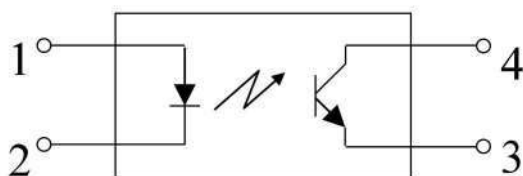
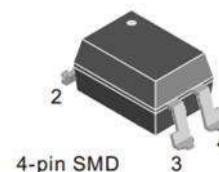
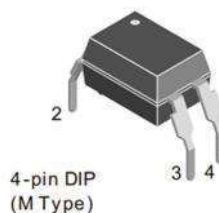
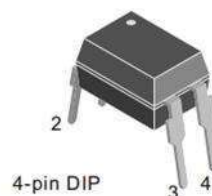


DIP and SMD Photo Transistor Coupler

• Block Diagram and Package



1. Anode
2. Cathode
3. Emitter
4. Collector



• Features

1. Current conversion ratio (Min 100% Working condition $I_F=5\text{mA}$, $V_{CE}=5\text{V}$)
2. Insulation Voltage = 5,000Vrms
3. Response Time (t_r : TYP. $6\mu\text{s}$; t_f : TYP. $5\mu\text{s}$) working condition $V_{CE}=2\text{V}$, $I_C=2\text{mA}$, $R_L=100\Omega$)
4. ESD: HBM8000V&MM2000V

• Instructions

1. PC817 photocoupler consist of one piece of GaAs emitter and one piece of NPN transistor
2. Pin pitch of PC817 is 2.54mm

• Application Range

1. Switching power supply
2. Ammeter
3. Computer
4. Instrumental application, measurement machine
5. Imbursement equipments, duplicating machine, automat
6. Family-use electric equipments, such as fans
7. Signal transforming systems

ELECTRICAL CHARACTERISTICS

• Max Absolute rated Value (Normal Temperature=25°C)

Parameter		Symbol	Rated Value	Unit
Inout	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Consume Power	P	70	mW
Output	Collector and emitter Voltage	V_{CEO}	70	V
	Emitter and collector Voltage	V_{ECO}	6	
	Collector Current	I_C	50	mA
	Consume Power	P_C	150	mW
Total Consume Power		P_{tot}	200	mW
*1 Insulation Voltage		V_{iso}	5,000	Vrms
Max Insulation Voltage		V_{IOTM}	6,000	V
Rated Impulse Insulation Voltage		V_{IORM}	630	V
Working Temperature		T_{opr}	-55 to + 110	°C
Deposit Temperature		T_{stg}	-55 to + 125	
*2 Soldering Temperature		T_{sol}	260	

*1. AC Test, 1 minute, humidity = 40~60%

Insulation test method as below:

- (1) Short circuit both terminals of photocoupler
- (2) No Current when testing insulation voltage
- (3) Adding sine wave voltage when testing

*2. soldering time is 10 seconds

• Opto-electronic Characteristics

Parameter		Symbol	Condition	Min	ium	Max	Unit
Input	Forward Current	V_F	$I_F=20mA$	---	1.20	1.40	V
	Reverse Voltage	I_R	$V_R=5V$	---	---	5	uA
	Collector capacitance	C_t	$V=0, f=1MHz$	---	30	250	pF
Output	Collector to emitter Current	I_{CEO}	$V_{CE}=20V,$ $I_F=0mA$	---	---	100	nA
	Collector and Emitter attenuation Voltage	BV_{CEO}	$I_C=0.1mA$ $I_F=0mA$	70	---	---	V
	Emitter and Collector attenuation Voltage	BV_{ECO}	$I_E=10\mu A$ $I_F=0mA$	6	---	---	V
Transforming	*1 Current conversion ratio	CTR	$I_F=5mA$ $V_{CE}=5V$	50	---	600	%

