

### **EL817 Series**

#### Features:

- Current transfer ratio (CTR:  $50\sim600\%$  at  $I_F = 5mA$ ,  $V_{CE} = 5V$ )
- High isolation voltage between input and output (Viso=5000 V rms)
- Creepage distance >7.62 mm
- Operating temperature up to +110°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

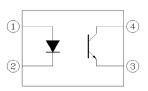








#### Schematic



#### Pin Configuration

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

Everlight Electronics Co., Ltd. Document No: DPC-0000046

: 10

LifecyclePhase:正式發行

Revision

Rev.10

http://www.everlight.com April, 21 2010 Release Date:2010-05-29 16:39:31.0



## **EL817 Series**

### Absolute Maximum Ratings (T<sub>a</sub>=25°C)

	Parameter	Symbol	Rating	Unit
	Forward current	I <sub>F</sub>	60	mA
	Peak forward current (1us, pulse)	I <sub>FP</sub>	1	А
Input	Reverse voltage	$V_R$	6	V
	Power dissipation		100	mW
	Derating factor ( aboveT <sub>a</sub> = 100°C)	P <sub>D</sub>	2.9	mW/°C
	Power dissipation		150	mW
	Derating factor (above T <sub>a</sub> = 100°C)	P <sub>C</sub>	5.8	mW/°C
Output	Collector current	I <sub>C</sub>	50	mA
	Collector-Emitter voltage	V <sub>CEO</sub>	35	V
	Emitter-Collector voltage	V <sub>ECO</sub>	6	V
Total power	er dissipation	P <sub>TOT</sub>	200	mW
Isolation voltage *1		V <sub>ISO</sub>	5000	V rms
Operating temperature		T <sub>OPR</sub>	-55 ~ +110	°C
Storage te	Storage temperature		-55 ~ +125	°C
Soldering	temperature *2	T <sub>SOL</sub>	260	°C

### <u>Notes</u>

2

Everlight Electronics Co., Ltd. Document No: DPC-0000046

Rev.10

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

**Expired Period: Forever** 

: 10

<sup>\*1</sup> 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.

<sup>\*2</sup> For 10 seconds.



## **EL817 Series**

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

Input

Parameter	Symbol	Min.	Тур.*	Max.	Unit	Condition	
Forward voltage	V <sub>F</sub>	-	1.2	1.4	V	I <sub>F</sub> = 20mA	
Reverse current	I <sub>R</sub>	-	-	10	μA	V <sub>R</sub> = 4V	
Input capacitance	C <sub>in</sub>	-	30	250	pF	V = 0, f = 1kHz	

**Output** 

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter dark current	I <sub>CEO</sub>	-	-	100	nA	V <sub>CE</sub> = 20V, I <sub>F</sub> = 0mA
Collector-Emitter breakdown voltage	BV <sub>CEO</sub>	35	-	-	V	I <sub>C</sub> = 0.1mA
Emitter-Collector breakdown voltage	BV <sub>ECO</sub>	6	-	-	V	I <sub>E</sub> = 0.1mA

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

Parameter		Symbol	Min.	Тур.*	Max.	Unit	Condition
	EL817		50	100	600	%	M -
	EL817A		80	OV	160		
	EL817B	- 0	130	1	260		
Current Transfer ratio	EL817C	CTR	200	M. m	400		$I_F = 5mA$ , $V_{CE} = 5V$
	EL817D		300	-	600		
	EL817X		100	-	200		
	EL817Y		150	-	300		
Collector-Emitter saturation voltage		V <sub>CE(sat)</sub>	-	0.1	0.2	٧	$I_F = 20 \text{mA}$ , $I_C = 1 \text{mA}$
Isolation resistance		R <sub>IO</sub>	5×10 <sup>10</sup>	-	-	Ω	V <sub>IO</sub> = 500Vdc, 40~60% R.H.
Floating capacitance		C <sub>IO</sub>	-	0.6	1.0	pF	$V_{IO} = 0$ , $f = 1MHz$
Cut-off frequency		fc	-	80	-	kHz	$V_{CE} = 5V$ , $I_C = 2mA$ $R_L = 100\Omega$ , -3dB
Rise time		t <sub>r</sub>	-	4	18	μs	$V_{CE} = 2V, I_{C} = 2mA,$
Fall time		t <sub>f</sub>	-	3	18	μs	$R_L = 100\Omega$

3

Everlight Electronics Co., Ltd.

