CT852

4-Pin High Power Photodarlington Optocoupler

Features

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

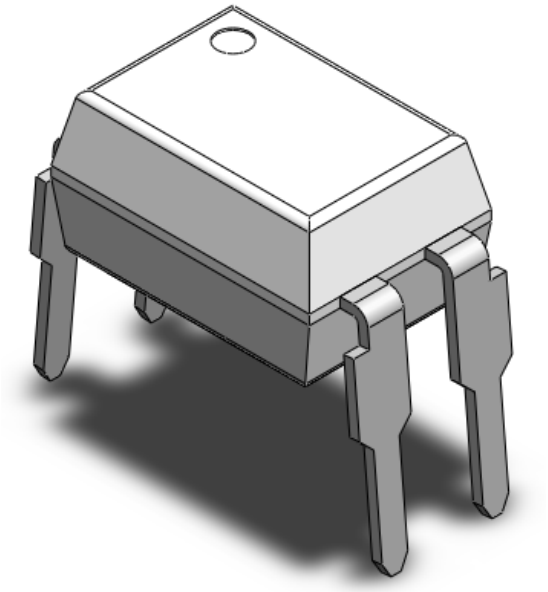
Applications

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

Description

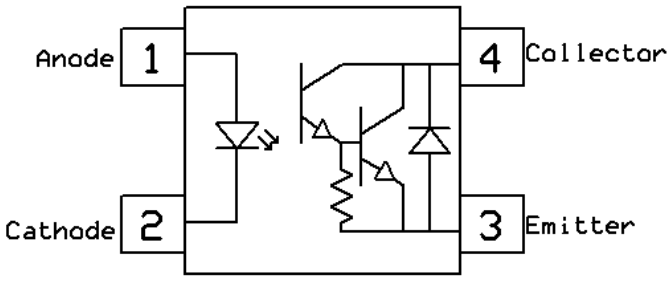
The CT852 series consists of high voltage photodarlington optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead DIP package with bending options.

Package Outline



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

Schematic



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	

Electrical Characteristics

T_A = 25℃ (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}	$5x10^{10}$			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		

