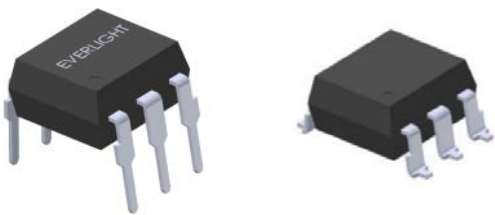
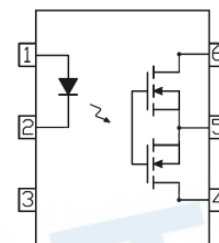


6PIN DIP TYPE FORM A SSR EL6XXA-G Series Datasheet



Schematic



Pin Configuration

- 1, LED Anode
- 2, LED Cathode
- 4, 6 MOSFET Drain
- 5, MOSFET Source

Features

- Normally open signal pole signal throw relay
- Low operating current
- 60 to 600V output withstand voltage
- Low on resistance
- Wide operating temperature range of -40°C to 85°C
- High isolation voltage between input and output (Viso=5000 Vrms)
- UL and cUL approved
- VDE approved
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved

Description

The EL606A, EL625A, EL640A and EL660A are solid state relays containing an infrared LEDs on the light emitting side (input side) optically coupled to a high voltage output detector circuit. The detector consists of a photovoltaic diode array and MOSFETs on the output side. They can enable AC/DC and DC only output connections. The single channel configuration is equivalent to 1 form A EMR. They are packaged in 6 pin DIP and available in surface mount SMD option.

Applications

- Exchange equipment
- Measurement equipment
- FA/OA equipment
- Industrial controls
- Security

Absolute Maximum Ratings (T_A=25°C, unless otherwise specified)

Parameter	Symbol	Type of connection	Rating				Unit	
			EL606A	EL625A	EL640A	EL660A		
Input	Forward Current	I _F			50		mA	
	Reverse Voltage	V _R			5		V	
	Peak Forward Current*1	I _{FP}			1		A	
	Power Dissipation	P _{in}			75		mW	
Output	Break Down Voltage	V _L	60	250	400	600	V	
	Continuous Load Current	I _L	A	550	150	120	50	mA
			B	650	220	130	60	mA
			C	800	300	150	80	mA
	Pulse Load Current*2	I _{LPeak}	1.2	0.5	0.3	0.15	A	
	Power Dissipation	P _{out}			500		mW	
Total Power Dissipation	P _T			550		mW		
Isolation Voltage*3	V _{iso}			5000		V _{rms}		
Storage Temperature	T _{STG}			-40 to 125		°C		
Operating Temperature	T _{OPR}			-40 to 85		°C		
Soldering Temperature*4	T _{SOL}			260		°C		

Notes:

*1. f =100Hz, Duty Cycle = 0.1%

*2. A connection: 100ms (1 shot), V_L = DC

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

*4. For 10 seconds

Recommended Operating Conditions (T_A=25°C)

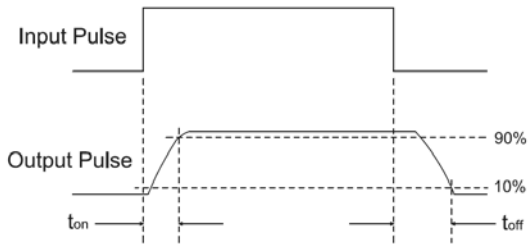
Please use under recommended operating conditions to obtain expected characteristics

Parameter	Symbol	Min.	Max.	Unit	
Forward current	I _F	8	20	mA	
Load voltage	V _L	EL606A	-	48	V
		EL625A	-	200	
		EL640A	-	320	
		EL660A	-	480	
Continuous load current	I _L	EL606A	-	440	mA
		EL625A	-	120	
		EL640A	-	96	
		EL660A	-	40	

Electro-Optical Characteristics (T_A=25°C)

	Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit		
Input	Forward Voltage	V _F	I _F = 10mA	-	1.18	1.5	V		
	Reverse Current	I _R	V _R = 5V	-	-	10	μA		
Output	Off State leakage Current	I _{leak}	I _F = 0mA, V _L = Max.	-	-	1	μA		
	On Resistance*	EL606A	R _{d(ON) A}	I _F = 5mA I _L = Max. t = 1s	-	0.75	2.5	Ω	
		EL625A			-	6.5	30		
		EL640A			-	20	30		
		EL660A			-	42	70		
	On Resistance*	EL606A	R _{d(ON) B}	I _F = 5mA I _L = Max. t = 1s	-	0.4	1	Ω	
		EL625A			-	3.4	20		
		EL640A			-	15.2	20		
		EL660A			-	28	50		
	On Resistance*	EL606A	R _{d(ON) C}	I _F = 5mA I _L = Max. t = 1s	-	0.2	0.5	Ω	
		EL625A			-	1.7	15		
		EL640A			-	7.6	15		
		EL660A			-	14	30		
	Output Capacitance	EL606A	C _{out}	V _L = 0V f = 1MHz	-	85	-	pF	
		EL625A			-	60	-		
		EL640A			-	45	-		
		EL660A			-	30	-		
	Transfer Characteristics	LED turn on Current	EL606A	I _{F(on)}	I _L = Max.	-	3	5	mA
			EL625A			-	3	5	
EL640A			-			3	5		
EL660A			-			3	5		
LED turn off current		EL606A	I _{F(off)}	I _L = 0.01mA	0.4	-	-	mA	
		EL625A			0.4	-	-		
		EL640A			0.4	-	-		
		EL660A			0.4	-	-		
Turn On Time		EL606A	T _{on}	I _F = 10 mA, I _L = Max. R _L = 200Ω	-	1.4	3	ms	
		EL625A			-	1.4	3		
		EL640A			-	1.4	3		
		EL660A			-	1.4	3		
Turn Off Time	EL606A	T _{off}	I _F = 10 mA, I _L = Max. R _L = 200Ω	-	0.1	0.5	ms		
	EL625A			-	0.1	0.5			
	EL640A			-	0.1	0.5			
	EL660A			-	0.1	0.5			
	Isolation Resistance	R _{I-O}	V _{I-O} = 500V DC	5×10 ¹⁰	-	-	Ω		
	Isolation Capacitance	C _{I-O}	V = 0V, f = 1MHz	-	1.5	-	pF		

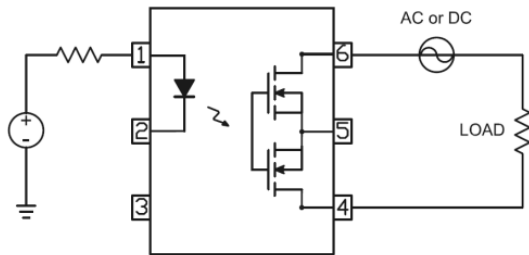
Turn on/Turn off Time



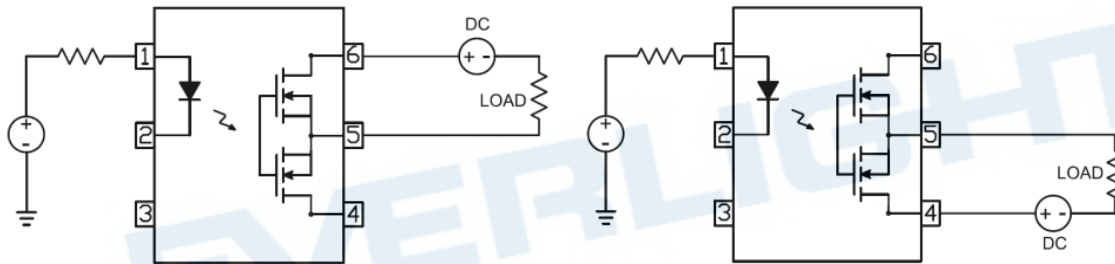
Note:

