



CT852

4-Pin High Power Photodarlington Optocoupler

Features

- High isolation 5000 VRMS
- CTR : Min 1000%
- High $B_{VCEO} = 350V$
- Operating temperature range - 55 °C to 110 °C

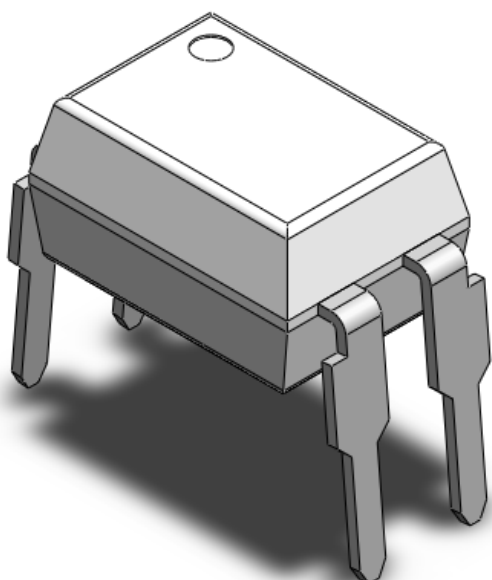
Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface
- Controller for SSR, DC Motor
- Telephone Line Interface

Description

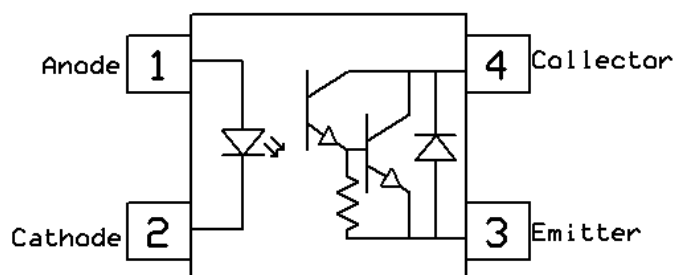
The CT852 series consists of high voltage photodarlington optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead DIP package with bending options.

Package Outline



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

Schematic



**CT852**

4-Pin High Power Photodarlington Optocoupler

Absolute Maximum Rating at 25°C

<i>Symbol</i>	<i>Parameters</i>	<i>Ratings</i>	<i>Units</i>	<i>Notes</i>
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	



4-Pin High Power Photodarlington Optocoupler

Electrical Characteristics

T_A = 25 °C (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V _F	Forward voltage	I _F =10mA		1.2	1.4	V	
I _R	Reverse Current	V _R = 5V	-	-	5	μA	
C _{IN}	Input Capacitance	f= 1MHz	-	45	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
B _{VCEO}	Collector-Emitter Breakdown	I _C = 100μA	350	-	-	V	
B _{VECO}	Emitter-Collector Breakdown	I _E = 100μA	0.1	-	-	V	
I _{CEO}	Collector-Emitter Dark Current	V _{CE} = 200V, I _F =0mA	-	-	100	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	I _F = 1mA, V _{CE} = 2V	1000		15000	%	
V _{CE(SAT)}	Collector-Emitter Saturation Voltage	I _F = 20mA, I _C = 100mA	-	-	1.2	V	
R _{IO}	Isolation Resistance	V _{IO} = 500V _{DC}	5×10 ¹⁰			Ω	
C _{IO}	Isolation Capacitance	f= 1MHz		0.6		pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t _r	Rise Time	I _C =2mA, V _{CE} = 2V, R _L = 100Ω	-	-	250	μs	
t _f	Fall Time		-	-	95		