ELECTRICAL CHARACTERISTICS

Characteristics	Collector and Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=20mA$ $I_C=1mA$	---	0.1	0.2	V
	Insulation Impedance	R_{iso}	DC500V 40~60%R.H.	5×10^{10}	1×10^{11}	---	Ω
	capacotance	C_f	$V=0, f=1MHz$	---	0.6	1	pF
	Transforming Frequency	f_c	$V_{CE}=5V,$ $I_C=2mA$ $R_L=100\Omega, -3dB$	---	80	---	kHz
	Rise time	t_r	$V_{CE}=2V,$ $I_C=2mA$ $R_L=100\Omega$	---	6	18	μs
	Descend Time	t_f		---	5	18	μs

● **Current Conversion Ratio** = $I_C / I_F \times 100\%$

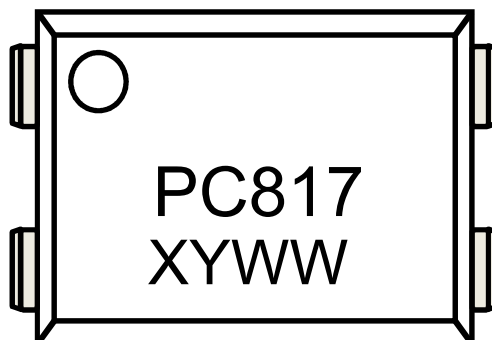
● **Grades of Current conversion ratio**

Grade Sign	.Min (%)	.Max (%)
A	80	160
B	130	260
C	200	400
D	300	600
A or B or C or D	80	600

Note: Working condition: $I_F=5mA$, $V_{CE}=5V$, $T_a=25^\circ C$.

Typical Characteristics

Marking



- The "PC817 " in the printed word represents the product model
- The "x" in the printed word represents the product segment: A、 B、 C、 D or others
- " Y" represents the year; "WW" represents the week