* On resistance test

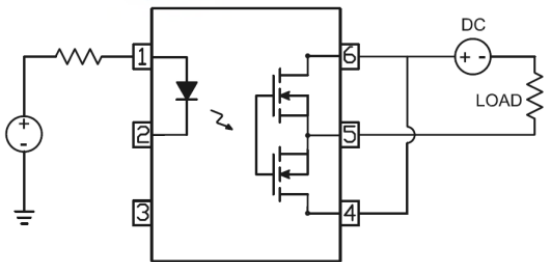
Connection A



Connection B



Connection C



Typical Electro-Optical Characteristics Curves

Figure 1-1. Load current vs Ambient temperature

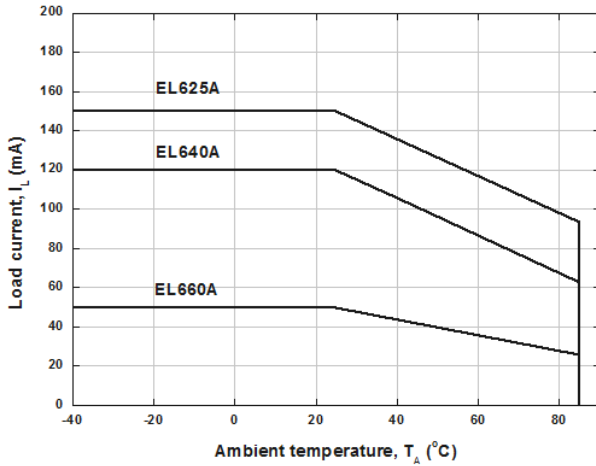


Figure 1-2. Load current vs Ambient temperature

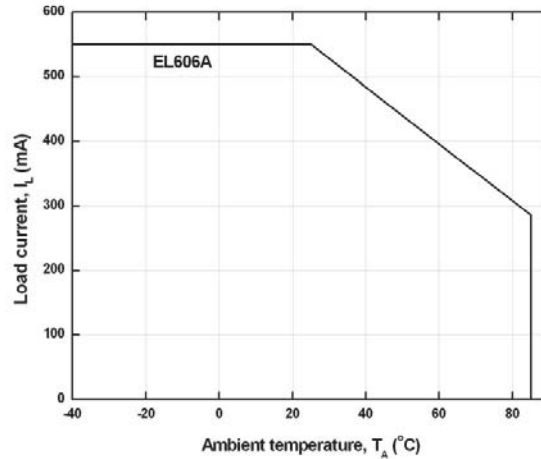


Figure 2-1. On Resistance vs Ambient Temperature

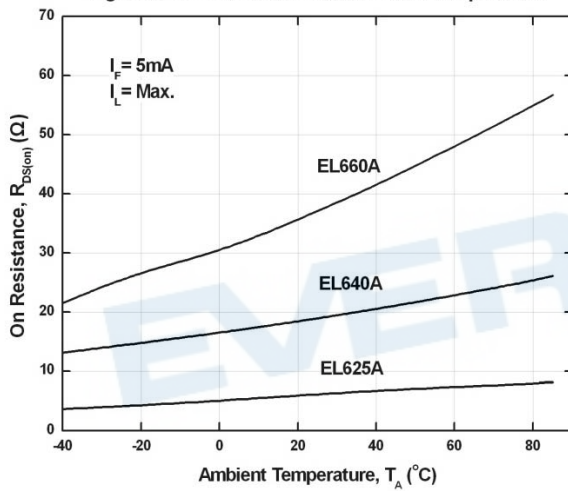


Figure 2-2. On Resistance vs Ambient Temperature

