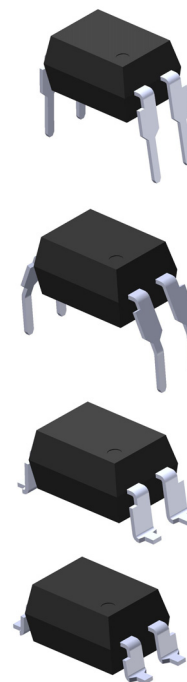


## 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

### EL2501-G Series

#### Features:

- Halogens free.
- Current transfer ratio  
(CTR: 80~600% 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 approval
- VDE approval
- SEMKO approval
- NEMKO approval
- DEMKO approval
- FIMKO approval
- CSA approval



#### Description

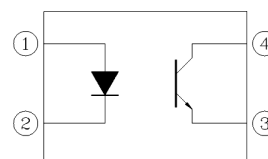
The EL2501-G series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector encapsulated with green compound..

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

## EL2501-G Series

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

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	60	mA
	Peak forward current (PW=100us,duty cycle = 1%)	$I_{FP}$	1	A
	Reverse voltage	$V_R$	6	V
	Power dissipation Derating factor ( above $T_a = 100^{\circ}\text{C}$ )	$P_D$	100	mW
	5.8		mW/ $^{\circ}\text{C}$	
Output	Power dissipation Derating factor (above $T_a = 100^{\circ}\text{C}$ )	$P_C$	150	mW
			5.8	mW/ $^{\circ}\text{C}$
	Collector current	$I_C$	50	mA
	Collector-Emitter voltage	$V_{CEO}$	80	V
	Emitter-Collector voltage	$V_{ECO}$	7	V
Total power dissipation		$P_{TOT}$	200	mW
Isolation voltage <sup>*1</sup>		$V_{ISO}$	5000	V rms
Operating temperature		$T_{OPR}$	-55 ~ +110	$^{\circ}\text{C}$
Storage temperature		$T_{STG}$	-55 ~ +125	$^{\circ}\text{C}$
Soldering temperature <sup>*2</sup>		$T_{SOL}$	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.



LIGHTING FOREVER

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

## EL2501-G Series

### Electrical Characteristics (T<sub>a</sub>=25°C unless specified otherwise)

#### Input

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Forward voltage	V <sub>F</sub>	-	1.2	1.4	V	I <sub>F</sub> = 10mA
Reverse current	I <sub>R</sub>	-	-	5	μA	V <sub>R</sub> = 5V
Input capacitance	C <sub>in</sub>	-	50	250	pF	V = 0, f = 1MHz

#### Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter dark current	I <sub>CEO</sub>	-	-	100	nA	V <sub>CE</sub> = 80V, I <sub>F</sub> = 0mA
Collector-Emitter breakdown voltage	BV <sub>CEO</sub>	80	-	-	V	I <sub>C</sub> = 0.1mA
Emitter-Collector breakdown voltage	BV <sub>ECO</sub>	7	-	-	V	I <sub>E</sub> = 0.1mA

