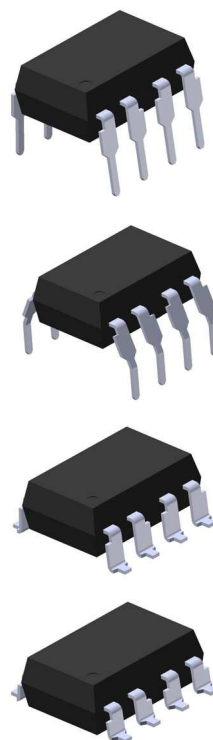


4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Features:

- Current transfer ratio
(CTR: 600~7500% at $I_F = 1\text{mA}$, $V_{CE} = 2\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 5000\text{ V rms}$)
- Creepage distance $> 7.62\text{ mm}$
- Operating temperature up to $+110^\circ\text{C}$
 - 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

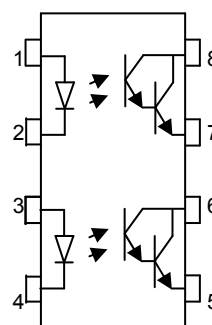
The EL825 series devices each consists of an infrared emitting diodes, optically coupled to a Darlington phototransistor detector.

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

Schematic



Pin Configuration

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



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4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

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 $T_a = 100^\circ\text{C}$	P_D	100	mW
Output	Power dissipation Derating factor (above $T_a = 80^\circ\text{C}$)	P_C	150	mW
			5.8	mW/ $^\circ\text{C}$
	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 ^{*1}		V_{ISO}	5000	V rms
Operating temperature		T_{OPR}	-55 ~ +110	$^\circ\text{C}$
Storage temperature		T_{STG}	-55 ~ +125	$^\circ\text{C}$
Soldering temperature ^{*2}		T_{SOL}	260	$^\circ\text{C}$

Notes

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

*2 For 10 seconds.



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4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Electrical Characteristics ($T_a=25^\circ\text{C}$ unless specified otherwise)

Input

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

Output

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

Transfer Characteristics ($T_a=25^\circ\text{C}$ unless specified otherwise)

