



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

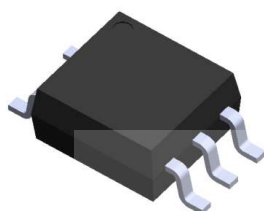
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

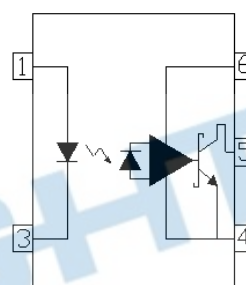
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



5 PIN SOP HIGH SPEED 10MBit/s LOGIC GATE PHOTOCOUPLER ELM6XX series



Schematic



Pin Configuration

- 1, Anode
- 3, Cathode
- 4, Gnd
- 5, Vout
- 6, VCC

Features

- Compliance Halogen Free .
(Br <900 ppm , Cl <900 ppm , Br+Cl < 1500 ppm)
- High speed 10Mbit/s
- Guaranteed performance from -40 to 85°C
- Logic gate output
- High isolation voltage between input and output (Viso=3750 V rms)
- Compliance with EU REACH
- Pb free and RoHS compliant.
- UL and cUL approved(No. E214129)
- VDE approved (No. 40028116)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved

Description

The ELM600, ELM601 and ELM611 are consists of an infrared emitting diode optically coupled to a high speed integrated photo detector logic gate with a strobable output.

The devices are packaged in a 5-pin small outline package which conforms to the standard footprint.

Applications

- Ground loop elimination
- LSTTL to TTL, LSTTL or 5 volt CMOS
- Line receiver, data transmission
- Data multiplexing
- Switching power supplies
- Pulse transformer replacement
- Computer peripheral interface

Truth Table

Input	Output
H	L
L	H

Absolute Maximum Ratings (T_A=25 °C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	Reverse voltage	V _R	5	V
	Power dissipation	P _D	100	mW
Output	Power dissipation	P _C	85	mW
	Output current	I _O	50	mA
	Output voltage	V _O	7.0	V
	Supply voltage	V _{CC}	7.0	V
	Output Power Dissipation	P _O	85	mW
	Isolation Voltage* ¹	V _{ISO}	3750	V rms
	Operating Temperature	T _{OPR}	-40 ~ +85	°C
	Storage Temperature	T _{STG}	-55 ~ +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 & 3 are shorted together, and pins 4, 5 & 6 are shorted together.

*2 For 10 seconds

Electrical Characteristics (T_A=-40 to 85°C unless specified otherwise)

Input

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage	V _F	-	1.45	1.8	V	I _F = 10mA
Reverse voltage	V _R	5.0	-	-	V	I _R = 10μA, T _A =25°C
Temperature coefficient of forward voltage	V _F /T _A	-	-1.9	-	mV/°C	I _F =10mA
Input capacitance	C _{IN}	-	70	-	pF	V _F =0, f=1MHz

Output

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
High level supply current	I _{CCH}	-	6.0	9	mA	I _F =0mA, V _{CC} =5.5V
Low level supply current	I _{CCL}	-	7.5	10	mA	I _F =10mA, V _{CC} =5.5V

Transfer Characteristics

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
High Level Output Current	I _{OH}	-	2.1	30	uA	V _{CC} =5.5V, V _O =5.5V, I _F =250uA
Low Level Output Current	V _{OL}	-	0.4	0.6	V	V _{CC} = 5.5V, I _F =5mA, I _{OL} (Sinking)=13mA
Input Threshold Current	I _{FT}	-	2.4	5	mA	V _{CC} = 5.5V, V _O =0.6V, I _{OL} (Sinking)=13mA

Switching Characteristics ($T_A=-40$ to 85°C , $V_{CC}=5\text{V}$, $I_F=7.5\text{mA}$ unless specified otherwise)

