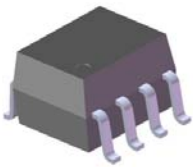


8 PIN SOP PHOTOTRANSISTOR PHOTOCOUPLER

EL20X Series

EL21X Series

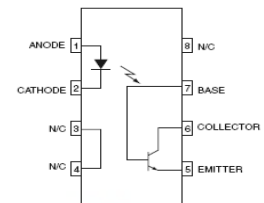


Features:

- Halogens free.(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)
- Current transfer ratios offered in narrow ranges

EL205: 40-80%	EL211: >20%
EL206: 63-125%	EL212: >50%
EL207: 100-200%	EL213: >100%
EL208: 160-320%	
- High isolation voltage between input and output (Viso = 3750 Vrms)
- Operating temperature range of -55 to +110°C
- High BVceo of 80V
- Standard SO-8 footprint package
- Compliance with EU REACH
- Pb free and RoHS compliant
- UL and cUL approved(No. E214129)
- VDE approval (pending)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved

Schematic



Pin Configuration

1. Anode
2. Cathode
3. No Connection
4. No Connection
5. Emitter
6. Collector
7. Base
8. No Connection

Description

The EL20X and EL21X series contain an infrared emitting diode optically coupled to a phototransistor detector. The devices are packaged in an 8-pin small outline package which conforms to the standard SO-8 footprint.

Applications

- Feedback Control Circuits
- Interfacing and coupling systems of different potentials and impedances
- General Purpose Switching Circuits
- Monitor and Detection Circuits

Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I _F	60	mA
	Peak forward current (t = 10μs)	I _{FM}	1	A
	Reverse voltage	V _R	6	V
	Power dissipation No derating needed	P _D	90	mW
Output	Collector power dissipation No derating needed	P _C	150	mW
	Collector-Emitter voltage	V _{CEO}	80	V
	Collector-Base voltage	V _{CBO}	80	V
	Emitter-Collector voltage	V _{ECO}	7	V
	Total Power Dissipation	P _{TOT}	240	mW
	Isolation Voltage*1	V _{ISO}	3750	V rms
	Operating Temperature	T _{OPR}	-55 to 110	°C
	Storage Temperature	T _{STG}	-55 to 125	°C
	Soldering Temperature*2	T _{SOL}	260	°C

Notes:

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2, 3 & 4 are shorted together, and pins 5, 6, 7 & 8 are shorted together.

*2 For 10 seconds

Electro-Optical Characteristics (Ta=25°C) unless specified otherwise)

Input

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage	V_F	-	1.3	1.5	V	$I_F = 10\text{mA}$
Reverse current	I_R	-	0.1	100	μA	$V_R = 6\text{V}$
Input capacitance	C_{in}	-	13	-	pF	$V = 0, f = 1\text{MHz}$

Output

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Collector-Emitter dark current	I_{CEO}	-	5.0	50	nA	$V_{CE} = 10\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	BV_{CEO}	80	-	-	V	$I_C = 0.1\text{mA}$
Emitter-Collector breakdown voltage	BV_{ECO}	7	-	-	V	$I_E = 0.1\text{mA}$
Collector-Emitter capacitance	C_{CE}	-	8	-	pF	$V_{CE} = 0\text{V}, f = 1\text{MHz}$

Transfer Characteristics

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Current Transfer Ratio	EL205	40	-	80	%	$I_F = 10\text{mA}, V_{CE} = 5\text{V}$
	EL206	63	-	125		
	EL207	100	-	200		
	EL208	160	-	320		
	EL211	20	-	-		
	EL212	50	-	-		
	EL213	100	-	-		
Current Transfer Ratio	EL205	13	25	-	%	$I_F = 1\text{mA}, V_{CE} = 5\text{V}$
	EL206	22	40	-		
	EL207	34	60	-		
	EL208	56	95	-		
	EL215	20	50	-		
	EL216	50	80	-		
	EL217	100	130	-		

