



Features

- High isolation 5300 VRMS
- DC input with transistor output
- Operating temperature range - 55 °C to 125 °C
- RoHS compliance
- REACH compliance
- Halogen free
- Regulatory Approvals
 - UL - UL1577 (Pending Approval)
 - VDE - EN60747-5-5 (Pending Approval)
 - CQC – GB4943.1, GB8898 (Pending Approval)
 - IEC60065, IEC60950 (Pending Approval)

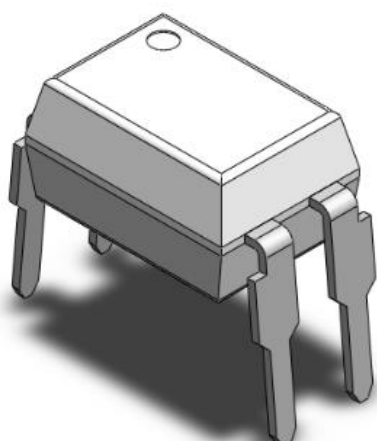
Description

The CT521-1GB consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a DIP package.

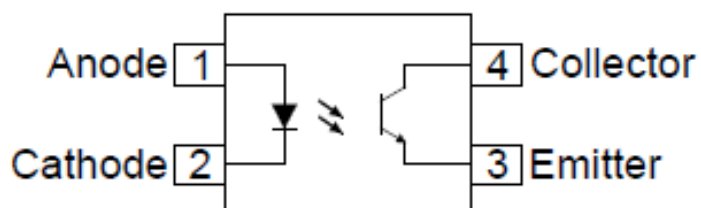
Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface

Package Outline



Schematic



CT521-1

**Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	5300	V _{RMS}	
P _{TOT}	Total power dissipation	200	mW	
T _{OPR}	Operating temperature	-55 ~ +125	°C	
T _{STG}	Storage temperature	-55 ~ +150	°C	
T _{SOL}	Soldering temperature	260	°C	
Emitter				
I _F	Forward current	60	mA	
I _{F(TRANS)}	Peak transient current (≤1μs P.W,300pps)	1000	mA	
V _R	Reverse voltage	6	V	
P _D	Emitter power dissipation	100	mW	
Detector				
P _C	Detector power dissipation	150	mW	
B _{VCEO}	Collector-Emitter Breakdown Voltage	80	V	
B _{VECO}	Emitter-Collector Breakdown Voltage	7	V	
I _C	Collector Current	80	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	$I_F = 10\text{mA}$	-	1.25	1.4	V	
I_R	Reverse Current	$V_R = 6\text{V}$	-	-	5	μA	
C_{IN}	Input Capacitance	$f = 1\text{MHz}$	-	30	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C = 100\mu\text{A}$	55	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E = 100\mu\text{A}$	7	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	$V_{CE} = 24\text{V}, I_F = 0\text{mA}$	-	-	100	nA	
		$V_{CE} = 24\text{V}, I_F = 0\text{mA}, T_A = 85^\circ\text{C}$	-	-	50	μA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	100	-	600	%	
		$I_F = 1\text{mA}, V_{CE} = 0.4\text{V}$	30	-	-	%	
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	$I_F = 1\text{mA}, I_C = 0.2\text{mA}$	-	-	0.4	V	
R_{IO}	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	5×10^{10}	-	-	Ω	
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$	-	0.25	1	pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_r	Rise Time	$I_C = 2\text{mA}, V_{CE} = 2\text{V}$ $R_L = 100\Omega$	-		16	μs	
t_f	Fall Time		-		16		
t_{on}	Turn-on time		-		20	μs	
t_{off}	Turn-off time		-		20		