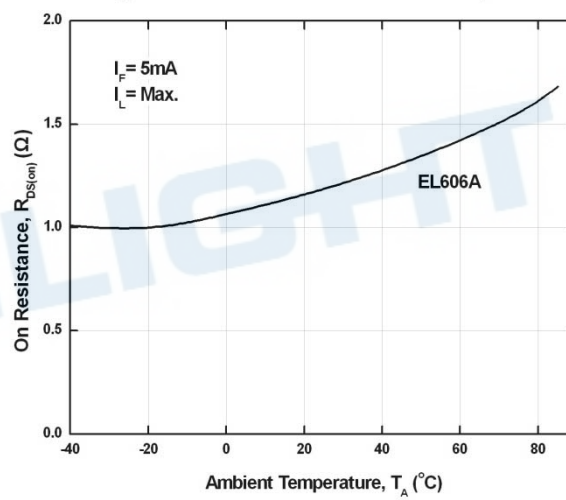


Figure 3. Switching Time vs Ambient Temperature

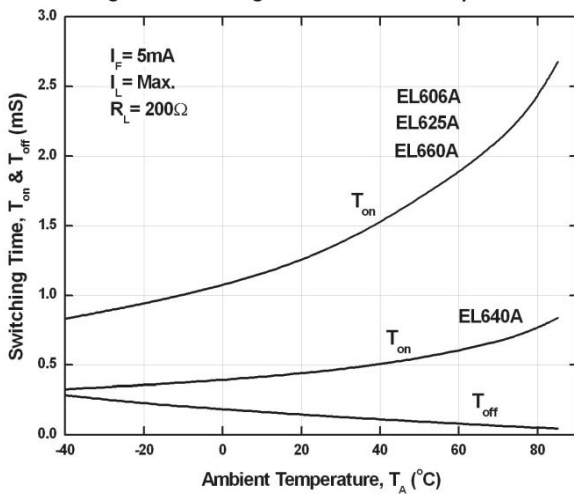


Figure 4. Turn On Time vs LED Forward Current

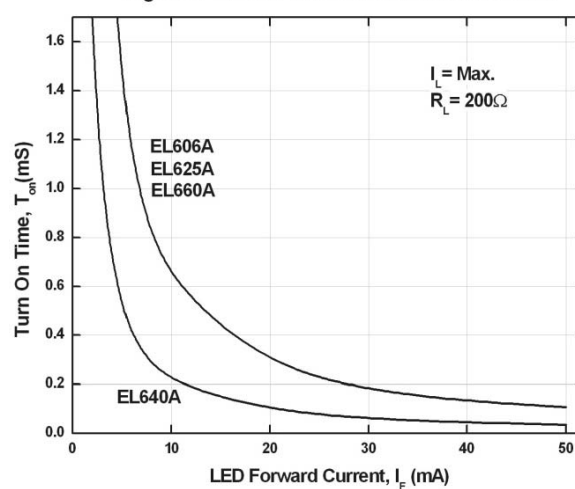


Figure 5. Turn Off Time vs LED Forward Current

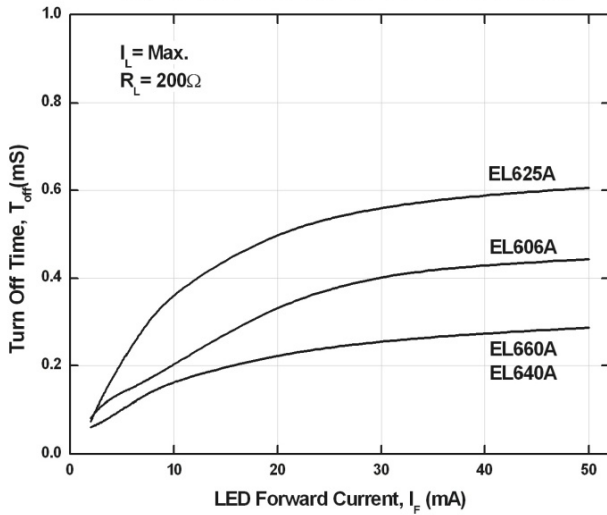


Figure 6. LED Operate on Current vs Ambient Temperature

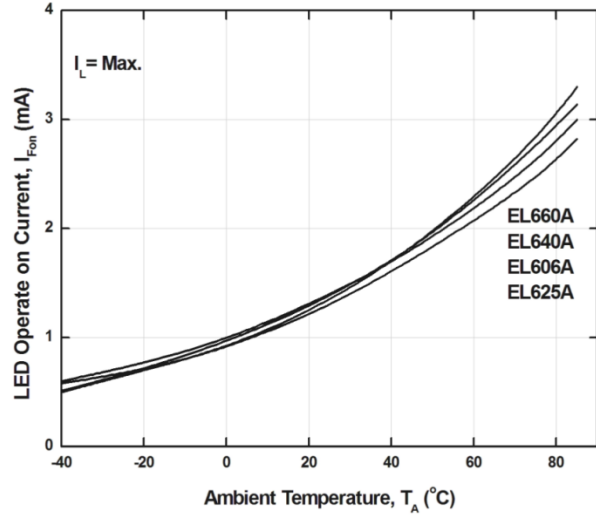


Figure 7. LED Turn off Current vs Ambient Temperature

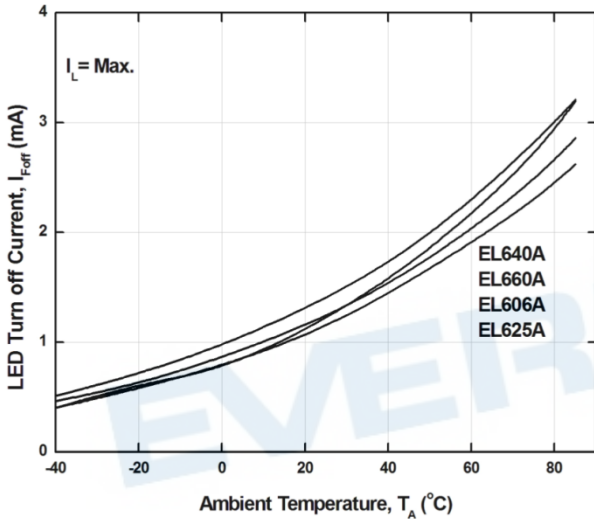


