

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

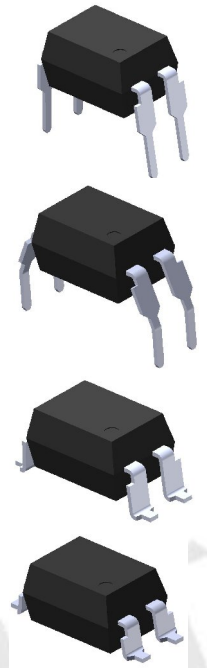
Features:

- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{ V rms}$)
- Creepage distance $> 7.62\text{ mm}$
- Operating temperature up to $+110^\circ\text{C}$
- Compact small outline package
- Pb free and RoHS compliant.
- UL approved (No. E214129)
- VDE approved (No. 132249)
- SEMKO approved (No. 716108)
- NEMKO approved (No. P08209467)
- DEMKO approved (No. 314683)
- FIMKO approved (No. FI 224433)
- CSA approved (No. 1143601)

Description

The EL817 series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector.

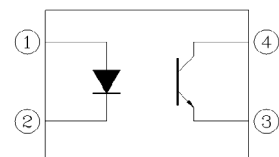
They are packaged in a 4-pin DIP package and available in wide-lead spacing and SMD option.



Applications

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances

Schematic



Pin Configuration

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



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Absolute Maximum Ratings ($T_a=25^{\circ}\text{C}$)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	60	mA
	Peak forward current (1us, pulse)	I_{FP}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	100	mW
	Derating factor (above $T_a = 100^{\circ}\text{C}$)		2.9	mW/ $^{\circ}\text{C}$
Output	Power dissipation	P_C	150	mW
	Derating factor (above $T_a = 100^{\circ}\text{C}$)		5.8	mW/ $^{\circ}\text{C}$
	Collector current	I_C	50	mA
	Collector-Emitter voltage	V_{CEO}	35	V
	Emitter-Collector voltage	V_{ECO}	6	V
Total power dissipation		P_{TOT}	200	mW
Isolation voltage ^{*1}		V_{ISO}	5000	V rms
Operating temperature		T_{OPR}	-55 ~ +110	$^{\circ}\text{C}$
Storage temperature		T_{STG}	-55 ~ +125	$^{\circ}\text{C}$
Soldering temperature ^{*2}		T_{SOL}	260	$^{\circ}\text{C}$

Notes

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1 & 2 are shorted together, and pins 3 & 4 are shorted together.

*2 For 10 seconds.

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Electrical Characteristics (T_a=25°C unless specified otherwise)

Input

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Forward voltage	V _F	-	1.2	1.4	V	I _F = 20mA
Reverse current	I _R	-	-	10	μA	V _R = 4V
Input capacitance	C _{in}	-	30	250	pF	V = 0, f = 1kHz

Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter dark current	I _{CEO}	-	-	100	nA	V _{CE} = 20V, I _F = 0mA
Collector-Emitter breakdown voltage	BV _{CEO}	35	-	-	V	I _C = 0.1mA
Emitter-Collector breakdown voltage	BV _{ECO}	6	-	-	V	I _E = 0.1mA

Transfer Characteristics (T_a=25°C unless specified otherwise)

