



CT852

DC Input 4-Pin High Power Photodarlington Optocoupler

Features

- High isolation 5000 VRMS
- CTR : Min 1000%
- High $B_{VCEO} = 350V$
- RoHS Compliance
- REACH Compliance
- External Creepage $\geq 7.4mm$
- Distance Through Isolation $\geq 0.4mm$
- Spatial Distance $\geq 7.5mm$ (S/SL Type)
- Spatial Distance $\geq 8.0mm$ (M/SLM Type)
- Regulatory Approvals
 - UL - UL1577 (E364000)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950

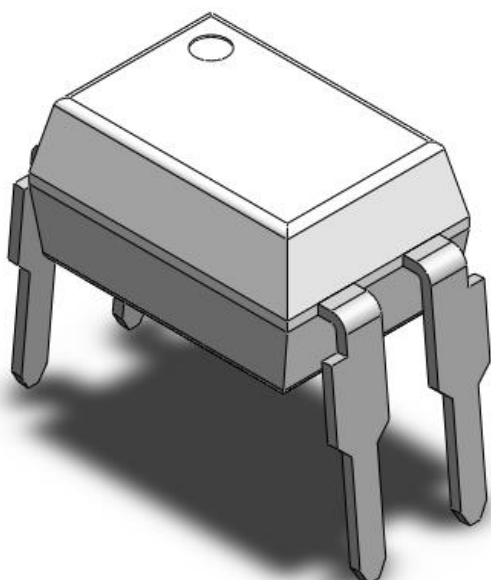
Description

The CT852 consists of a high power photodarlington transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead DIP package different lead forming options.

Applications

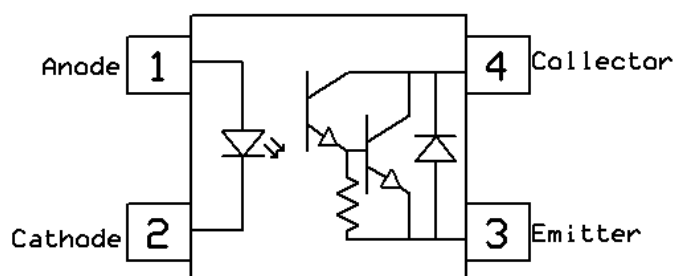
- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface

Package Outline



Note: Different lead forming options available. See package dimension.

Schematic



**DC Input 4-Pin High Power Photodarlington Optocoupler****Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	5000	V _{RMS}	
T _{OPR}	Operating temperature	-55 ~ +100	°C	
T _{STG}	Storage temperature	-55 ~ +150	°C	
T _{SOL}	Soldering temperature	260	°C	
Emitter				
I _F	Forward current	80	mA	
I _{F(TRANS)}	Peak transient current (≤1μs P.W,300pps)	1	A	
V _R	Reverse voltage	6	V	
P _D	Power dissipation	150	mW	
Detector				
P _D	Power dissipation	300	mW	
B _{VCEO}	Collector-Emitter Breakdown Voltage	350	V	
B _{VECO}	Emitter-Collector Breakdown Voltage	0.1	V	
I _C	Collector Current	150	mA	



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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	$V_R = 5\text{V}$	-	-	5	μA	
C_{IN}	Input Capacitance	$f = 1\text{MHz}$	-	45	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C = 100\mu\text{A}$	350	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E = 100\mu\text{A}$	0.1	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	$V_{CE} = 200\text{V}$, $I_F = 0\text{mA}$	-	-	100	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	$I_F = 1\text{mA}$, $V_{CE} = 2\text{V}$	1000		15000	%	
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	$I_F = 20\text{mA}$, $I_C = 100\text{mA}$	-	-	1.2	V	
R_{IO}	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	5×10^{10}			Ω	
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$		0.6		pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_r	Rise Time	$I_C = 2\text{mA}$, $V_{CE} = 2\text{V}$, $R_L = 100\Omega$	-	-	250	μs	
t_f	Fall Time		-	-	95		