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

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

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Typical Performance Curves

Figure 1. Forward Current vs Forward Voltage

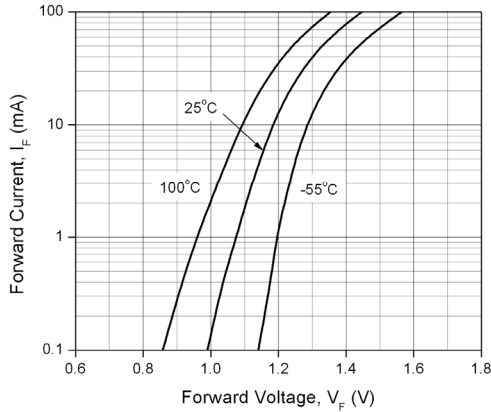


Figure 2. Current Transfer Ratio vs. Ambient Temperature

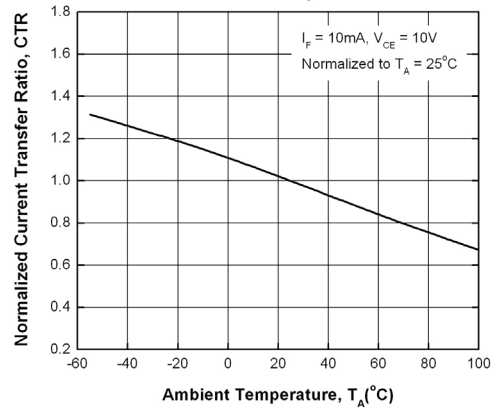


Figure 3. Normalized Current Transfer Ratio vs Forward Current

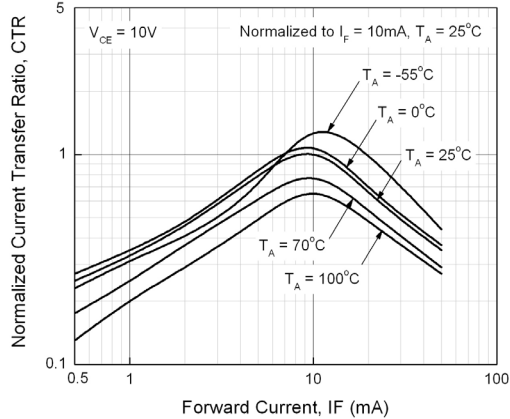


Figure 4. Collector Dark Current vs Ambient Temperature

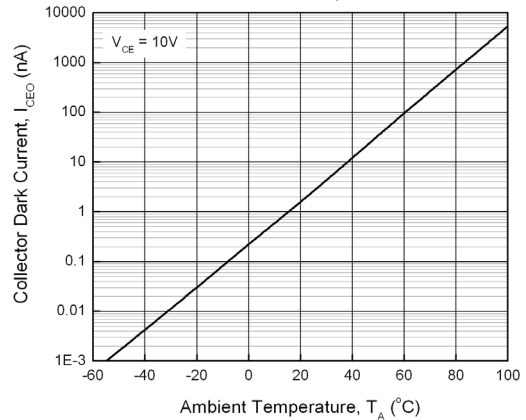


Figure 5. Turn-on Time vs Forward Current

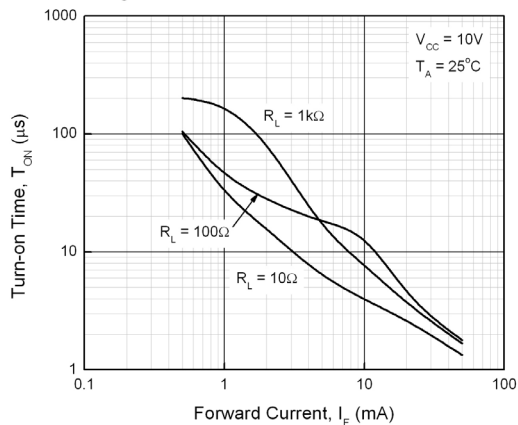
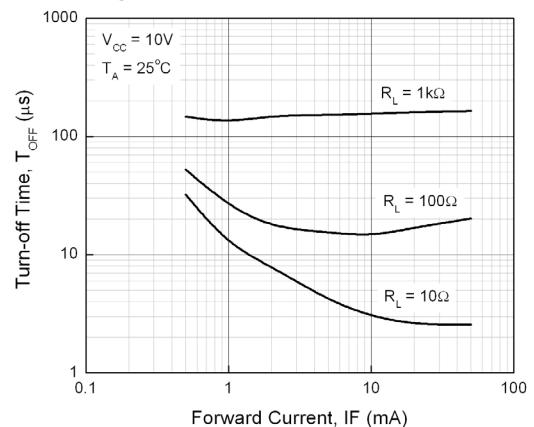


Figure 6. Turn-off Time vs Forward Current



4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

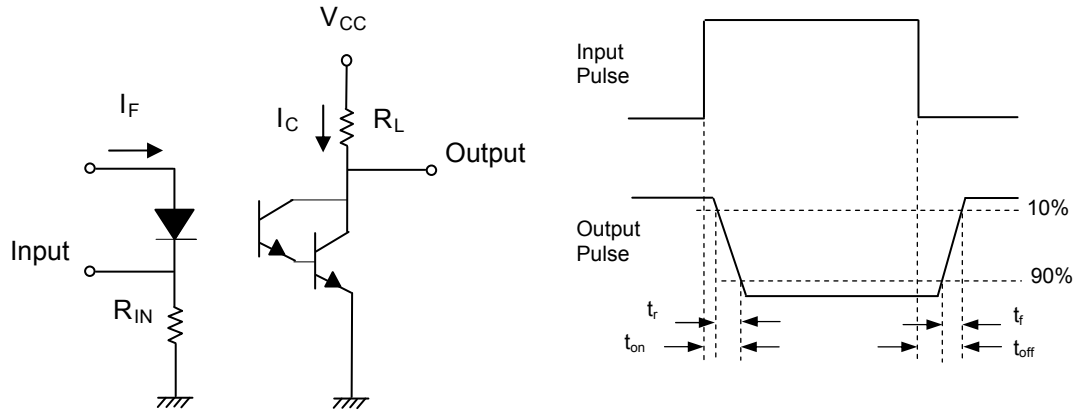


Figure 7. Switching Time Test Circuit & Waveforms



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4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Order Information

Part Number

EL825(X)(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).

