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.

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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!

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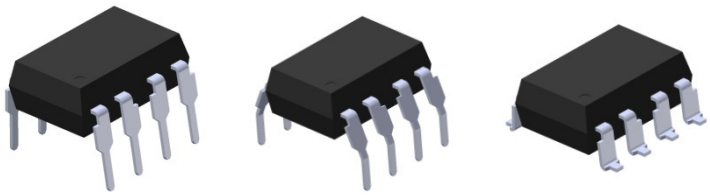
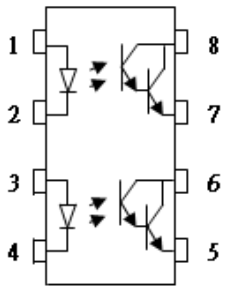
DATASHEET

8 PIN DIP PHOTODARLINGTON PHOTOCOUPLER
EL825 Series



Schematic



Pin Configuration
1, 3. Anode
2, 4. Cathode
5, 7. Emitter
6, 8. Collector

Features:

- Current transfer ratio
  (CTR: 600~7500% at I_F =1mA, V_{CE} =2V)
- High isolation voltage between input
  and output (Viso=5000 V rms)
- Creepage distance >7.62 mm
- Operating temperature up to +110℃
- Compact small outline package
- Pb free and RoHS compliant.
- UL approved (No. E214129)
- VDE approved (No. 132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CSA approved
- CQC approved

Description

The EL825 series devices each consists of an infrared emitting diodes, optically coupled to a Darlington phototransistor detector.

These devices are packaged in an 8-pin DIP package and available in wide-lead spacing and SMD option.

Applications

- Telephone set, telephone exchangers
- Sequence controllers
- System appliances, measuring instruments
- Signal transmission between circuits of different potentials and impedances

Absolute Maximum Ratings (Ta=25℃)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	60	mA
	Peak forward current (1us, pulse)	I_{FP}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation No derating required up to Ta = 100℃	P_D	100	mW
Output	Power dissipation	P_C	150	mW
	Derating factor (above Ta = 80℃)		5.8	mW/℃
	Collector current	I_C	80	mA
	Collector-Emitter voltage	V_{CEO}	40	V
	Emitter-Collector voltage	V_{ECO}	7	V
Total power dissipation		P_{TOT}	200	mW
Isolation voltage		V_{ISO}	5000	Vrms
Operating temperature		T_{OPR}	-55 to 110	℃
Storage temperature		T_{STG}	-55 to 125	℃
Soldering temperature *2		T_{SOL}	260	℃

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

*2 For 10 seconds

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

Input

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Forward Voltage	V_F	-	1.2	1.4	V	I_F = 20mA
Reverse Current	I_R	-	-	10	μA	V_R = 4V
Input capacitance	C_{in}	-	30	250	pF	V = 0, f = 1kHz

Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter dark current	I_{CEO}	-	-	1	μA	V_{CE} = 10V, I_F = 0mA
Collector-Emitter breakdown voltage	BV_{CEO}	40	-	-	V	I_C = 0.1mA
Emitter-Collector breakdown voltage	BV_{ECO}	7	-	-	V	I_E = 0.01mA

Transfer Characteristics

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Current Transfer ratio	CTR	600	-	7500	%	I_F = 1mA ,V_{CE} = 2V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	-	0.8	1.0	V	I_F = 20mA ,I_C = 5mA
Isolation resistance	R_{IO}	5×10^{10}	-	-	Ω	V_{IO} = 500Vdc, 40~60% R.H.
Floating capacitance	C_{IO}	-	0.6	1.0	pF	V_{IO} = 0, f = 1MHz
Cut-off frequency	fc	-	6	-	kHz	V_{CE} = 5V, I_C = 2mA R_L = 100Ω, -3dB
Rise time	t_r	-	60	300	μs	V_{CE} = 2V, I_C = 10mA, R_L = 100Ω
Fall time	t_f	-	53	250	μs	