Typical Characteristic Curves

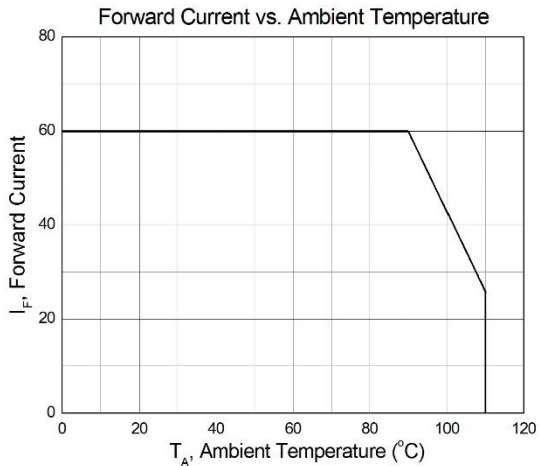


Figure 1

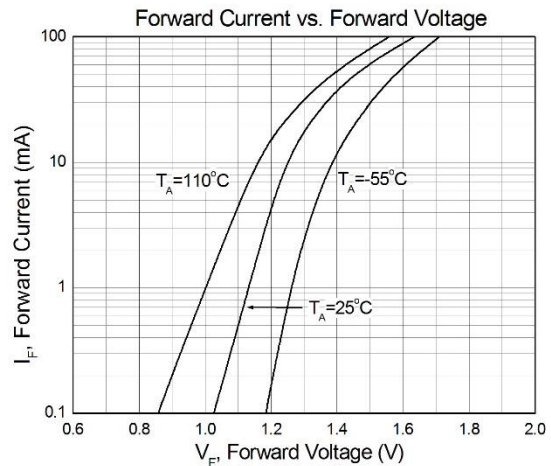


Figure 2

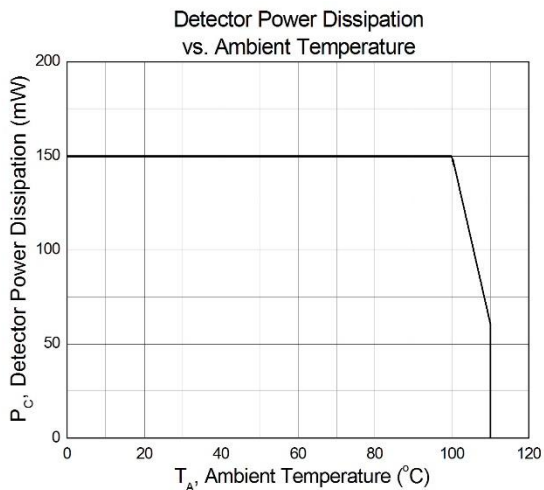


Figure 3

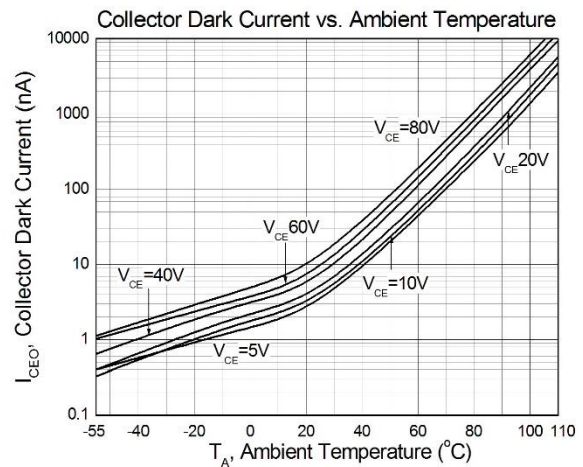


Figure 4

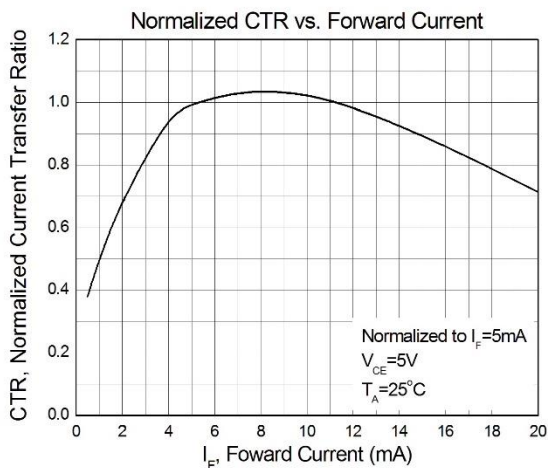


Figure 5

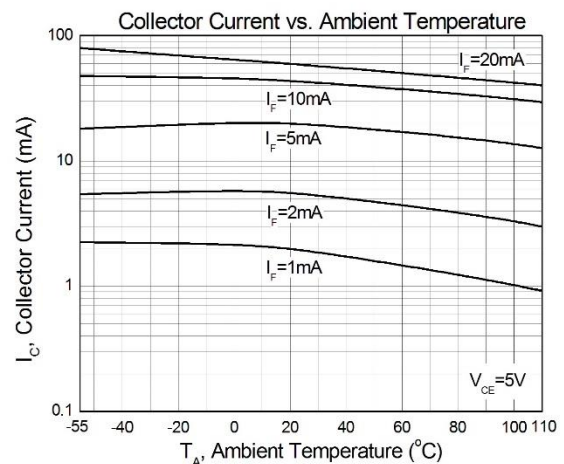