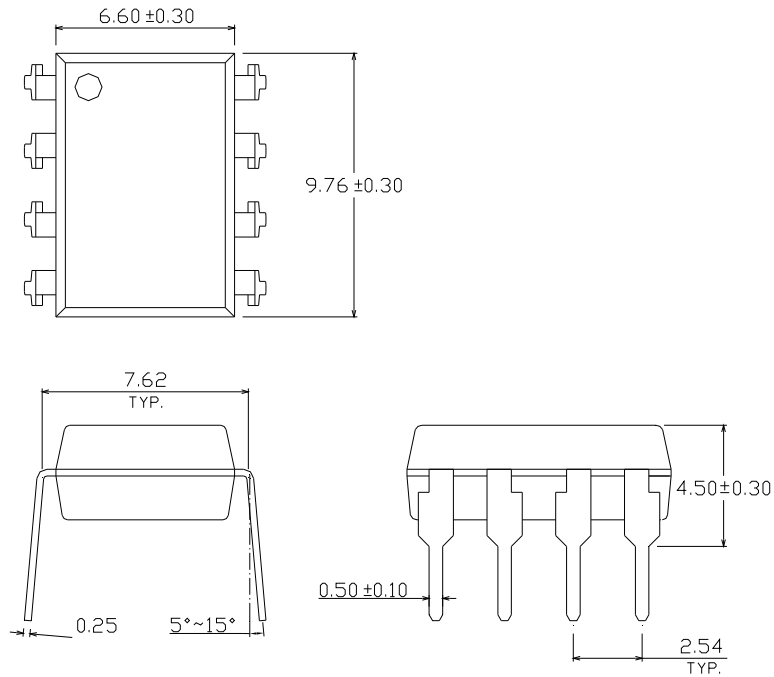
Option	Description	Packing quantity
None	Standard DIP-4	45 units per tube
M	Wide lead bend (0.4 inch spacing)	45 units per tube
S (TA)	Surface mount lead form + TA tape & reel option	1000 units per reel
S (TB)	Surface mount lead form + TB tape & reel option	1000 units per reel
S1 (TA)	Surface mount lead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

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

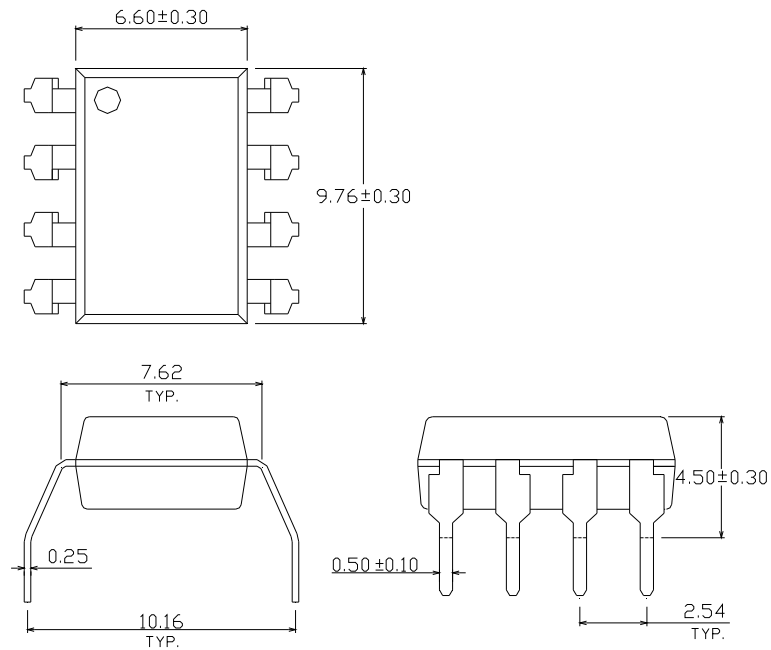
EL825 Series

Package Drawing (Dimensions in mm)