Figure 8. LED Dropout Voltage vs Ambient Temperature

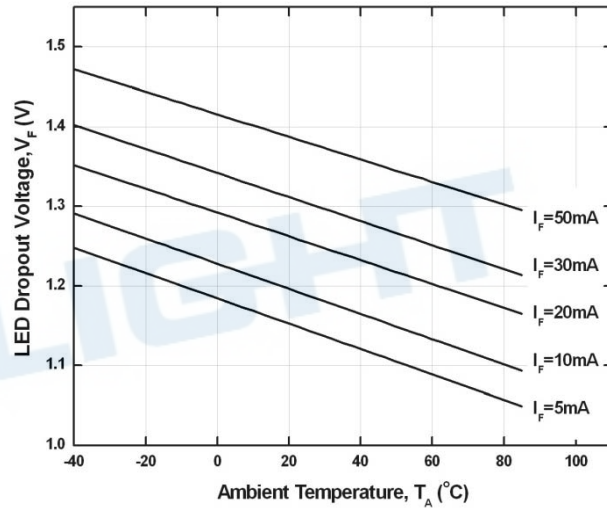


Figure 9-1. Load Voltage vs Load Current

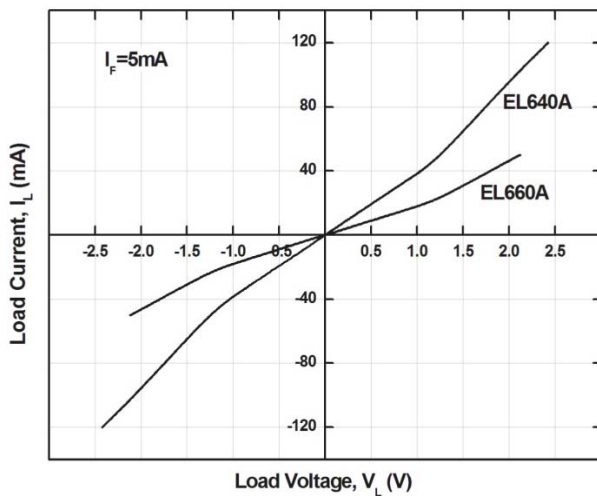


Figure 9-2. Load Voltage vs Load Current

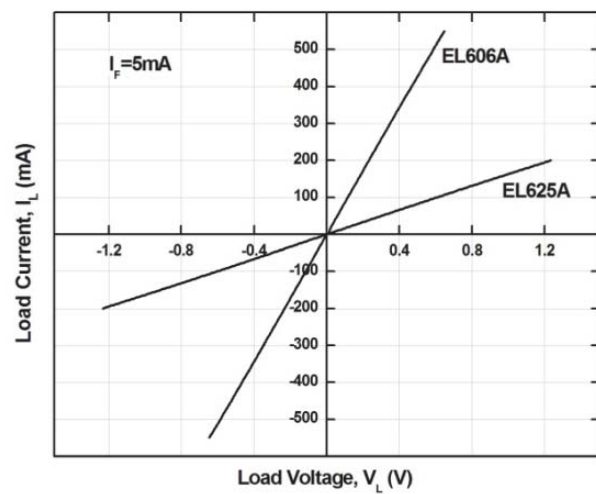


Figure 10. Off State Leakage Current vs Load Voltage

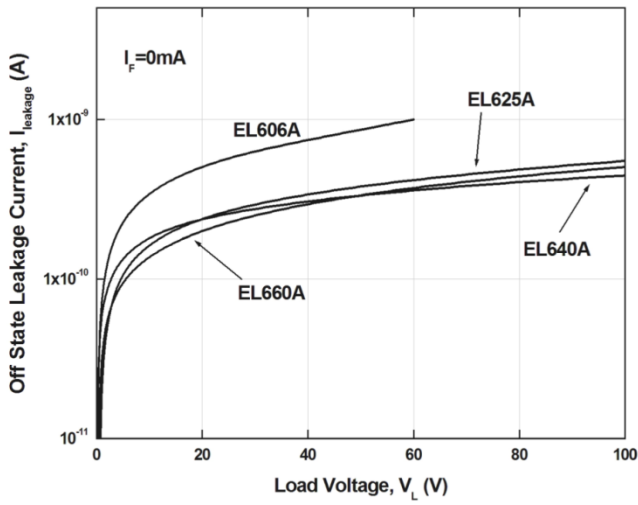
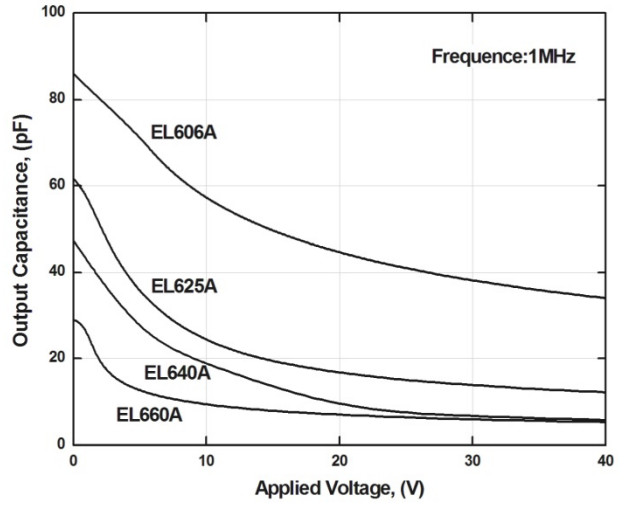


Figure 11. Applied Voltage VS Output Capacitance



Note: The graphs shown in this datasheet are representing typical data only and do not show guaranteed values