4-Pin High Power Photodarlington Optocoupler

Typical Characteristic Curves

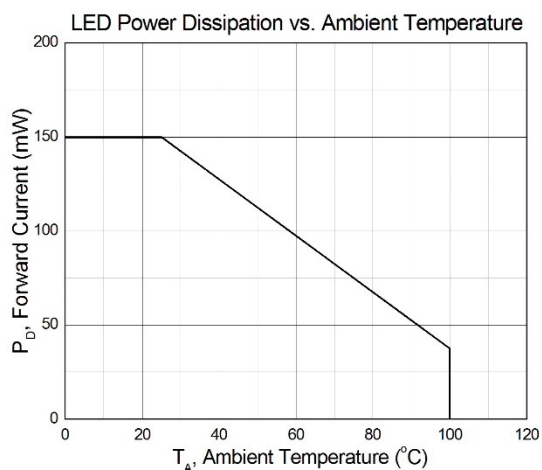


Figure 1

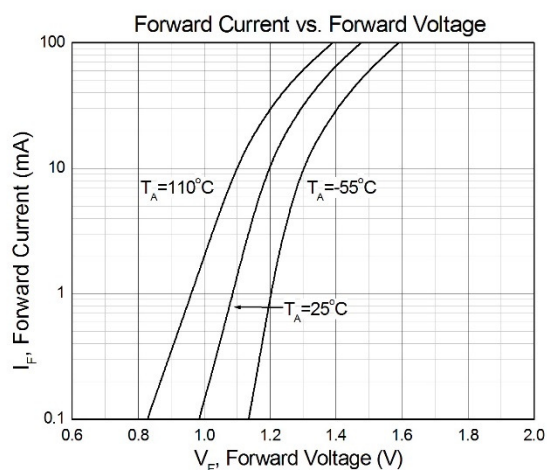


Figure 2

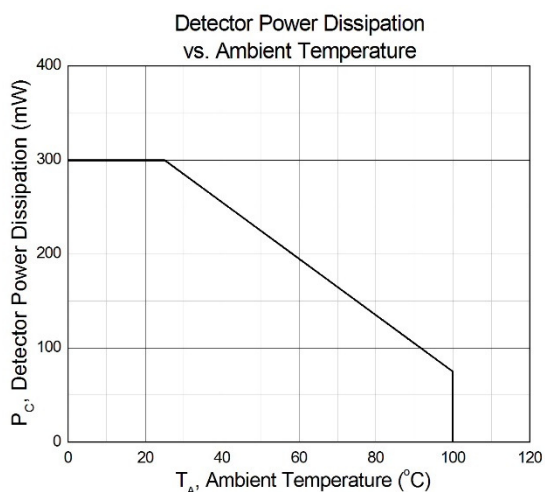


Figure 3

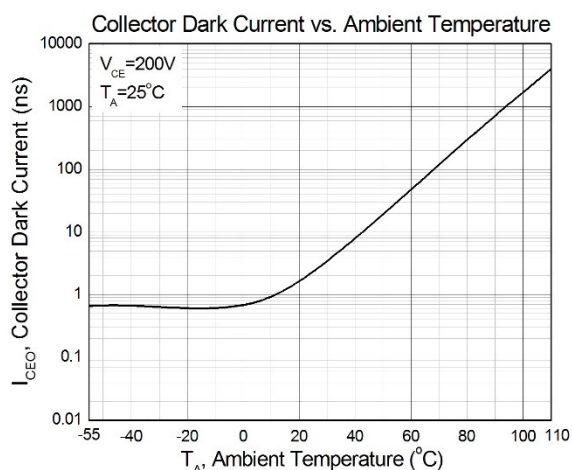


Figure 4

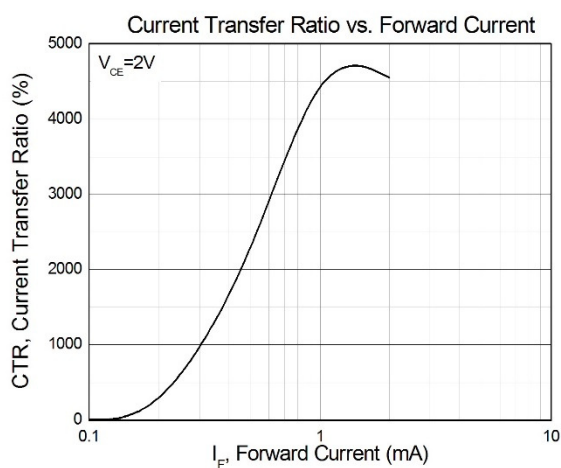


Figure 5

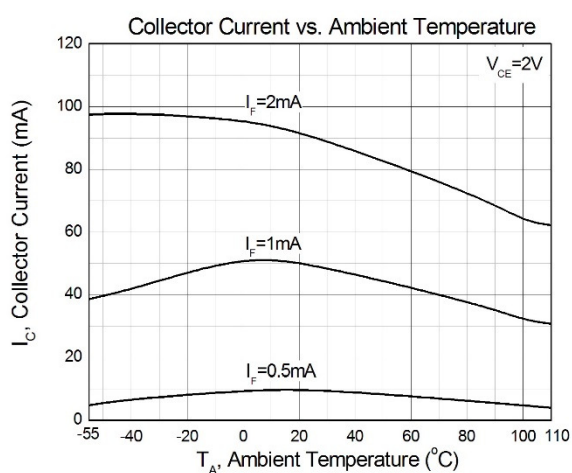