Typical Characteristic Curves

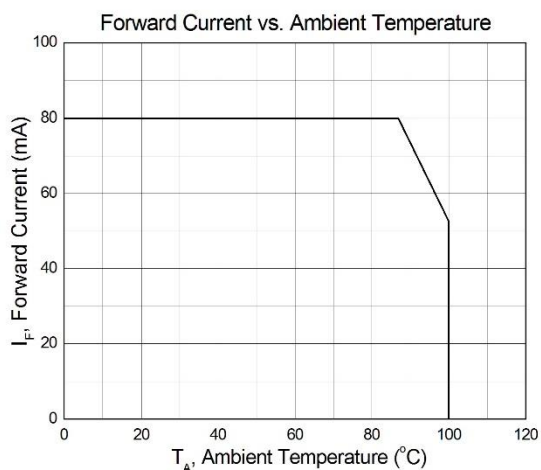


Figure 1

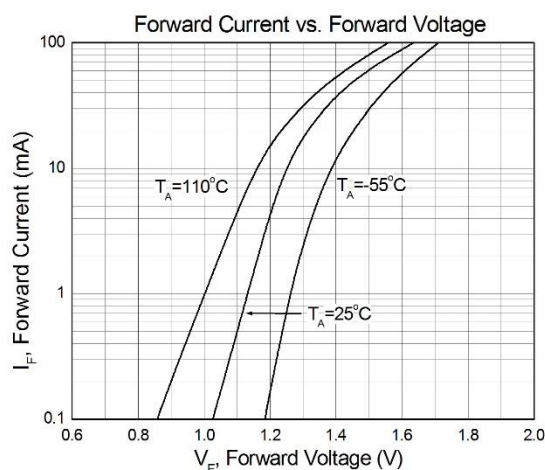


Figure 2

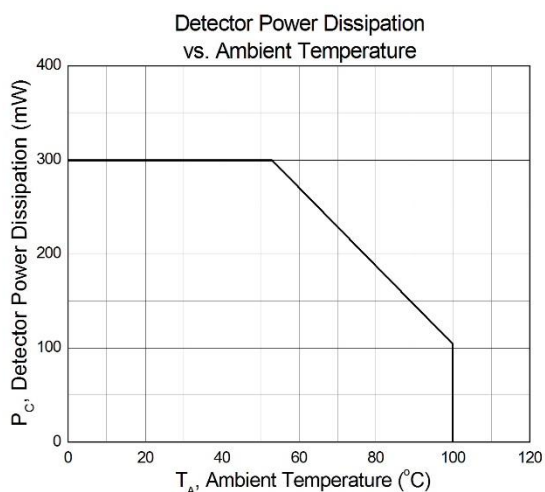


Figure 3

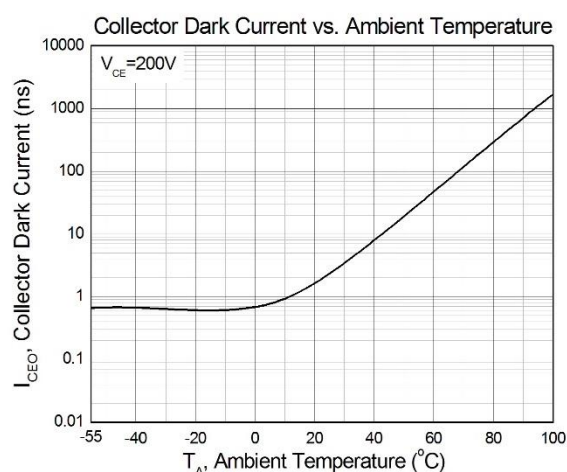


Figure 4

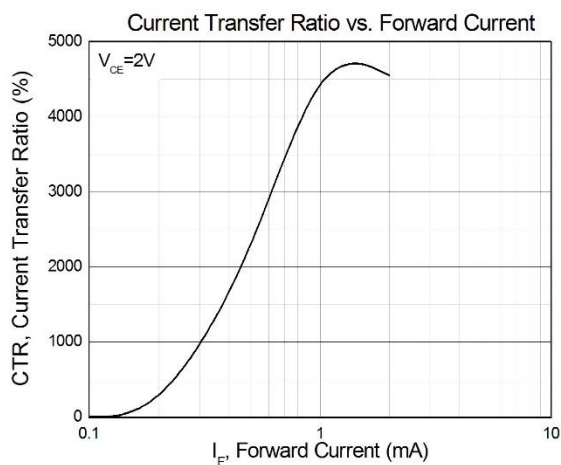


Figure 5

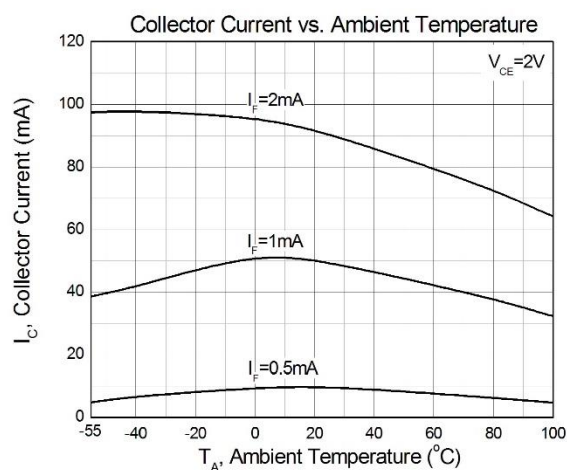


Figure 6