### Transfer Characteristics (T<sub>a</sub>=25°C unless specified otherwise)

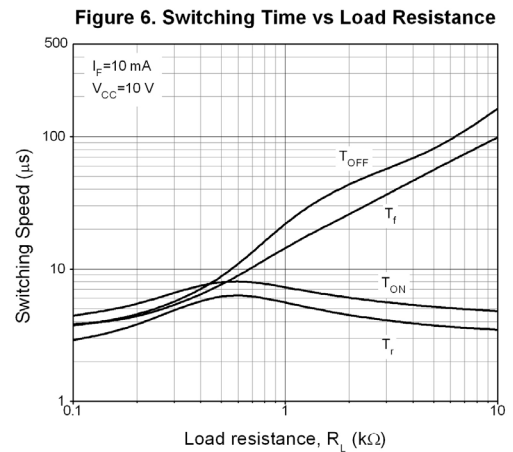
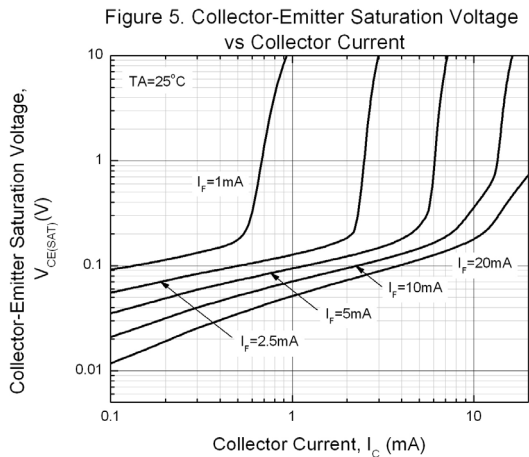
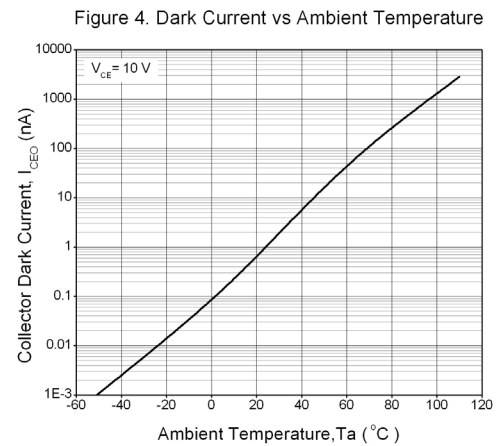
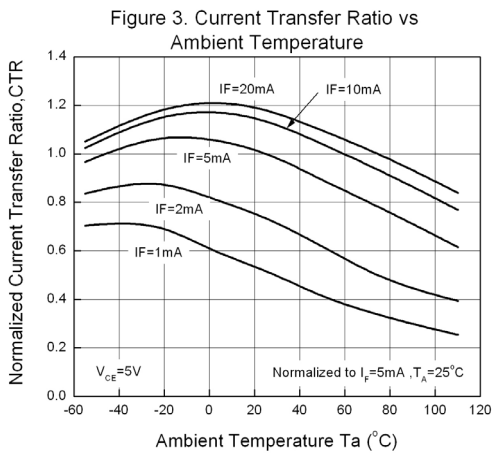
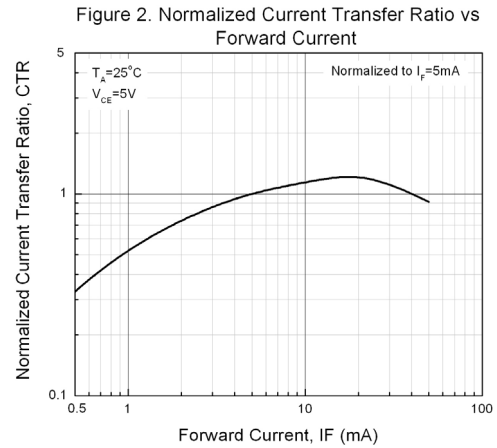
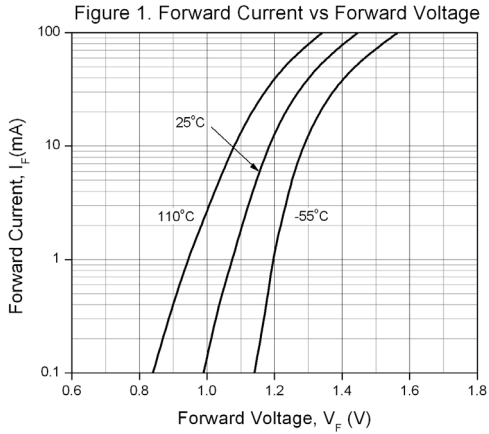
Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer ratio	EL2501N	80	-	600	%	I <sub>F</sub> = 5mA, V <sub>CE</sub> = 5V
	EL2501H	80	-	160		
	EL2501W	130	-	260		
	EL2501L	200	-	400		
	EL2501K	300	-	600		
	EL2501Q	100	-	200		
	EL2501D	150	-	300		
Collector-Emitter saturation voltage	V <sub>CE(sat)</sub>	-	0.1	0.3	V	I <sub>F</sub> = 10mA, I <sub>C</sub> = 2mA
Isolation resistance	R <sub>IO</sub>	10 <sup>11</sup>	-	-	Ω	V <sub>IO</sub> = 1K Vdc, 40~60% R.H.
Floating capacitance	C <sub>IO</sub>	-	0.6	1.0	pF	V <sub>IO</sub> = 0, f = 1MHz
Cut-off frequency	f <sub>c</sub>	-	80	-	kHz	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω, -3dB
Rise time	t <sub>r</sub>	-	3	18	μs	V <sub>CC</sub> = 10V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω
Fall time	t <sub>f</sub>	-	5	18	μs	