Figure 6



4-Pin High Power Photodarlington Optocoupler

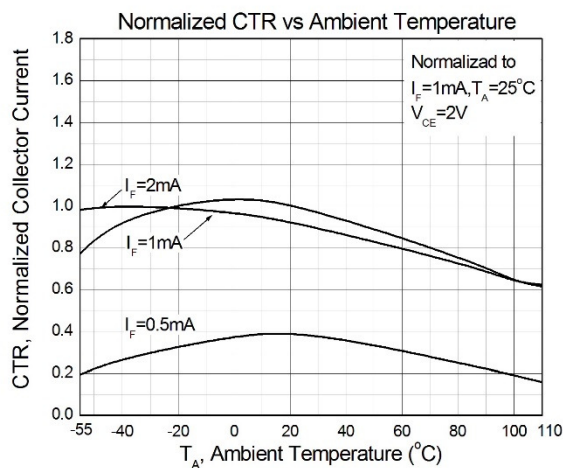


Figure 7

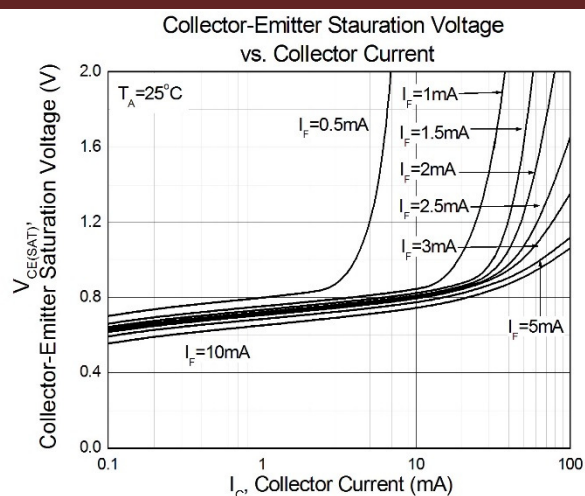


Figure 8

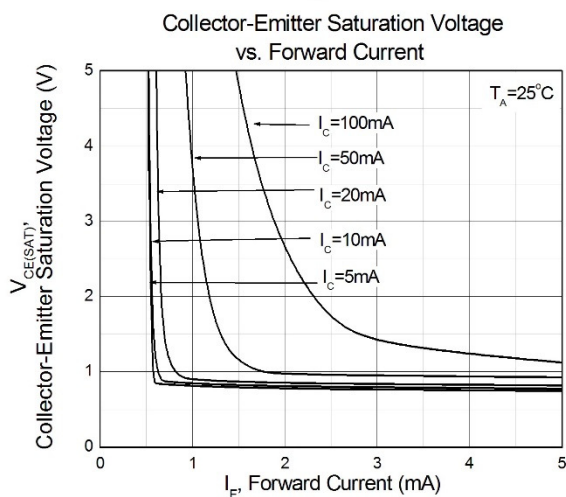


Figure 9

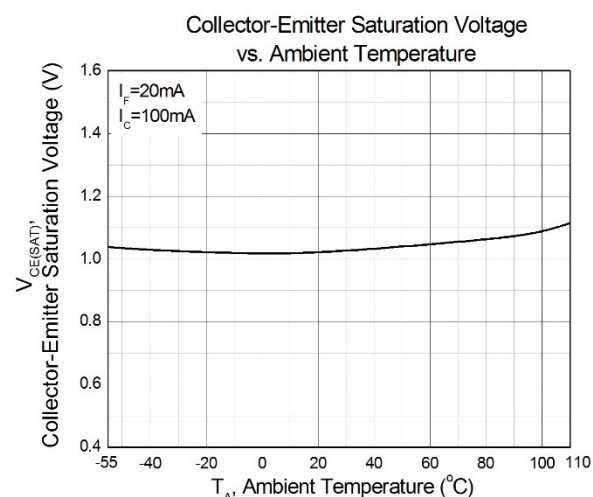


Figure 10

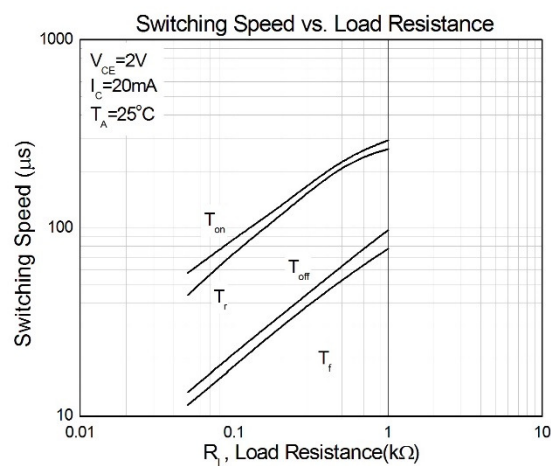


Figure 11