DC Input 4-Pin High Power Photodarlington Optocoupler

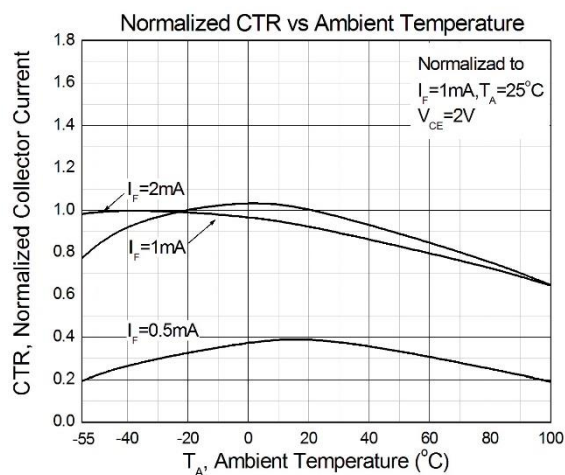


Figure 7

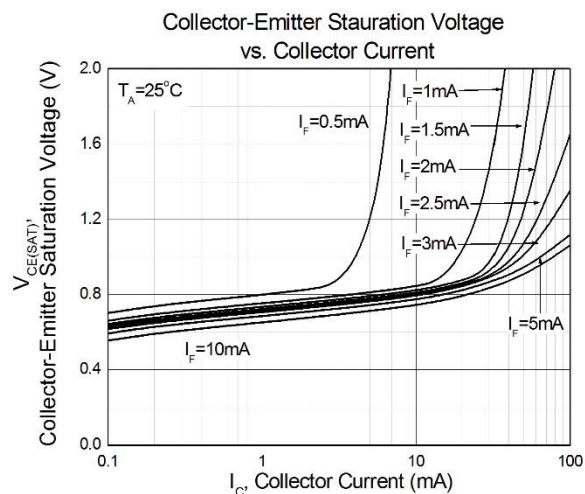


Figure 8

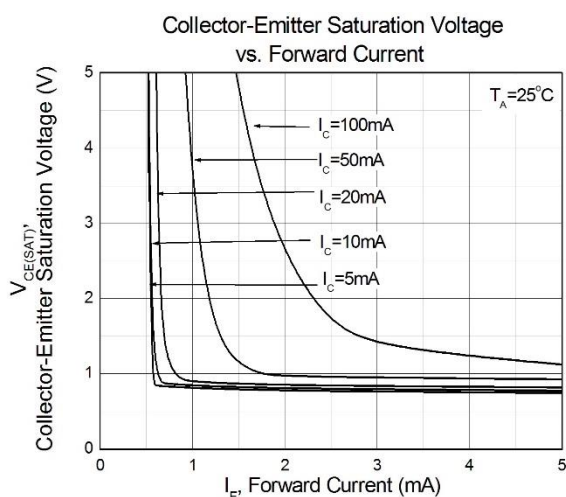


Figure 9

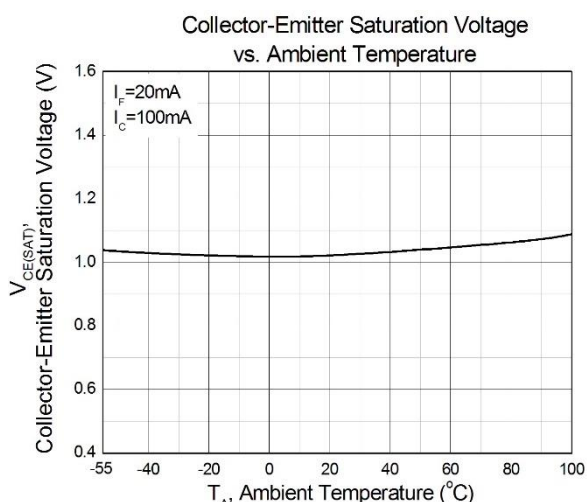


Figure 10

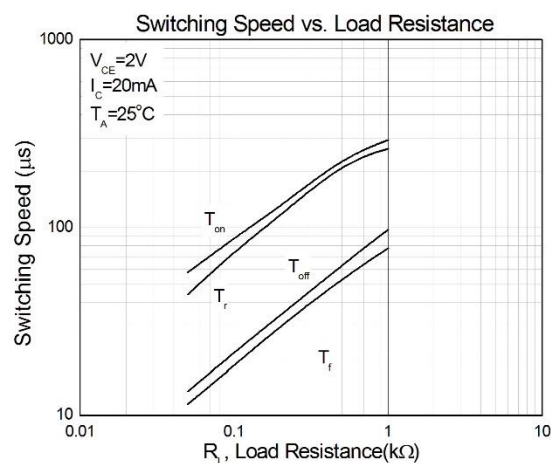


Figure 11

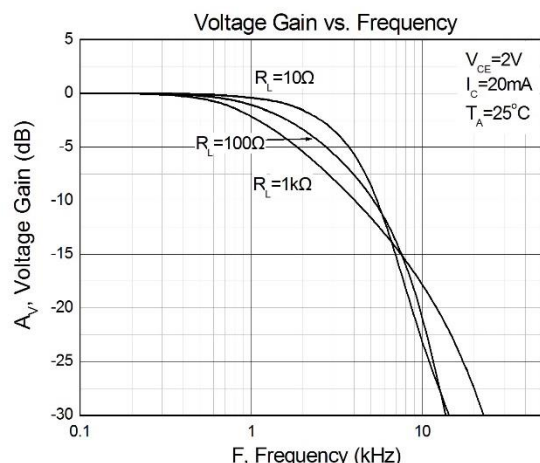