Typical Characteristics

• Characteristics Curve

Fig.1 Forward Current vs. Ambient Temperature

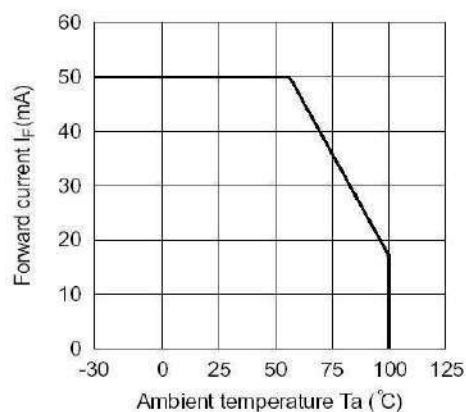


Fig.2 Collector Power Dissipation vs. Ambient Temperature

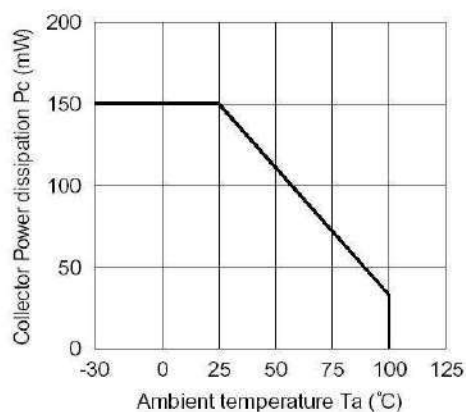


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

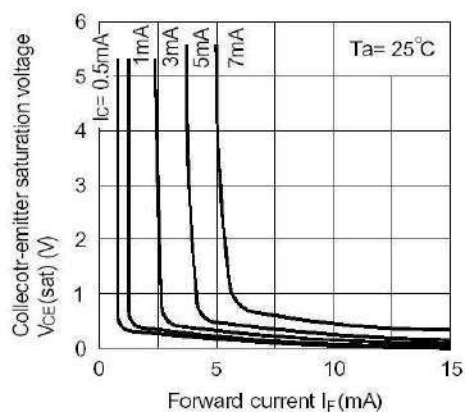


Fig.4 Forward Current vs. Forward Voltage

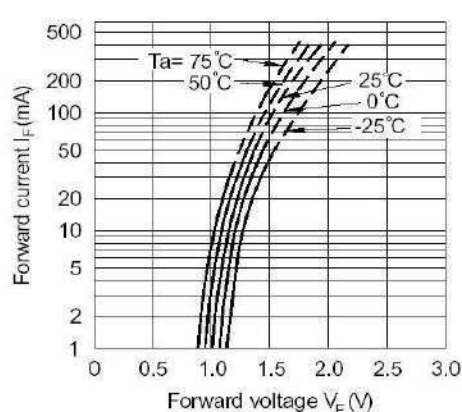


Fig.5 Current Transfer Ratio vs. Forward Current

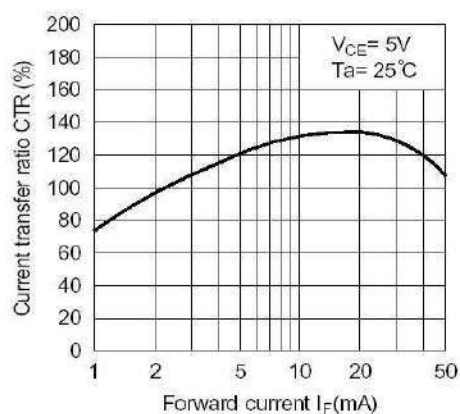
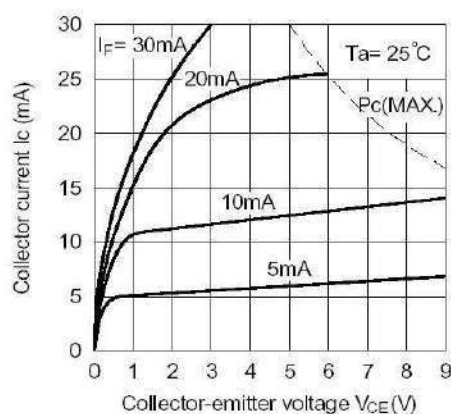


