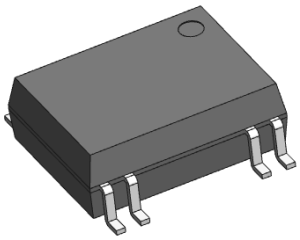
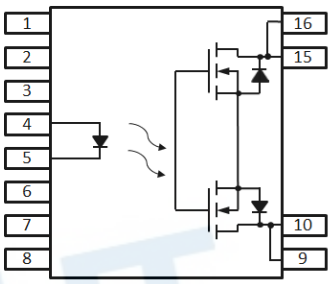
DATASHEET

16 PIN SOPL TYPE FORM A SSR
EV16150A-G Series

Preliminary



Schematic



Pin Configuration
1, 2, 3, 6, 7, 8
No Connect
5 LED Cathode
4, LED Anode
10, 9 MOSFET Drain
16, 15 MOSFET Drain

Features

- Compliance Halogens Free
  (Br < 900 ppm, Cl < 900 ppm, Br+Cl < 1500 ppm)
- Compliance with EU REACH.
- The product itself will remain within RoHS compliant version
- Normally open signal pole signal throw relay
- Low operating current
- 1500V output withstand voltage
- Wide operating temperature range of -40°C to 125°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
- Qualified to AEC-Q101 test guidelines
- Comparative Tracking Index >600

Description

The EV16150A-G 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 16 PIN SOPL Type.

Applications

- EV/Battery Management System
- Industrial Controls
- Automotive

This is a preliminary specification intended for design purposes and subject to change without prior notice.

Absolute Maximum Ratings (T_A=25ºC, unless otherwise specified) *6

Parameter		Symbol	Rating	Unit
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*2	V_L	1500	V
	Continuous Load Current	I_L	20	mA
	Avalanche Current*3	I_{AV}	0.6	mA
	Power Dissipation	P_{out}	800	mW
Isolation Voltage*4		V_{iso}	5000	Vrms
Storage Temperature		T_{STG}	-40 to 150	ºC
Operating Temperature		T_{OPR}	-40 to 125	ºC
Soldering Temperature*5		T_{SOL}	260	ºC

Notes:
*1. f =100Hz, Duty Cycle = 0.1%
*2. Indicate the peak AC and DC values
*3.1min (max. continuous), Duty cycle=0.1%, 5 time over lifetime.
*4.AC for 1 minute, R.H. = 40 ~ 60% R.H. In this test, pins 1~8 are shorted together, and pins 9、10、15、16 are shorted together.
*5.For 10 seconds
*6.In case in which a continual DC bias is applied between the input and output , the output-side MOSFET may deteriorate due to the voltage. Therefore , please verify operation of the actual design before using.

Recommended Operating Conditions (T_A=25℃)

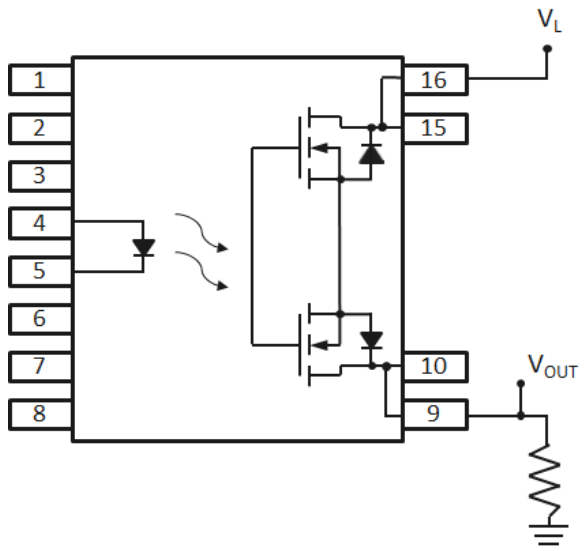
Please use under recommended operating conditions to obtain expected characteristics