Figure 12

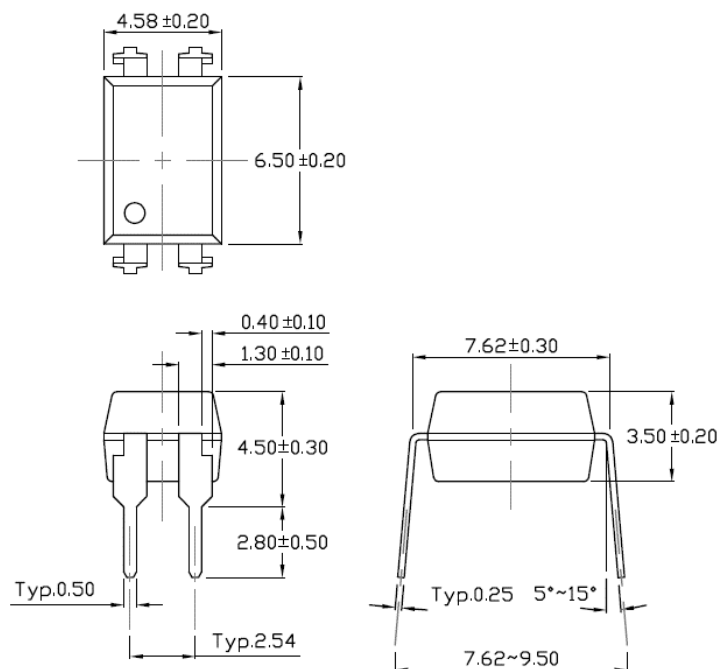


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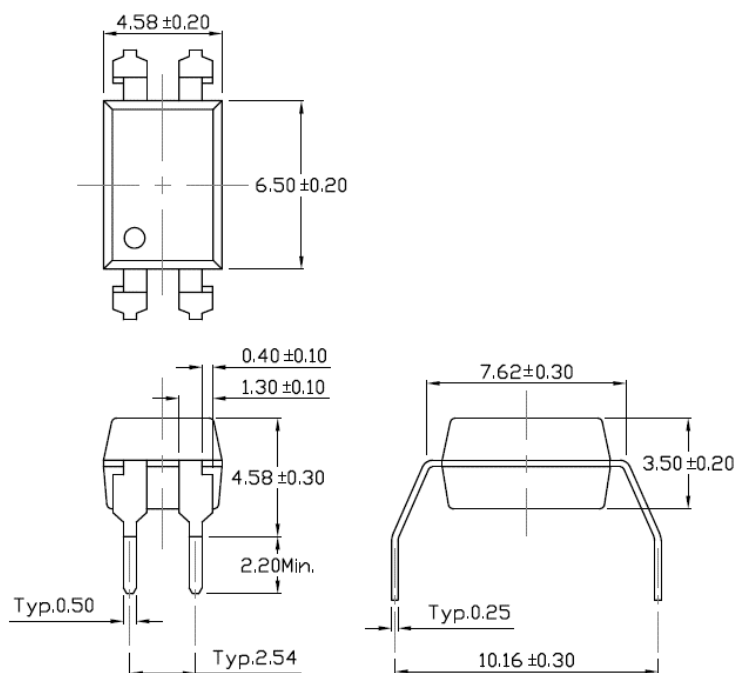
DC Input 4-Pin High Power Photodarlington Optocoupler

Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole

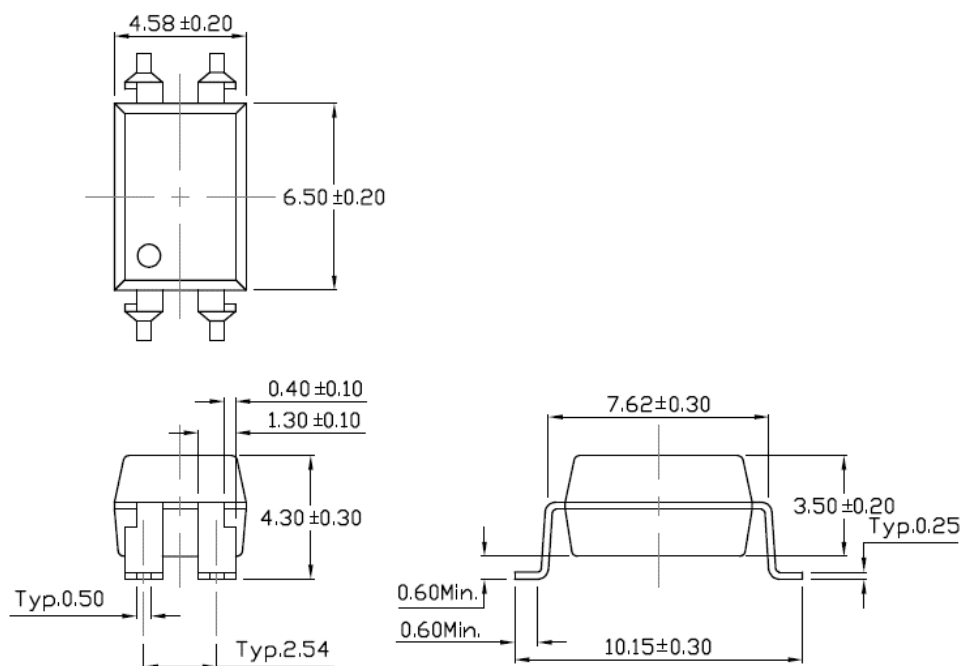


Gullwing (400mil) Lead Forming – Through Hole (M Type)