Typical Characteristic Curves

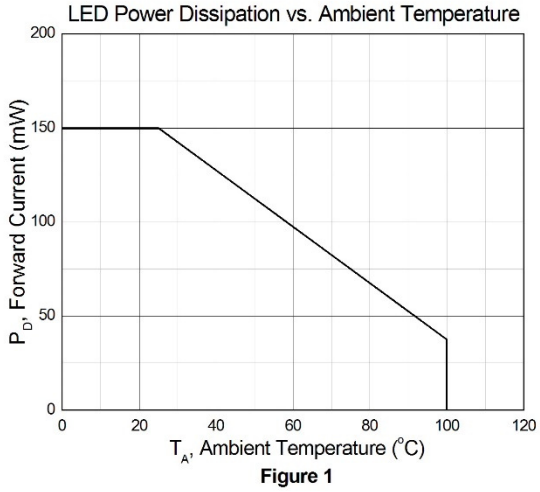


Figure 1

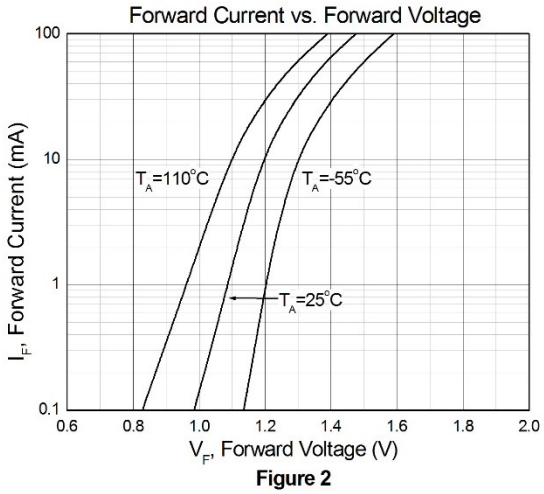


Figure 2

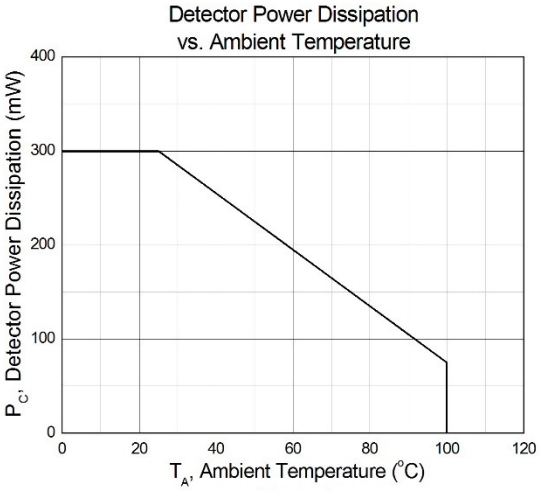


Figure 3

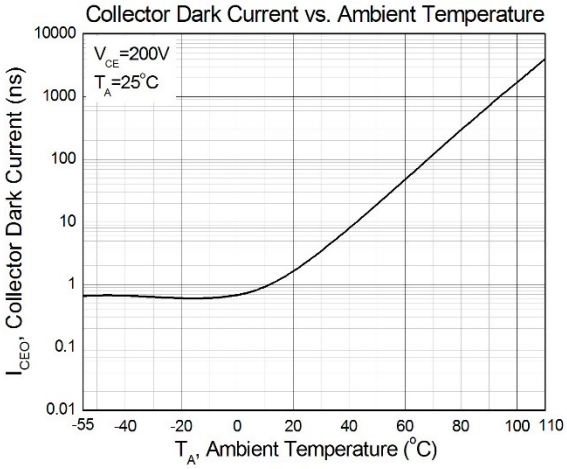


Figure 4