Figure 6

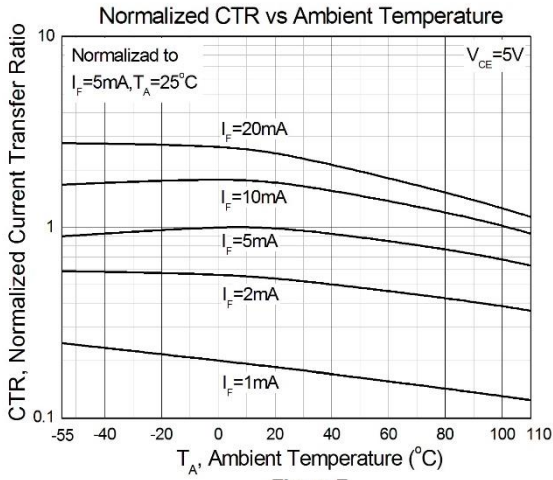


Figure 7

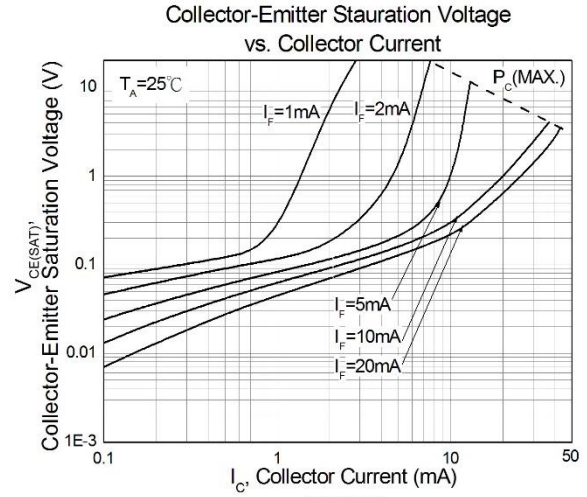


Figure 8

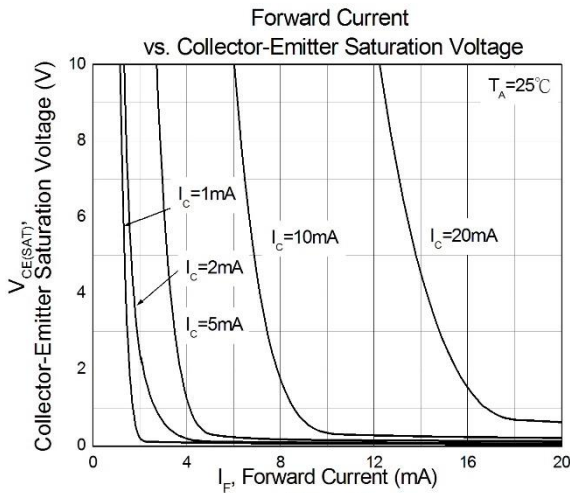


Figure 9

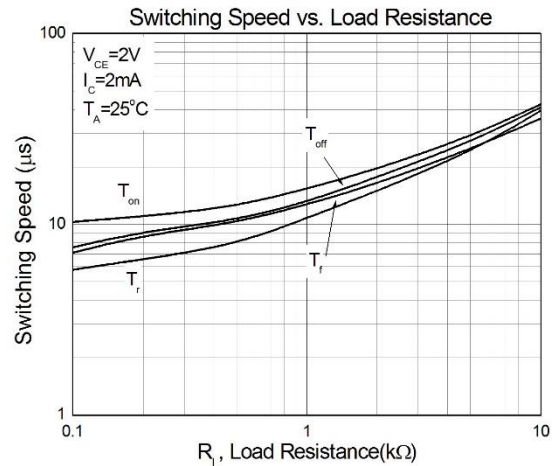


Figure 10

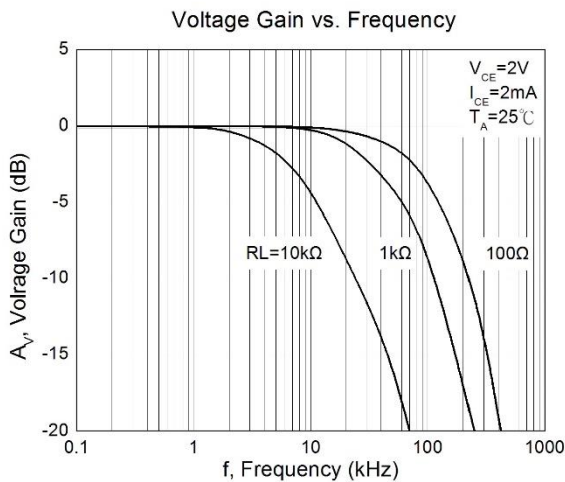
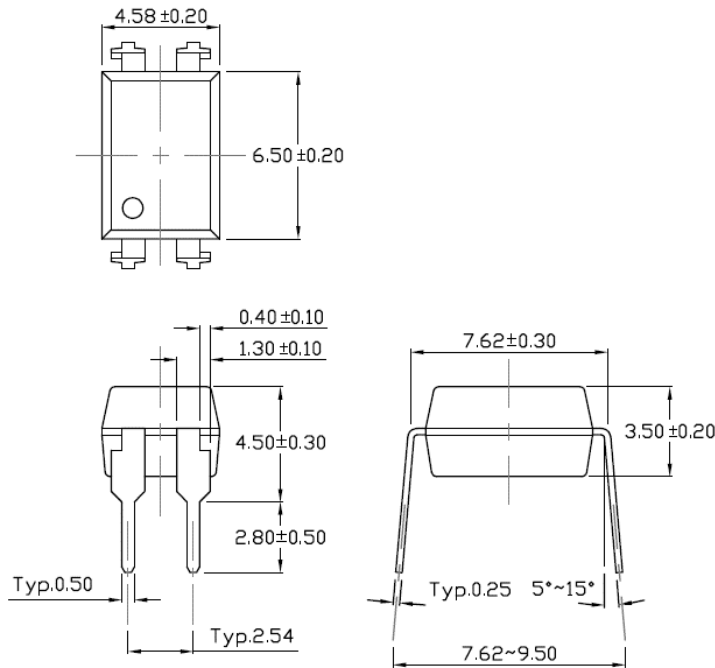