Standard DIP Type



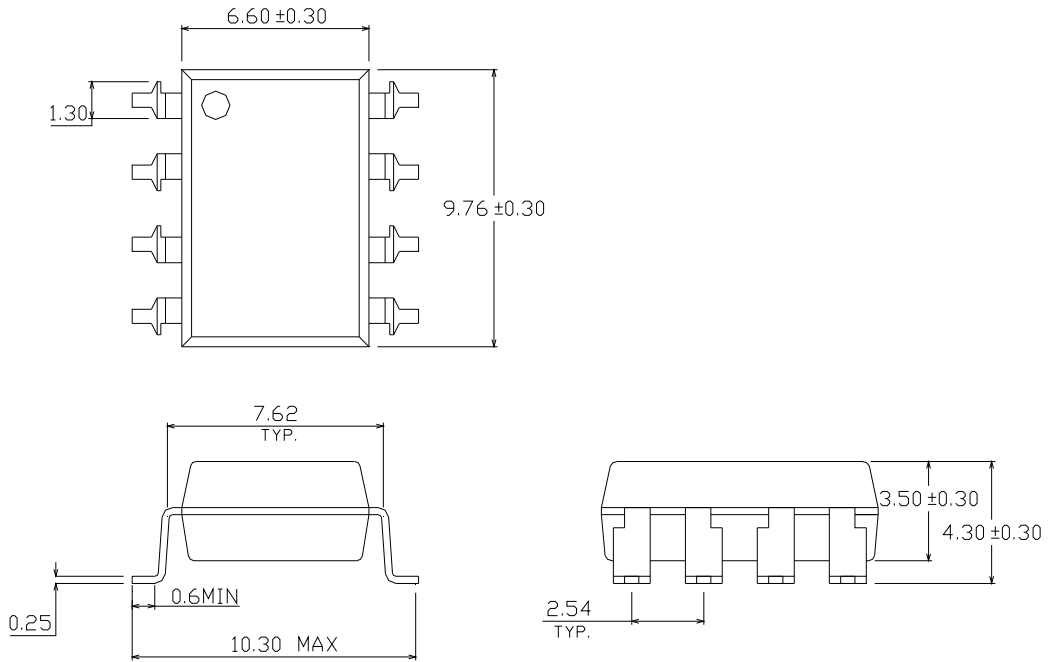
Option M Type



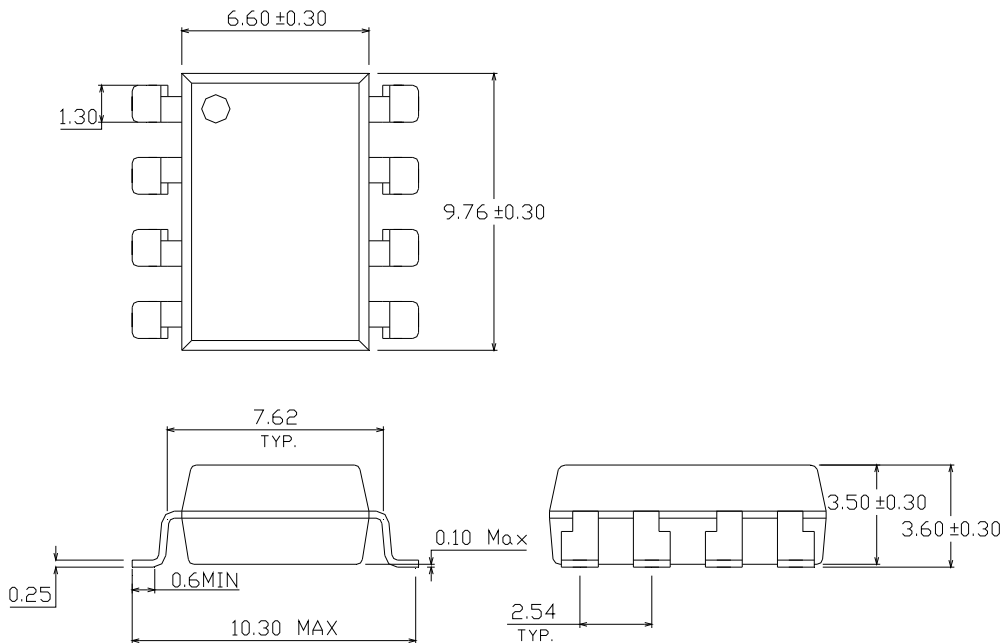
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Option S Type