* Typical values at $T_a = 25^\circ\text{C}$

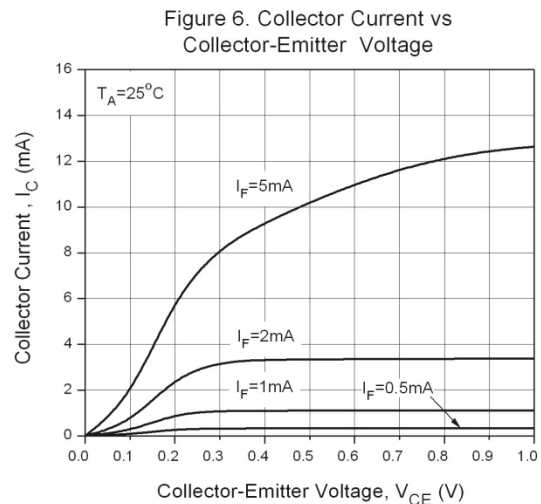
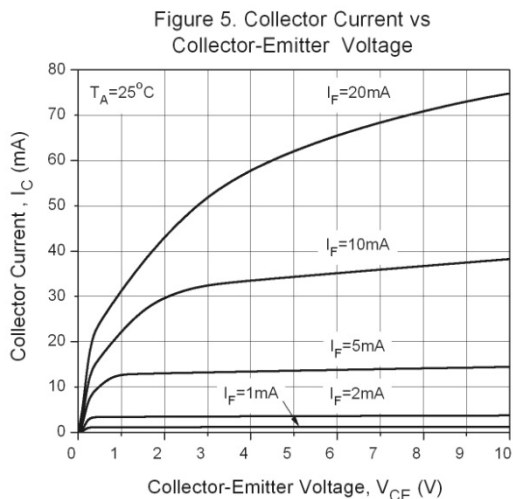
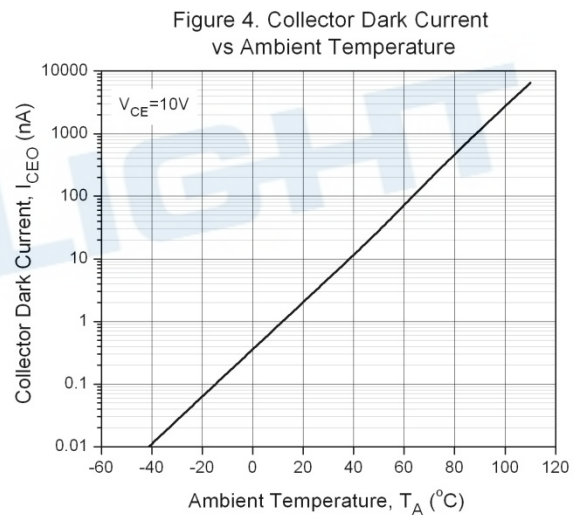
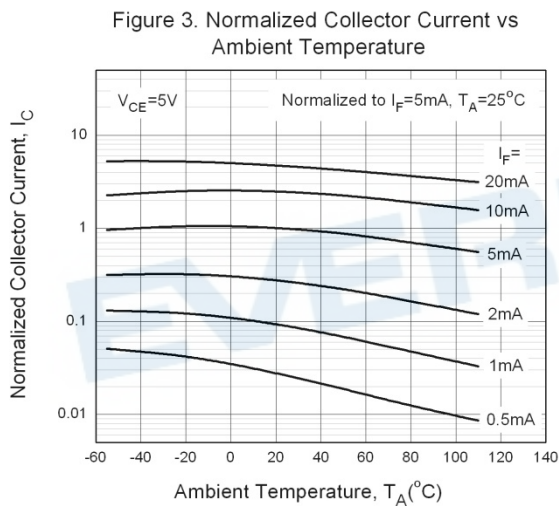
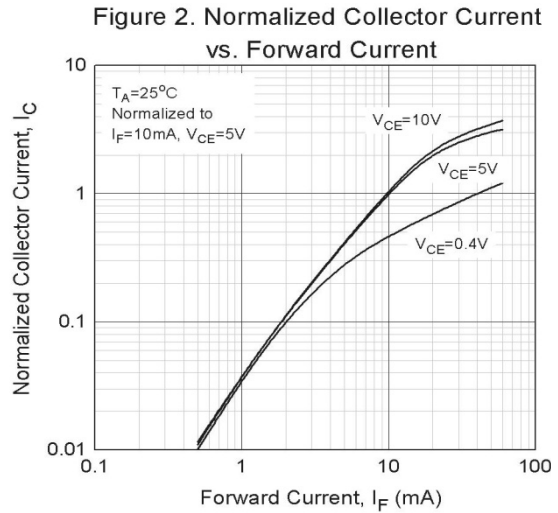
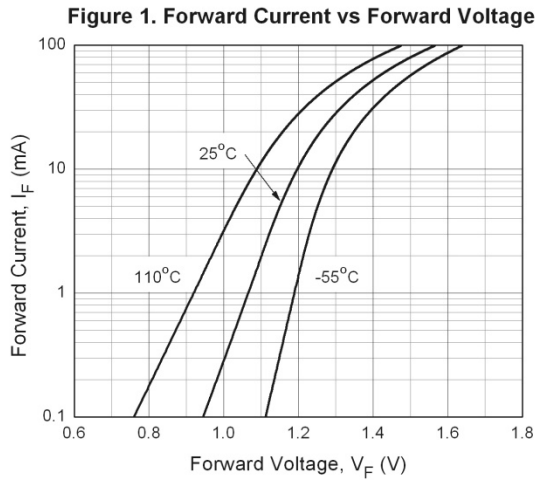
Transfer Characteristics