Figure 11

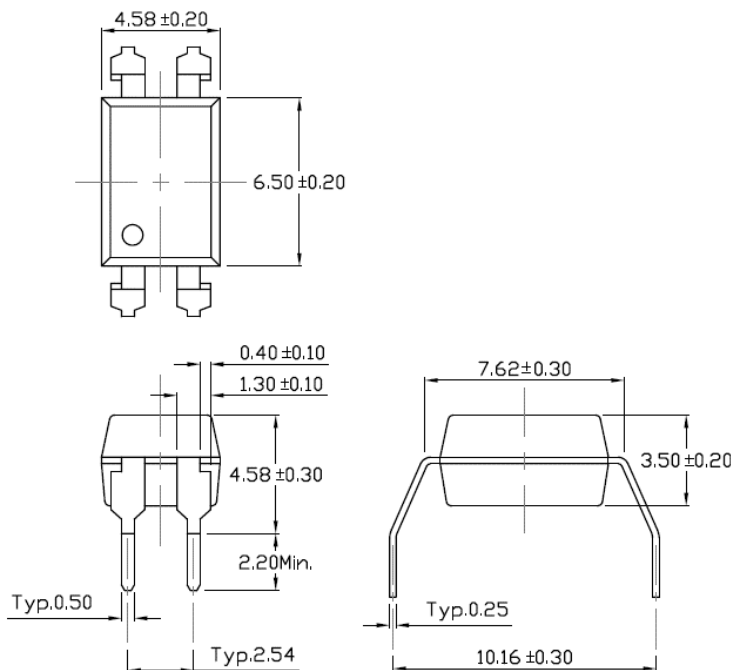


Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole

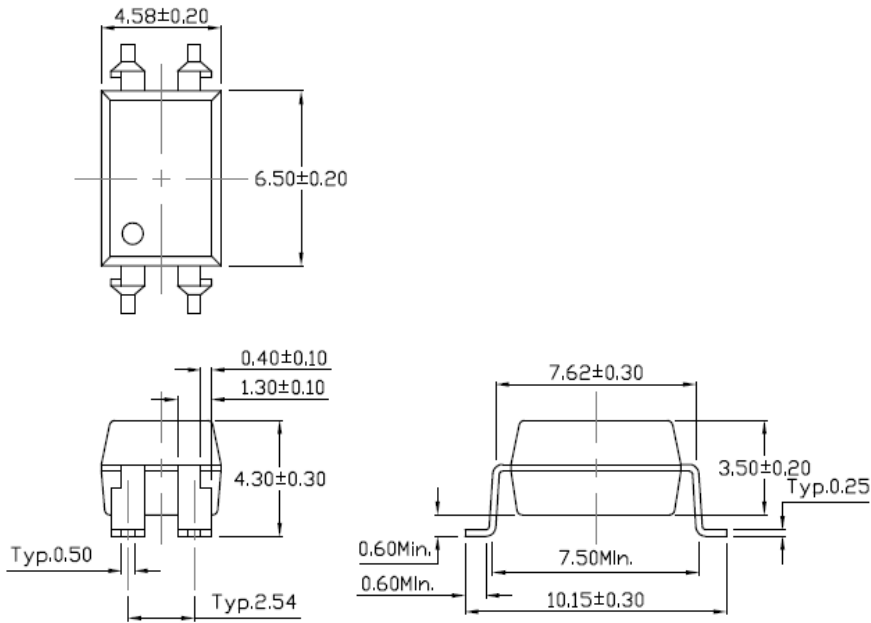


Gullwing (400mil) Lead Forming – Through Hole (M Type)

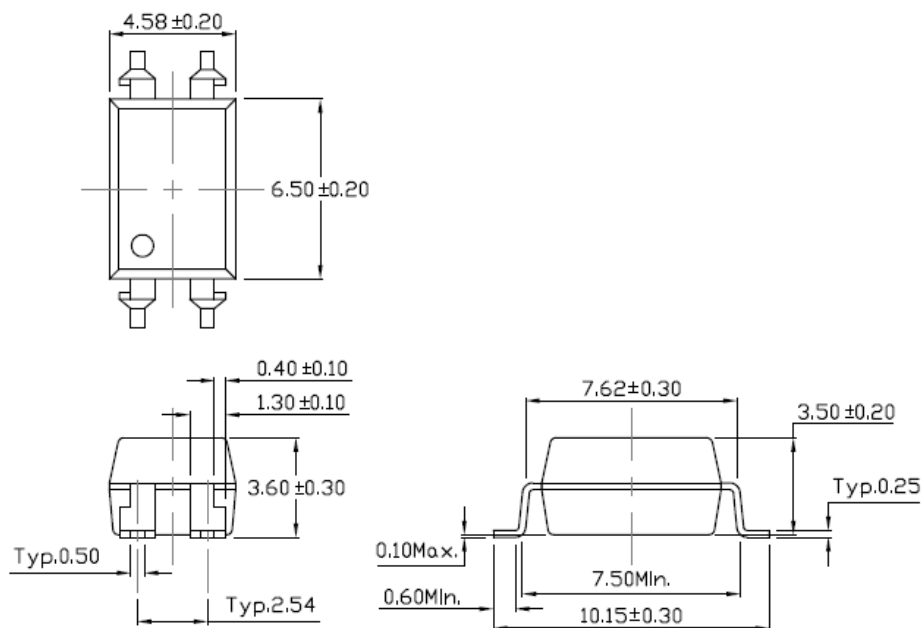




Surface Mount Lead Forming (S Type)