Document No: DPC-0000046

Rev.10

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

**Expired Period: Forever** 

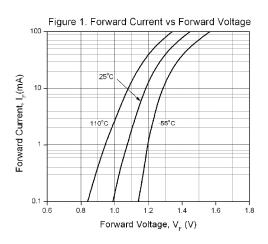
: 10

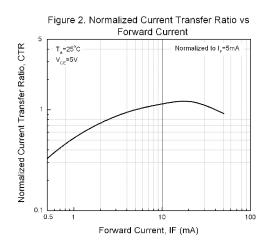
<sup>\*</sup> Typical values at T<sub>a</sub> = 25°C

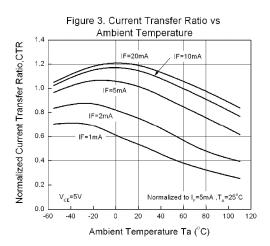


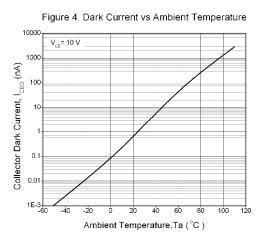
## **EL817 Series**

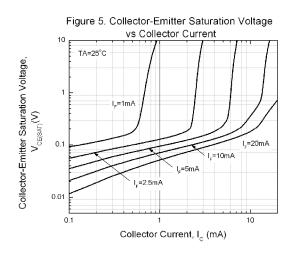
### **Typical Performance Curves**

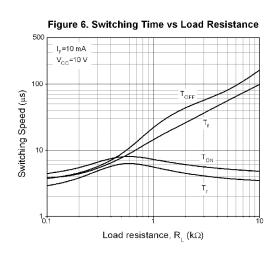












Everlight Electronics Co., Ltd. Document No: DPC-0000046

Rev.10

4

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

**Expired Period: Forever** 

: 10



## **EL817 Series**

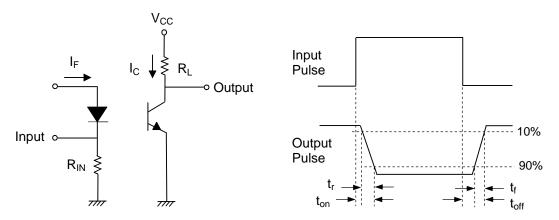


Figure 7. Switching Time Test Circuit & Waveforms



5

Everlight Electronics Co., Ltd. Document No : DPC-0000046

Revision: 10

Rev.10

http://www.everlight.com April, 21 2010 Release Date:2010-05-29 16:39:31.0



**EL817 Series** 

#### **Order Information**

**Part Number** 

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

#### Note

Χ

= Lead form option (S, S1, S2, M or none) = CTR Rank (A, B, C, D, X, Y or none) = Tape and reel option (TA, TB, TU, TD or none). Ζ

= Lead frame option (F: Iron, None: copper)

= 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

6

Everlight Electronics Co., Ltd. Document No: DPC-0000046

Revision : 10

LifecyclePhase:正式發行

Rev.10

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

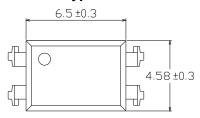


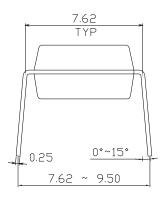
## **EL817 Series**

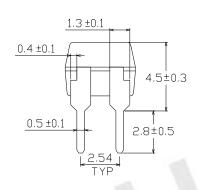
### **Package Drawing**

(Dimensions in mm)

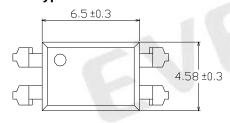
### **Standard DIP Type**

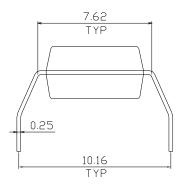


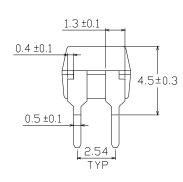




### **Option M Type**







7

Everlight Electronics Co., Ltd. Document No: DPC-0000046

: 10 LifecyclePhase:正式發行

Revision

Rev.10

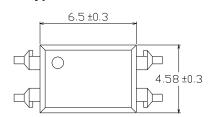
http://www.everlight.com April, 21 2010

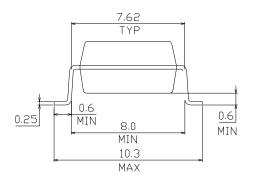
Release Date:2010-05-29 16:39:31.0

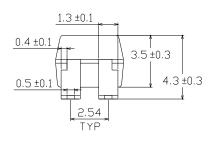


## **EL817 Series**

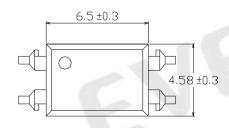
### **Option S Type**

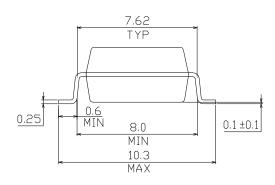


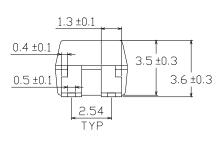




### **Option S1 Type**







8

Everlight Electronics Co., Ltd. Document No: DPC-0000046

Revision: 10

LifecyclePhase:正式發行

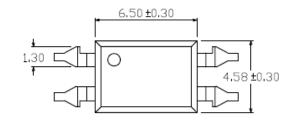
Rev.10

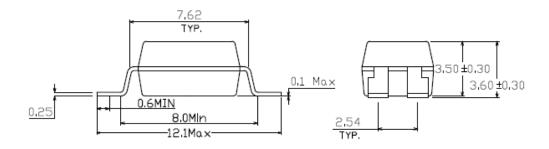
http://www.everlight.com April, 21 2010 Release Date:2010-05-29 16:39:31.0