* Typical values at T_a = 25℃

Typical Electro-Optical Characteristics Curves

Figure 1. Forward Current vs Forward Voltage

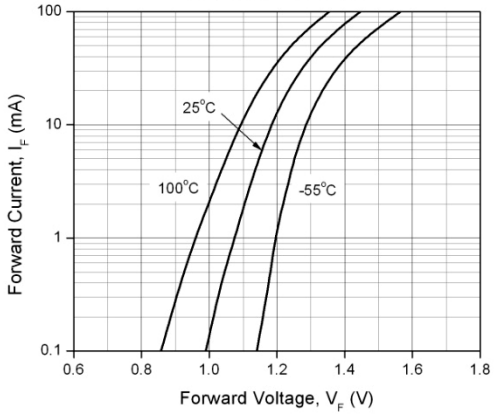


Figure 2. Current Transfer Ratio vs. Ambient Temperature

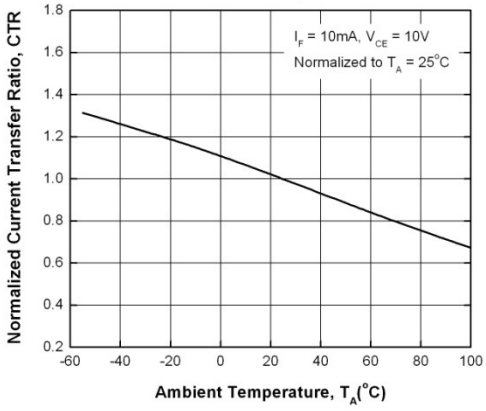


Figure 3. Normalized Current Transfer Ratio vs Forward Current

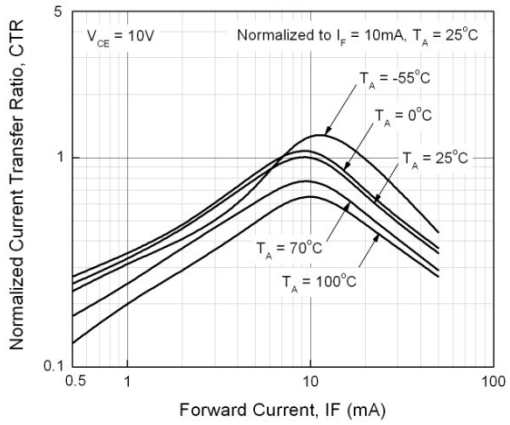


Figure 4. Collector Dark Current vs Ambient Temperature

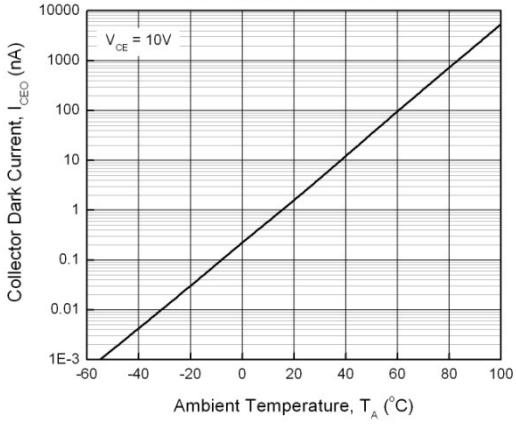


Figure 5. Turn-on Time vs Forward Current

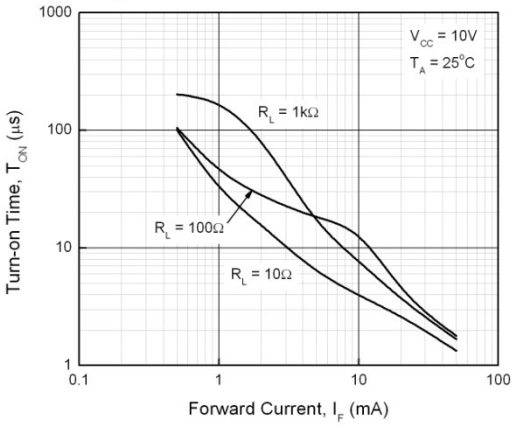
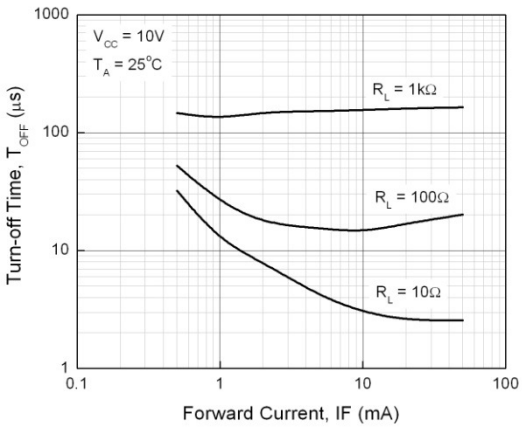