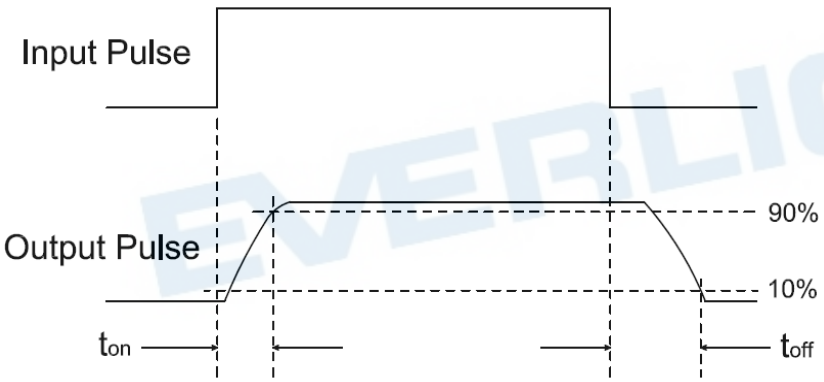
Parameter	Symbol	Min.	Max.	Unit
Forward current	I_F	5	20	mA
Load voltage	V_L	-	1000	V
Continuous load current	I_L	-	15	mA
Operating temperature	T_{OPR}	-40	110	ºC

Electro-Optical Characteristics (T_A=25℃)

	Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F = 10mA	-	1.38	1.8	V
	Reverse Current	I_R	V_R = 5V	-	-	10	μA
Output	Off State leakage Current	I_{leak}	I_F = 0mA, V_L = 1200V	-	-	1	μA
	Output Withstand Voltage	V_{OFF}	I_{OFF}=250μA	1500	-	-	V
	Output Capacitance	C_{OFF}	V_{OFF} = 0 V, f = 1 MHz	-	150	-	pF
	On Resistance	$R_{d(ON)}$	I_F = 10mA, I_L = 15mA. t < 1s	-	280	500	Ω
Transfer Characteristics	LED turn on Current	$I_{F(ON)}$	I_L = 15mA.	-	1.2	5	mA
	LED turn off current	$I_{F(OFF)}$	I_L = 0.1mA	0.4	1.16	-	mA
	Turn On Time	T_{ON}	I_F = 10 mA, V_L =20 V R_L = 200Ω	-	0.24	3	ms
	Turn Off Time	T_{OFF}		-	0.17	1	ms
	Isolation Resistance	R_{I-O}	V_{I-O} = 500V DC	5×10^{10}	-	-	Ω
	Isolation Capacitance	C_{I-O}	V = 0V, f = 1MHz	-	2.0	-	pF