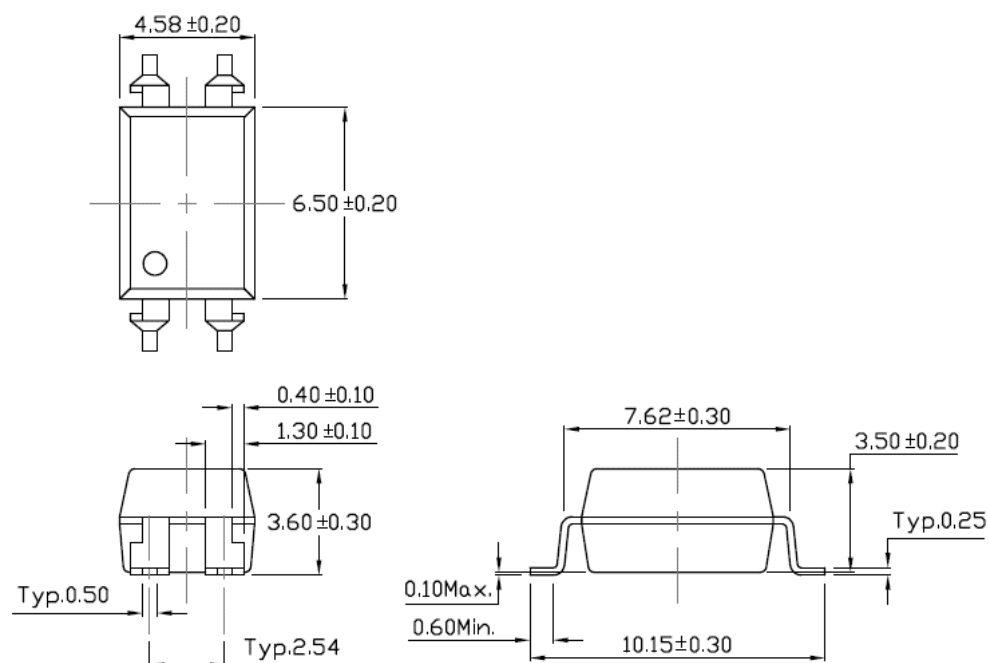


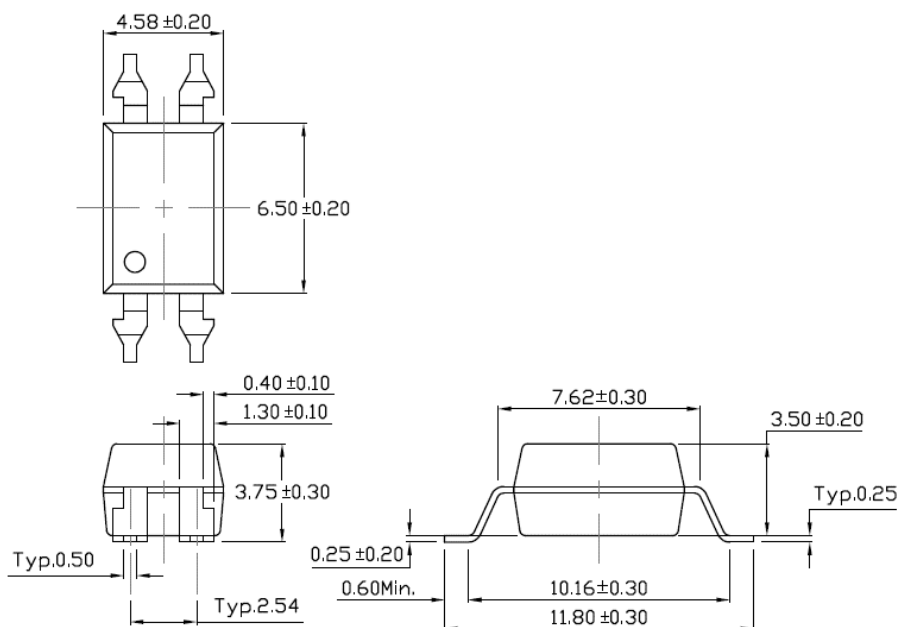
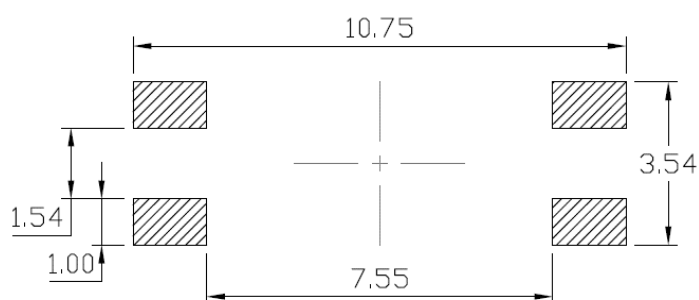
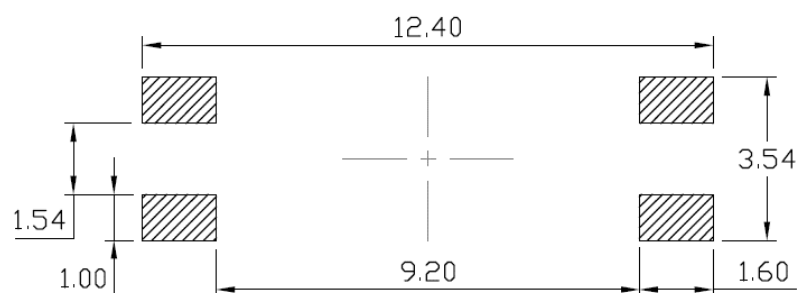


Surface Mount Lead Forming (S Type)



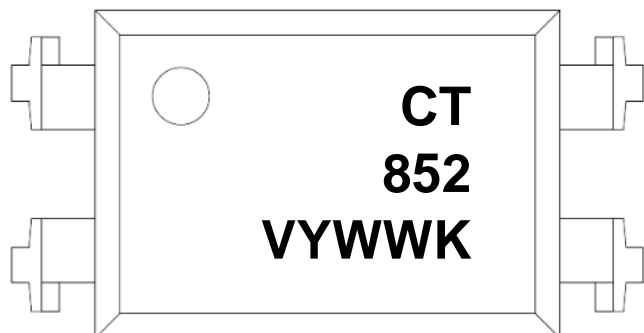
Surface Mount (Low Profile) Lead Forming (SL Type)