Figure 6. Turn-off Time vs Forward Current



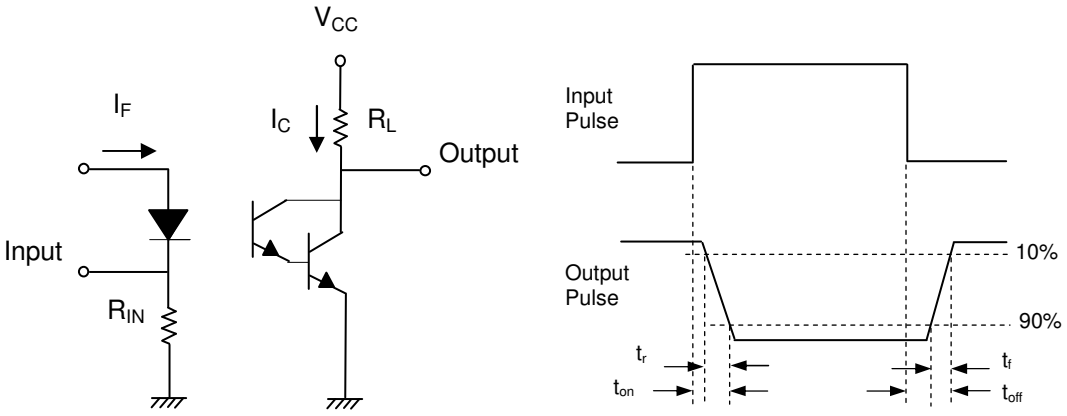


Figure 7. Switching Time Test Circuit & Waveforms

Order Information

Part Number

EL825X(Z)-V

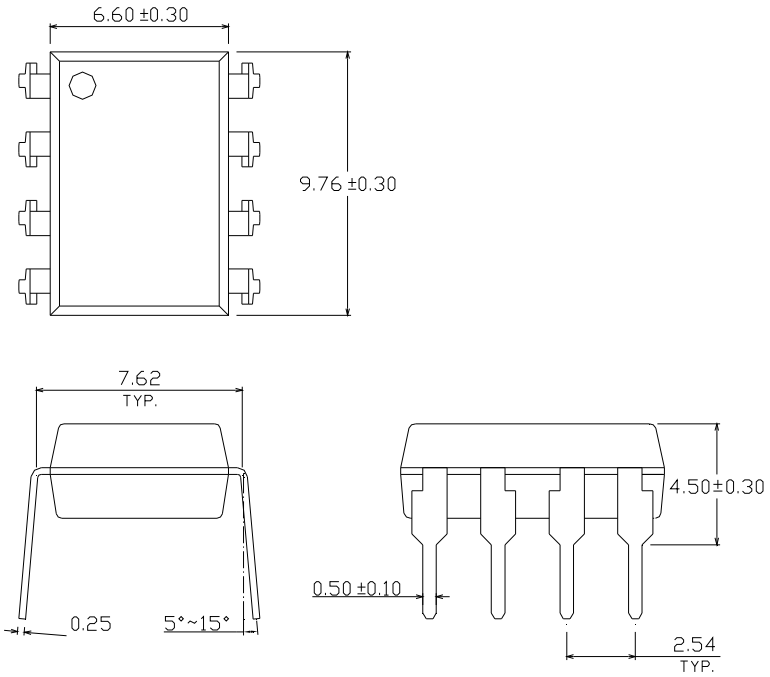
Note

X = Lead form option (S, S1, M or none)
Z = Tape and reel option (TA, TB or none).
V = VDE safety (optional).