EVERLIGHT

Order Information

Part Number

EL6XXAY(Z)-VG

Note:

XX = Part No. (06, 25, 40 or 60)

Y = Lead form option (S1, or none)

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

V = VDE safety approved option

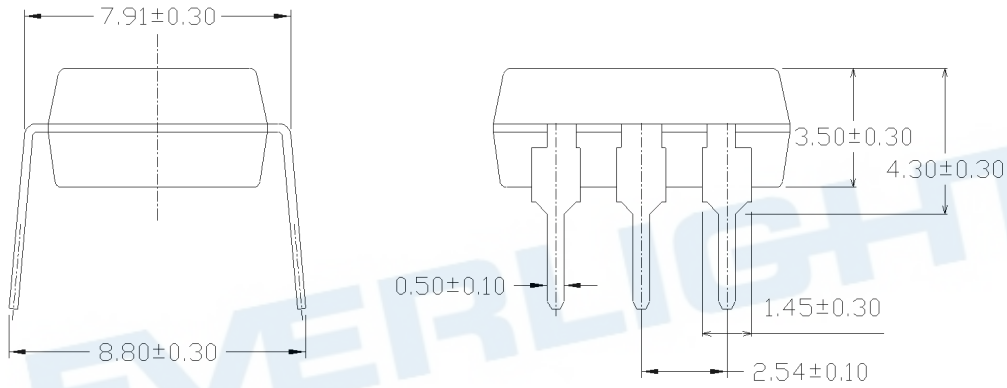
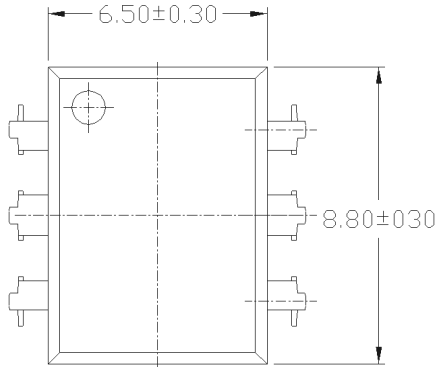
G= Halogens free

Option	Description	Packing quantity
None	Standard DIP-6	50 units per tube
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