Fig.6 Collector Current vs. Collector-emitter Voltage



Typical Characteristics

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

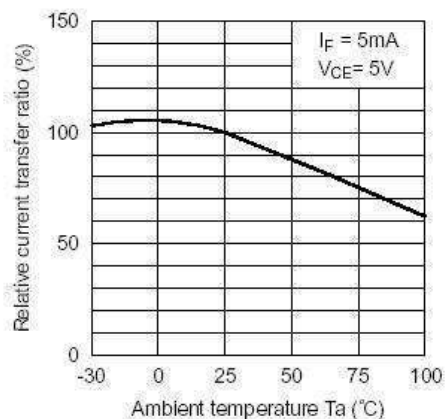


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

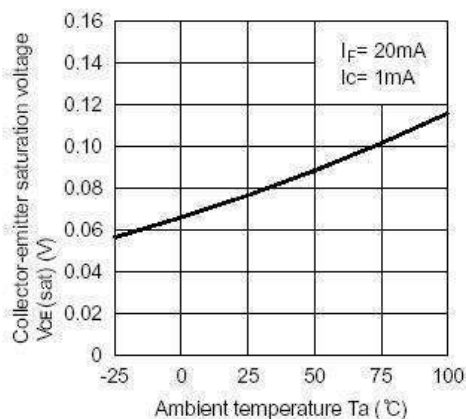


Fig.9 Collector Dark Current vs. Ambient Temperature

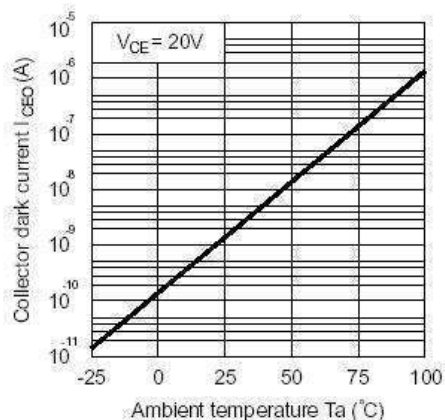


Fig.10 Response Time vs. Load Resistance

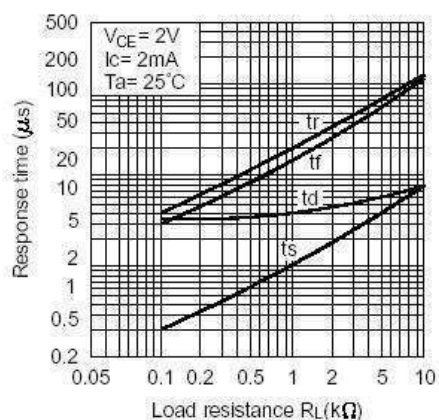
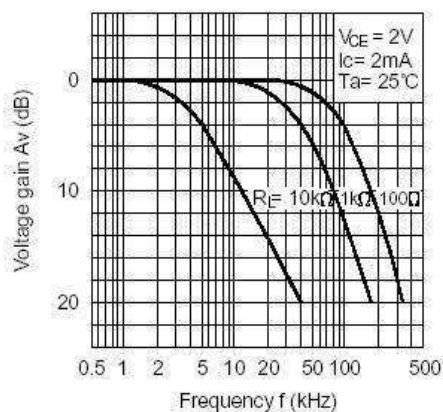
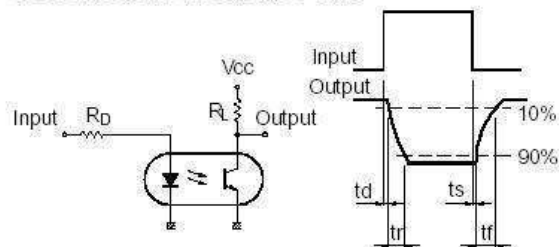