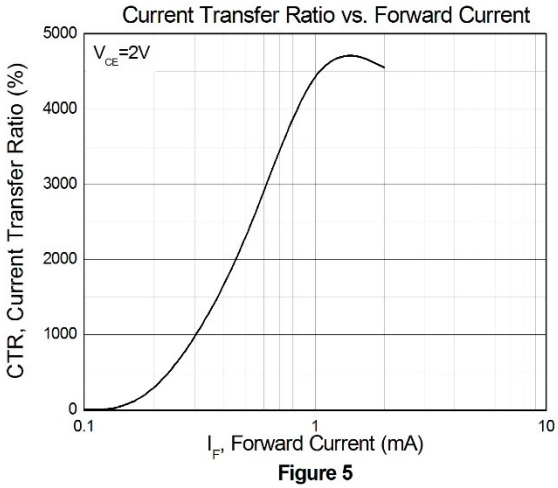


Figure 5

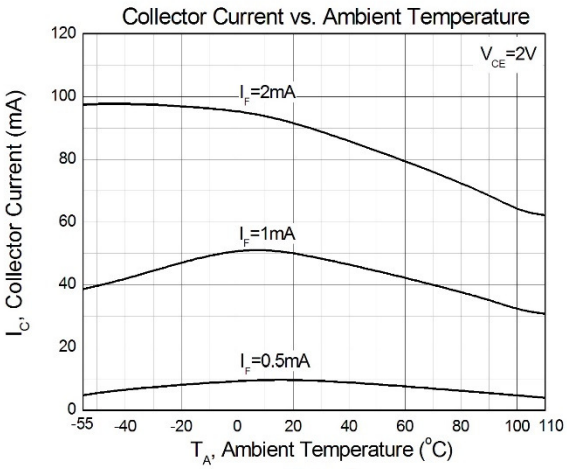


Figure 6

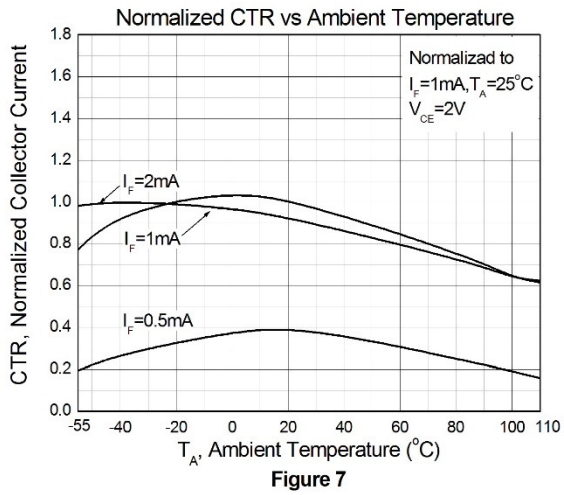


Figure 7

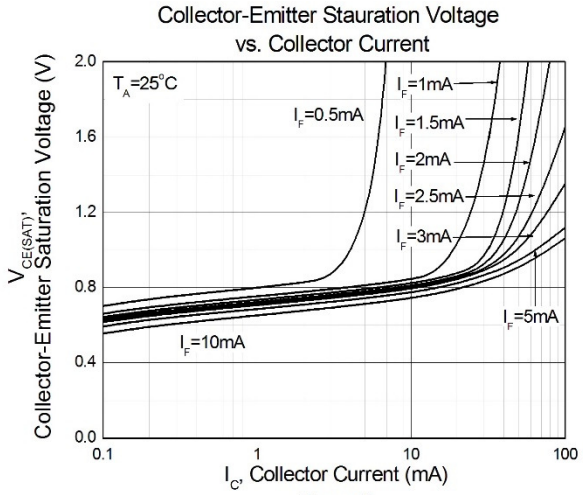


Figure 8

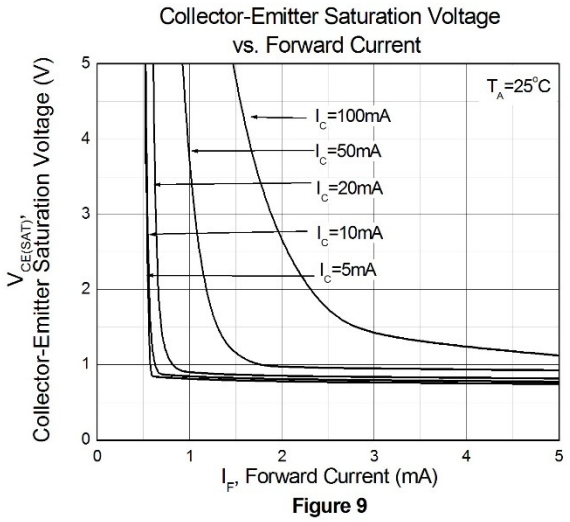


Figure 9