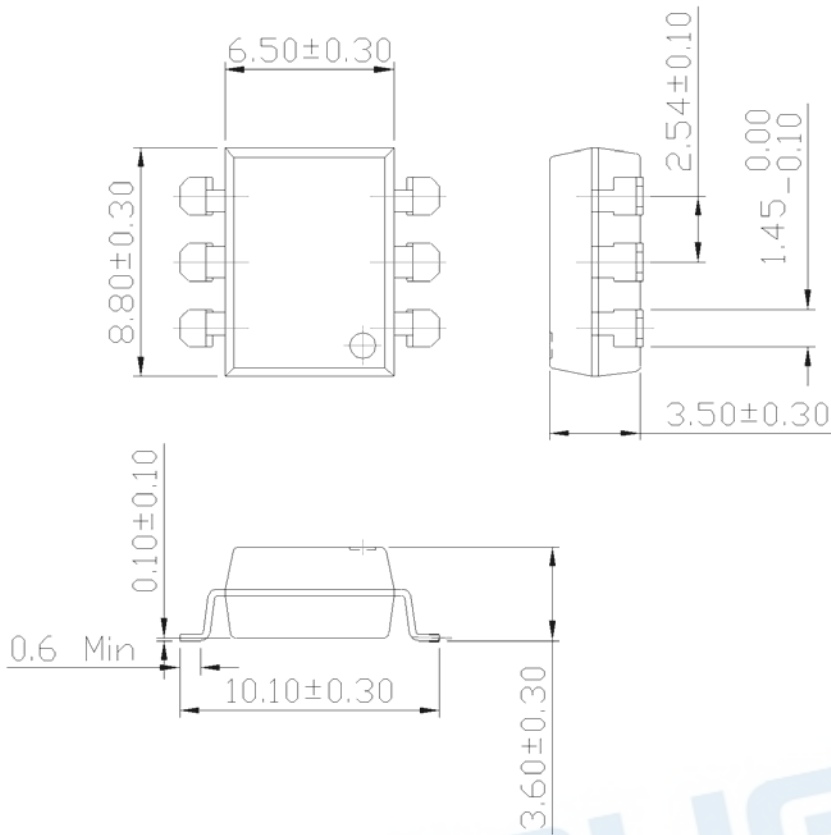
EVERLIGHT

Package Dimension

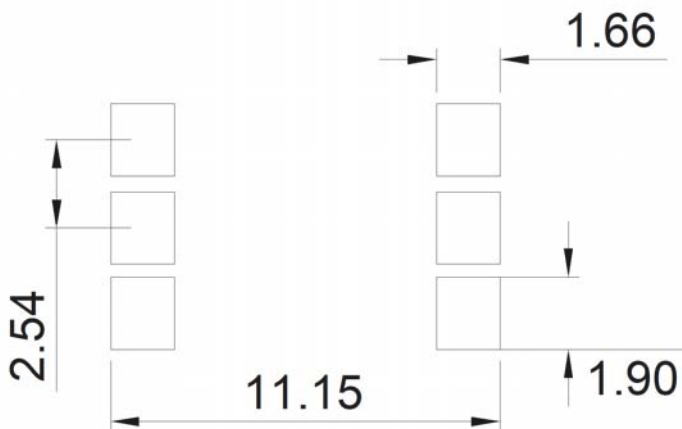
Standard DIP Type (Dimensions in mm)



Option S1 Type



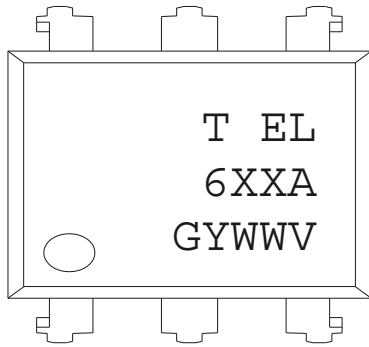
Recommended pad layout for surface mount leadform



Notes

Suggested pad dimension is just for reference only.
 Please modify the pad dimension based on individual need.