\* Typical values at T<sub>a</sub> = 25°C

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

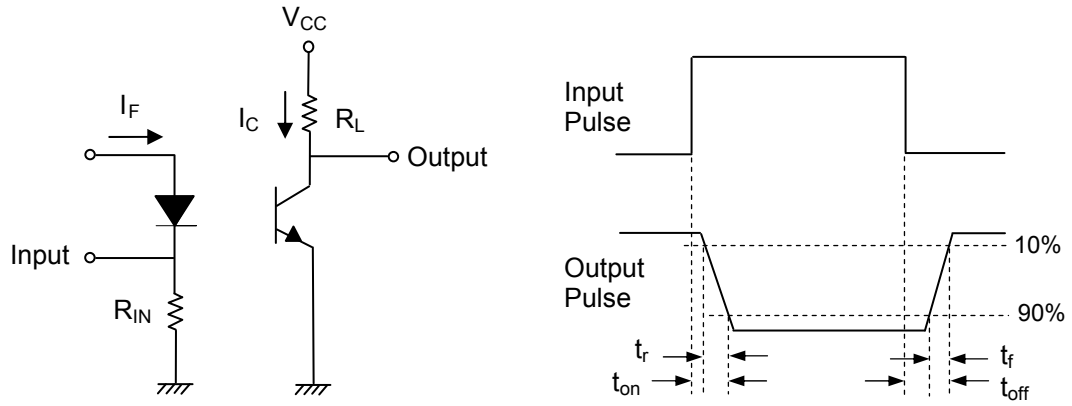
## EL2501-G Series

### Typical Performance Curves



**4 PIN DIP PHOTOTRANSISTOR  
PHOTOCOUPLER**

**EL2501-G Series**



**Figure 7. Switching Time Test Circuit & Waveforms**



LIGHTING FOREVER

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

## EL2501-G Series

### Order Information

#### Part Number

# EL2501(X)(Y)(Z)-VG

#### Note

- X = Lead form option (S, S1, S2, M or none)
- Y = CTR Rank (N, H, K, L, W, Q or none)
- Z = Tape and reel option (TA, TB, TU, TD or none).
- V = VDE safety (optional).
- G = Halogen free

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

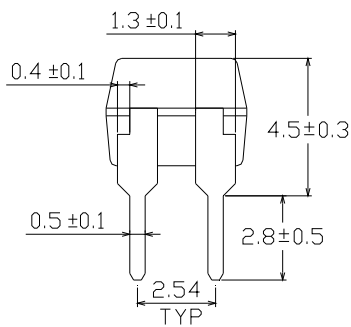
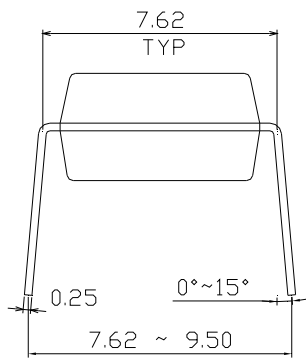
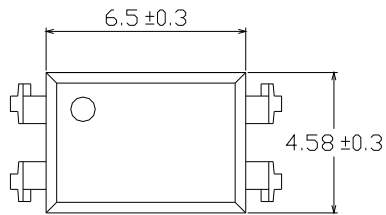
# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