Turn on/Turn off Time





Typical Electro-Optical Characteristics Curves

Figure 1. Load Current vs Ambient Temperature

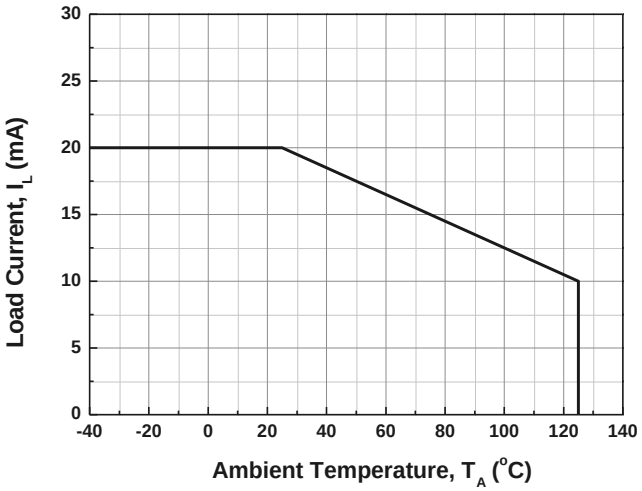


Figure 2. LED Forward Current vs Ambient Temperature

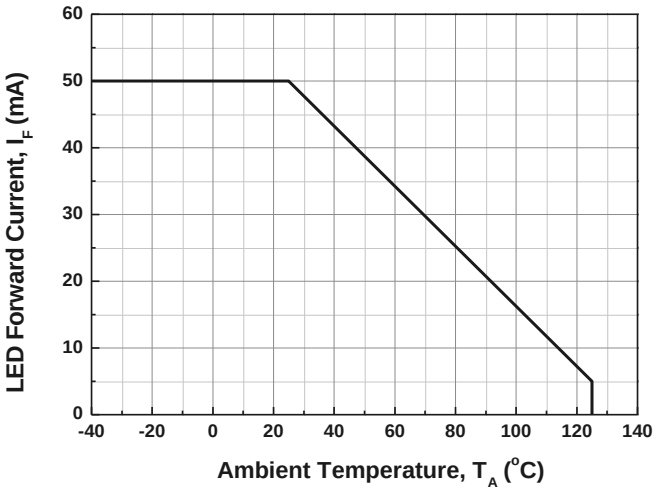


Figure 3. Switching Time vs Ambient Temperature

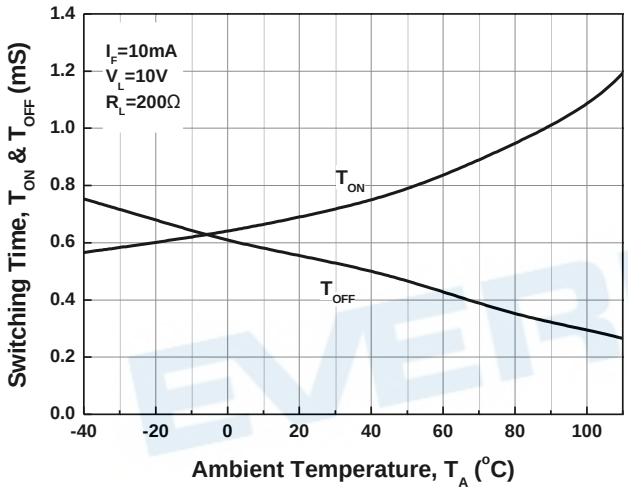