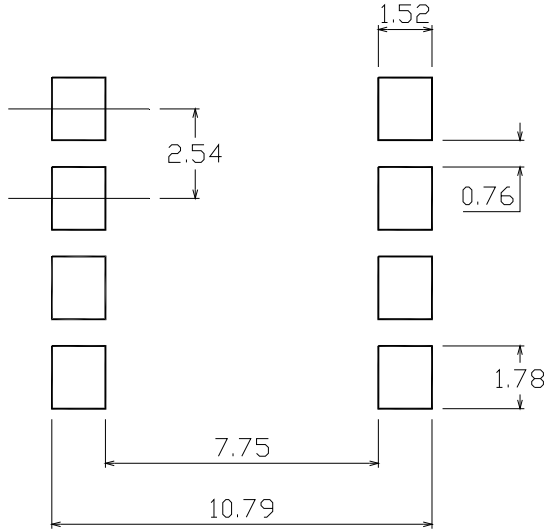
Option S1 Type



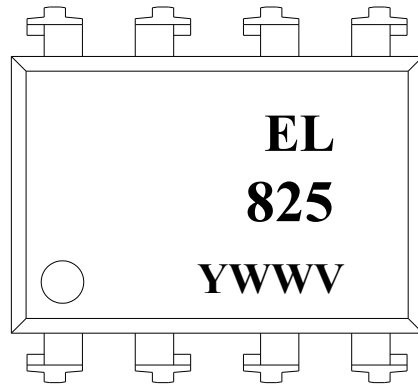
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

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Recommended pad layout for surface mount leadform



Device Marking



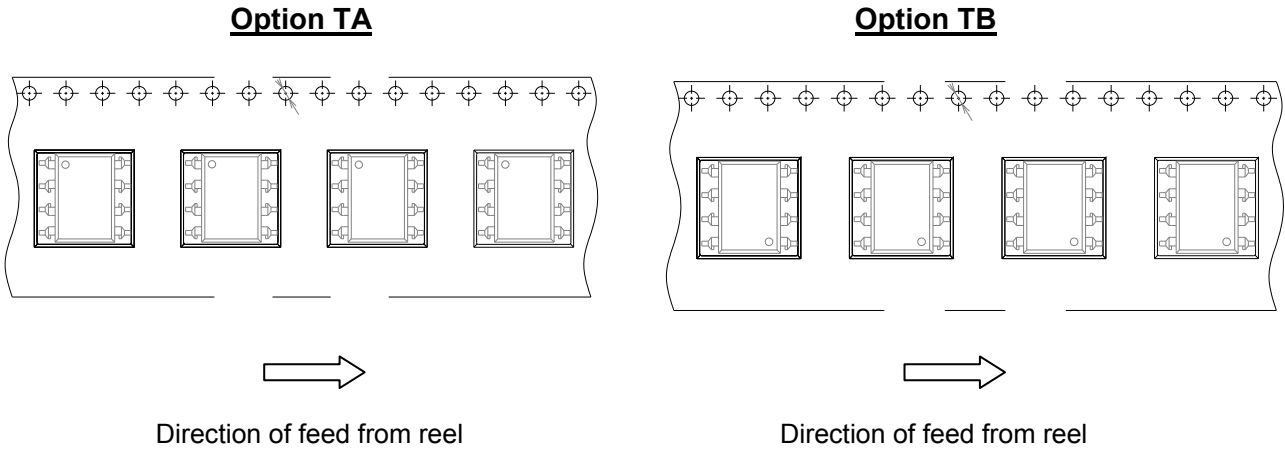
Notes

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

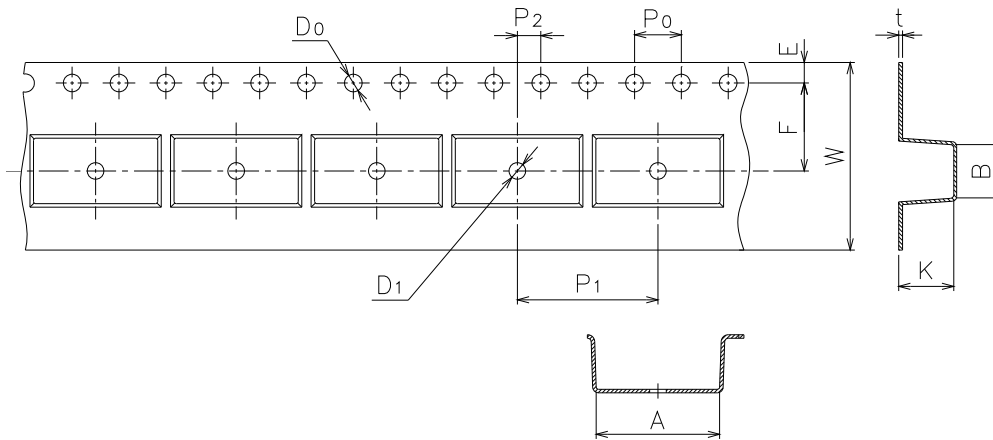
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