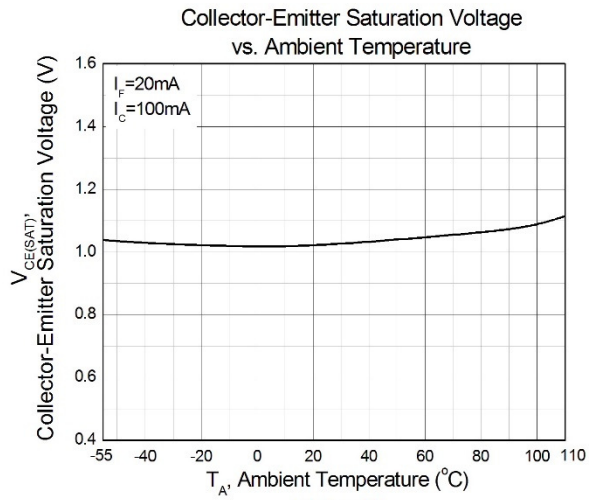


Figure 10

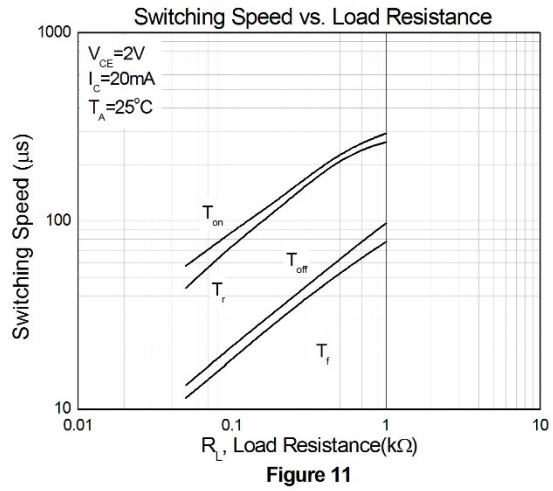


Figure 11

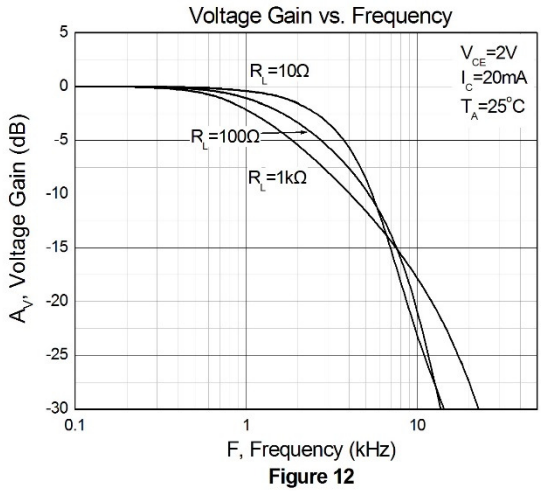


Figure 12

Test Circuit

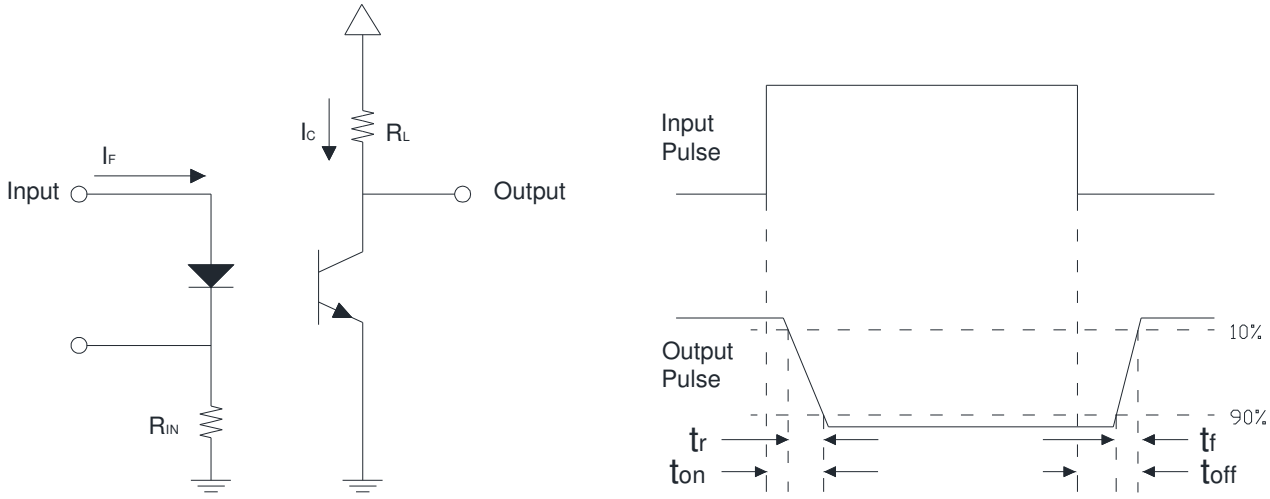
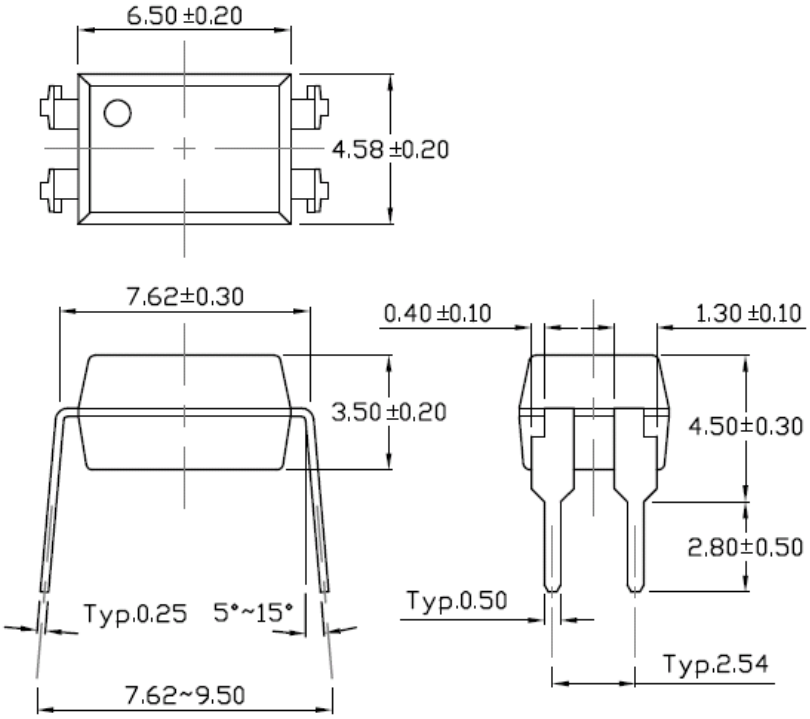