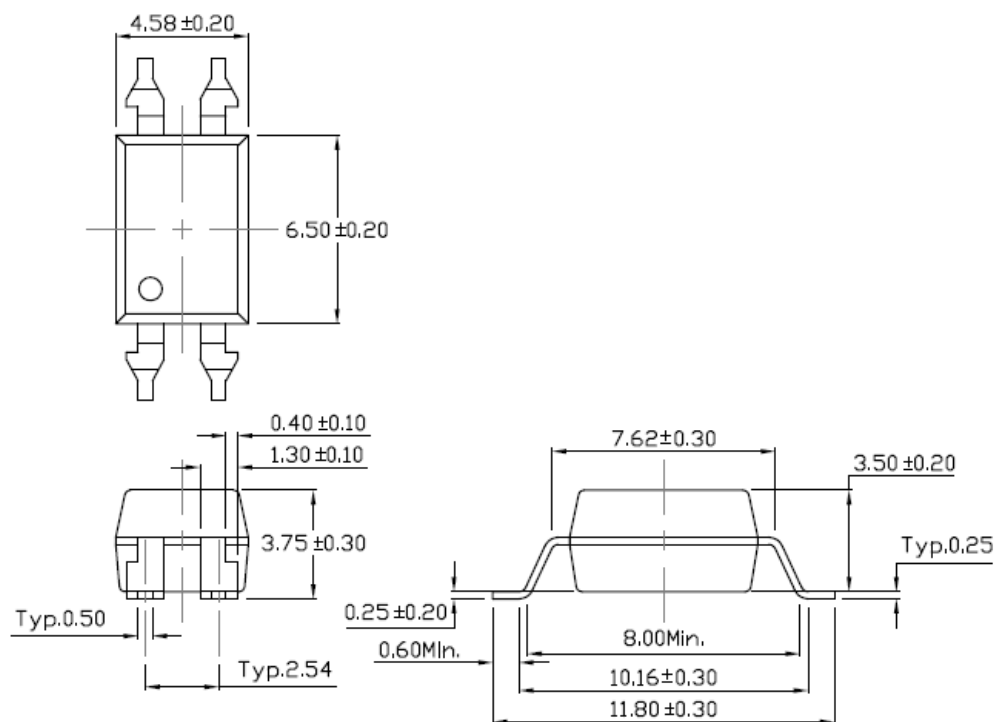


Surface Mount (Low Profile) Lead Forming (SL Type)





Surface Mount (Gullwing) Lead Forming (SLM Type)



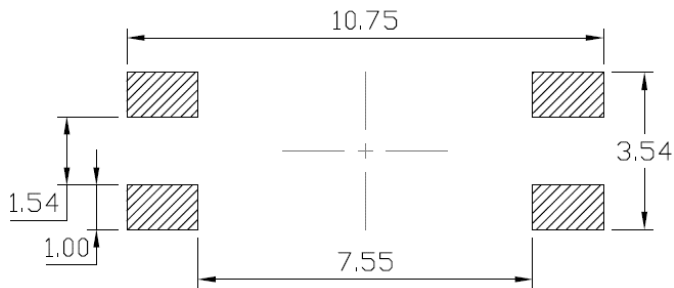


CT521-1GB

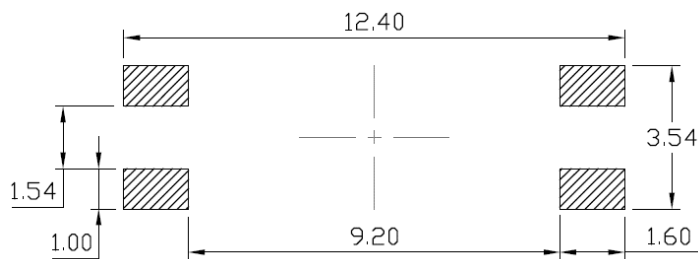
DC DIP Phototransistor Optocoupler

Recommended Solder Mask Dimensions in mm unless otherwise stated

Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming



Surface Mount (Gullwing) Lead Forming



Marking Information



Note:

- CT : Denotes "CT Micro"
- 521-1 : Part Number
- GB : CTR Rank
- V : VDE Safety Option (V or none)
- Y : Fiscal Year
- WW : Work Week
- K : Manufacturing Code



Ordering Information**CT521-1GB(V)(W)(Y)**

- CT : Denotes “CT Micro”
521-1 : Part Number
GB : CTR Rank
V : VDE Safety Option(V or none)
W : Lead form option (S, SL, SLM, M or none)
Y : Tape and reel option (T1, T2 or none)

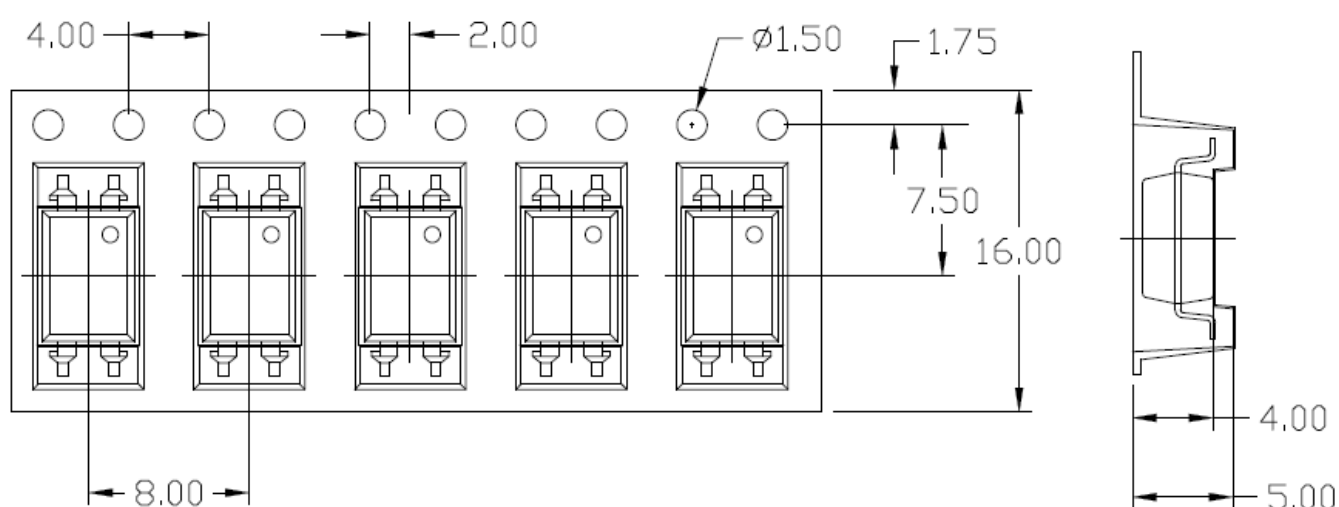
Option	Description	Quantity
None	Standard 4 Pin DIP	100 Units/Tube
M	Gullwing (400mil) Lead Forming	100 Units/Tube
S(T1)	Surface Mount Lead Forming – With Option 1 Taping	1500 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1500 Units/Reel
SL(T1)	Surface Mount (Low Profile) Lead Forming– With Option 1 Taping	1500 Units/Reel
SL(T2)	Surface Mount (Low Profile) Lead Forming – With Option 2 Taping	1500 Units/Reel
SLM(T1)	Surface Mount (Gullwing) Lead Forming– With Option 1 Taping	1500 Units/Reel
SLM(T2)	Surface Mount (Gullwing) Lead Forming – With Option 2 Taping	1500 Units/Reel



Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

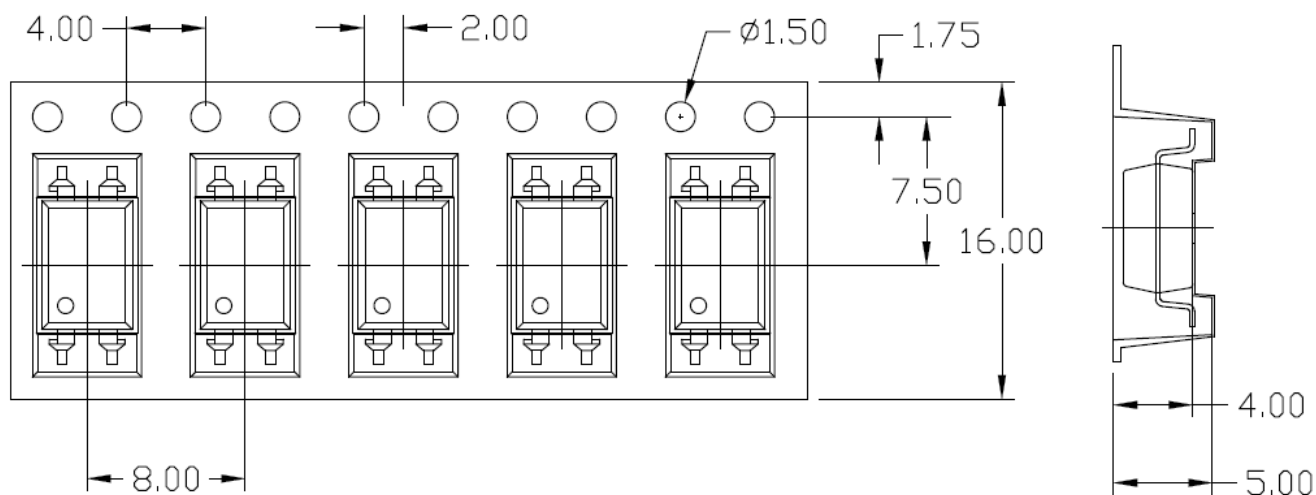
Option S(T1) & SL(T1)

Input Direction
→



Option S(T2) & SL(T2)