Tape & Reel Packing Specifications



Tape dimensions

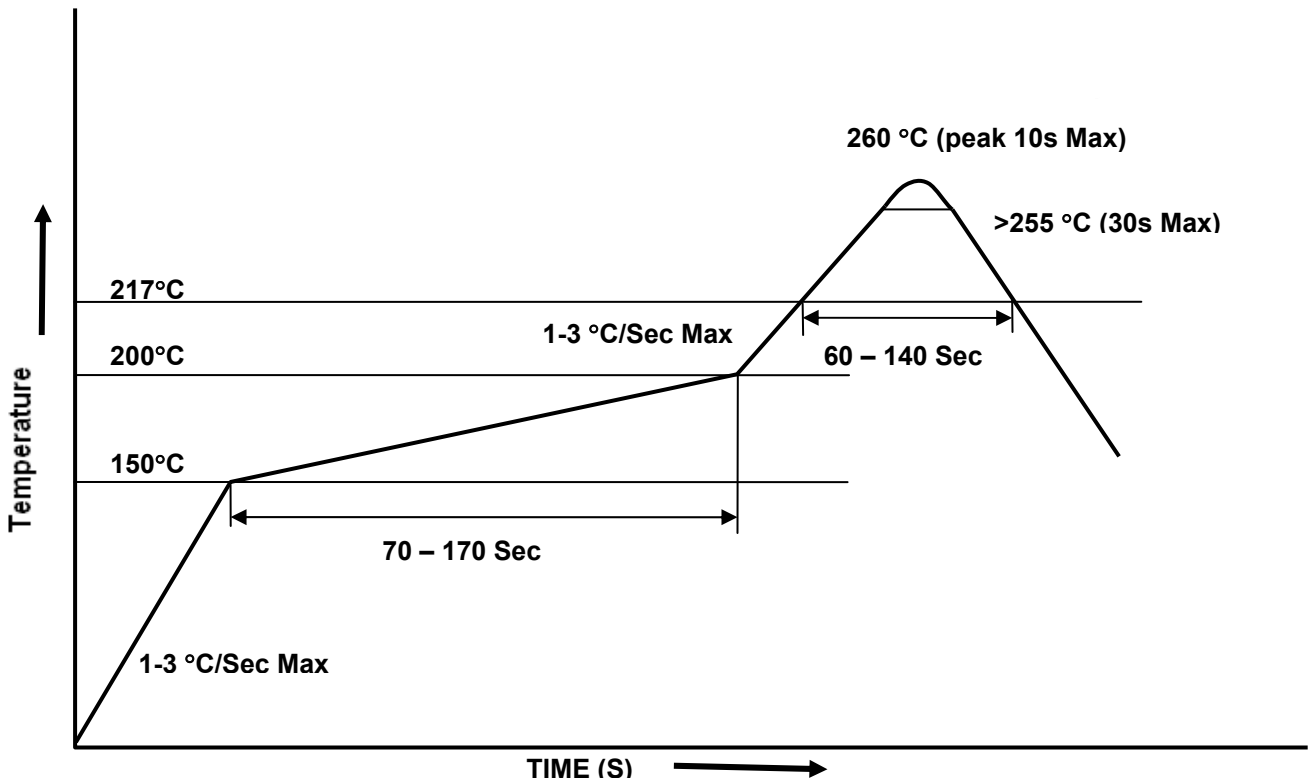


Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	10.4±0.1	10.0±0.1	1.5±0.1	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.4±0.1	16.0+0.3/ -0.1	4.5±0.1

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

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Solder Reflow Temperature Profile





4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

EL825 Series

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