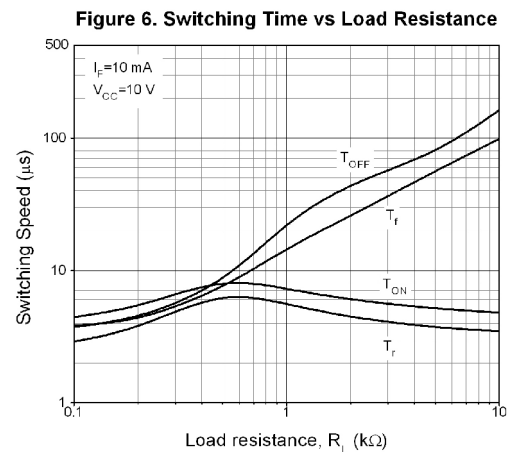
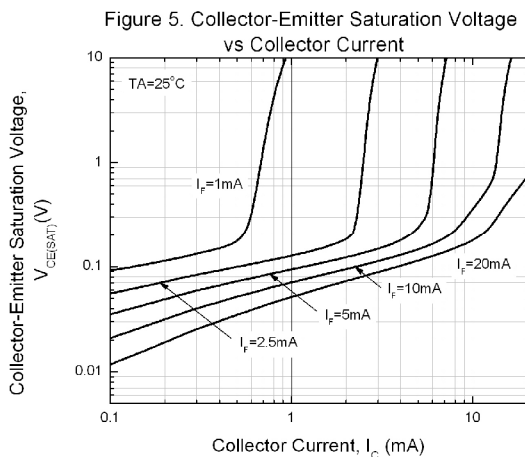
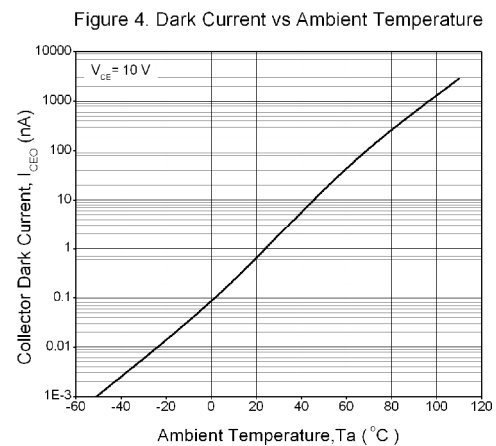
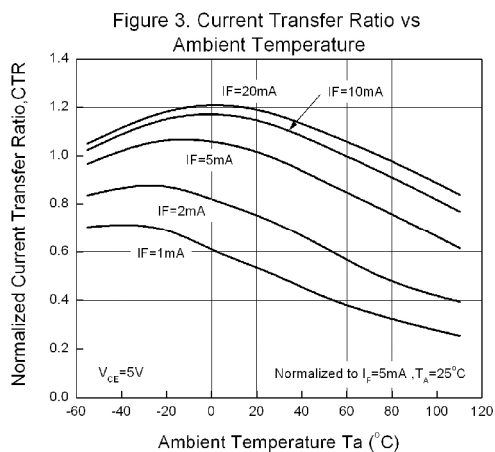
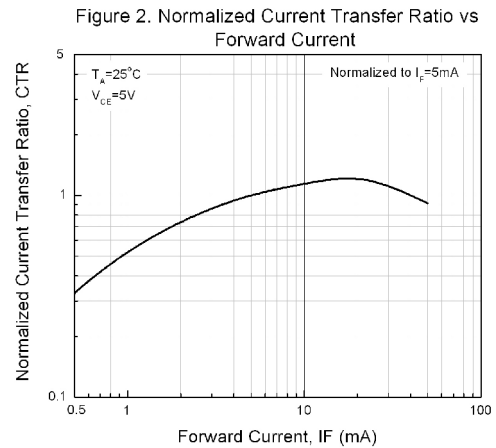
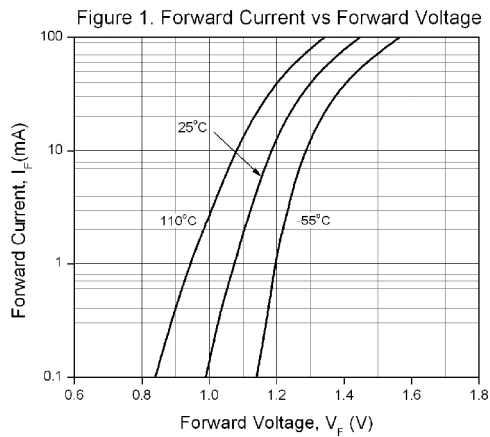
Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer ratio	EL817	50	-	600	%	I _F = 5mA, V _{CE} = 5V
	EL817A	80	-	160		
	EL817B	130	-	260		
	EL817C	200	-	400		
	EL817D	300	-	600		
	EL817X	100	-	200		
	EL817Y	150	-	300		
Collector-Emitter saturation voltage	V _{CE(sat)}	-	0.1	0.2	V	I _F = 20mA, I _C = 1mA
Isolation resistance	R _{IO}	5×10 ¹⁰	-	-	Ω	V _{IO} = 500Vdc, 40~60% R.H.
Floating capacitance	C _{IO}	-	0.6	1.0	pF	V _{IO} = 0, f = 1MHz
Cut-off frequency	f _c	-	80	-	kHz	V _{CE} = 5V, I _C = 2mA R _L = 100Ω, -3dB
Rise time	t _r	-	4	18	μs	V _{CE} = 2V, I _C = 2mA, R _L = 100Ω
Fall time	t _f	-	3	18	μs	