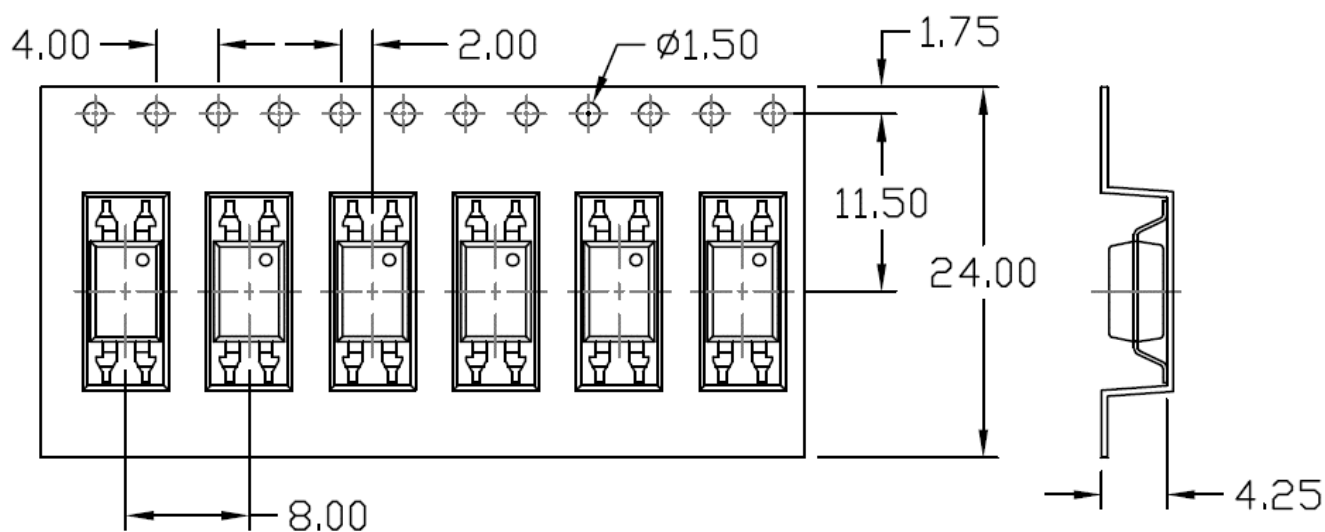
Input Direction
→





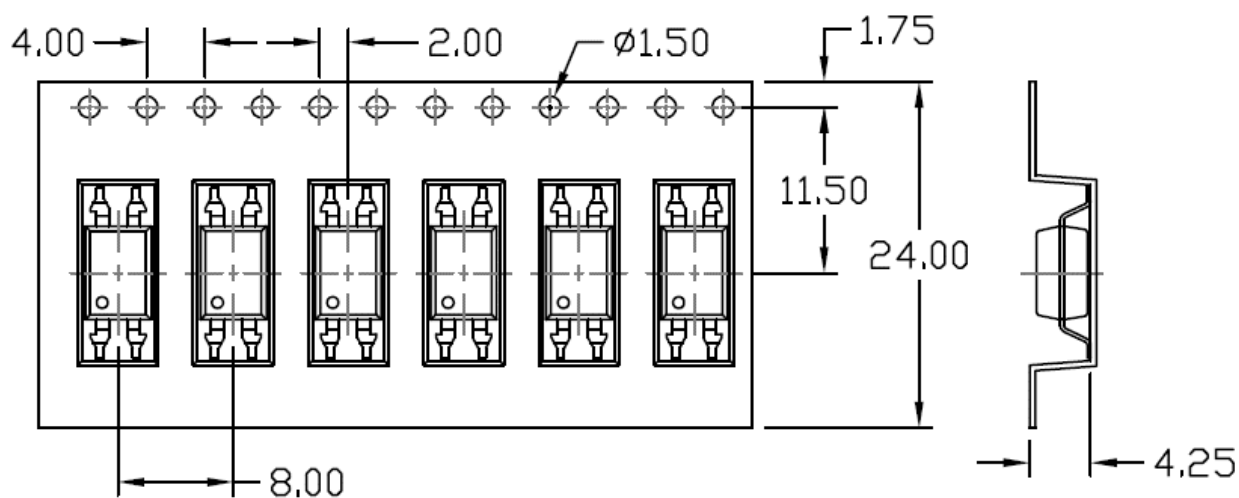
Option SLM(T1)

Input Direction



Option SLM(T2)

Input Direction





Wave soldering (JEDEC22A111 compliant)

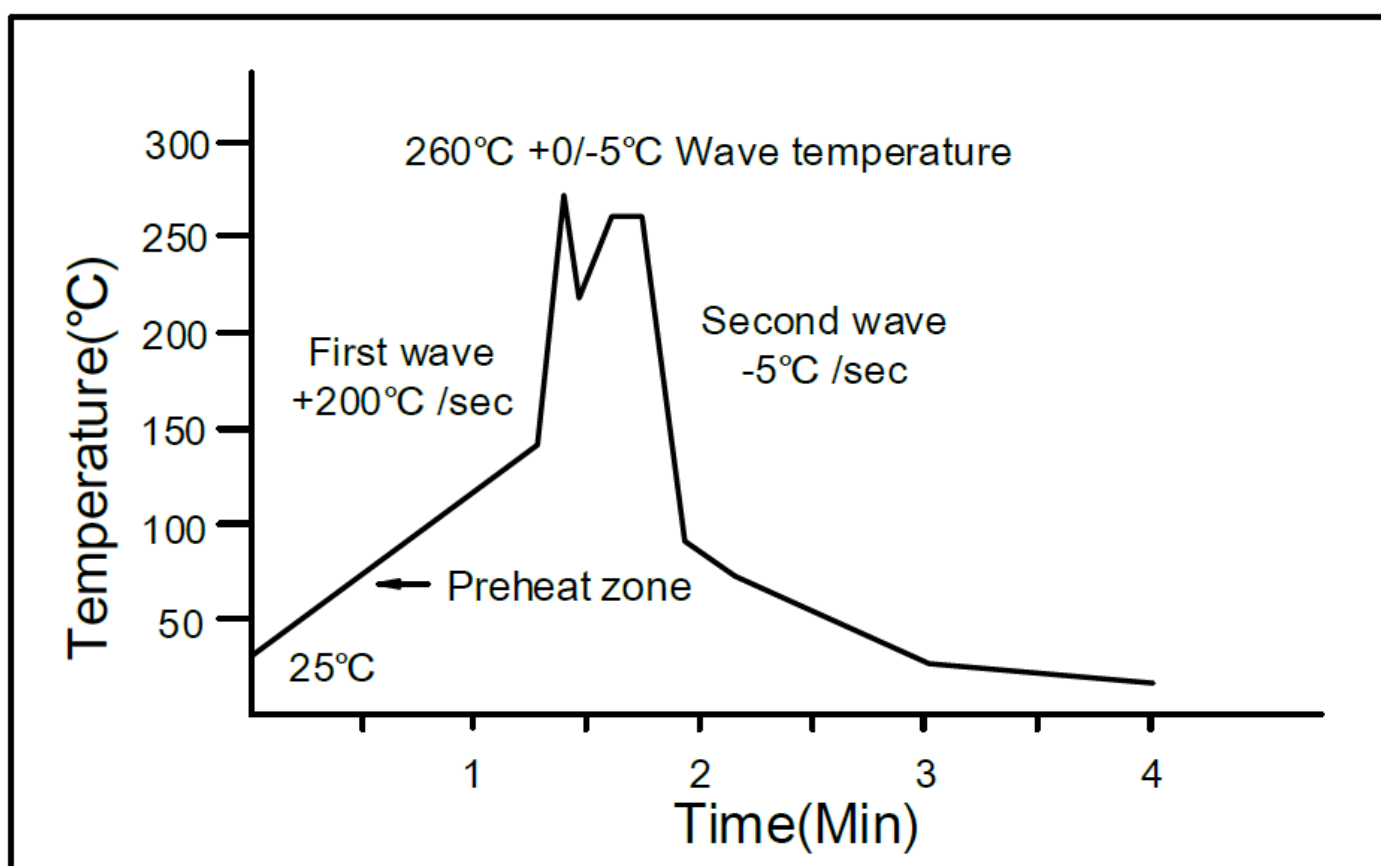
One time soldering is recommended within the condition of temperature.