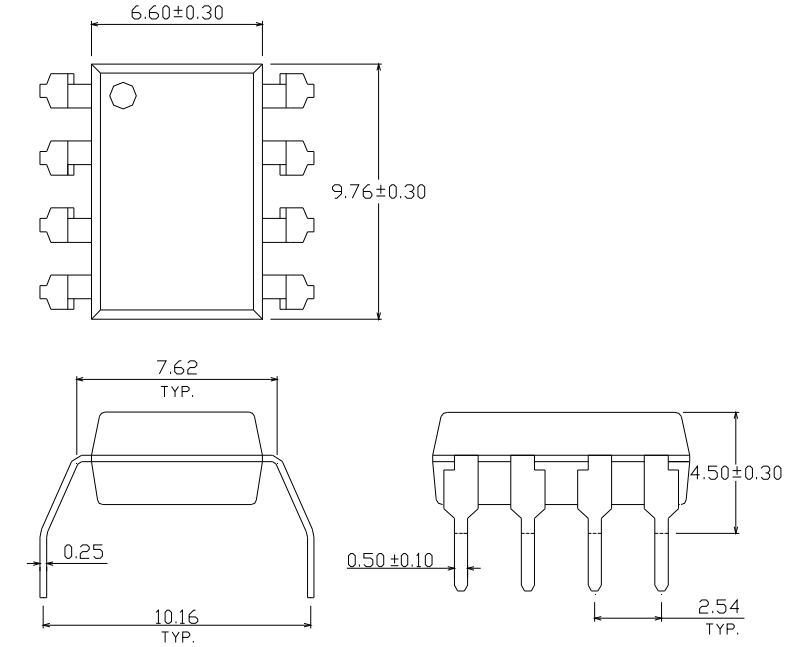
Option	Description	Packing quantity
None	Standard DIP-4	45 units per tube
M	Wide lead bend (0.4 inch spacing)	45 units per tube
S (TA)	Surface mount lead form + TA tape & reel option	1000 units per reel
S (TB)	Surface mount lead form + TB tape & reel option	1000 units per reel
S1 (TA)	Surface mount lead 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

Package Dimension (Dimensions in mm)