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Propagation delay time to output High level* ³ (Fig.10)	T_{PHL}	-	41	100	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$
Propagation delay time to output Low level* ³ (Fig.10)	T_{PLH}	-	50	100	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$
Pulse width distortion	$ T_{PHL} - T_{PLH} $	-	9	35	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$
Propagation Delay Skew* ⁴	t_{PSK}	-	-	40	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$
Output rise time (Fig.10)	t_r	-	40	-	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$
Output fall time (Fig.10)	t_f	-	10	-	ns	$C_L = 15\text{pF}$, $R_L=350\Omega$
Common Mode Transient Immunity at Logic High* ⁶ (Fig.11)	M600	-	-	-	V/ μS	$I_F = 7.5\text{mA}$, $V_{OH}=2.0\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=10\text{Vp-p}$
	M601	5,000				$I_F = 7.5\text{mA}$, $V_{OH}=2.0\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=50\text{Vp-p}$
	M611	20,000				$I_F = 7.5\text{mA}$, $V_{OH}=2.0\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=1000\text{Vp-p}$
Common Mode Transient Immunity at Logic Low* ⁷ (Fig.11)	M600	-	-	-	V/ μS	$I_F = 0\text{mA}$, $V_{OL}=0.8\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=10\text{Vp-p}$
	M601	5,000				$I_F = 0\text{mA}$, $V_{OL}=0.8\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=50\text{Vp-p}$
	M611	20,000				$I_F = 0\text{mA}$, $V_{OL}=0.8\text{V}$, $R_L=350\Omega$, $T_A=25^{\circ}\text{C}$ $V_{CM}=1000\text{Vp-p}$