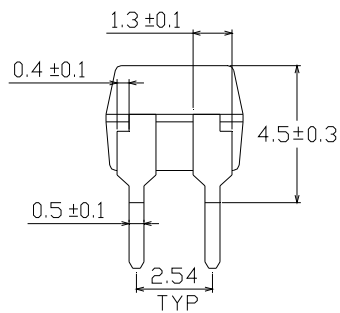
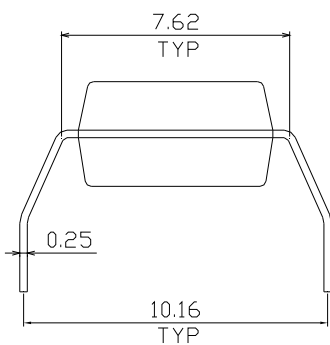
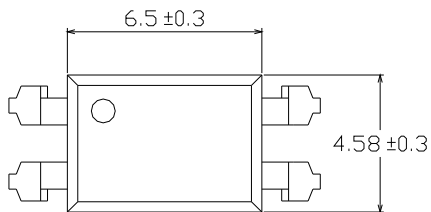
## Package Drawing

(Dimensions in mm)

### Standard DIP Type



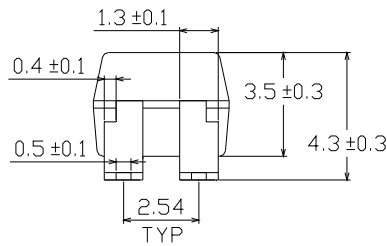
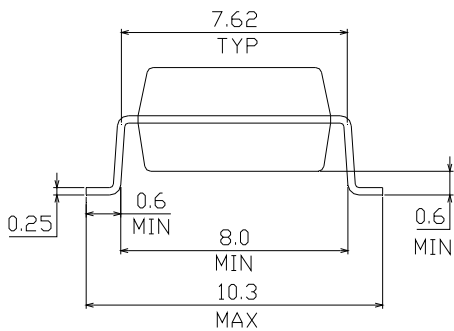
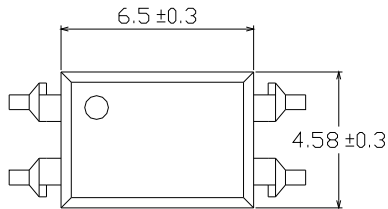
### Option M Type



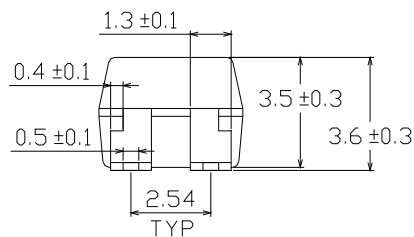
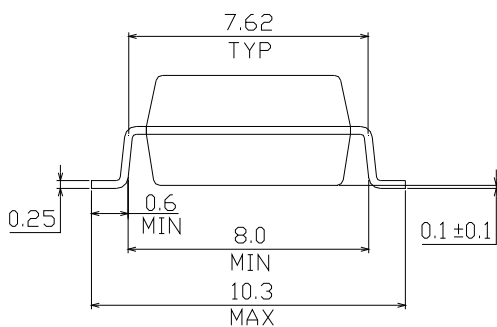
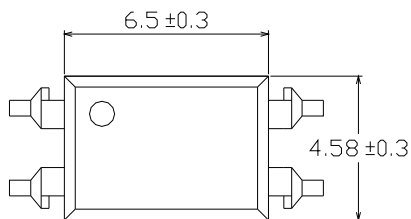
# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