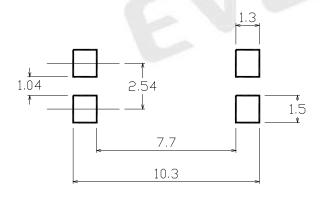
**EL817 Series** 

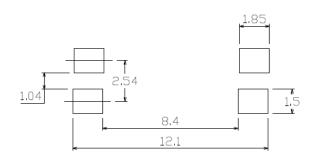
### **Option S2 Type**





## Recommended pad layout for surface mount leadform For S and S1 option For S2 option





Everlight Electronics Co., Ltd. Document No: DPC-0000046

Rev.10

9

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

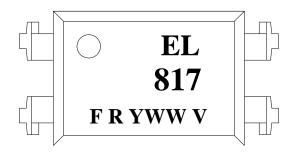
**Expired Period: Forever** 

: 10



## **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 Electronics Co., Ltd. Document No: DPC-0000046

Rev.10

10

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

**Expired Period: Forever** 

: 10

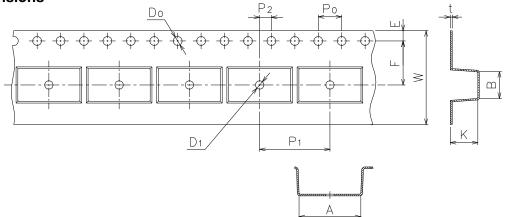


## **EL817 Series**

### **Tape & Reel Packing Specifications**

# **Option TA Option TB** Direction of feed from reel Direction of feed from reel

### **Tape dimensions**



Dimension No.	Α	В	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.	Ро	P1	P2	t	w	к
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/	4.55±0.1

11

Everlight Electronics Co., Ltd. Document No: DPC-0000046

Rev.10

http://www.everlight.com April, 21 2010

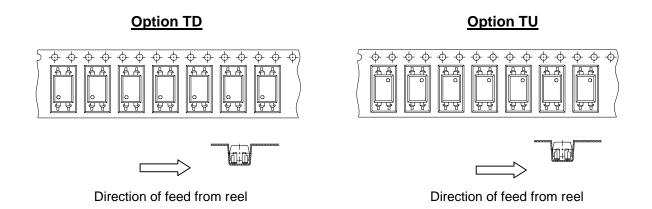
Release Date:2010-05-29 16:39:31.0

**Expired Period: Forever** 

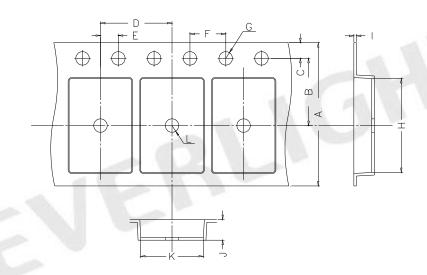
: 10



## **EL817 Series**



### **Tape dimensions**



Dimension No.	Α	В	С	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	Н	I	J	К	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

12

Everlight Electronics Co., Ltd. Document No: DPC-0000046

00046 Rev.10

http://www.everlight.com April, 21 2010

Release Date:2010-05-29 16:39:31.0

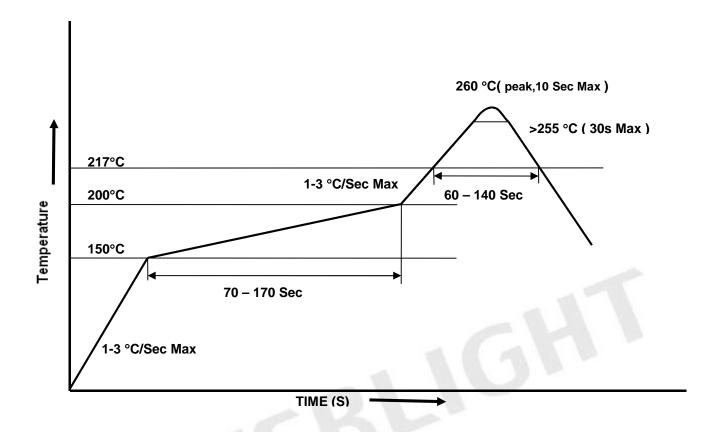
**Expired Period: Forever** 

: 10



## **EL817 Series**

### **Solder Reflow Temperature Profile**



Everlight Electronics Co., Ltd. Document No: DPC-0000046

Revision : 10

LifecyclePhase:正式發行

Rev.10

13

http://www.everlight.com April, 21 2010 Release Date:2010-05-29 16:39:31.0



**EL817 Series** 

#### **DISCLAIMER**

- 1. The specifications in this datasheet may be changed without notice. EVERLIGHT reserves the authority on material change for above specification.
- 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 Electronics Co., Ltd.
Document No : DPC-0000046

Revision: 10

LifecyclePhase:正式發行

April, 21 2010 Release Date:2010-05-29 16:39:31.0

14

Rev.10