*All typicals at $T_A = 25^{\circ}\text{C}$, $V_{CC} = 5\text{V}$

Typical Electro-Optical Characteristics Curves

Figure 1. Forward Current vs Forward Voltage

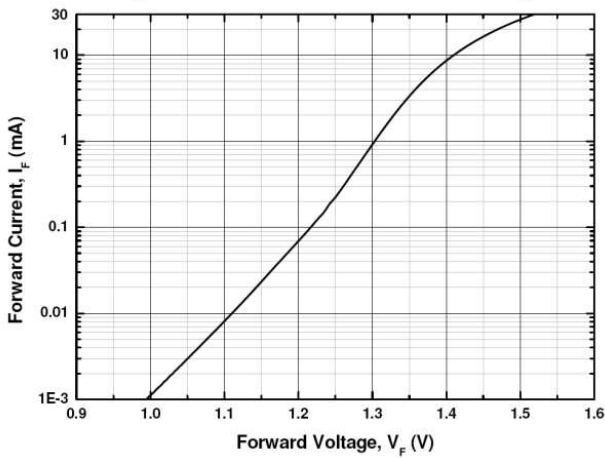


Figure 2. Low Level Output Voltage vs Ambient Temperature

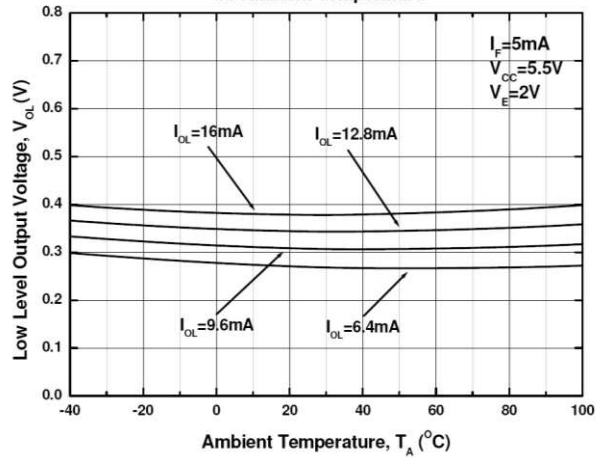


Figure 3. Low Level Output Current vs Ambient Temperature

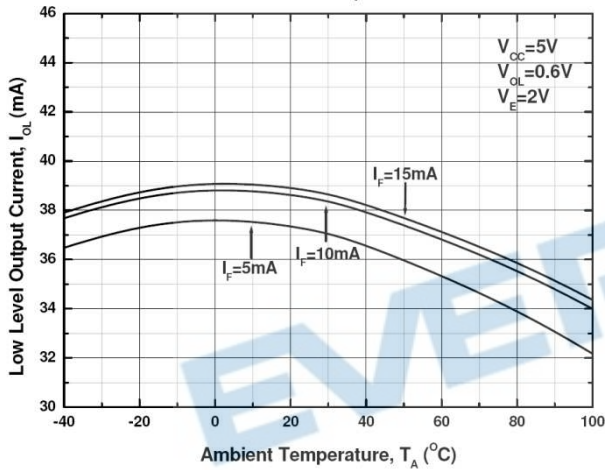


Figure 4. Input Threshold Current vs Ambient Temperature

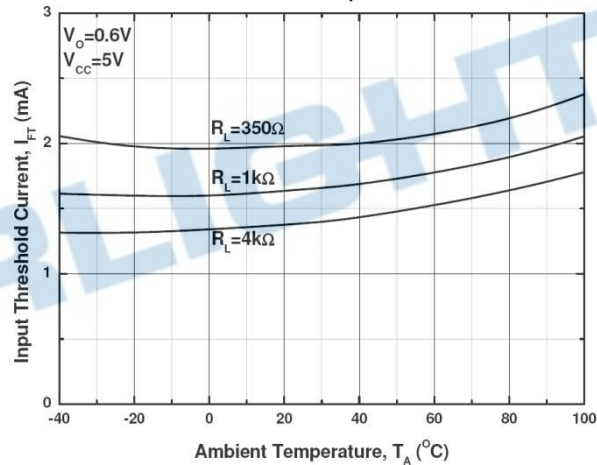


Figure 5. Input Current vs Output Voltage

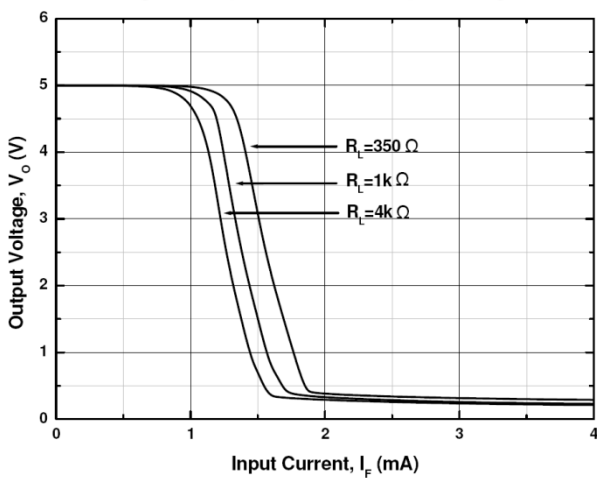


Figure 6. High Level Output Current vs Ambient Temperature

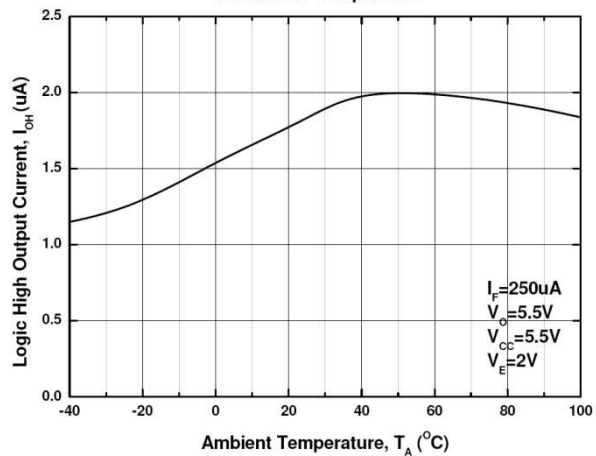