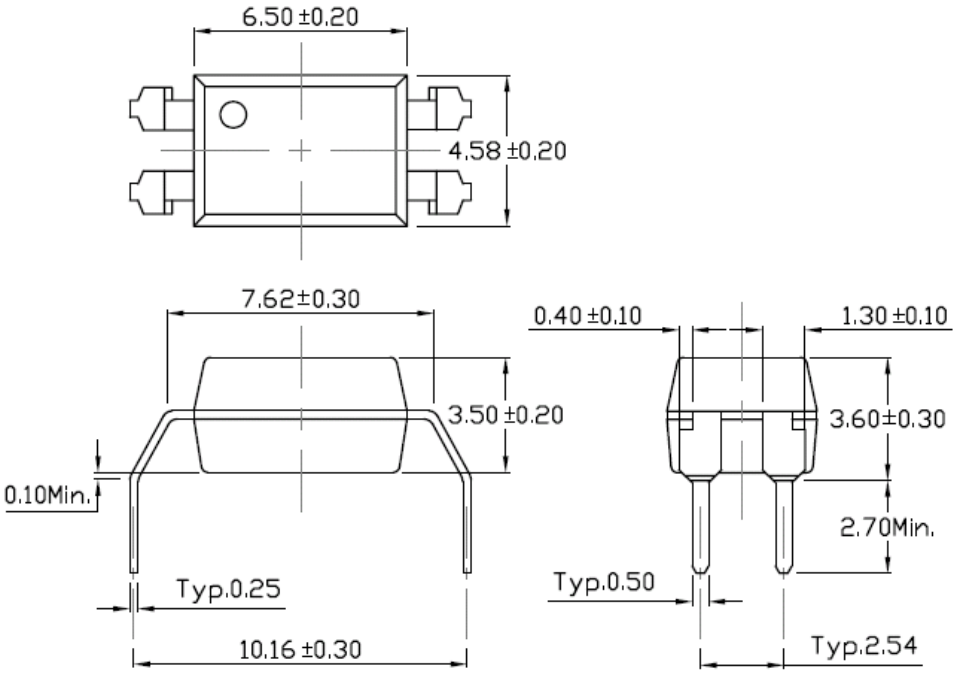
Figure 13: Switching Time Test Circuits

Package Dimension *Dimensions in mm unless otherwise stated*

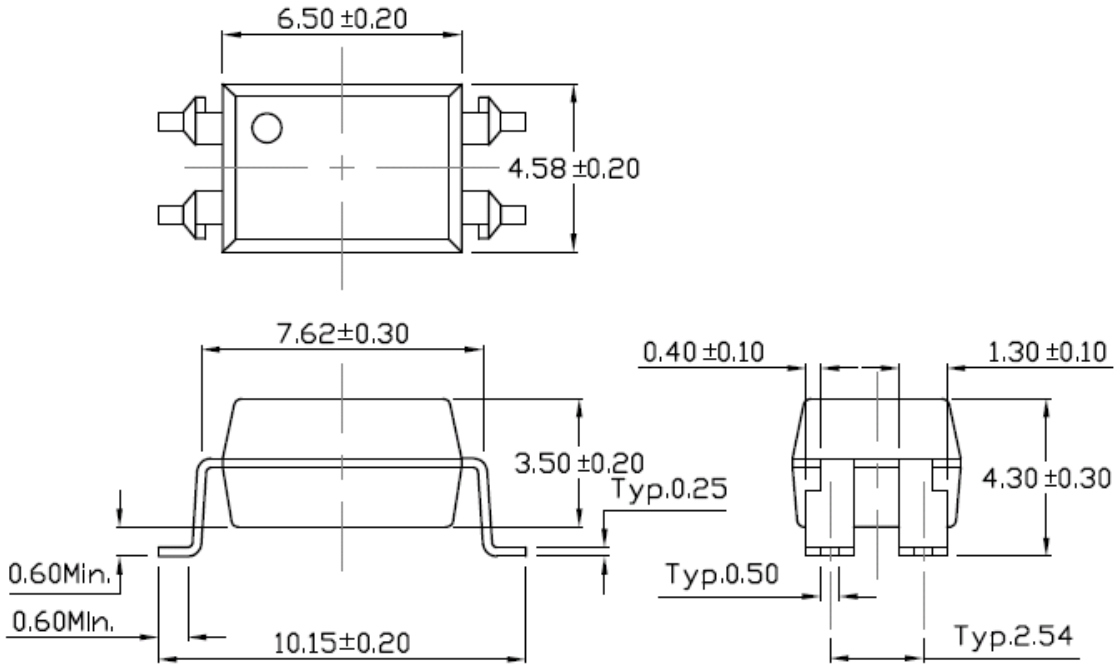
Standard DIP – Through Hole



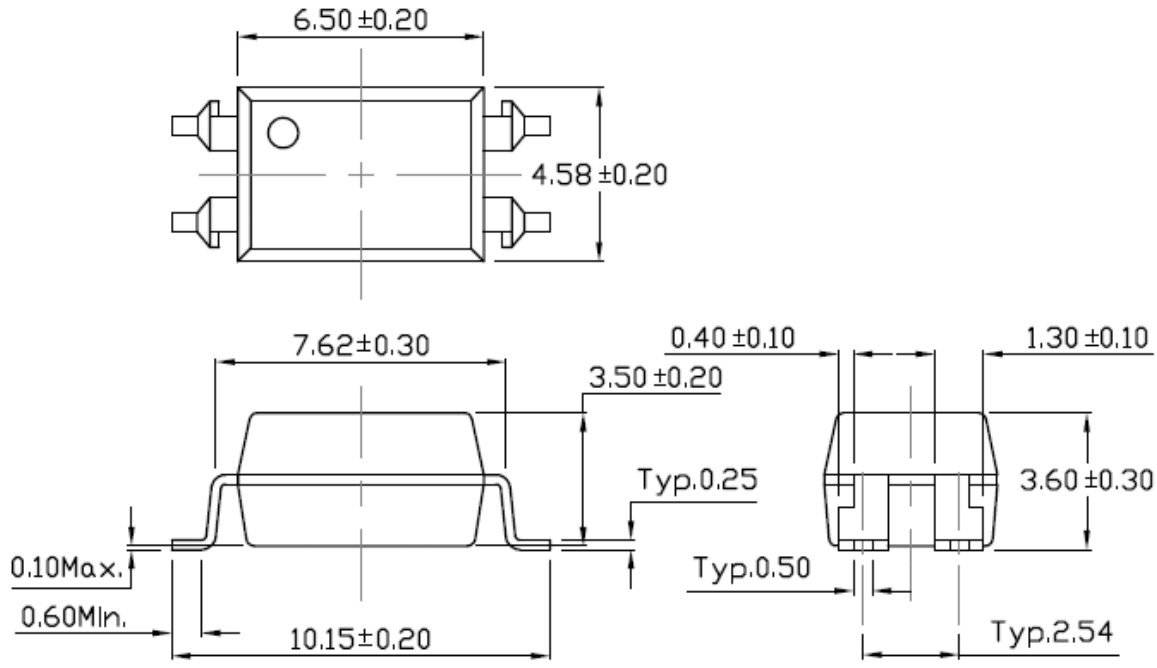
Gullwing (400mil) Lead Forming – Through Hole



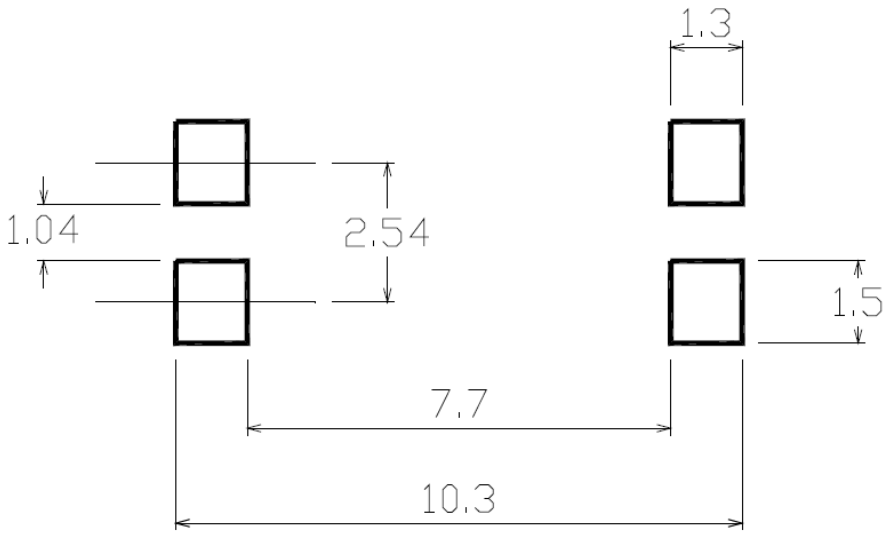
Surface Mount Lead Forming



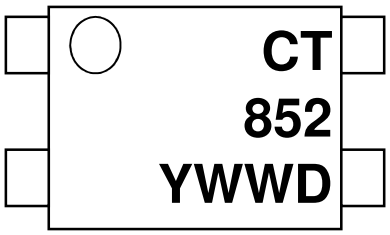
Surface Mount (Low Profile) Lead Forming