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_F = 10mA, I_C = 2mA$
Isolation resistance	R_{IO}	-	10^{11}	-	Ω	$V_{IO} = 500Vdc$
Input-output capacitance	C_{IO}	-	0.5	-	pF	$V_{IO} = 0, f = 1MHz$
Turn-on time	T_{on}	-	3.0	-	μs	$V_{CC} = 10V,$ $I_C = 2mA, R_L = 100\Omega$
Turn-off time	T_{off}	-	3.0	-		
Rise time	T_r	-	1.6	-		
Fall time	T_f	-	2.2	-		

* Typical values at $T_a = 25^\circ C$

EVERLIGHT

Typical Electro-Optical Characteristics Curves



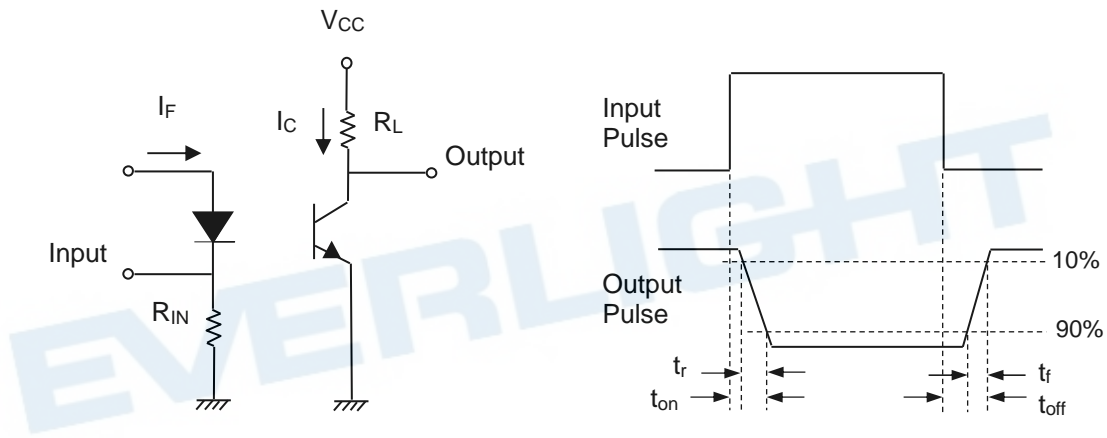
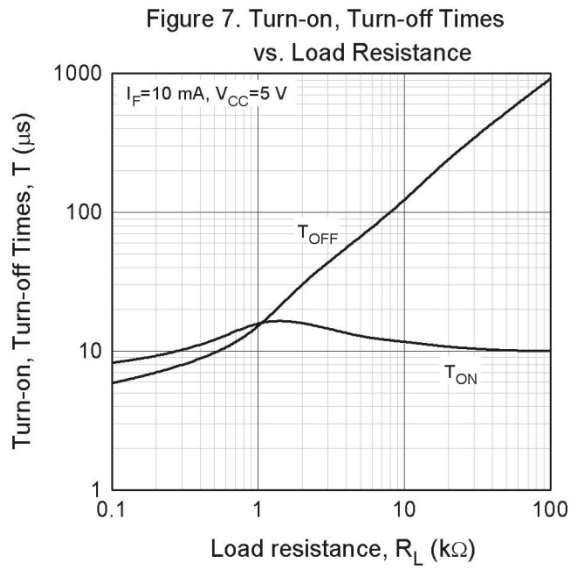