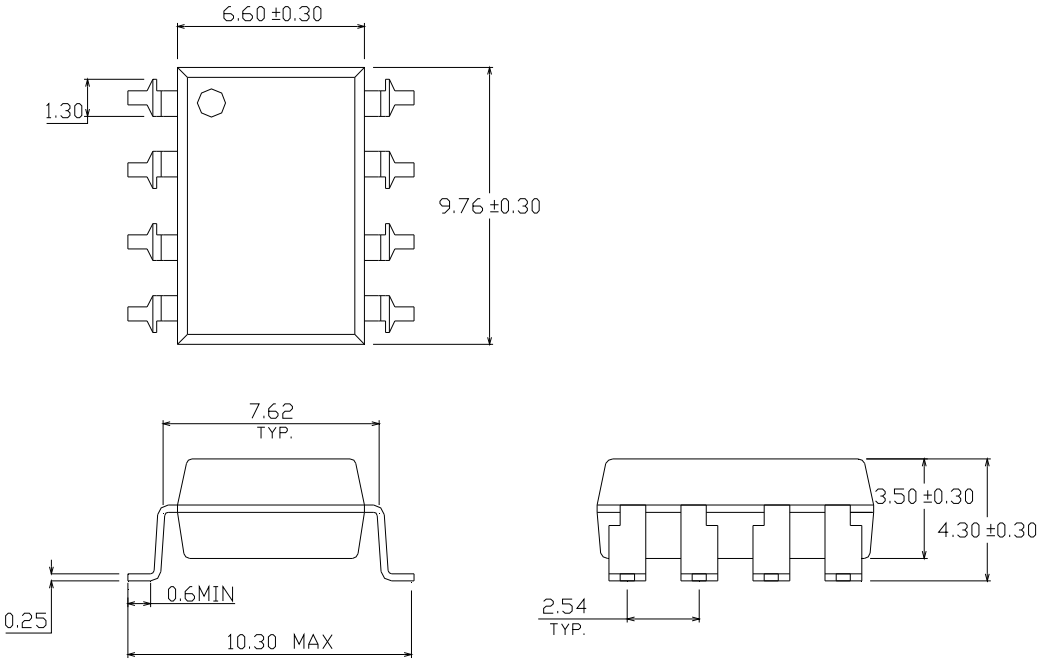
Standard DIP Type



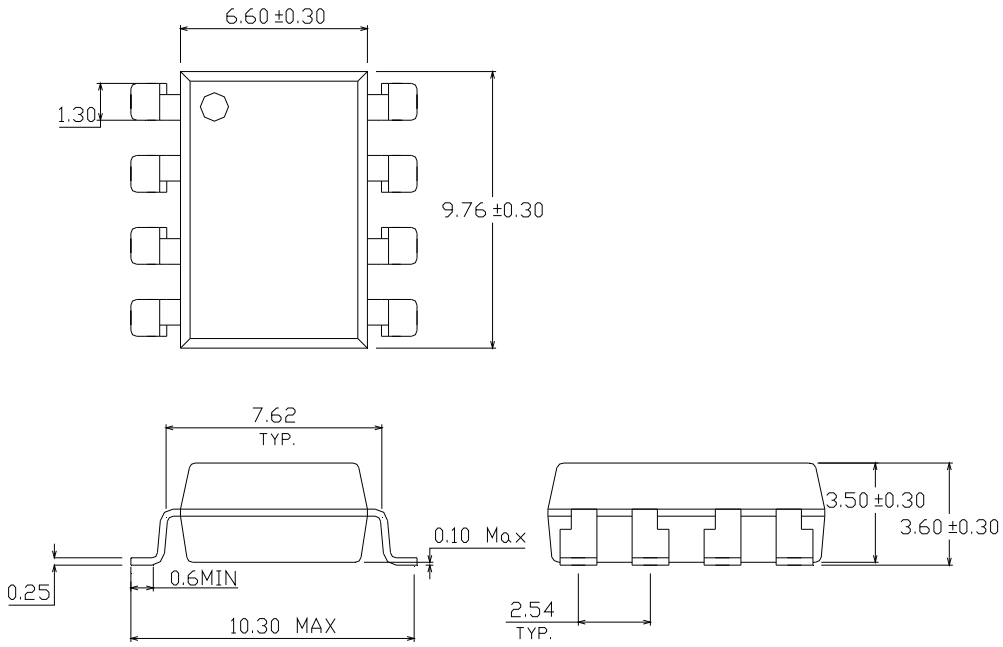
Option M Type



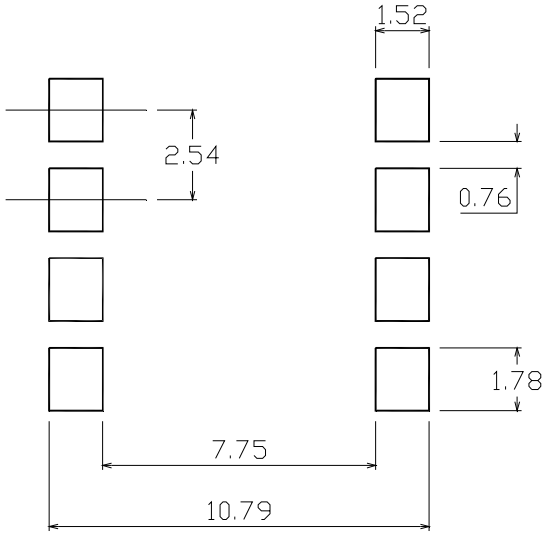
Option S Type



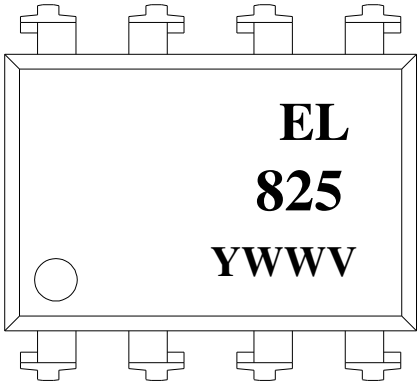
Option S1 Type



Recommended pad layout for surface mount leadform



Device Marking

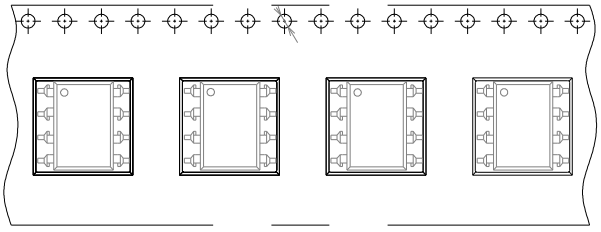


Notes

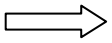
EL	denotes EVERLIGHT
825	denotes Device Number
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE optional