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

Ordering Information

CT852(Y)(Z)-G

Y = Lead form option (S, SL, M or none)

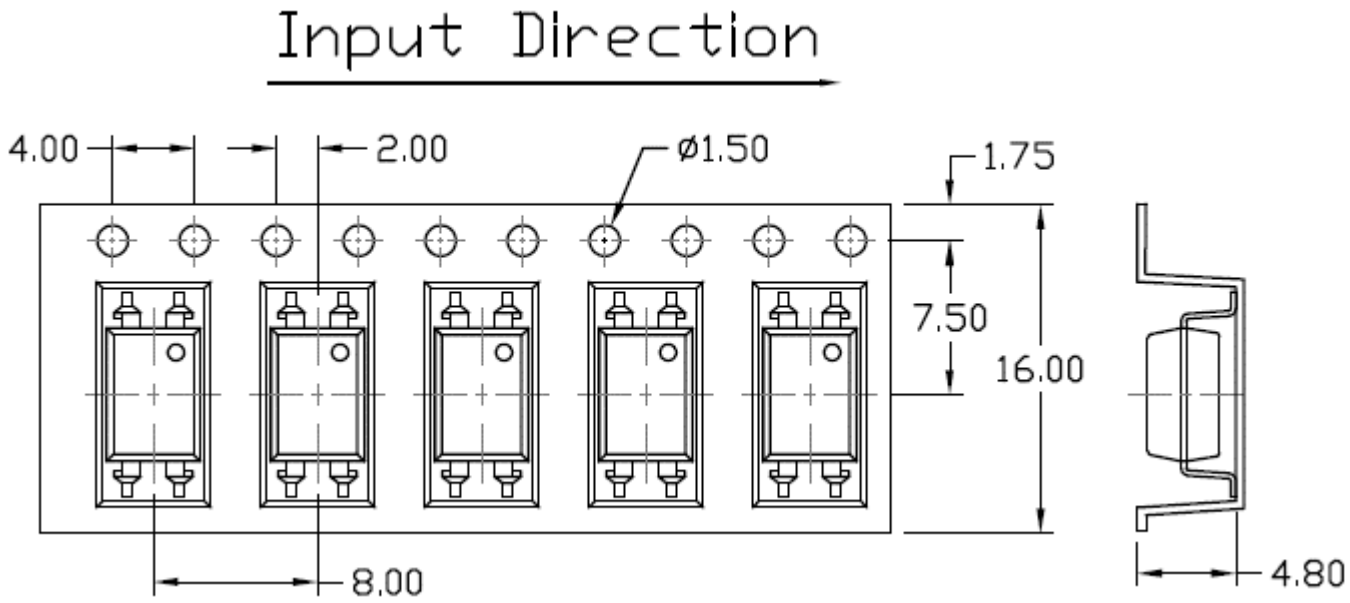
Z = Tape and reel option (T1, T2 or none)

G= Material option (G: Green, None: Non-green)

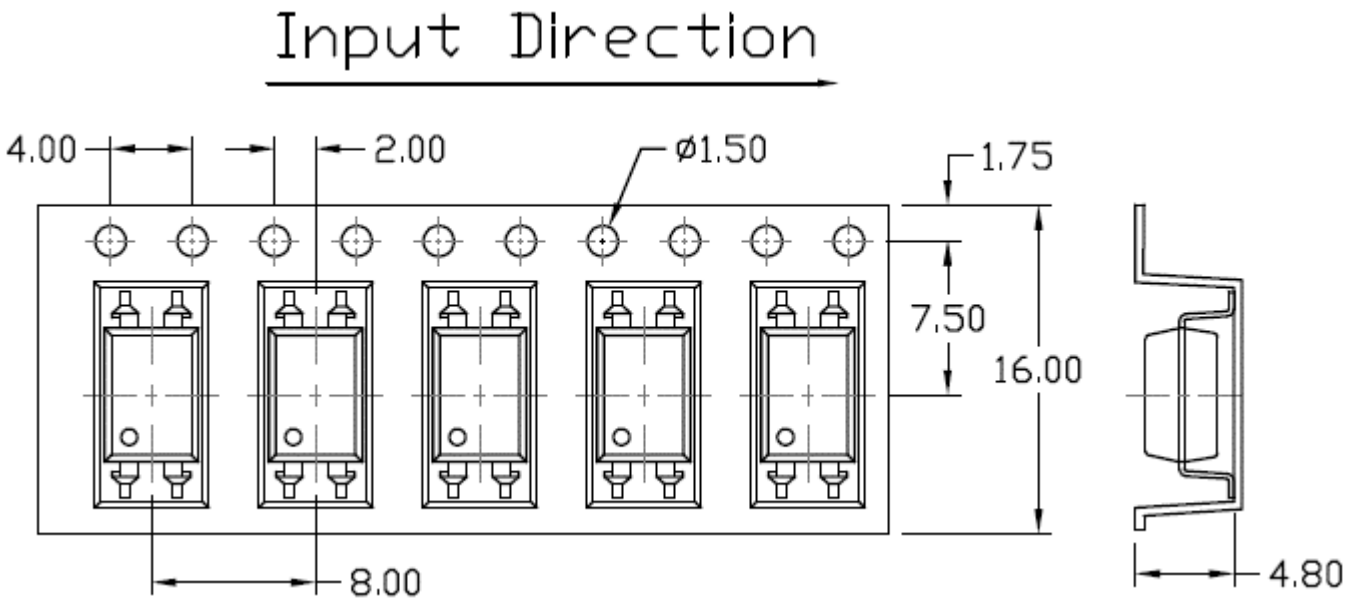
Option	***Description***	***Quantity***
None	Standard 4 Pin Dip	100 Units/Tube
M	Gullwing (400mil) Lead Forming	100 Units/Tube
S(T1)	Surface Mount Lead Forming – With Option 1 Taping	1000 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1000 Units/Reel
S(T3)	Surface Mount Lead Forming – 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