* Typical values at T_a = 25°C

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Typical Performance Curves



4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

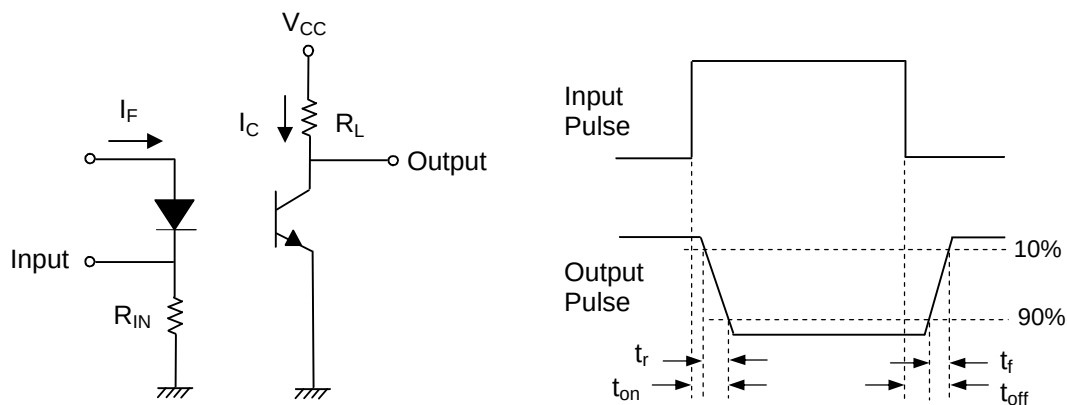


Figure 7. Switching Time Test Circuit & Waveforms

EVERLIGHT



LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Order Information

Part Number

EL817(X)(Y)(Z)-FV

Note

- X = Lead form option (S, S1, S2, M or none)
Y = CTR Rank (A, B, C, D, X, Y or none)
Z = Tape and reel option (TA, TB, TU, TD or none).
F = Lead frame option (F: Iron, None: copper)
V = VDE safety (optional).