Figure 7. Propagation Delay vs. Temperature

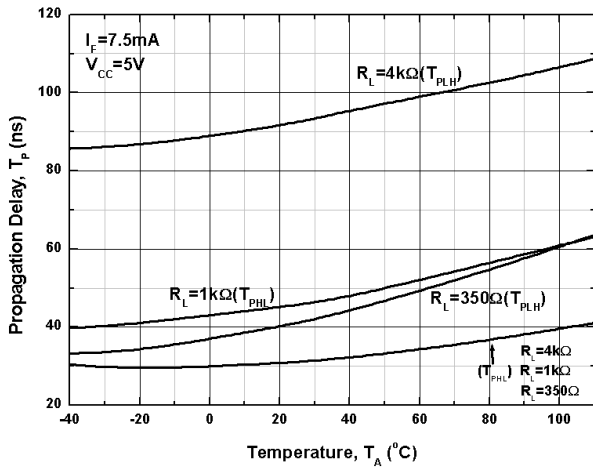


Figure 8. Pulse Width Distortion vs. Temperature

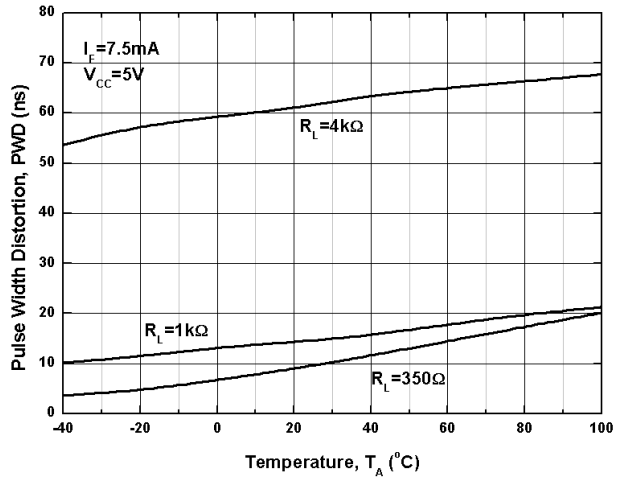


Figure 9. Rise and Fall Time vs. Temperature

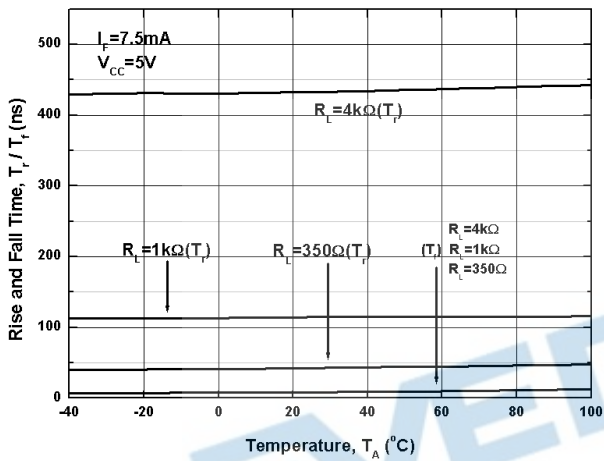


Fig. 10 Test circuit and waveforms for t_{PHL} , t_{PLH} , t_r , and t_f

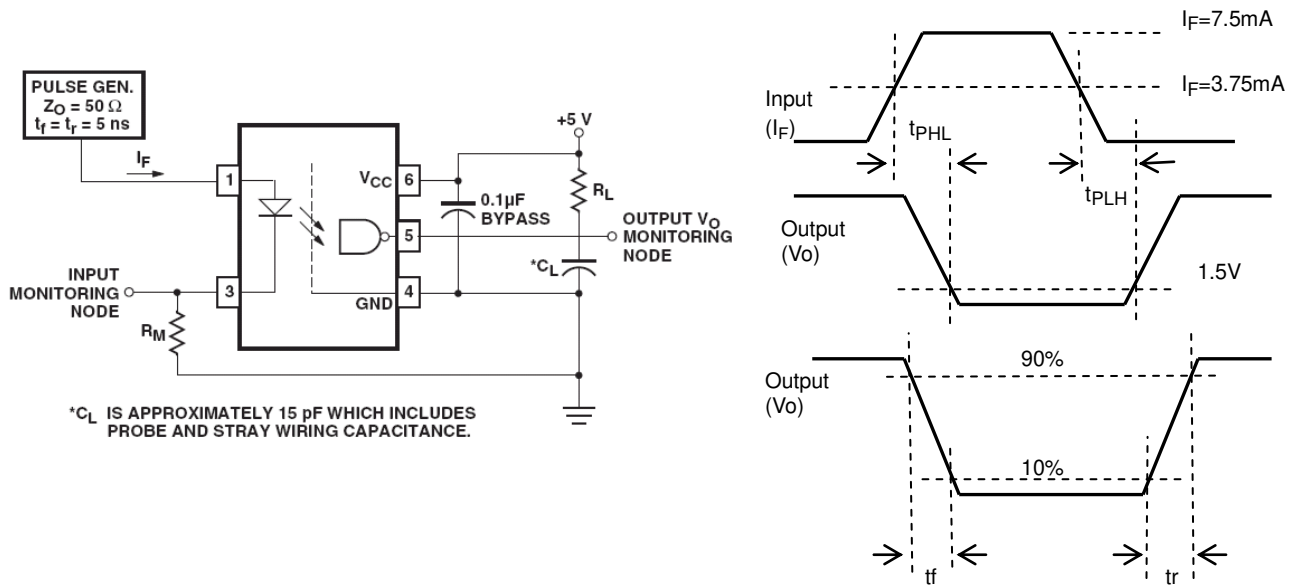
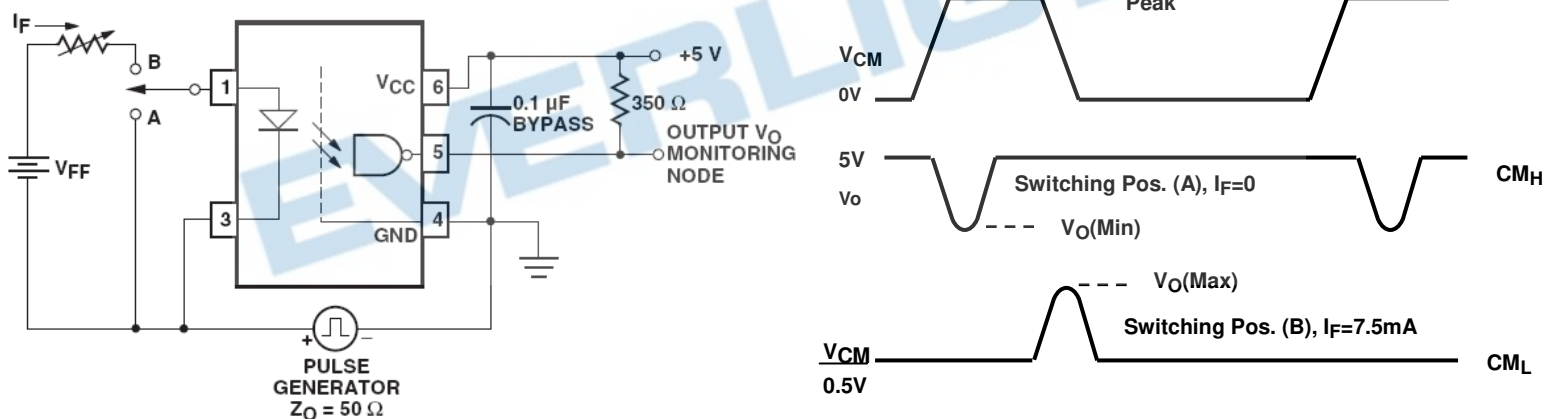


Fig. 11 Test circuit Common mode Transient Immunity



Notes:

- *3 The t_{PLH} propagation delay is measured from 3.75 mA point on the falling edge of the input pulse to the 1.5V point on the rising edge of the output pulse.
- *4 The t_{PHL} propagation delay is measured from 3.75 mA point on the rising edge of the input pulse to the 1.5 V point on the falling edge of the output pulse
- *5 t_{PSK} is equal to the magnitude of the worst case difference in t_{PHL} and/or t_{PLH} that will be seen between units at any given temperature within the worst case operating condition range.
- *6 CM_H – The maximum tolerable rate of rise of the common mode voltage to ensure the output will remain in the HIGH state (i.e., $V_{OUT} > 2.0\text{V}$).
- *7 CM_L – The maximum tolerable rate of fall of the common mode voltage to ensure the output will remain in the LOW output state (i.e., $V_{OUT} < 0.8\text{V}$).

Order Information

Part Number

ELM6XX(Z)-V

Note

XX = Part no.(00, 01 or 11)