**Surface Mount (Gullwing) Lead Forming (SLM Type)****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:**

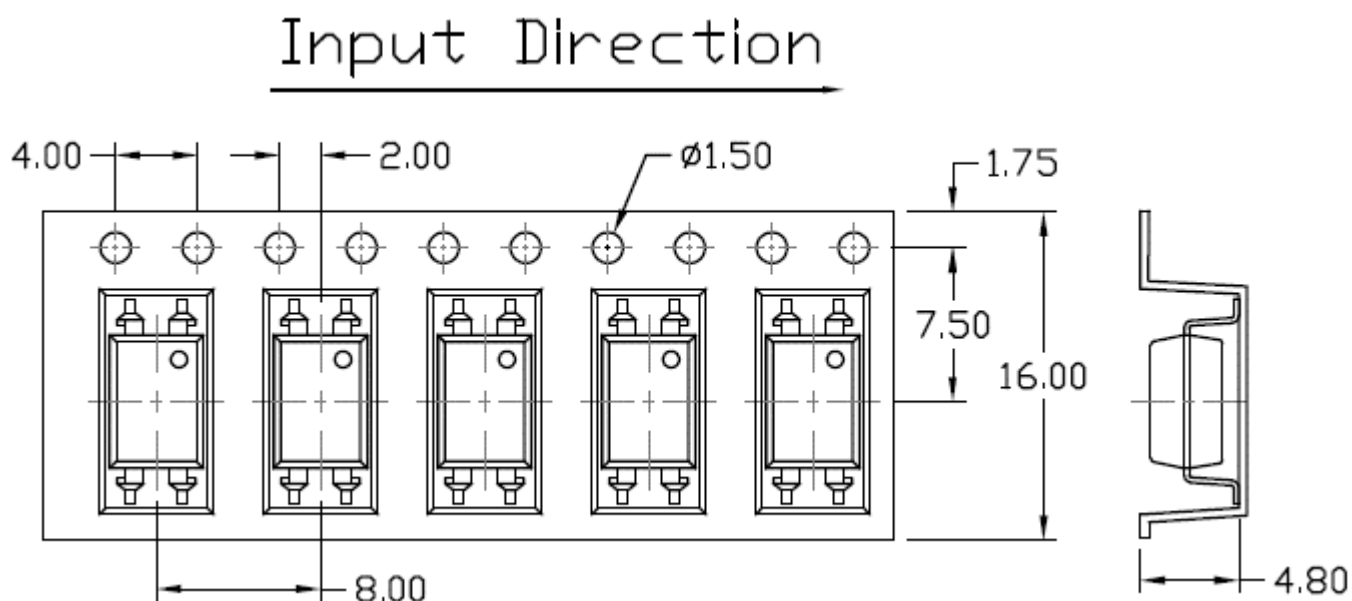
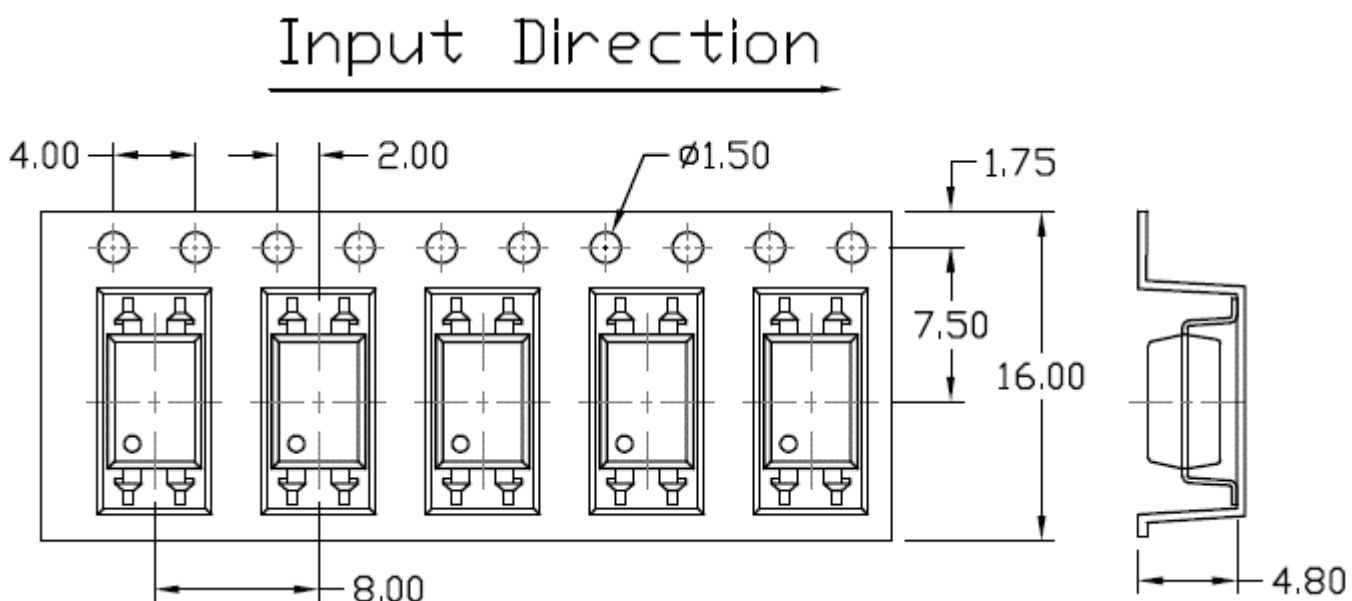
CT : Denotes "CT Micro"
852 : Part Number
V : VDE Option
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code

Ordering Information

CT852(V)(Y)(Z)-G

CT = Denotes "CT Micro"
852 = Part Number
V = VDE Option (V or None)
Y = Lead form option (S, SL, M, SLM or none)
Z = Tape and reel option (T1, T2, or none)
G = Material option (G: Green, None: Non-green)