## Option S Type



## Option S1 Type

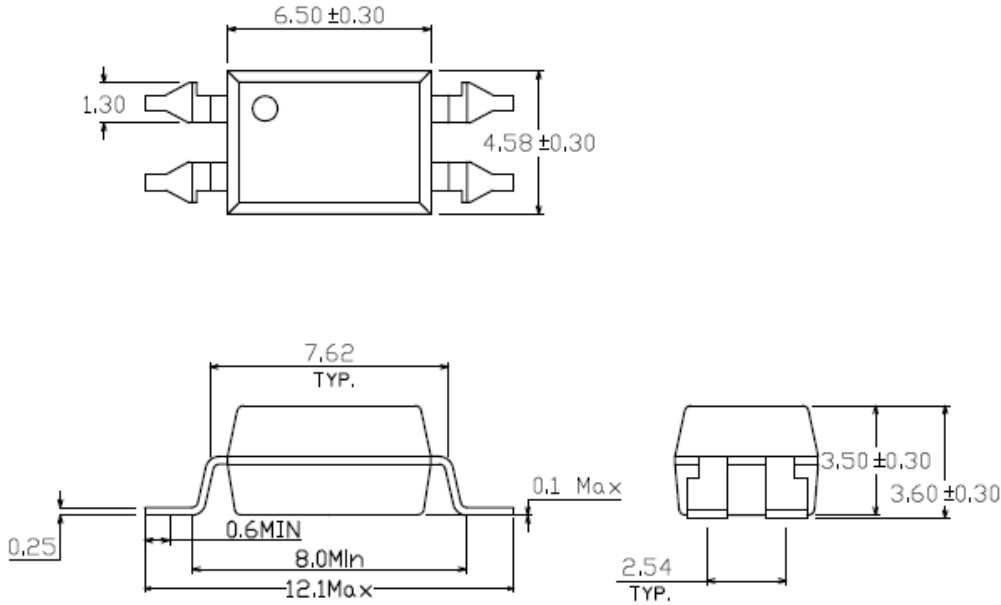




# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

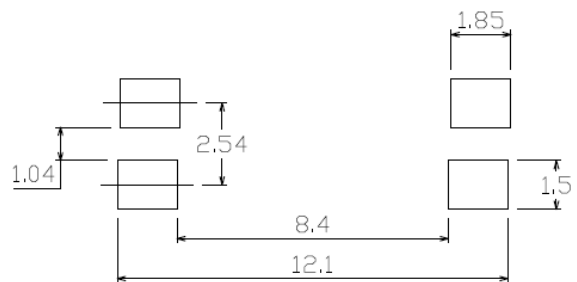
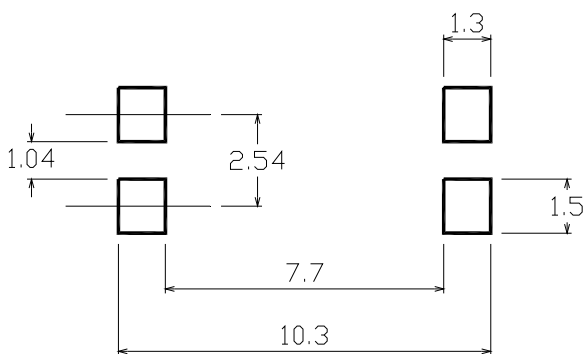
**Option S2 Type**



**Recommended pad layout for surface mount leadform**

**For S and S1 option**

**For S2 option**





LIGHTING FOREVER

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

## EL2501-G Series

---

### Device Marking



### Notes

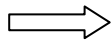
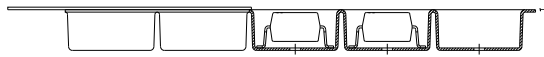
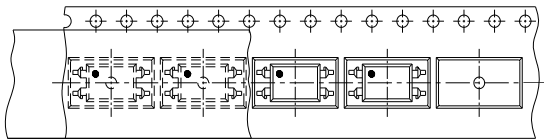
EL	denotes EVERLIGHT
2501	denotes Device Number
F	denotes Factory Code (G: China and Green part)
R	denotes CTR Rank (N, L, K, Q or none)
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE (optional)

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

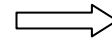
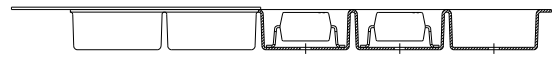
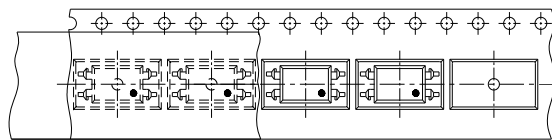
## Tape & Reel Packing Specifications