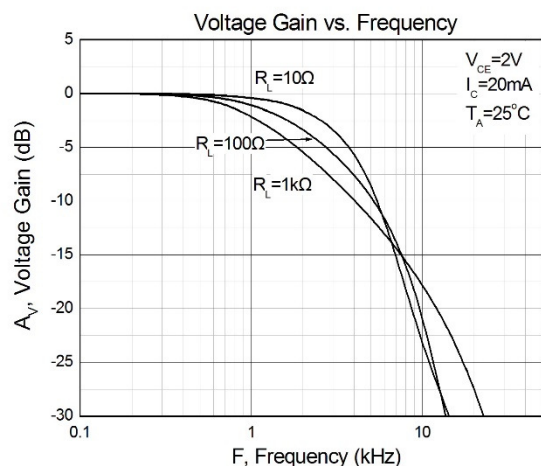


Figure 12



4-Pin High Power Photodarlington Optocoupler

Test Circuit

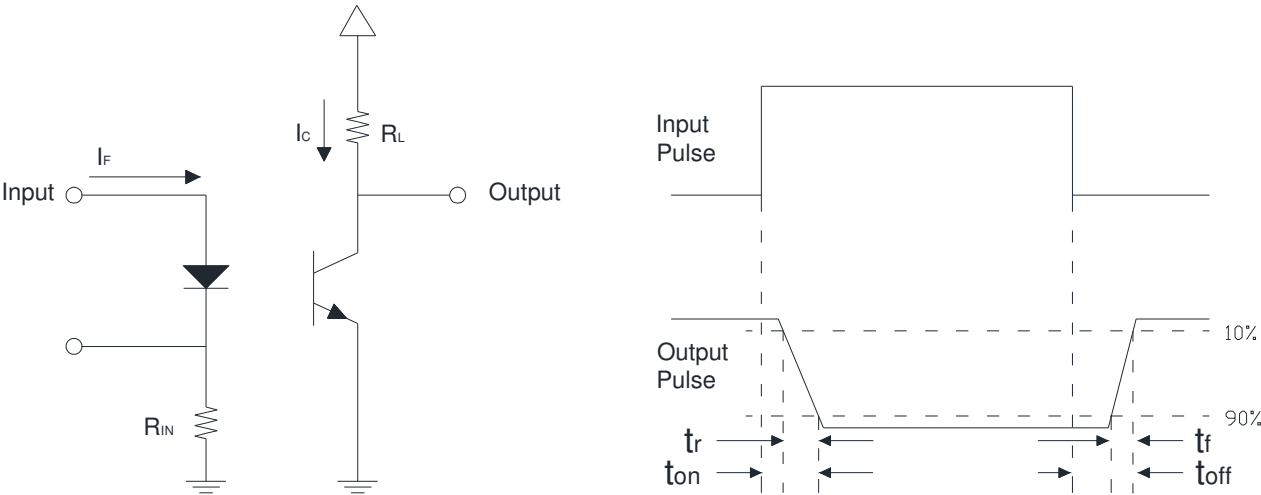


Figure 13: Switching Time Test Circuits

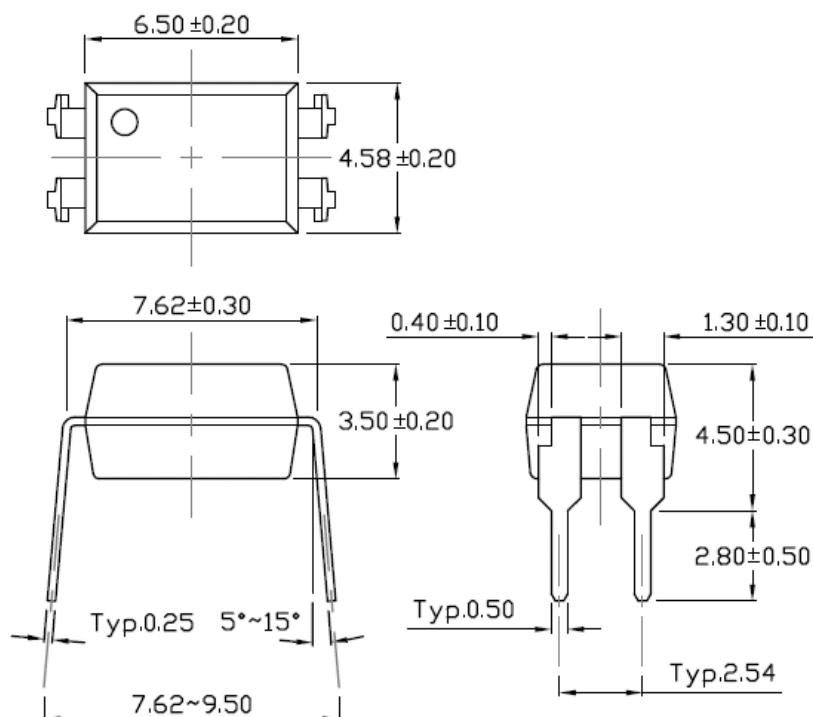


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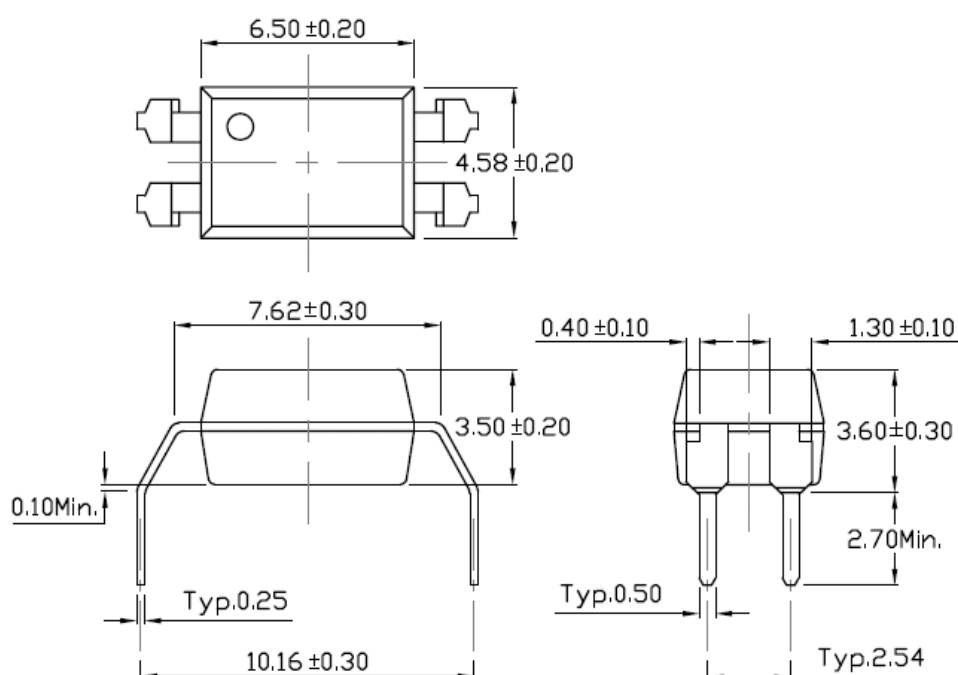
4-Pin High Power Photodarlington Optocoupler

Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



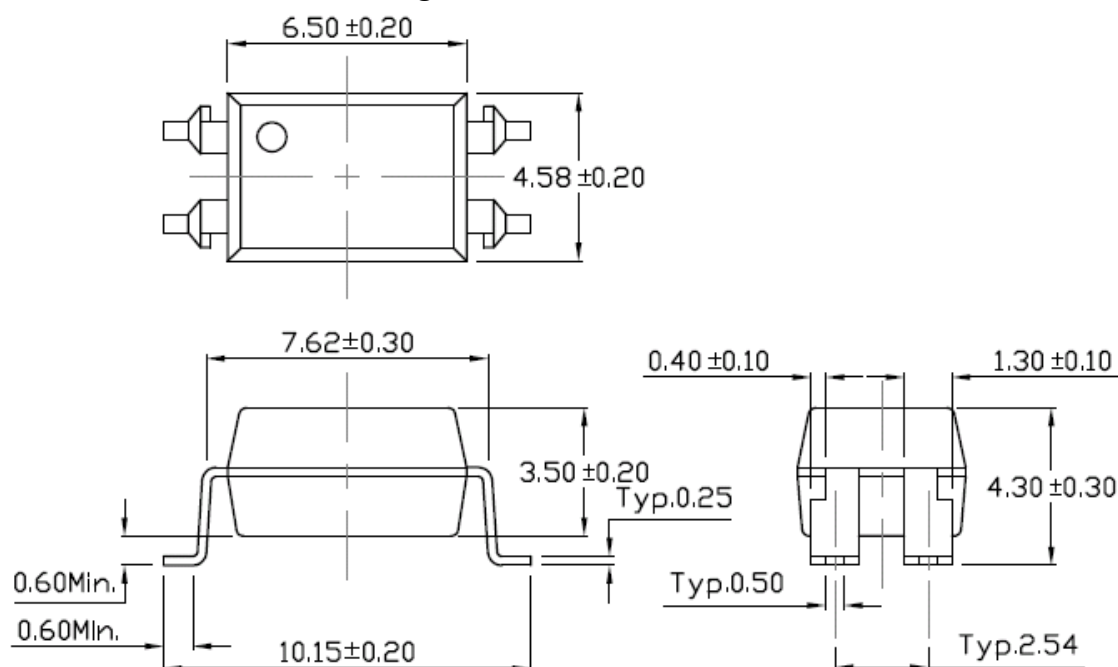
Gullwing (400mil) Lead Forming – Through Hole