Device Marking



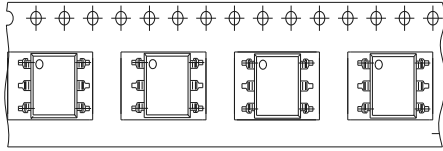
Notes

- T denotes Factory
 - No code : made in China
 - T : made in Taiwan
- EL denotes Everlight
- 6XXA denotes Part Number
- G denotes Green Part (optional)
- Y denotes 1 digit Year code
- WW denotes 2 digit Week code
- V denotes VDE(optional)

EVERLIGHT

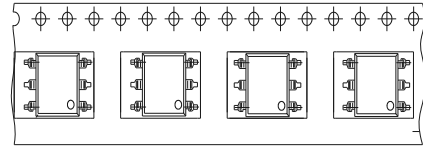
Tape & Reel Packing Specifications

Option TA



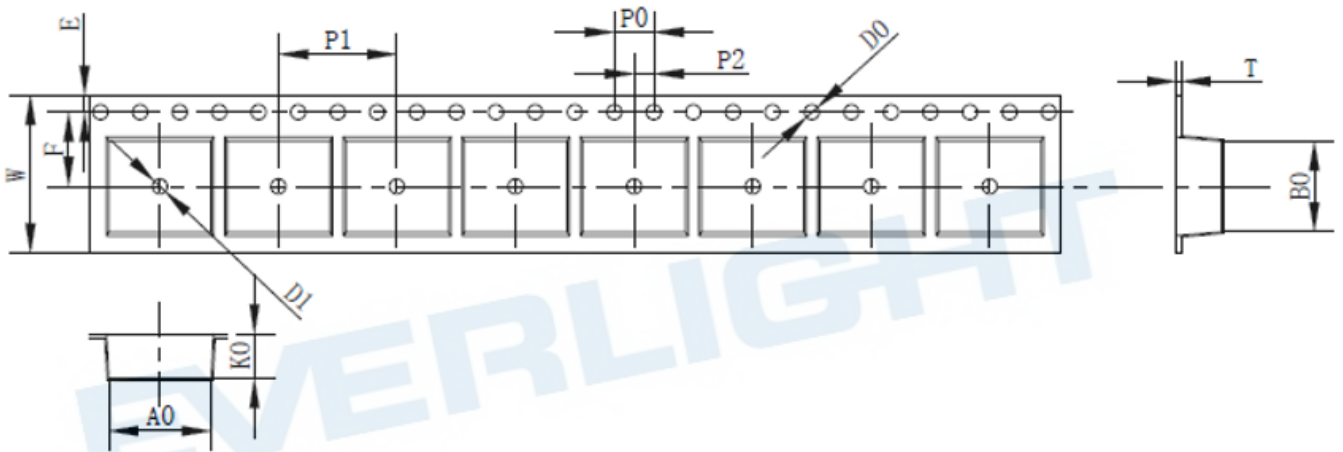
Direction of feed from reel

Option TB



Direction of feed from reel

Tape Dimensions

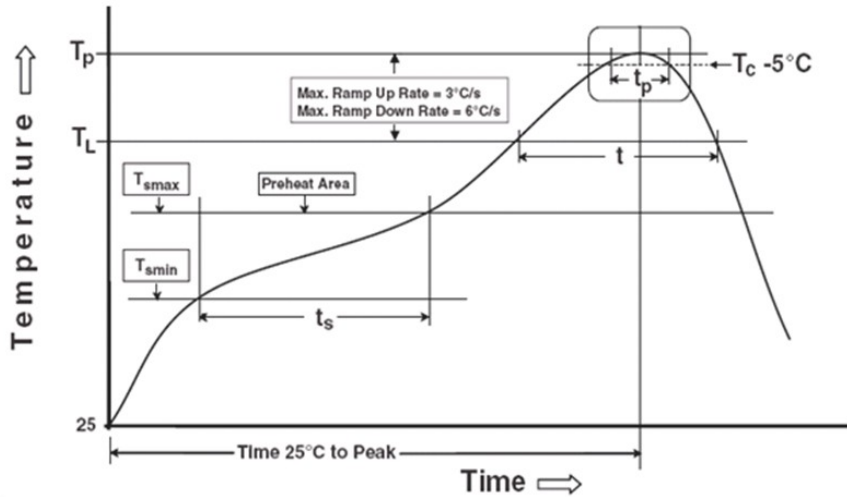


Dimension No.	A0	B0	D0	D1	E	F
Dimension(mm)	10.80±0.3	9.20±0.3	1.5+0.3	1.5 +0.3	1.75±0.3	7.5±0.3
Dimension No.	P0	P1	P2	W	K0	T
Dimension(mm)	4.0±0.3	12.0±0.3	2.0±0.3	16.0±0.3	4.5±0.3	0.40±0.05

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. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
3. When using this product, please observe the absolute maximum ratings and the instructions for use 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.
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