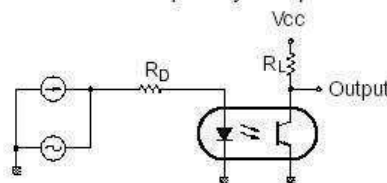
Fig.11 Frequency Response



Test Circuit for Response Time

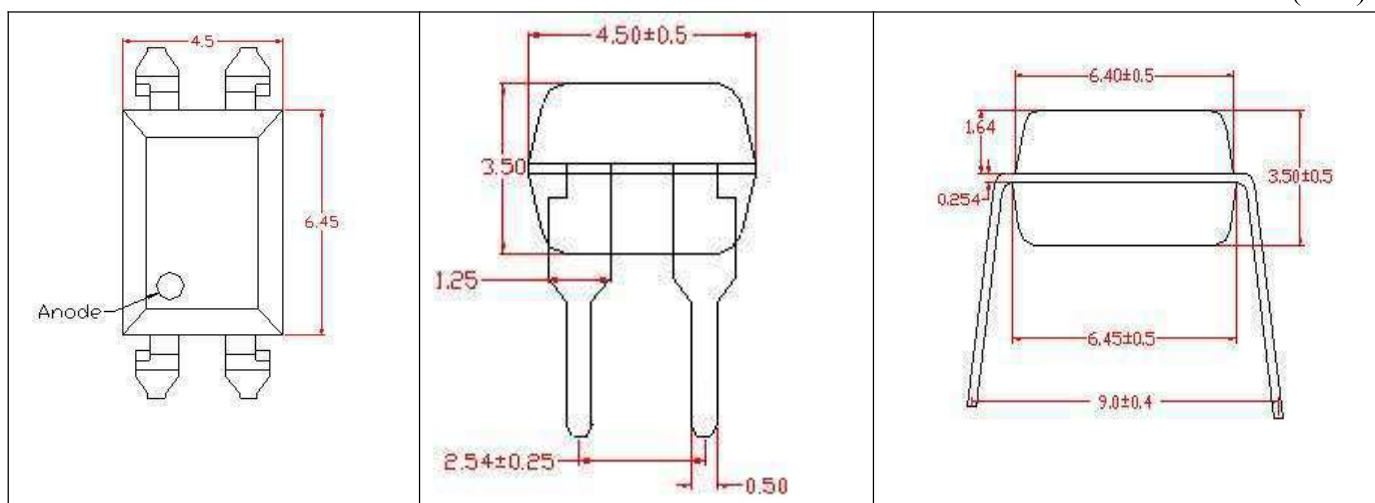


Test Circuit for Frequency Response

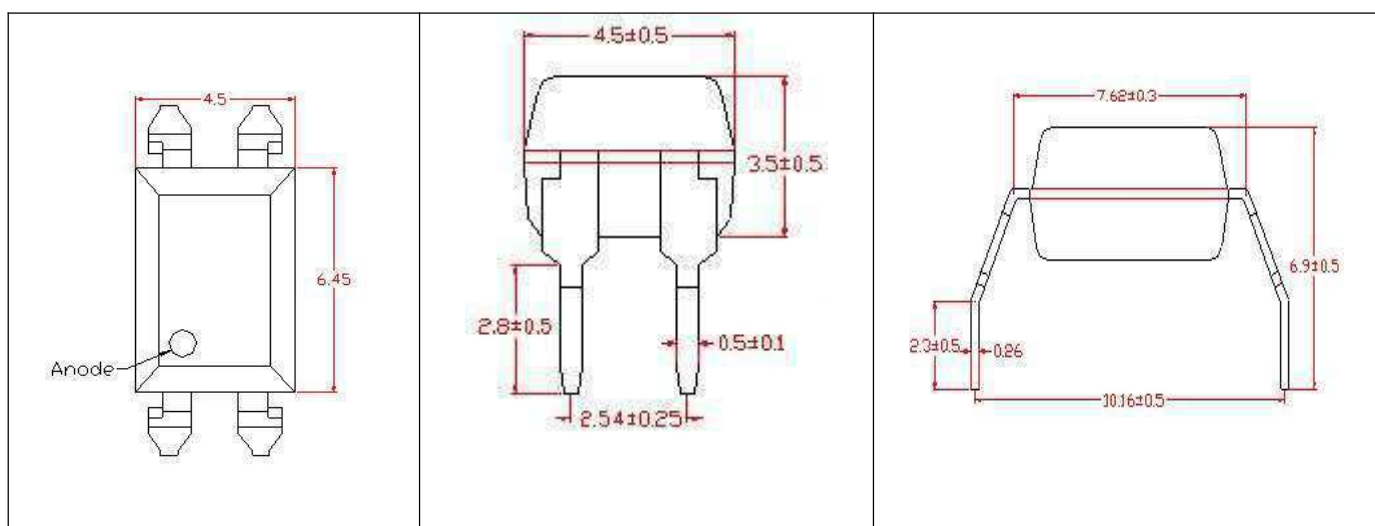


Outline Dimensions

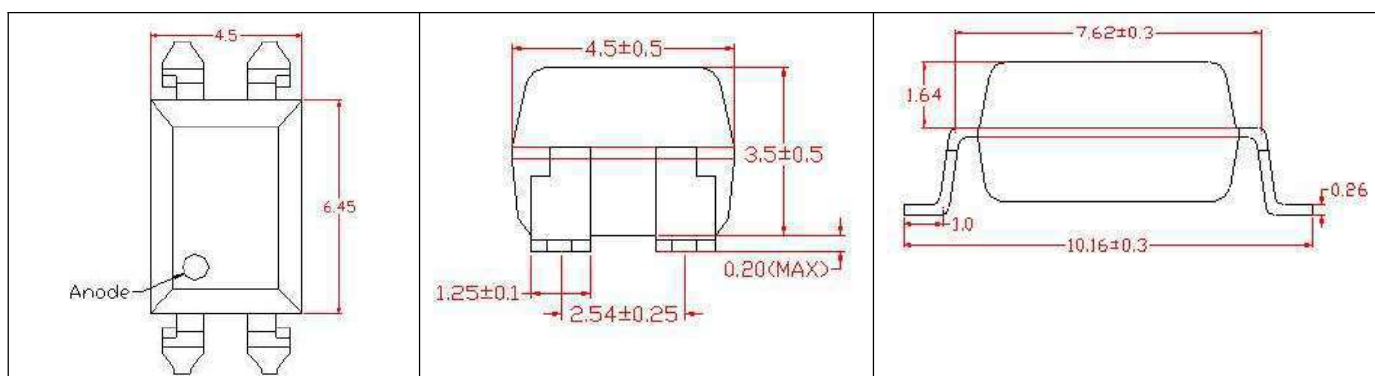
Unit: mm (inch)



4-pin DIP



4-pin DIP (M Type)



4-pin SMD

Packing

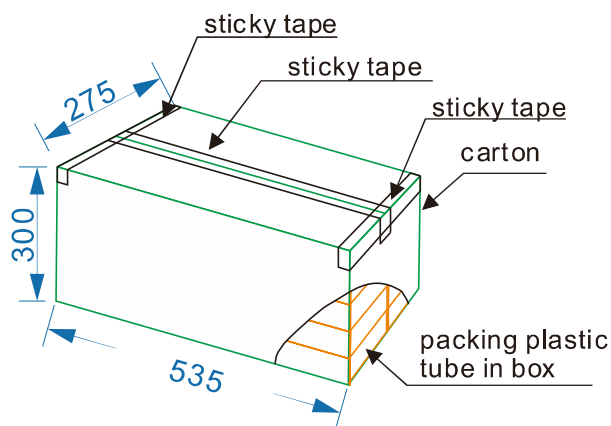
■ Summary table

Package Type	Packing Form	Quantity per Reel/Tube	Quantity per Box	Quantity per Carton	Antistatic Bag Specification	Box Specification	Carton Specification	Note
SMD-4 (T1/T2)	Reel (φ330mmBlue)	2k pcs/reel	2 reels /box	10 boxes /ctn	380*380mm	340*60*340mm	620*360*365mm	Guard band 120mm min.
SMD-4(T3/T4)	Reel (φ330mmBlue)	1k pcs/reel	2 reels /box	10 boxes /ctn	380*380mm	340*60*340mm	620*360*365mm	Guard band 120mm min.
DIP-4	Tube (500*12*11mm)	100pcs /tube	50 tubes/box	10 boxes /ctn	NA	525*128*56mm	535*275*300mm	
DIP-4(M)	Tube (500*13*11mm)	100pcs /tube	50 tubes/box	10 boxes /ctn	NA	525*128*56mm	535*275*300mm	

■ DIP-4 (tube)

- 1) Qty/ctn: 50000pcs
- 2) Inner packing:
 - a. 100pcs/tube, antistatic tube, indication of trade mark and antistatic.
 - b. 50 tubes/box.
- 3) Schematic

Packing



■ SMD-4(T1/T2) (Tape & Reel)

1) Qty/reel: 2000 pcs. Qty/ctn: 40000 pcs.

2) Inner packing: 2000pcs/reel.

■ SMD-4(T3/T4) (Tape & Reel)