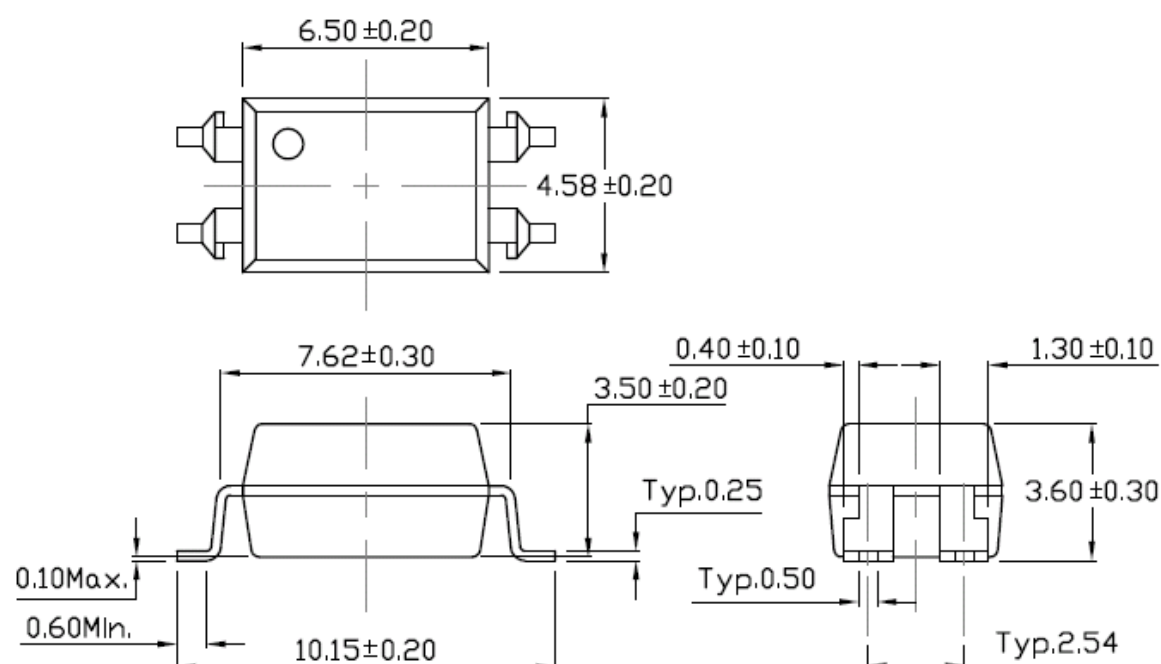


4-Pin High Power Photodarlington Optocoupler

Surface Mount Lead Forming



Surface Mount (Low Profile) Lead Forming

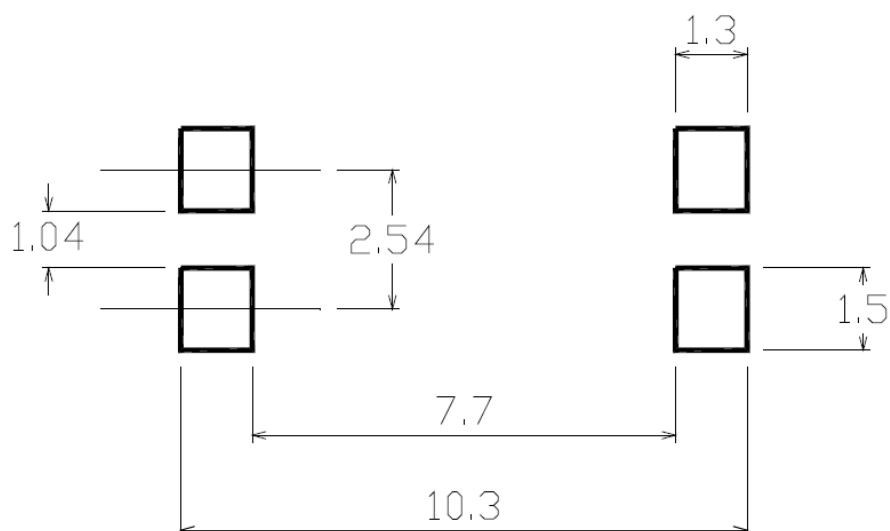




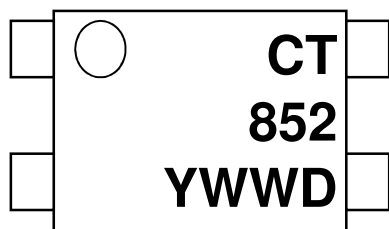
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4-Pin High Power Photodarlington Optocoupler

Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information



Note:

- CT : Denotes "CT Micro"
- 852 : Product Number
- R : CTR Rank
- Y : Fiscal Year
- WW : Work Week
- D : Production Code

**4-Pin High Power Photodarlington Optocoupler**

Ordering Information**CT852(Y)(Z)-G**

Y = Lead form option (S, SL, M 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	1000 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1000 Units/Reel
S(T3)	Surface Mount Lead Forming – With Option 3 Taping	1000 Units/Reel
S(T4)	Surface Mount Lead Forming – With Option 4 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
SL(T3)	Surface Mount (Low Profile) Lead Forming– With Option 3 Taping	1000 Units/Reel
SL(T4)	Surface Mount (Low Profile) Lead Forming – With Option 4 Taping	1000 Units/Reel