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

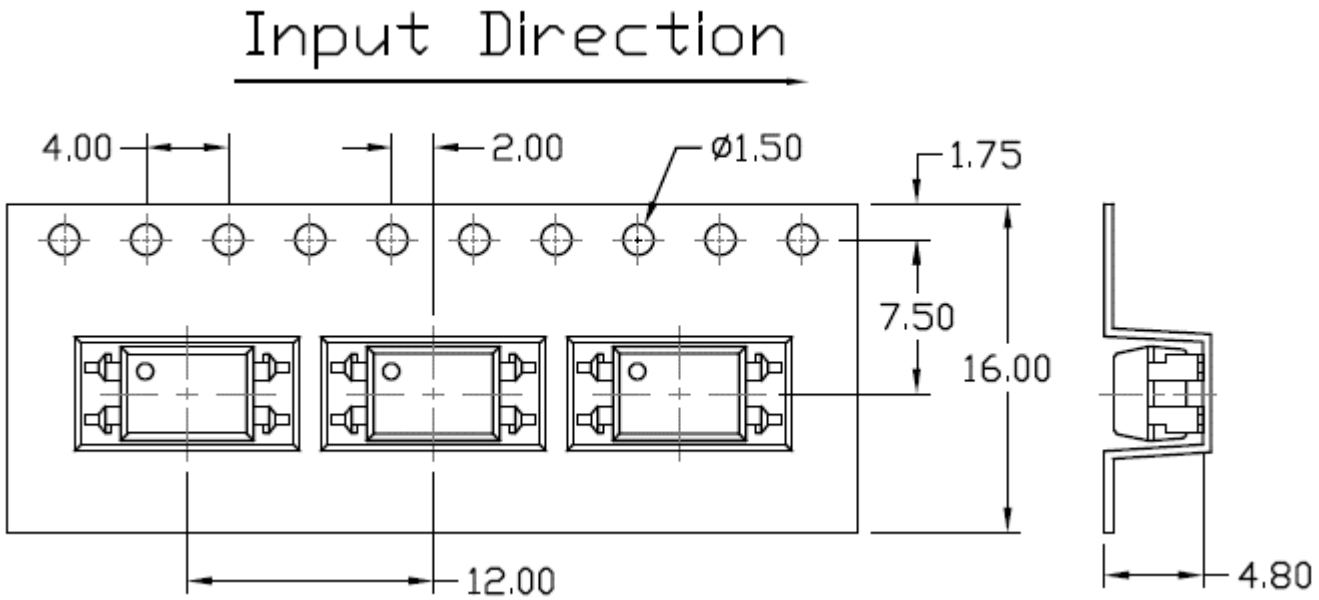
Option S(T1) & SL(T1)



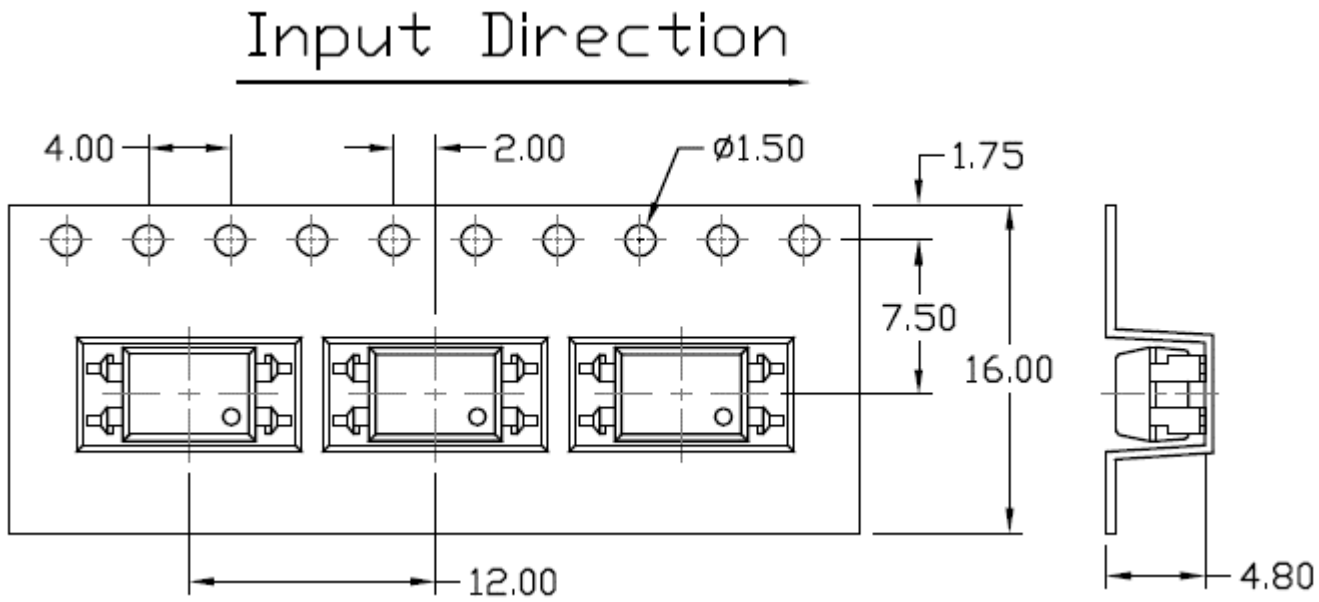
Option S(T2) & SL(T2)