**Option TA**



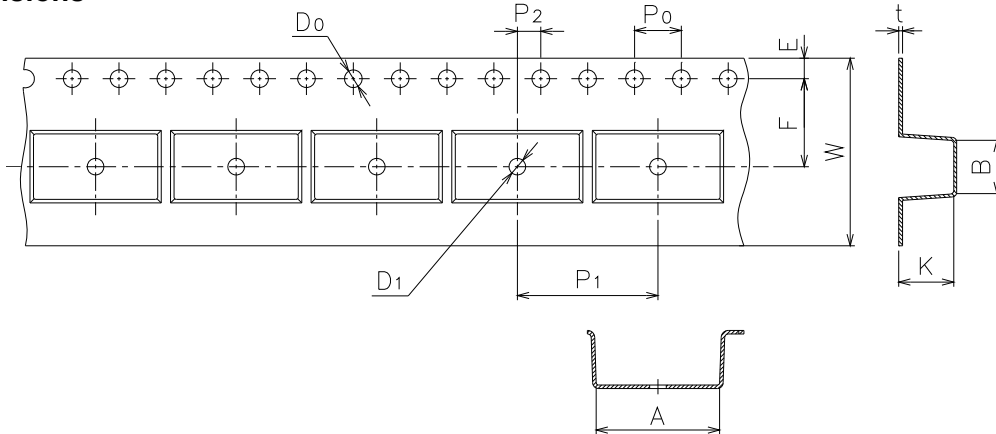
Direction of feed from reel

**Option TB**



Direction of feed from reel

## Tape dimensions

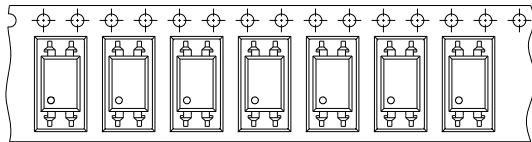


Dimension No.	A	B	Do	D1	E	F
For S2 type						
Dimension(mm)	12.15±0.1	4.65±0.1	1.55±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension(mm)	10.4±0.1	4.55±0.1	1.5±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
For S2 type						
Dimension(mm)	4.0±0.1	16.0±0.1	2.0±0.1	0.35±0.1	16.0+0.3/ -0.1	4.55±0.1
Dimension(mm)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

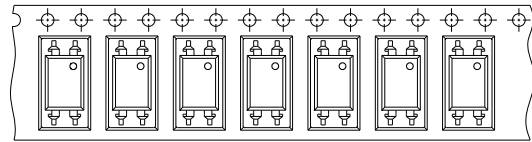
# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