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

Time: 10 sec.

Preheat temperature: 25 to 140°C .

Preheat time: 30 to 80 sec.



Hand soldering by soldering iron

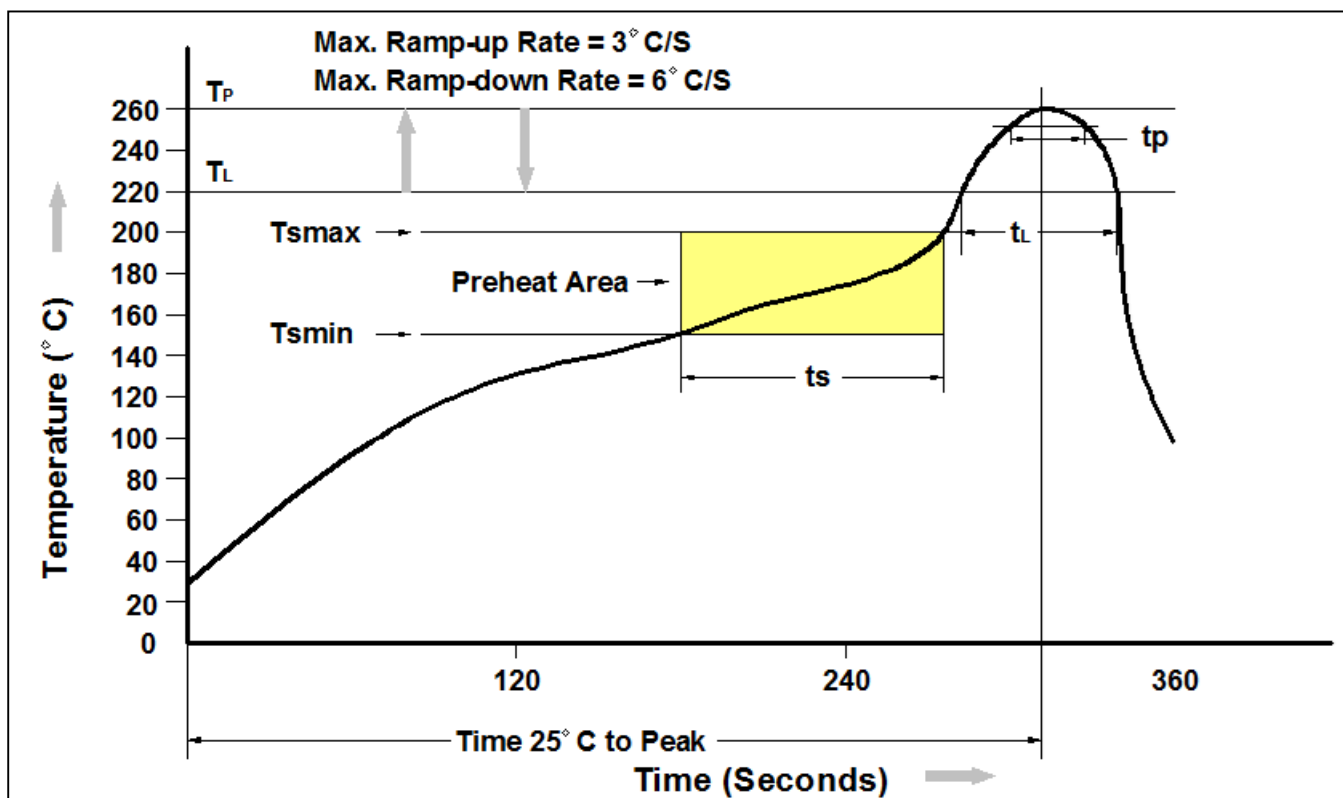
Allow single lead soldering in every single process.

One time soldering is recommended. Temperature: $350 \pm 5^\circ\text{C}$

Time: 3 sec max.



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmmin)	150°C
Temperature Max. (Tsmmax)	200°C
Time (ts) from (Tsmmin to Tsmmax)	60-120 seconds
Ramp-up Rate (tl to tp)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tl) Maintained Above (TL)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (tp) within 5°C of 260°C	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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- 2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.*