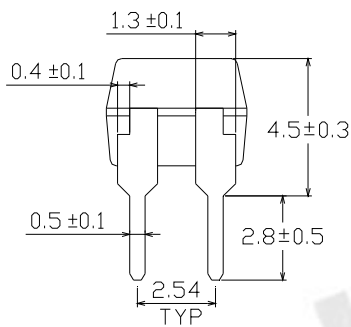
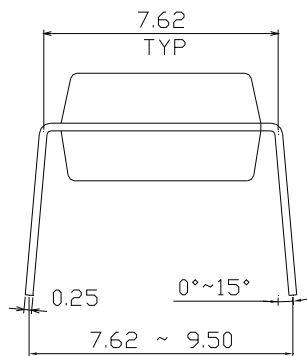
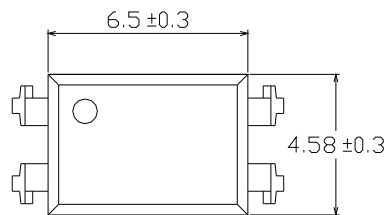
Option	Description	Packing quantity
None	Standard DIP-4	100 units per tube
M	Wide lead bend (0.4 inch spacing)	100 units per tube
S (TA)	Surface mount lead form + TA tape & reel option	1000 units per reel
S (TB)	Surface mount lead form + TB tape & reel option	1000 units per reel
S1 (TA)	Surface mount lead form (low profile) + TA tape & reel option	1000 units per reel
S1 (TB)	Surface mount lead form (low profile) + TB tape & reel option	1000 units per reel
S2 (TA)	Surface mount lead form (Gull-wing) + TA tape & reel option	500 units per reel
S2 (TB)	Surface mount lead form (Gull-wing) + TB tape & reel option	500 units per reel
S (TU)	Surface mount lead form + TU tape & reel option	1500 units per reel
S (TD)	Surface mount lead form + TD tape & reel option	1500 units per reel
S1 (TU)	Surface mount lead form (low profile) + TU tape & reel option	1500 units per reel
S1 (TD)	Surface mount lead form (low profile) + TD tape & reel option	1500 units per reel

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

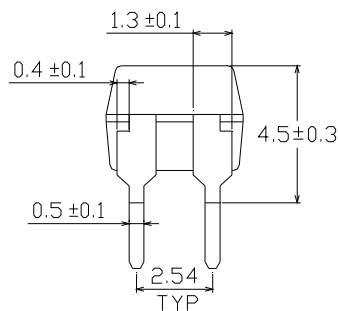
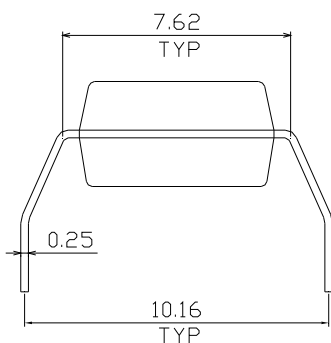
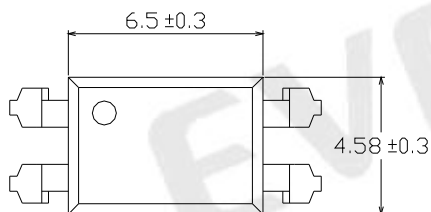
EL817 Series

Package Drawing (Dimensions in mm)