Figure 4. Switching Time vs LED Forward Current

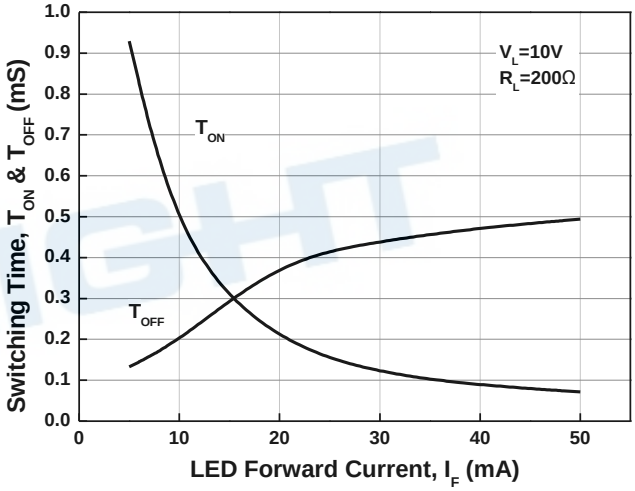


Figure 5. On Resistance vs Ambient Temperature

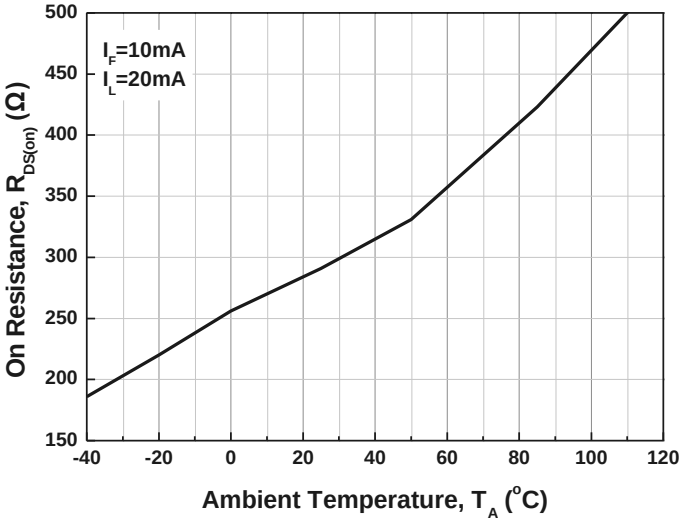


Figure 6. Normalizd LED Operate On Current vsAmbient Temperature

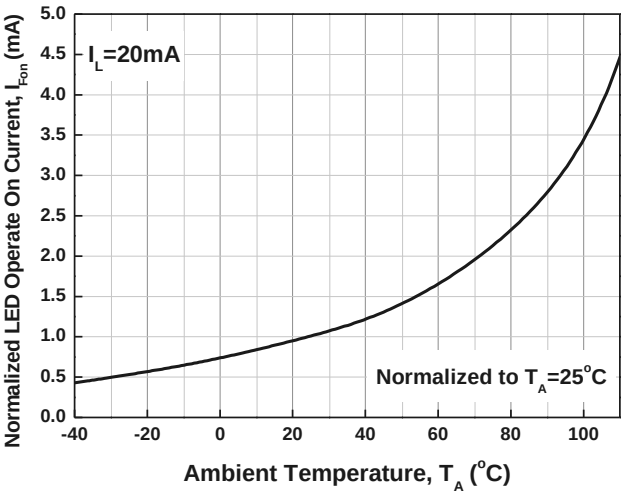
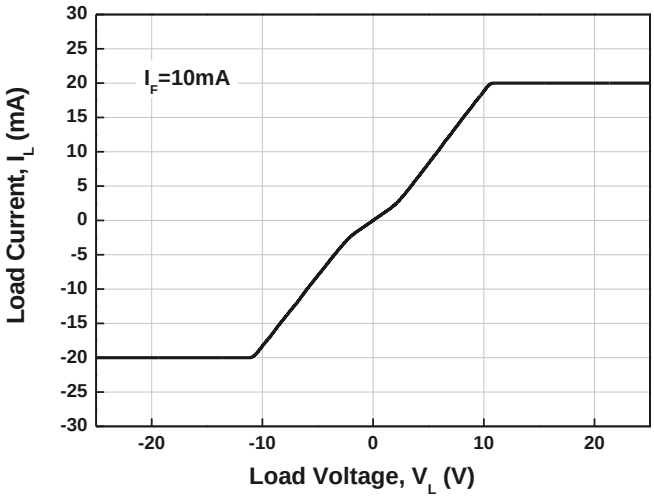