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

**DC Input 4-Pin High Power Photodarlington Optocoupler****Carrier Tape Specifications** *Dimensions in mm unless otherwise stated***Option S(T1) & SL(T1)****Option S(T2) & SL(T2)**

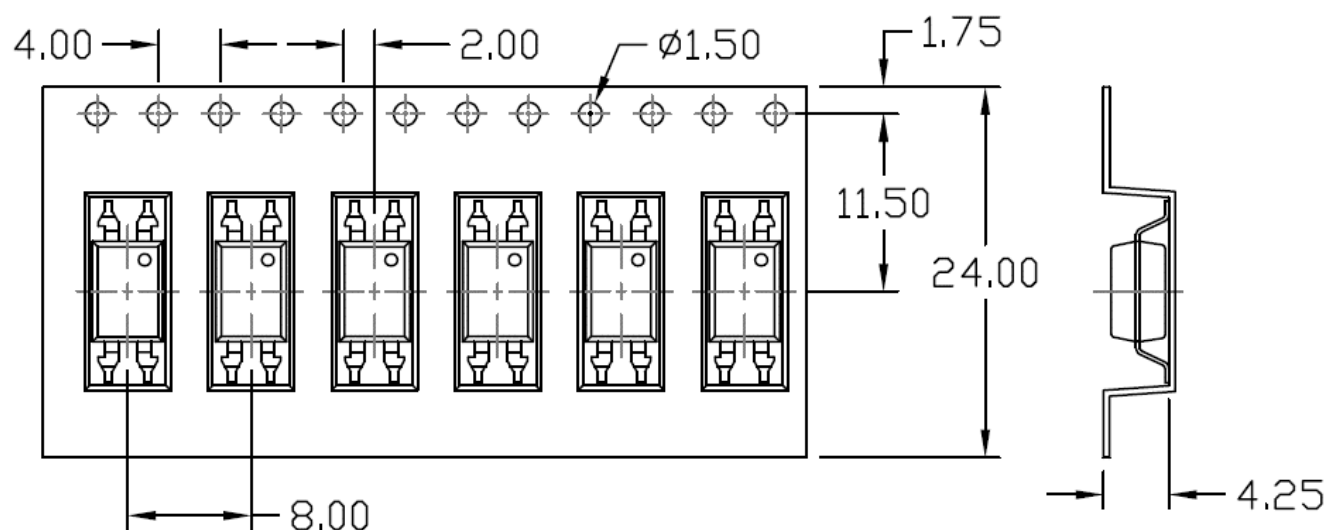


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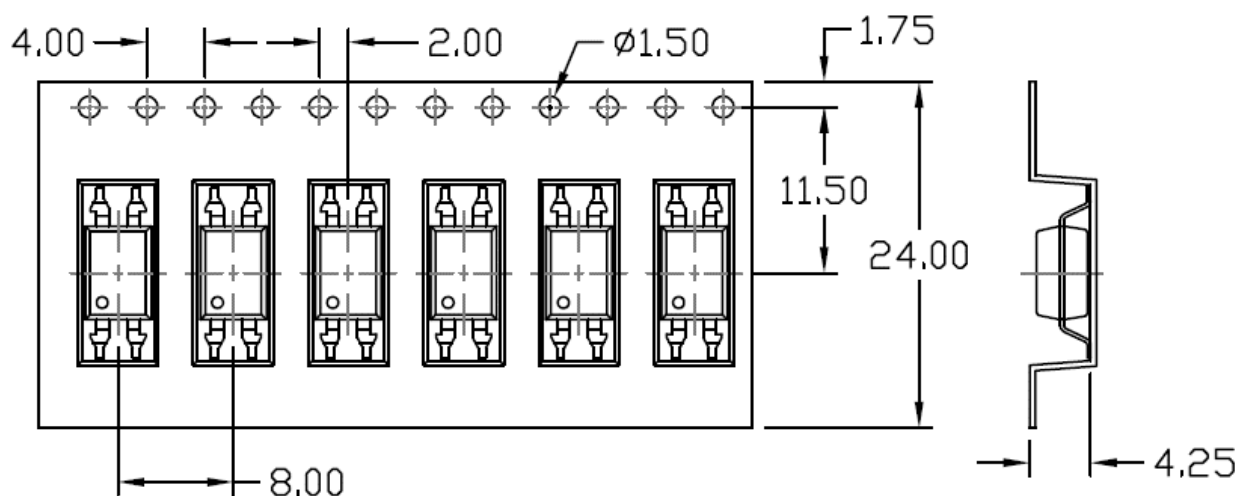
Option SLM(T1)

Input Direction



Option SLM(T2)