Standard DIP Type



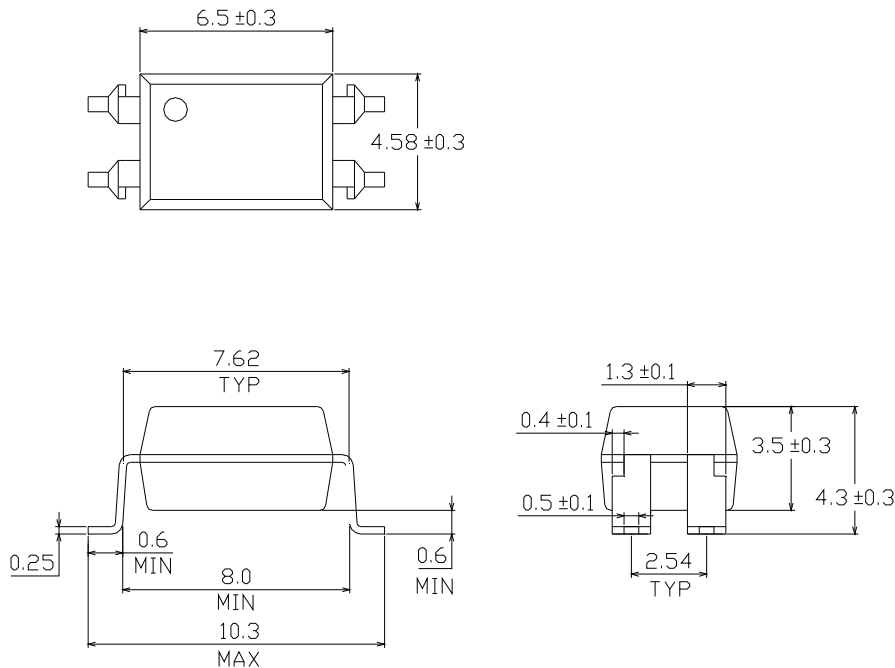
Option M Type



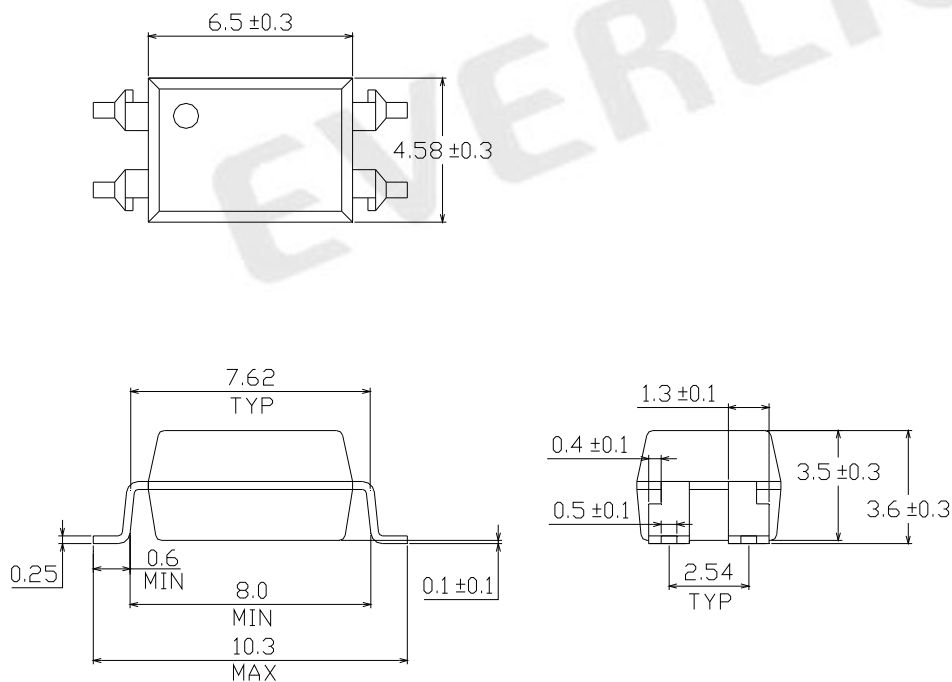
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Option S Type