Figure 7. Load Voltage vs Load Current



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

Order Information

Part Number

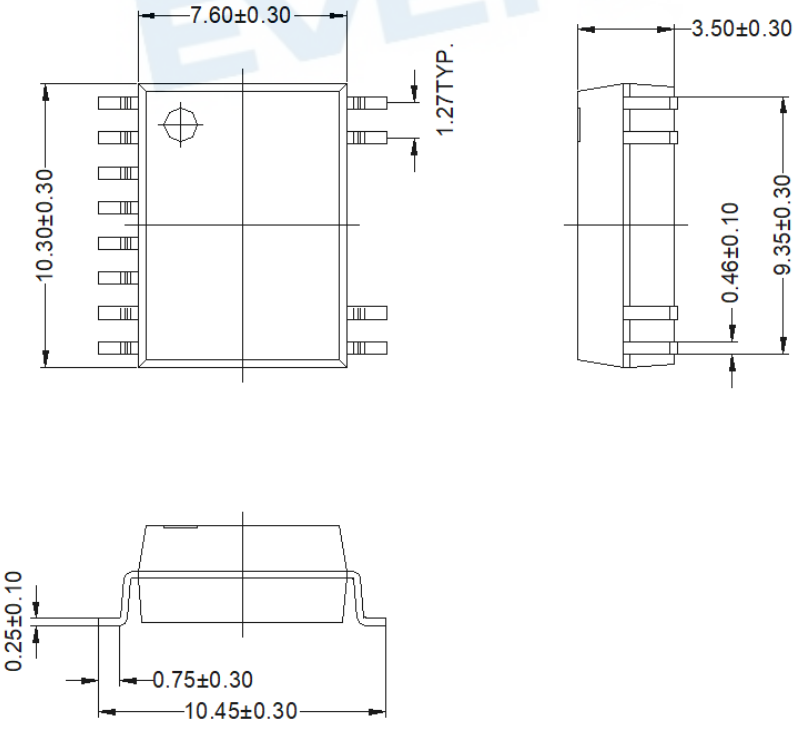
EV16150A(Z)-VG

Note:
Z = Tape and reel option (TA, TB, None).
V = VDE safety approved (optional)
G = Halogens free

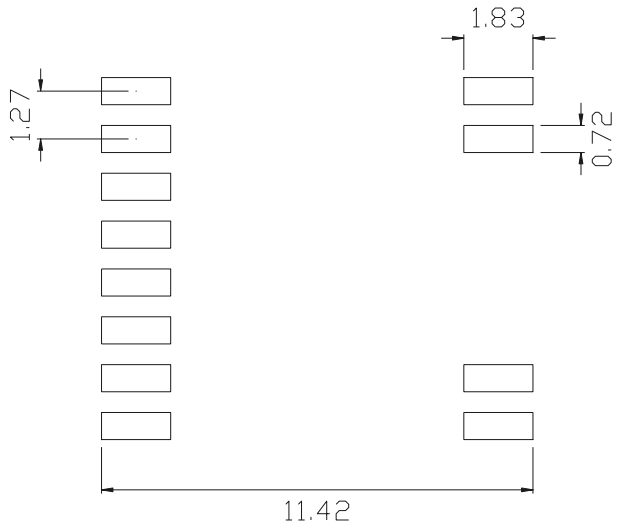
Option	Description	Packing quantity
None	Standard SMD option	65 units per tube
(TA)	TA tape & reel option	1000 units per reel
(TB)	TB tape & reel option	1000 units per reel
(TA)-V	TA tape & reel option + VDE	1000 units per reel
(TB)-V	TB tape & reel option + VDE	1000 units per reel

Package Dimension

Standard SMD Type (Dimensions in mm)

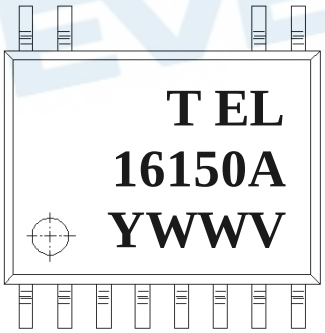


Recommended pad layout for surface mount leadform



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

Device Marking

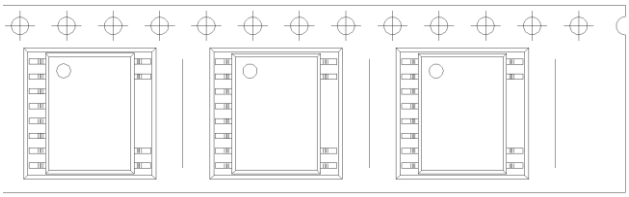


Notes

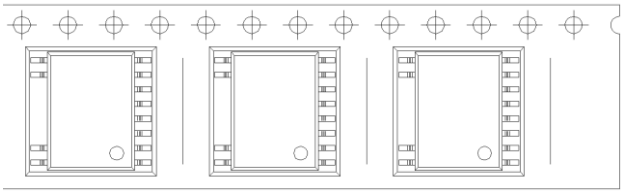
T	denotes	Factory No code : made in China T : made in Taiwan
EL	denotes	Everlight
16150A	denotes	Part Number
Y	denotes	1 digit Year code
WW	denotes	2 digit Week code
V	denotes	VDE(optional)