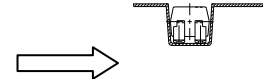
**Option TD**



**Option TU**

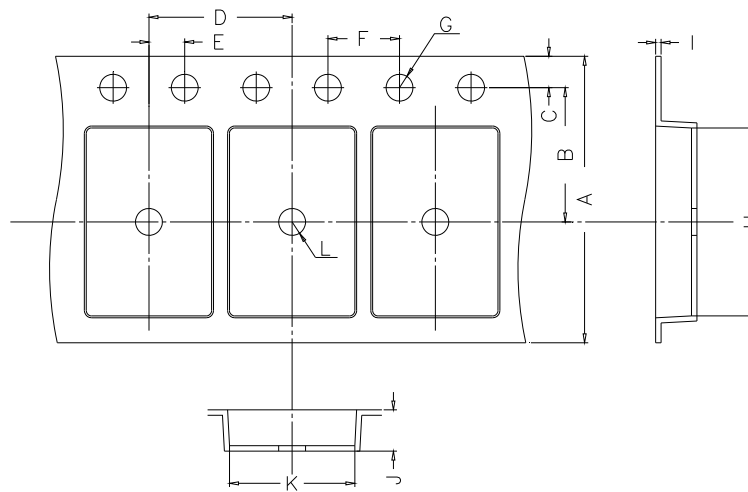


Direction of feed from reel



Direction of feed from reel

## Tape dimensions

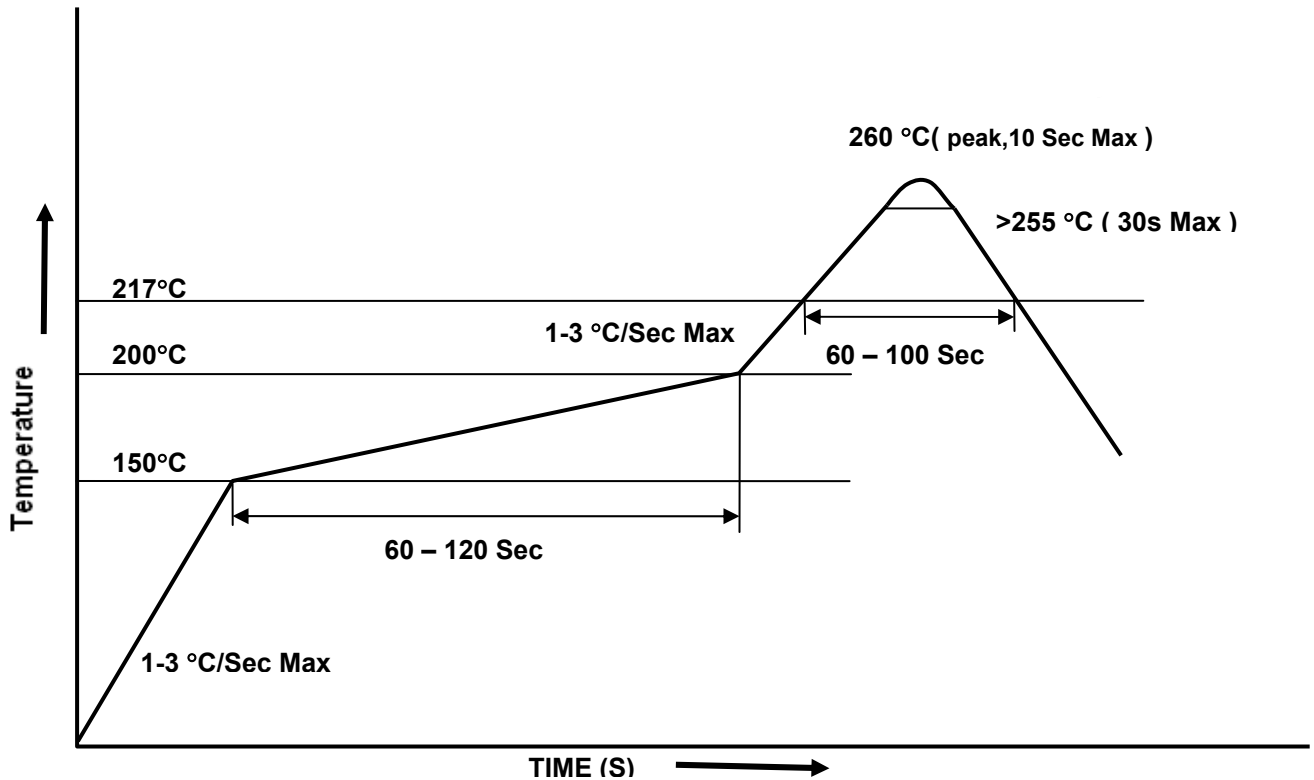


Dimension No.	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
Dimension(mm)	16.00±0.3	7.5±0.1	1.75±0.1	8.0±0.1	2.0±0.1	4.0±0.1
Dimension No.	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>
Dimension(mm)	1.5±0.1/-0	10.4±0.1	0.4±0.05	4.55±0.1	5.1±0.1	1.5±0.05

# 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G Series**

## Solder Reflow Temperature Profile





LIGHTING FOREVER

## 4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**EL2501-G 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.