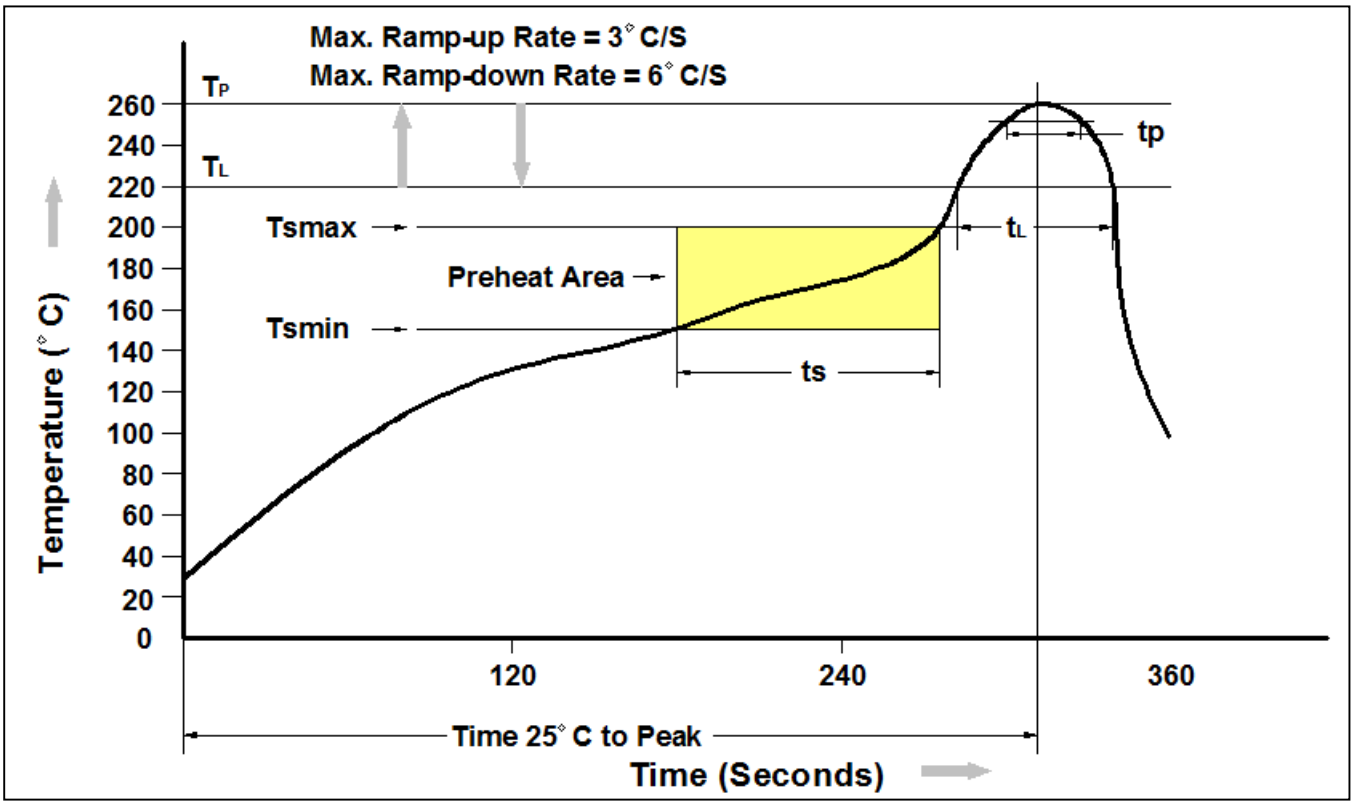
Option S(T3) & SL(T3)



Option S(T4) & SL(T4)



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150℃
Temperature Max. (Tsmax)	200℃
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Ramp-up Rate (t_L to t_P)	3℃/second max.
Liquidous Temperature (T_L)	217℃
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Body Package Temperature	260℃ +0℃ / -5℃
Time (t_P) within 5℃ of 260℃	30 seconds
Ramp-down Rate (T_P to T_L)	6℃/second max
Time 25℃ to Peak Temperature	8 minutes max.

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