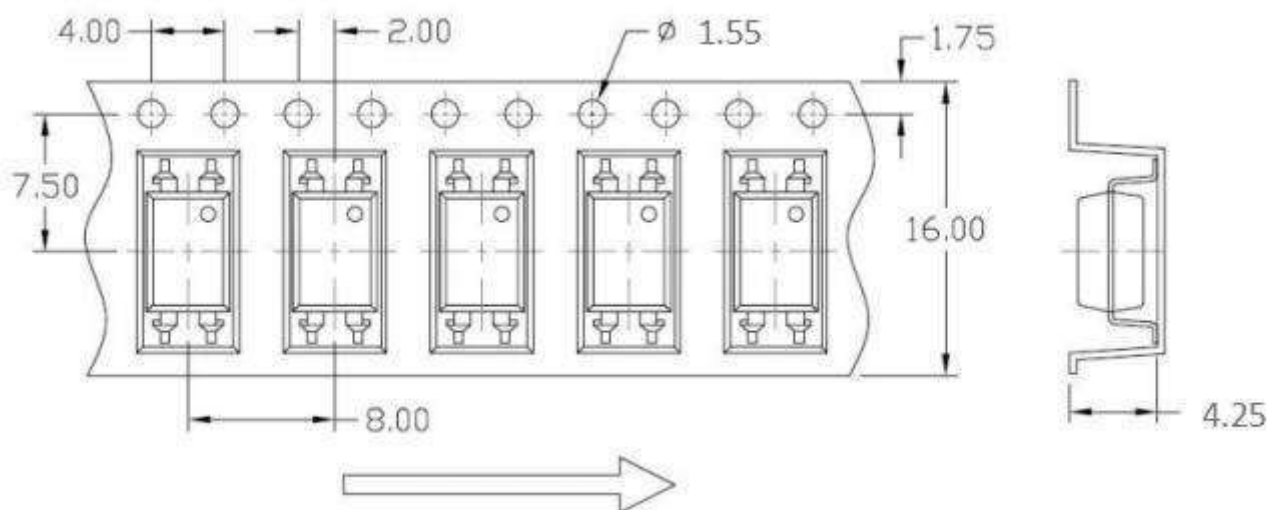
3) Qty/reel: 1000 pcs. Qty/ctn: 20000 pcs.

4) Inner packing: 1000pcs/reel.

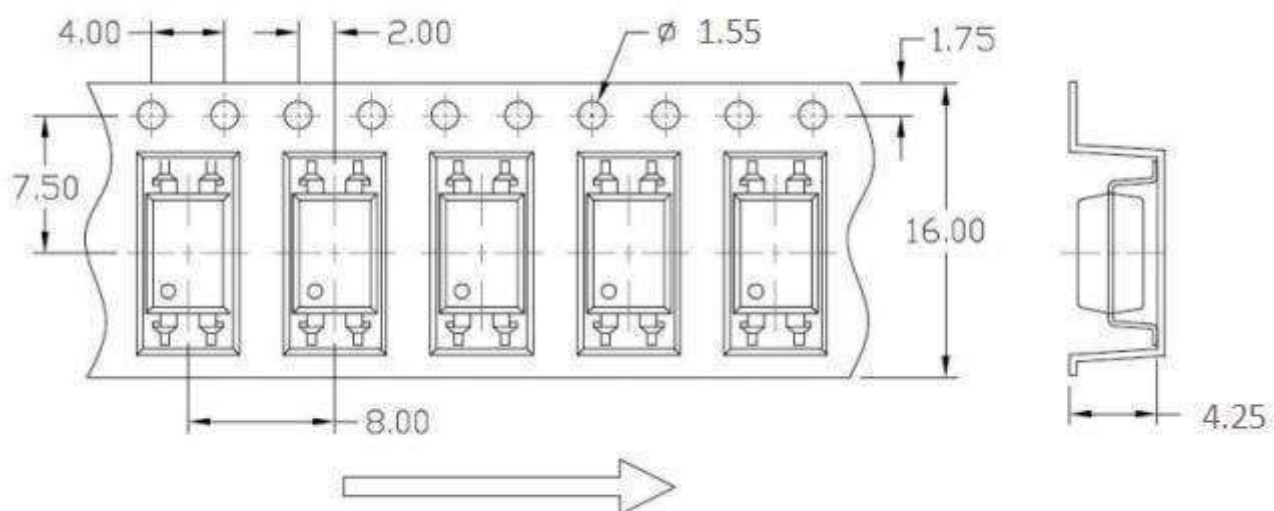
■ Schematic:

Packing

T1

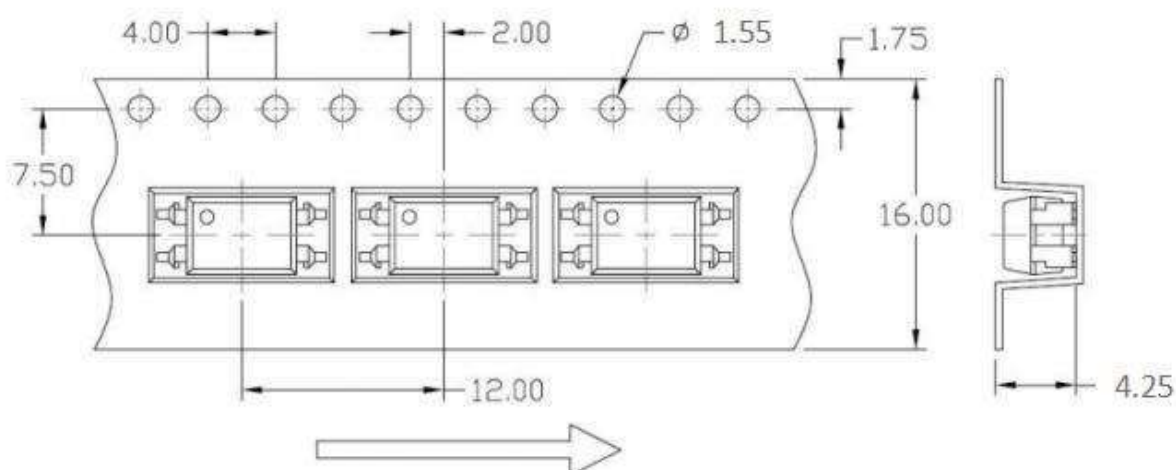


T2

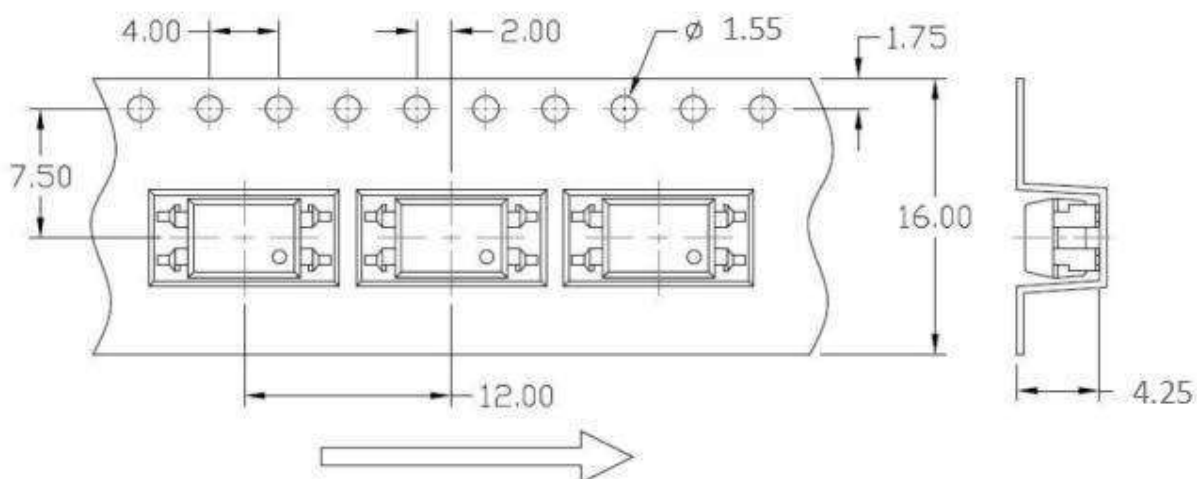


Packing

T3



T4



Packing