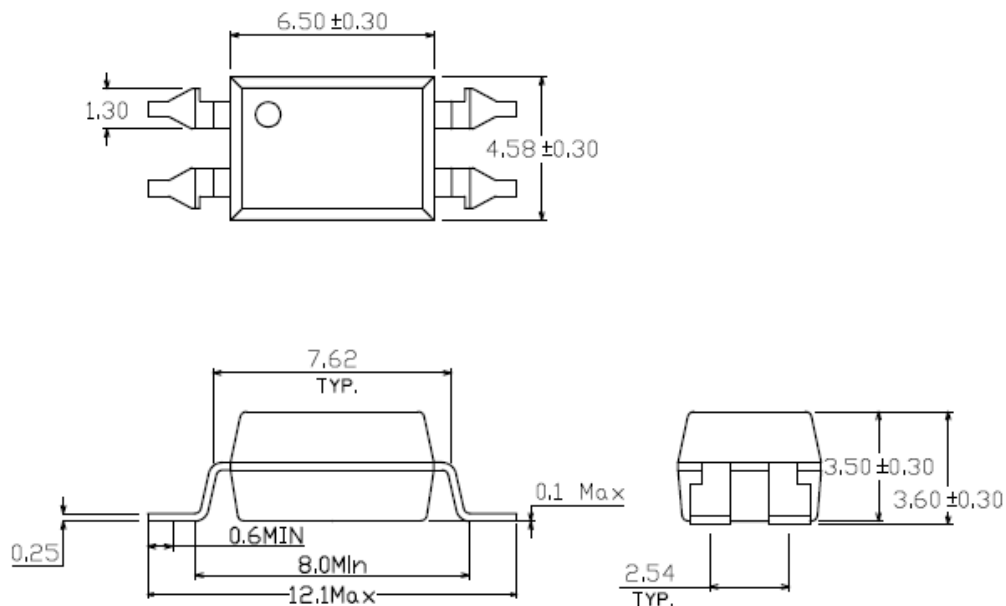
Option S1 Type



4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

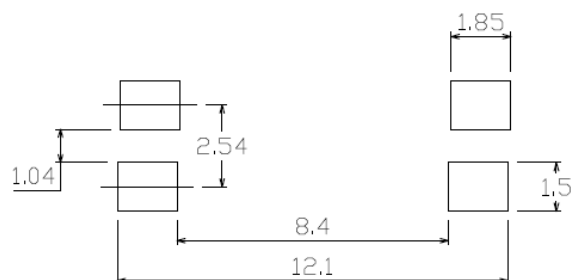
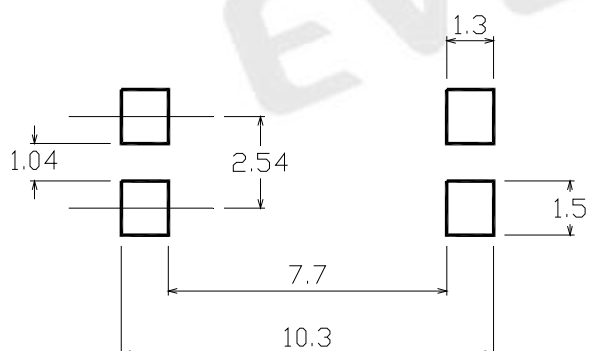
Option S2 Type



Recommended pad layout for surface mount leadform

For S and S1 option

For S2 option



4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Device Marking



Notes

EL	denotes EVERLIGHT
817	denotes Device Number
F	denotes Factory Code (None: China, T: Taiwan)
R	denotes CTR Rank (A, B, C, D or none)
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE (optional)

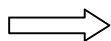
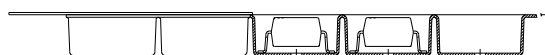
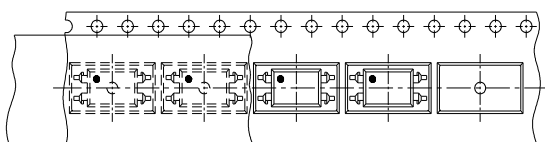
EVERLIGHT

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

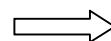
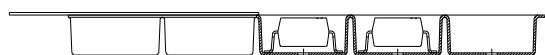
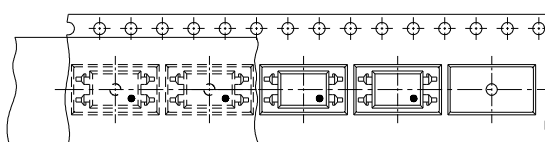
Tape & Reel Packing Specifications