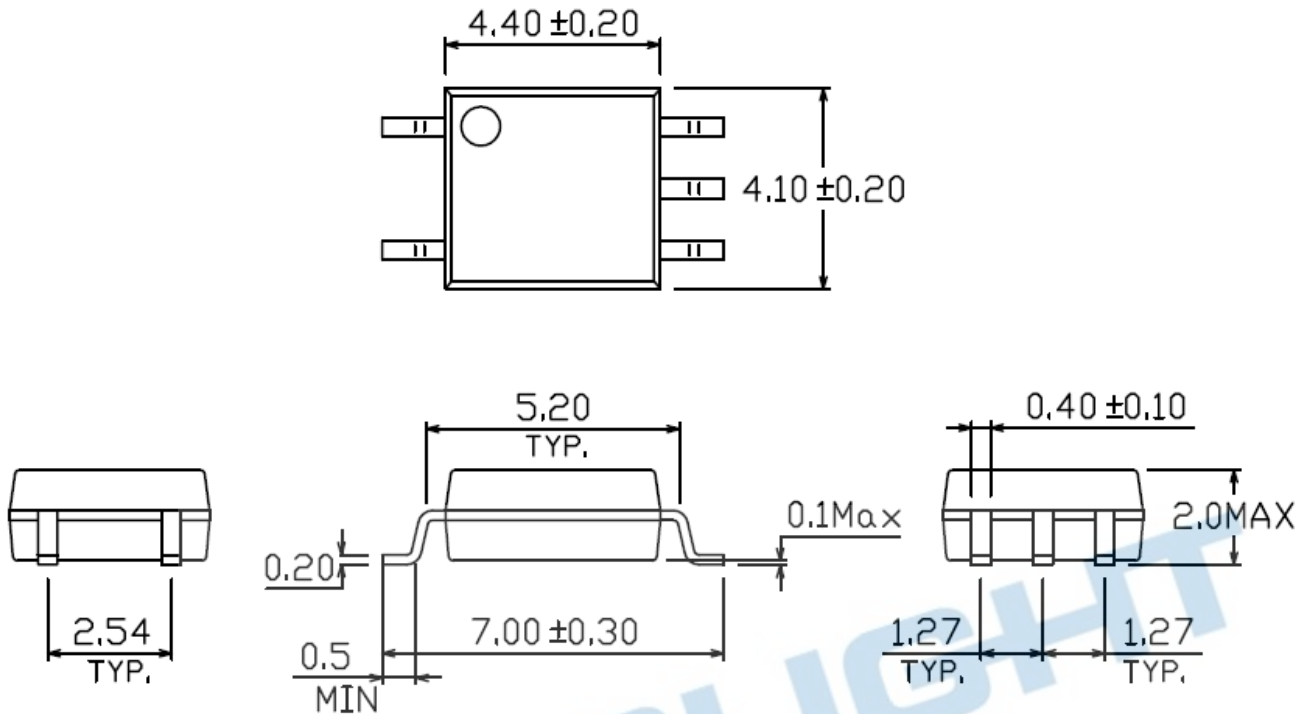
Z = Tape and reel option (TA, TB or none).

V = VDE (optional)

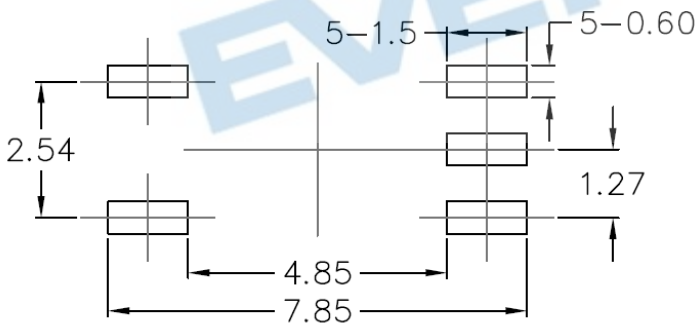
Option	Description	Packing quantity
None	Standard SMD option	100 units per tube
(TA)	Surface mount lead form + TA tape & reel option	3000 units per reel
(TB)	Surface mount lead form + TB tape & reel option	3000 units per reel

EVERLIGHT

Package Dimension
(Dimensions in mm)