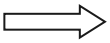
Tape & Reel Packing Specifications

Option TA



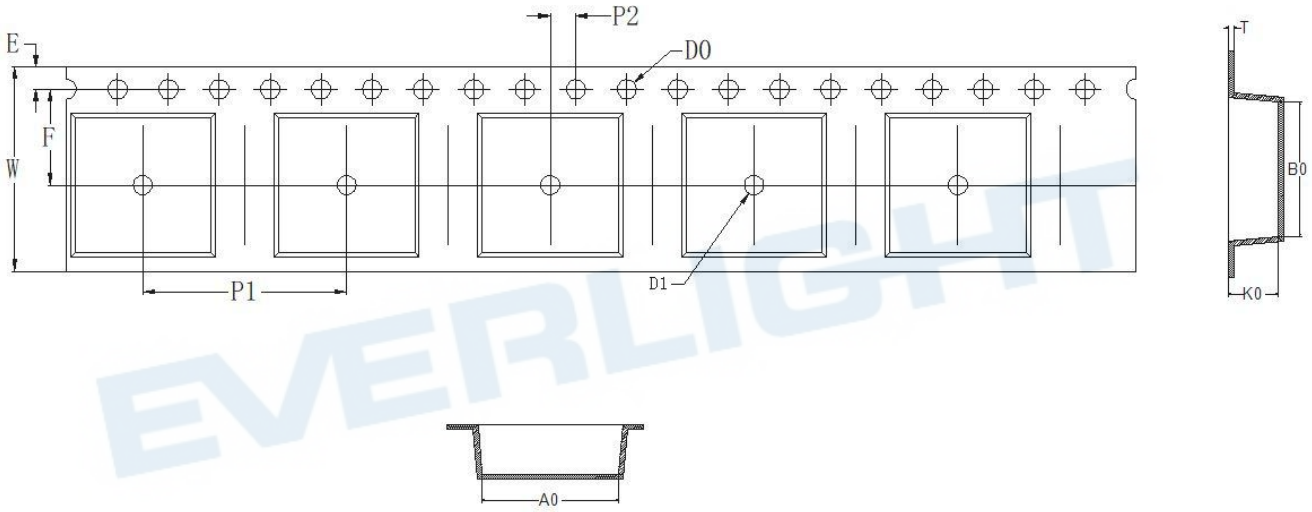
Option TB





Direction of feed from reel

Tape Dimensions

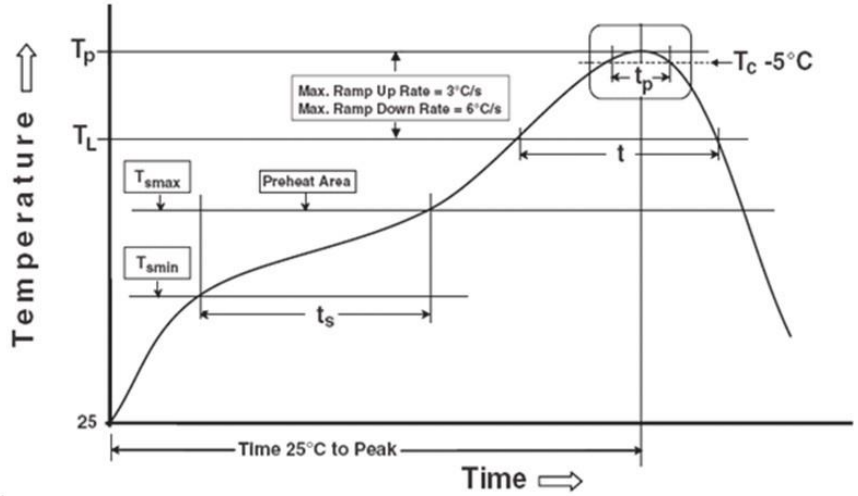


Dimension No.	A0	B0	D0	D1	E	F
Dimension(mm)	10.70±0.10	10.55±0.1	1.50+0.1	1.50 +0.1	1.75±0.1	7.50±0.1
Dimension No.	P0	P1	P2	W	K0	T
Dimension(mm)	4.00±0.1	16.00±0.1	2.00±0.1	16.00±0.2	3.9±0.1	0.40±0.05

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°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

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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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