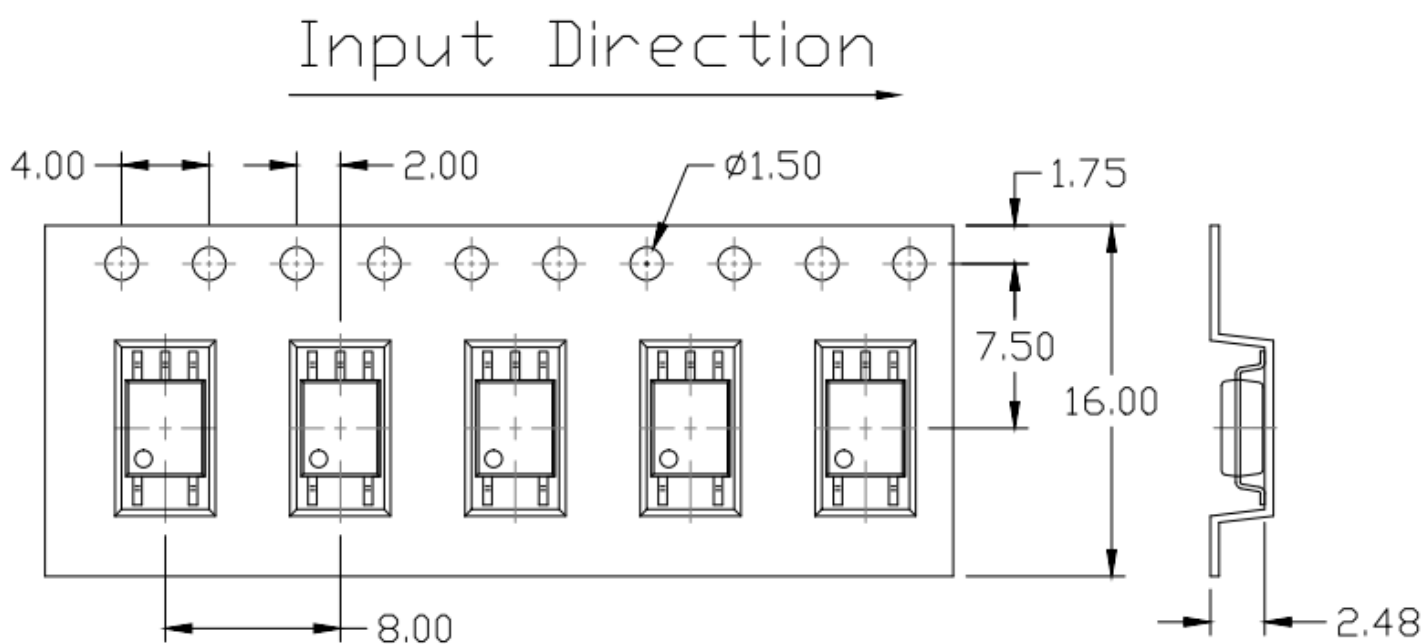
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option T1

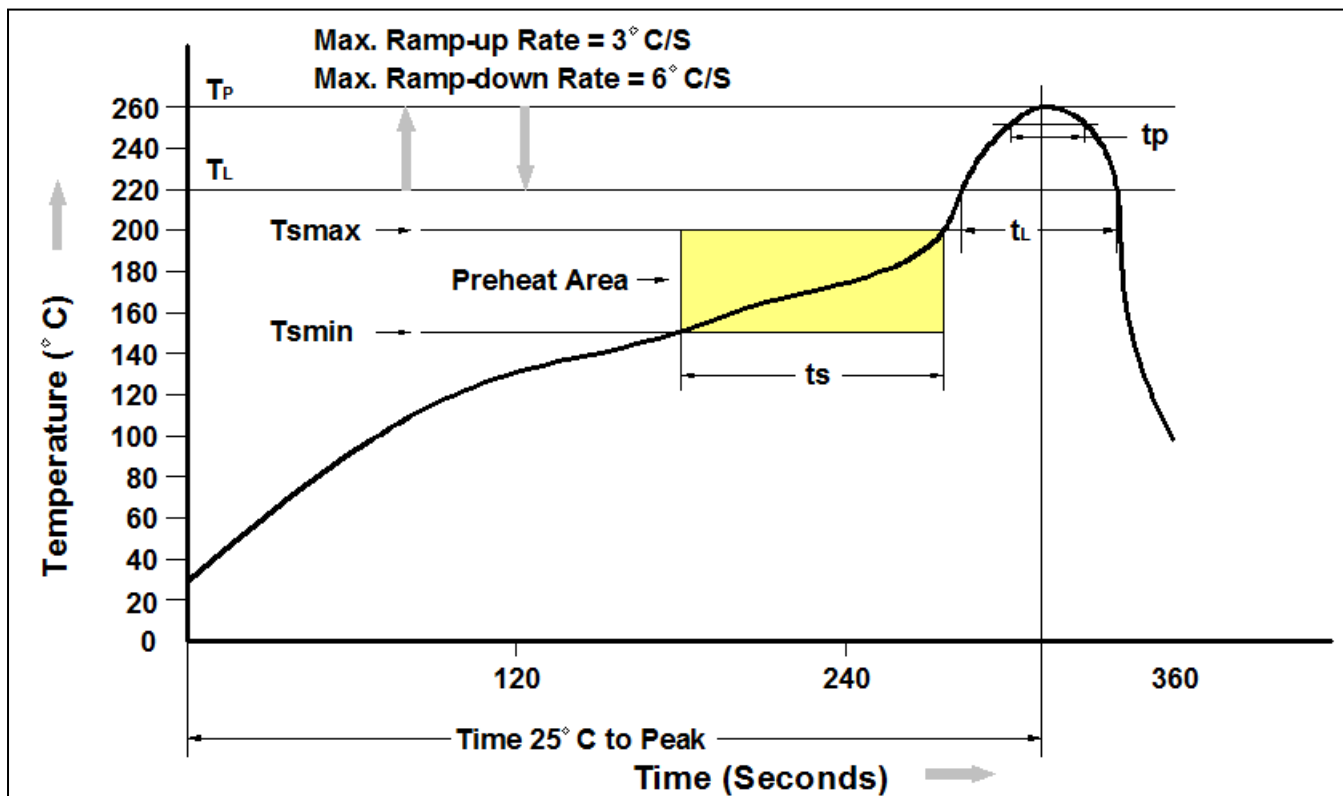


Option T2





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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