Option TA



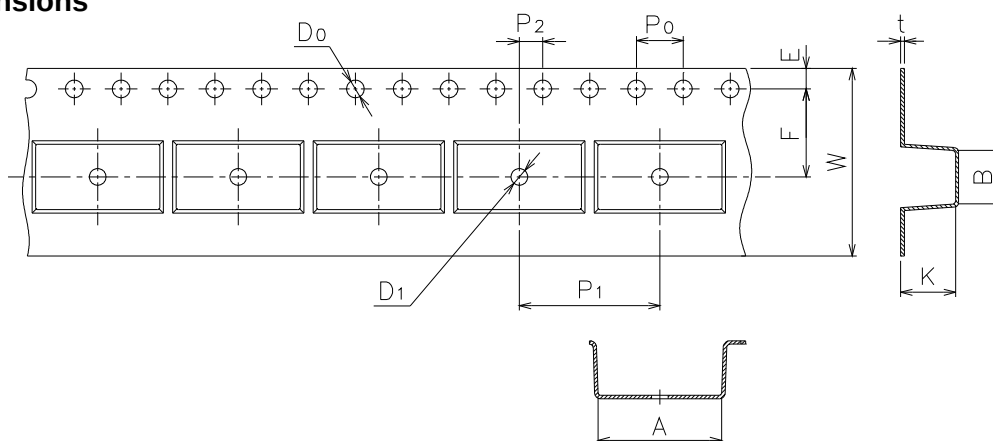
Direction of feed from reel

Option TB



Direction of feed from reel

Tape dimensions

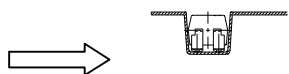
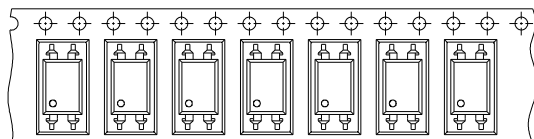


Dimension No.	A	B	Do	D1	E	F
For S2 type						
Dimension(mm)	12.15±0.1	4.65±0.1	1.55±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension(mm)	10.4±0.1	4.55±0.1	1.5±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
For S2 type						
Dimension(mm)	4.0±0.1	16.0±0.1	2.0±0.1	0.35±0.1	16.0+0.3/ -0.1	4.55±0.1
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.33±0.1	16.0+0.3/ -0.1	4.55±0.1

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

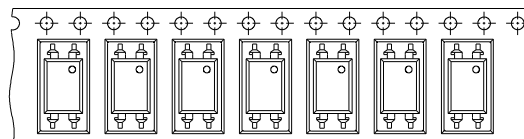
EL817 Series

Option TD



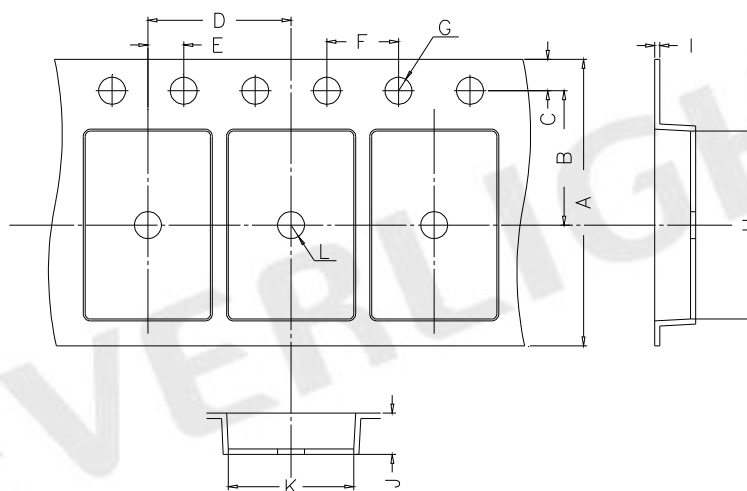
Direction of feed from reel

Option TU



Direction of feed from reel

Tape dimensions



Dimension No.	A	B	C	D	E	F
Dimension(mm)	16.00±0.3	7.5±0.1	1.75±0.1	8.0±0.1	2.0±0.1	4.0±0.1
Dimension No.	G	H	I	J	K	L
Dimension(mm)	1.5±0.1/-0	10.4±0.1	0.4±0.05	4.55±0.1	5.1±0.1	1.5±0.05