Input Direction



**Wave soldering (follow the JEDEC standard JESD22-A111)**

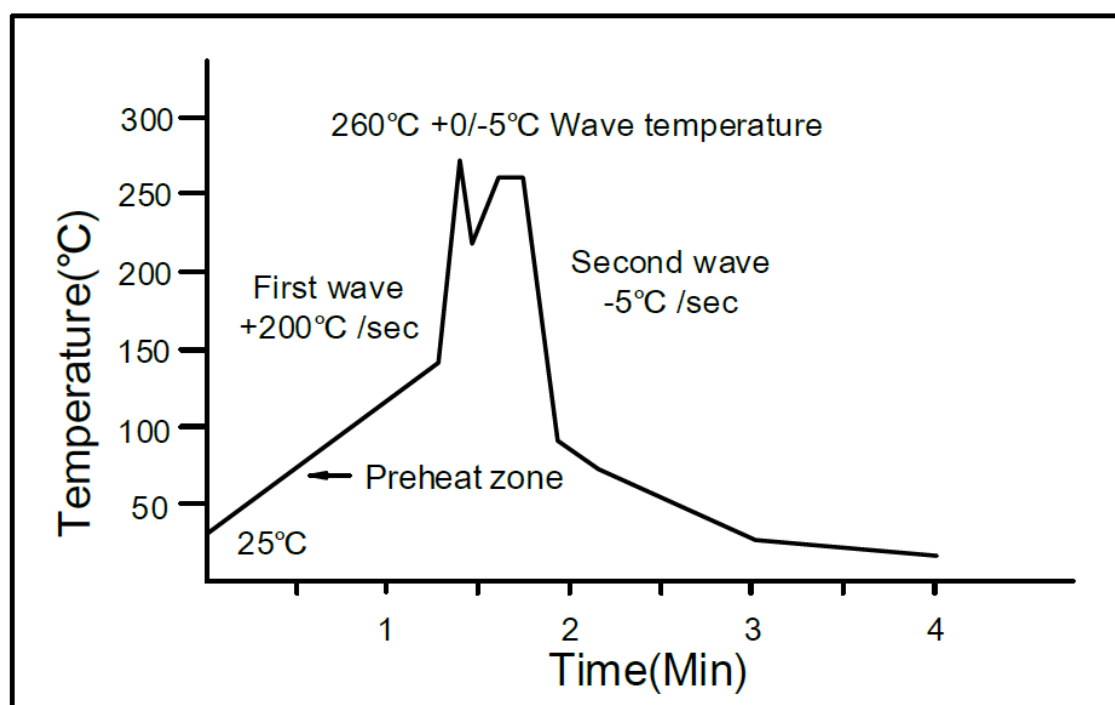
One time soldering is recommended within the condition of temperature.

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.

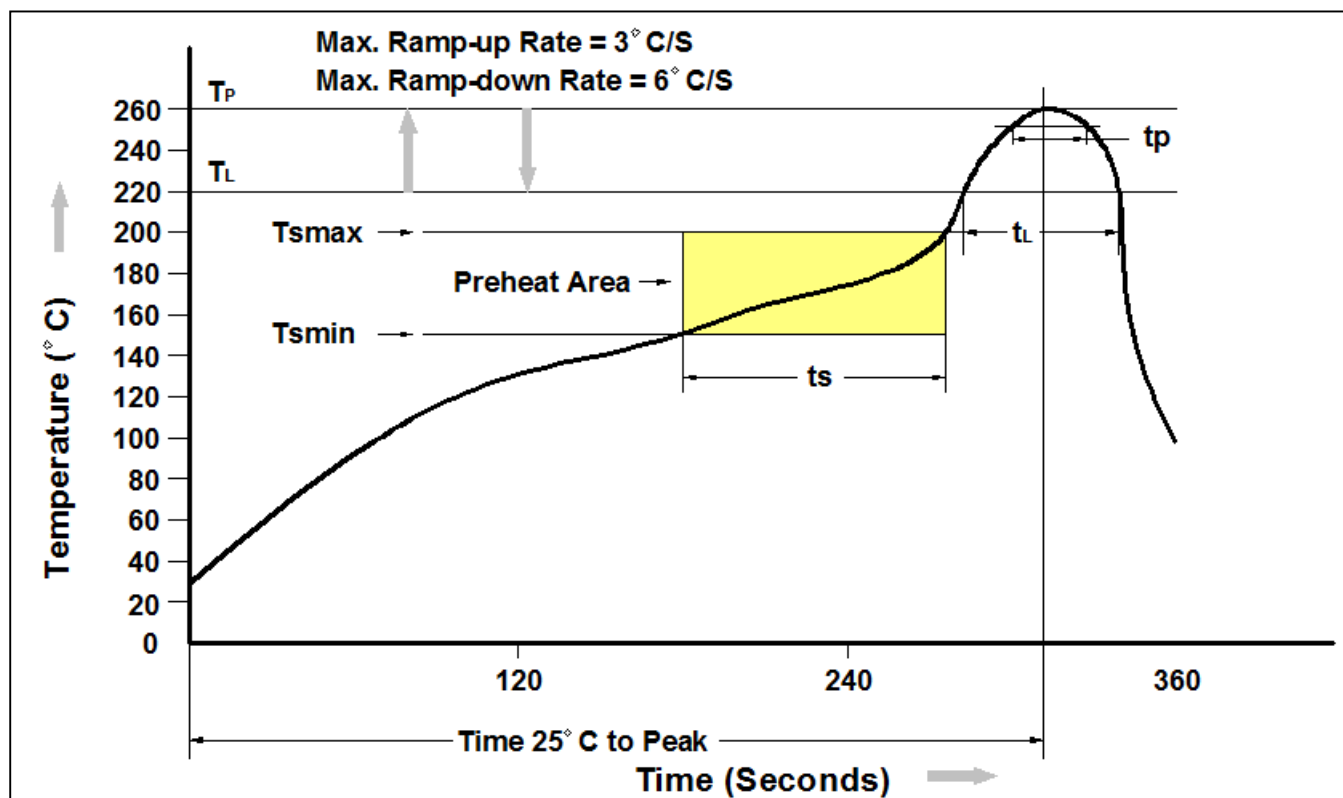
One time soldering is recommended. Temperature: $350 \pm 10^\circ\text{C}$

Time: 5 sec max.



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Reflow Profile



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 (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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