Recommended pad layout for surface mount leadform



Device Marking

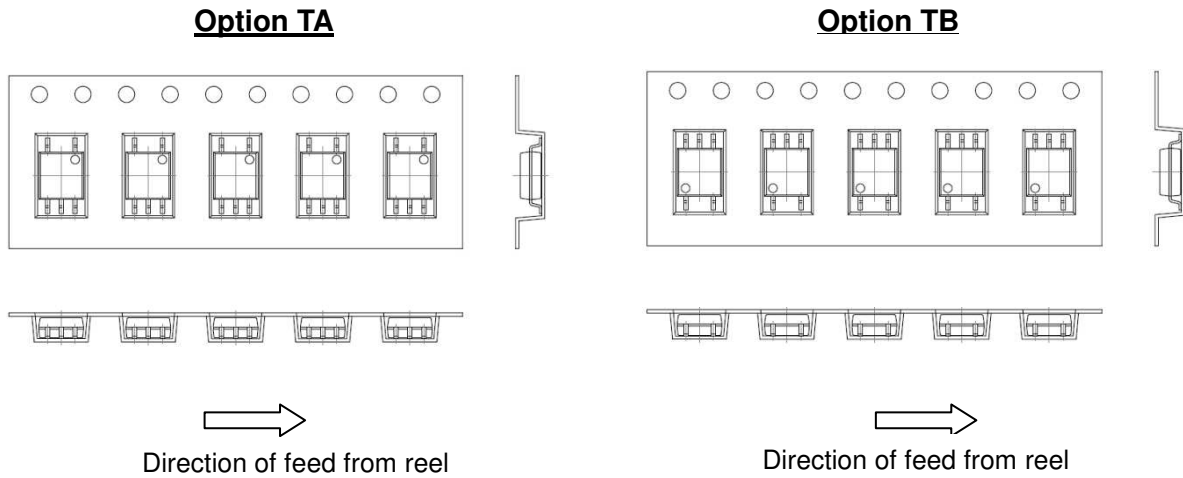


Notes

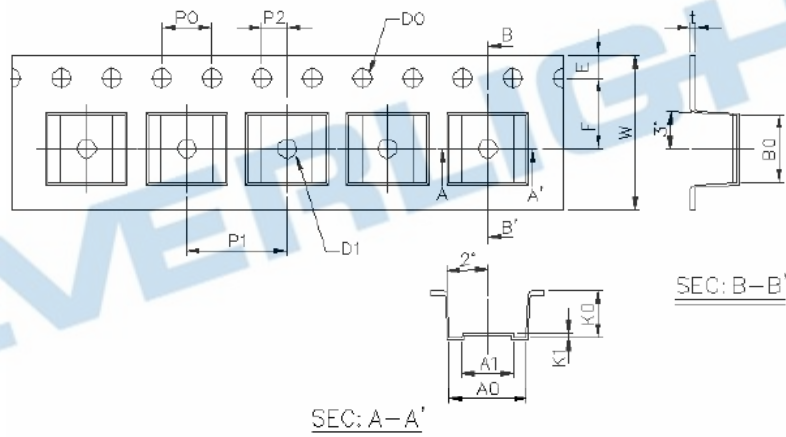
EL	denotes EVERLIGHT
M611	denotes Device Number
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE (optional)

EVERLIGHT

Tape & Reel Packing Specifications



Tape dimensions

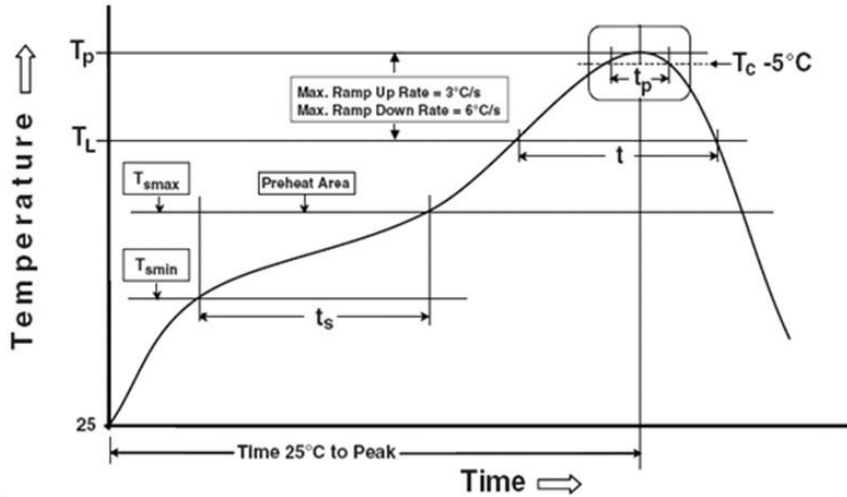


Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	10.4±0.1	10.0±0.1	1.5±0.1	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.4±0.1	16.0+0.3/ -0.1	4.5±0.1

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.

EVERLIGHT