Figure 8. Switching Time Test Circuit & Waveforms

Order Information

Part Number

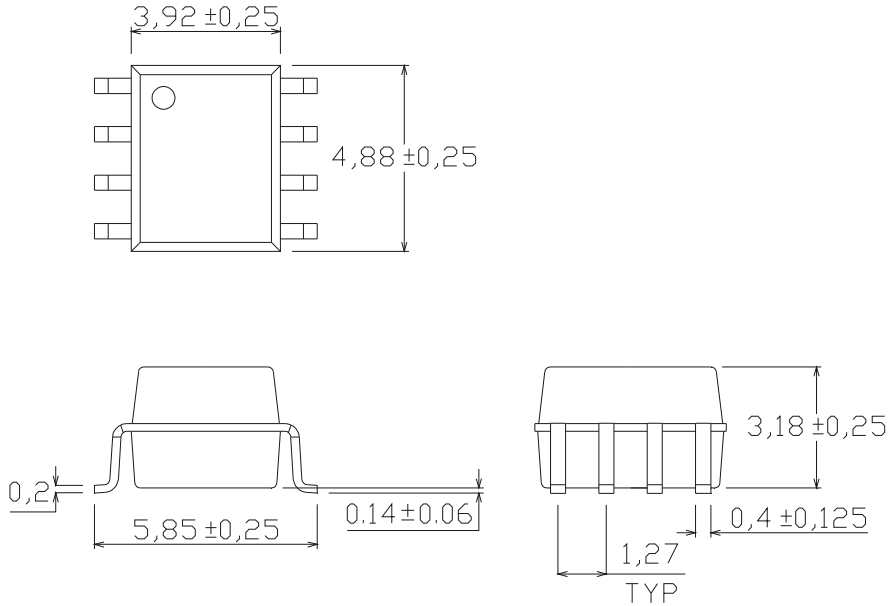
EL2XX(Y)-V

Note

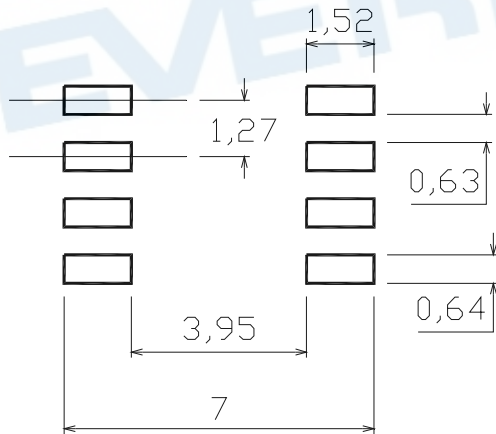
- XX = Part no. (05, 06, 07, 08, 11, 12, 13, 15, 16 or 17)
- Y = Tape and reel option (TA, TB or none).
- V = VDE safety (Optional)

Option	Description	Packing quantity
None	Standard	100 units per tube
-V	Standard + VDE	100 units per tube
(TA)	TA tape & reel option	2000 units per reel
(TB)	TB tape & reel option	2000 units per reel
(TA)-V	TA tape & reel option + VDE	2000 units per reel
(TB)-V	TB tape & reel option + VDE	2000 units per reel

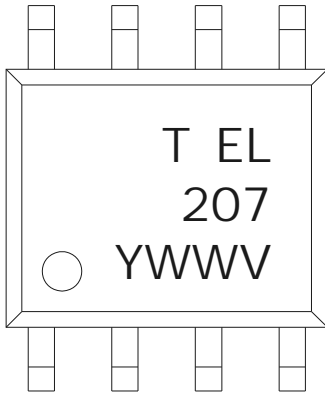
Package Dimension (Dimensions in mm)



Recommended pad layout for surface mount leadform



Device Marking



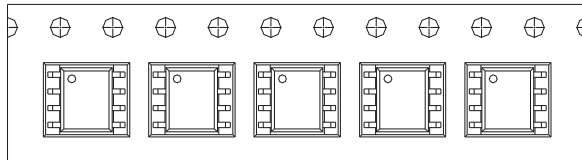
Notes

T	denotes Factory No code made in Chian T:made in Taiwan
EL	denotes Everlight
207	denotes Part Number
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