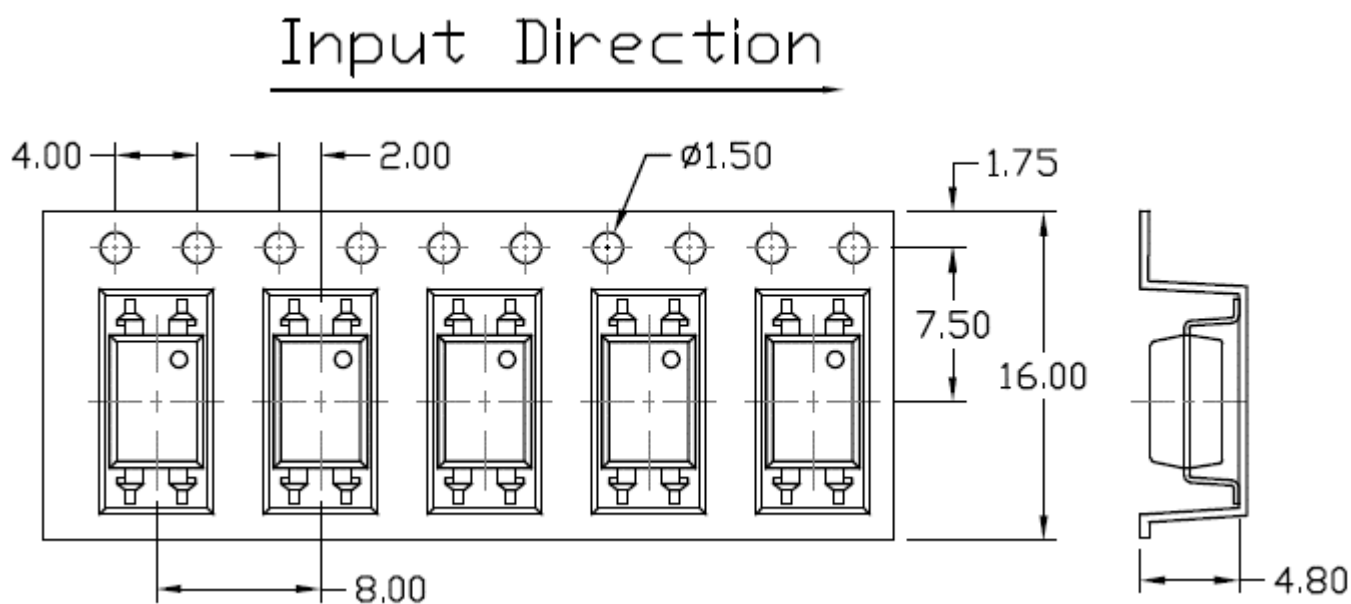


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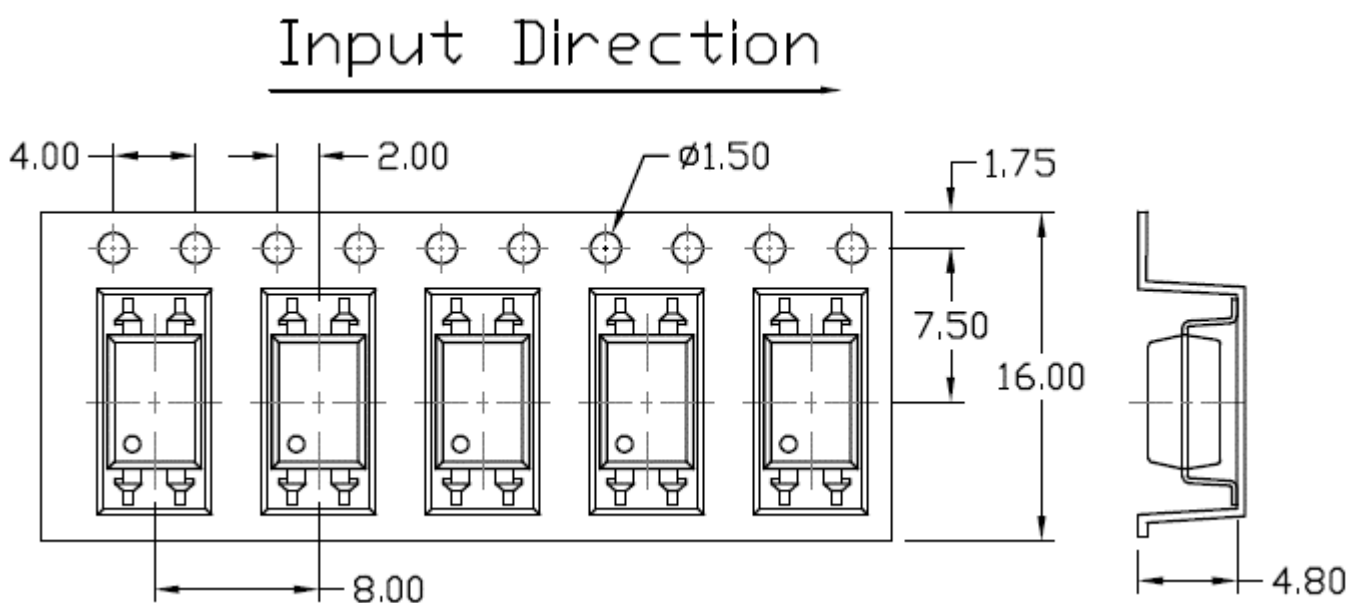
4-Pin High Power Photodarlington Optocoupler

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)