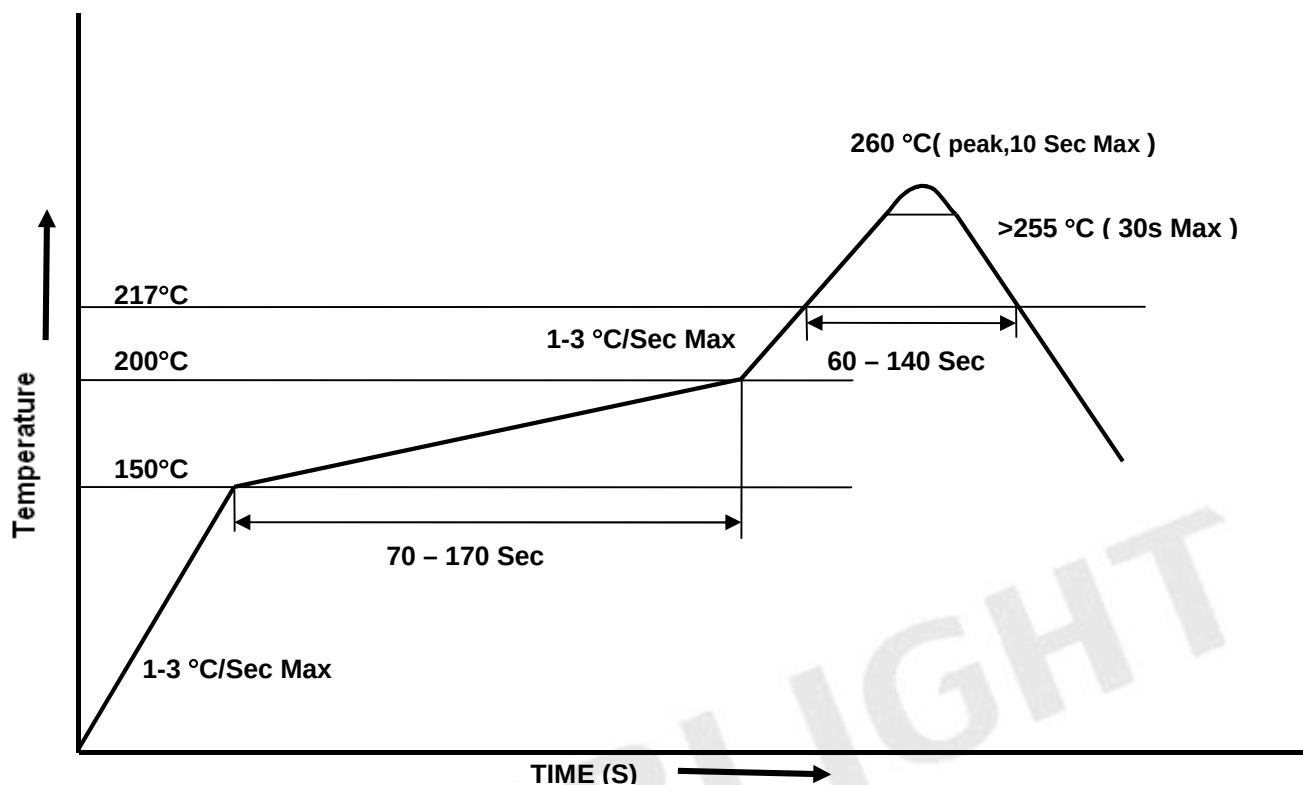


LIGHTING FOREVER

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

Solder Reflow Temperature Profile



4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL817 Series

DISCLAIMER

1. The specifications in this datasheet may be changed without notice. EVERLIGHT reserves the authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for use as outlined in this datasheet. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in this datasheet.
3. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without the specific consent of EVERLIGHT.

EVERLIGHT