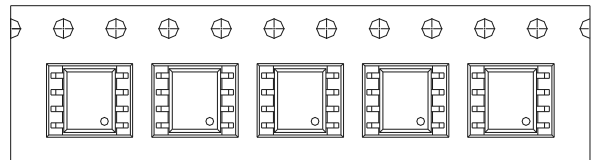
EVERLIGHT

Tape & Reel Packing Specifications

Option TA



Option TB

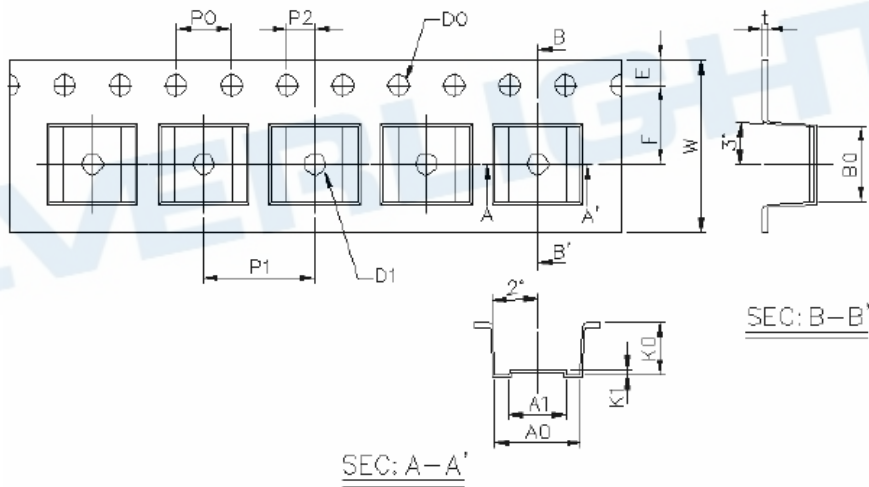


Direction of feed from reel



Direction of feed from reel

Tape dimensions

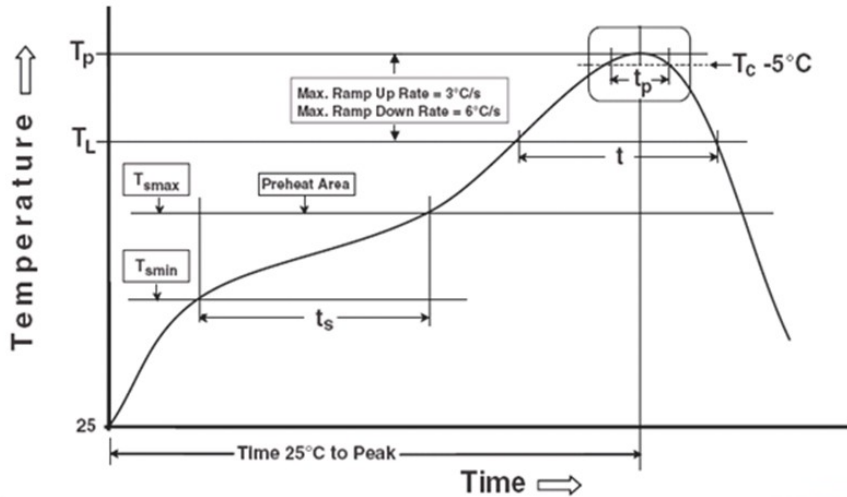


Dimension No.	A0	A1	B0	D0	D1	E	F
Dimension (mm)	6.2±0.1	4.1±0.1	5.28±0.1	1.5±0.1	1.5±0.3	1.75±0.1	5.5±0.1
Dimension No.	Po	P1	P2	t	W	K0	K1
Dimension (mm)	4.0±0.1	8.0±0.1	2.0±0.1	0.4±0.1	12.0+0.3/ -0.1	3.7±0.1	0.3±0.1

Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

Reference: IPC/JEDEC J-STD-020D

Preheat

Temperature min (T_{smin})	150 °C
Temperature max (T_{smax})	200°C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max

Other

Liquidus Temperature (T_L)	217 °C
Time above Liquidus Temperature (t_L)	60-100 sec
Peak Temperature (T_p)	260°C
Time within 5 °C of Actual Peak Temperature: $T_p - 5^\circ\text{C}$	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	3 times

DISCLAIMER

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. 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 these specification sheets.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
4. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without the specific consent of EVERLIGHT.
5. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized Everlight sales agent for special application request.
6. Statements regarding the suitability of products for certain types of applications are based on Everlight's knowledge of typical requirements that are often placed on Everlight products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Everlight's terms and conditions of purchase, including but not limited to the warranty expressed therein.