Tape & Reel Packing Specifications

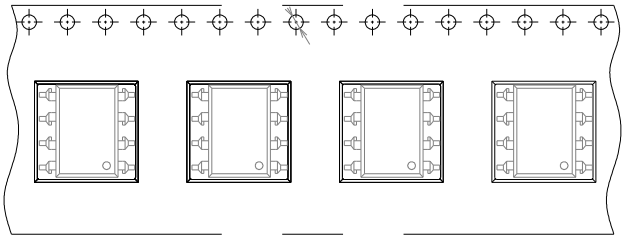
Option TA



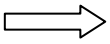
Direction of feed from reel



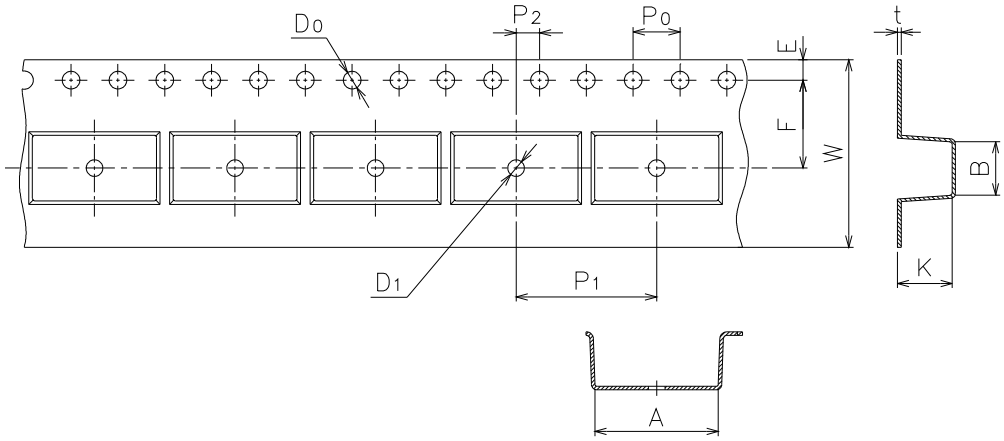
Option TB



Direction of feed from reel



Tape dimensions

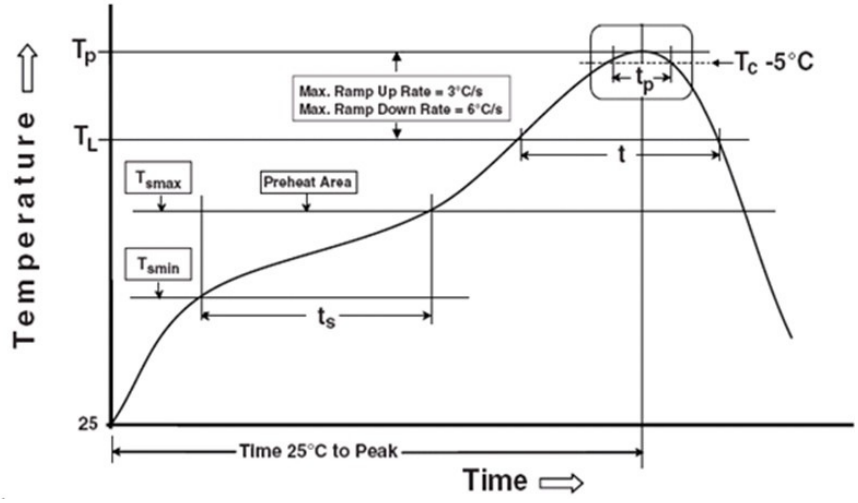


Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	10.4±0.1	10.0±0.1	1.5±0.1	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.4±0.1	16.0+0.3/ -0.1	4.5±0.1

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

Other

Liquidus Temperature (T_L)	217 ℃
Time above Liquidus Temperature (t_L)	60-100 sec
Peak Temperature (T_P)	260℃
Time within 5 ℃ of Actual Peak Temperature: T_P - 5℃	30 s
Ramp- Down Rate from Peak Temperature	6℃ /second max.
Time 25℃ 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. 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.
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