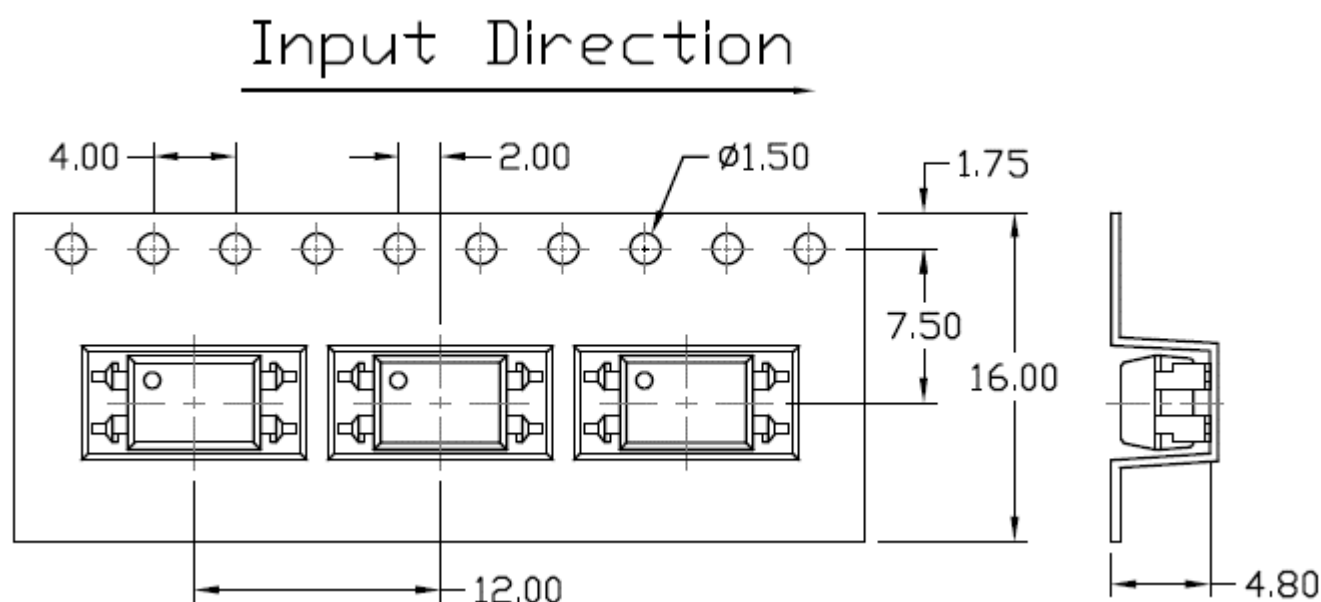




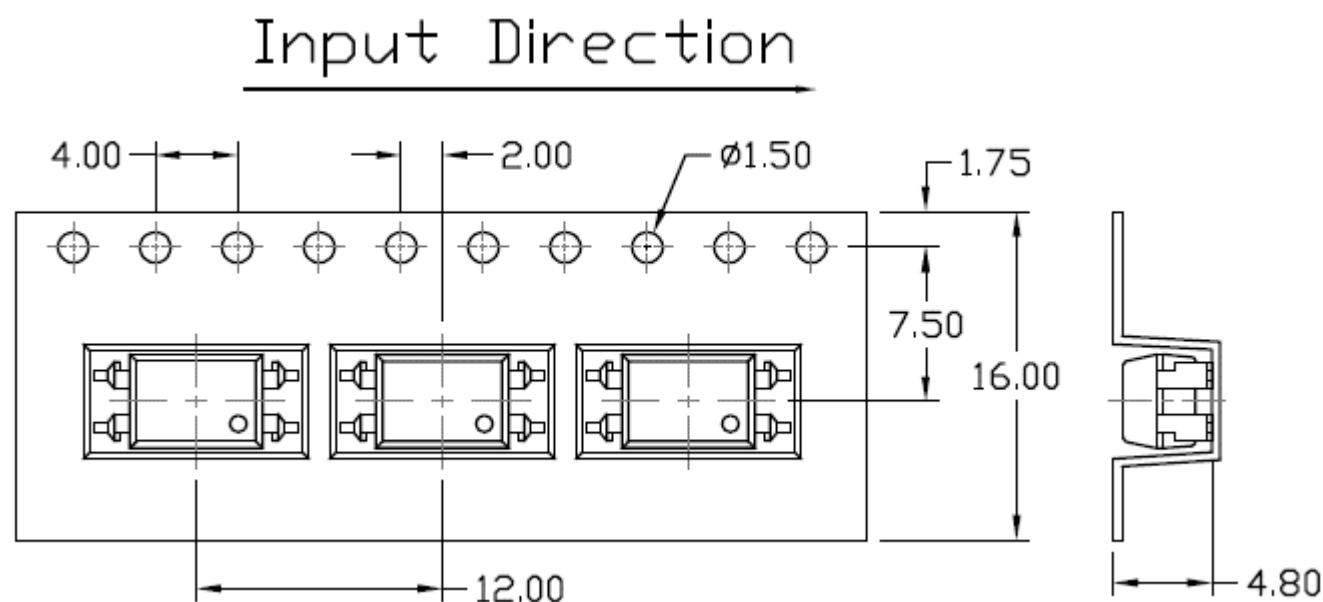
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4-Pin High Power Photodarlington Optocoupler

Option S(T3) & SL(T3)



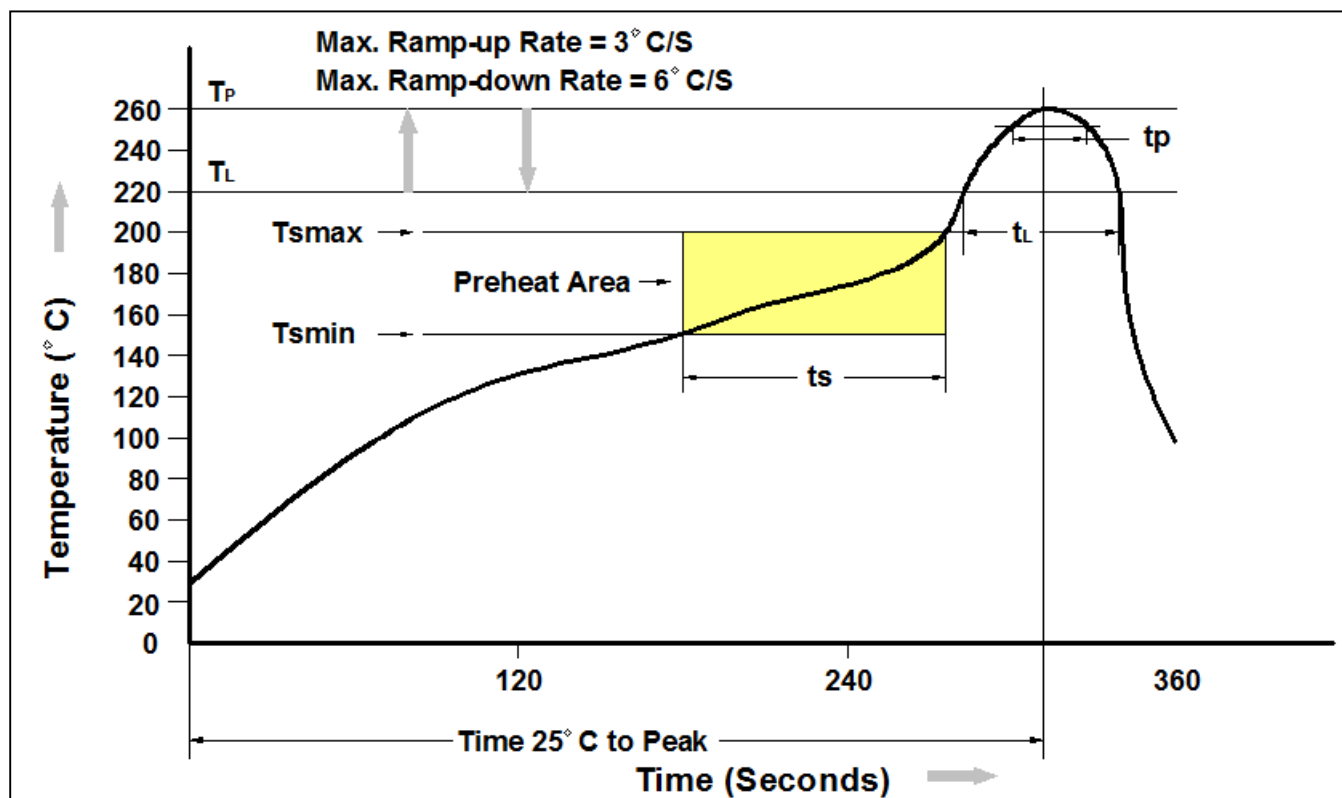
Option S(T4) & SL(T4)





4-Pin High Power Photodarlington Optocoupler

Reflow Profile



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



4-Pin High Power Photodarlington Optocoupler

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