

Features

- High collector- emitter voltage ($V_{CEO}=350V$)
- Current transfer ratio
(CTR: 50 to 600% at $I_F=5mA$, $V_{CE}=5V$)
- High isolation voltage between input and output
Viso = 5000 Vrms
- Compact dual-in-line package
- Pb free and RoHS compliant.
- UL approved (No E214129)
- VDE approved (No 132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CSA approved



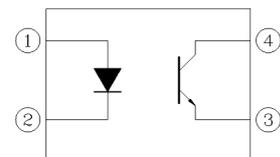
Description

The EL851 series devices consist an infrared emitting diodes, optically coupled to a phototransistor detector.

The devices are in a 4-pin DIP package and available in wide-lead spacing and SMD option.

Applications

- Telephone line interface
- Interface to power supply circuit
- Controller for SSRs. DC motor
- Programmable Controllers



1. Anode
2. Cathode
3. Emitter
4. Collector

4 PIN DIP HIGH VOLTAGE PHOTOTRANSISTOR PHOTOCOUPLER

EL851 series

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

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	80	mA
	Peak forward current (1 μ s pulse)	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	150	mW
Output	Collector power dissipation	P_C	300	mW
	Collector-Emitter voltage	V_{CEO}	350	V
	Collector Current	I_C	100	mA
	Emitter-Collector voltage	V_{ECO}	7	V
Total power dissipation		P_{tot}	260	mW
Isolation voltage ^{*1}		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-55~+100	$^\circ\text{C}$
Storage temperature		T_{stg}	-55~+150	$^\circ\text{C}$
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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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	$I_F = 10\text{mA}$
Reverse current	I_R	-	-	10	μA	$V_R = 5\text{V}$
Input capacitance	C_{in}	-	30	-	pF	$V = 0, f = 1\text{MHz}$

Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter dark current	I_{CEO}	-	-	100	nA	$V_{CE} = 200\text{V}$
Collector-Emitter breakdown voltage	BV_{CEO}	350	-	-	V	$I_C = 0.1\text{mA}$
Emitter-Collector breakdown voltage	BV_{ECO}	7	-	-	V	$I_E = 0.1\text{mA}$
Collector-Emitter capacitance	C_{CE}	-	10	-	pF	$V_{CE} = 0\text{V}, f = 1\text{MHz}$

Transfer Characteristics

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer Ratio	CTR	50	-	600	%	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_F = 20\text{mA}, I_C = 1\text{mA}$
Isolation resistance	R_{IO}	10^{11}	-	-	Ω	$V_{IO} = 500\text{Vdc}$
Input-output capacitance	C_{IO}	-	0.6	-	pF	$V_{IO} = 0, f = 1\text{MHz}$
Rise time	t_r	-	4	18	μs	$V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$
Fall time	t_f	-	5	18		

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

Typical Performance Curves

Figure 1. Forward Current vs Forward Voltage

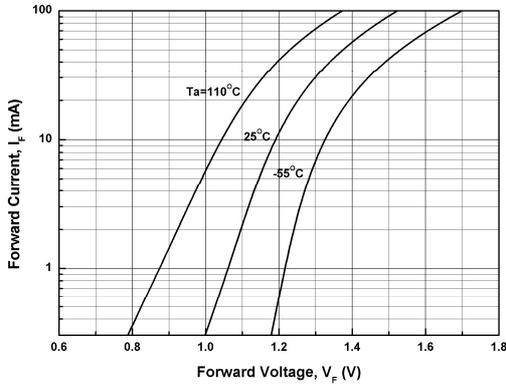


Figure 2. Current Transfer Ratio vs Forward Current

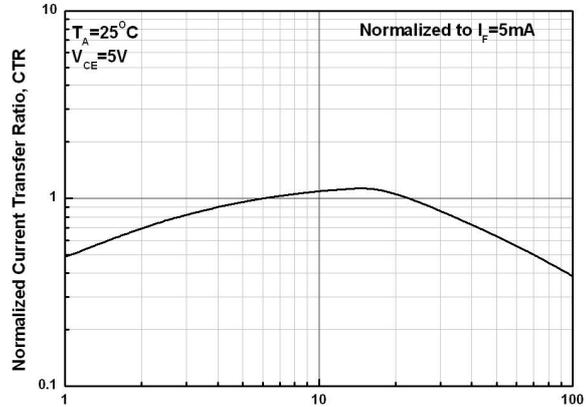


Figure 3. Collector Current vs Collector-emitter Voltage

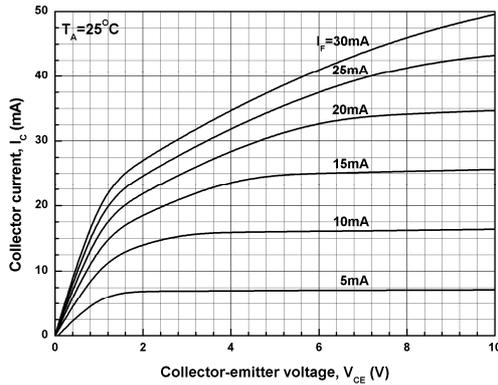


Figure 4. Relative Current Transfer Ratio vs Ambient Temperature

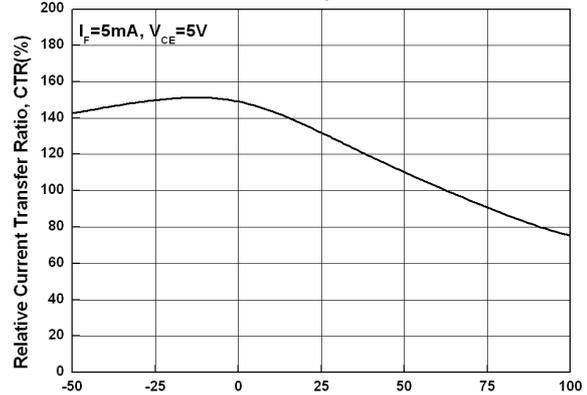
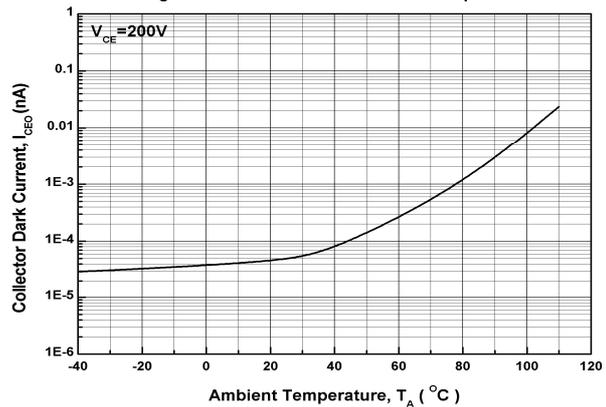
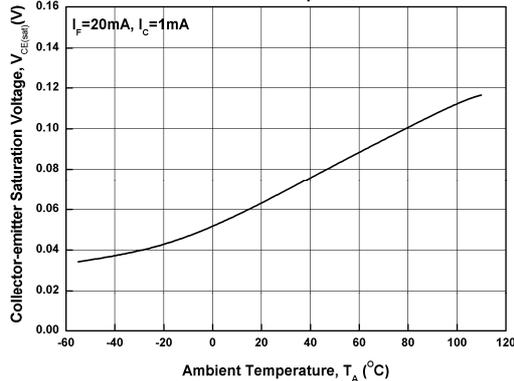


Figure 5. Collector-emitter Saturation Voltage vs Ambient Temperature



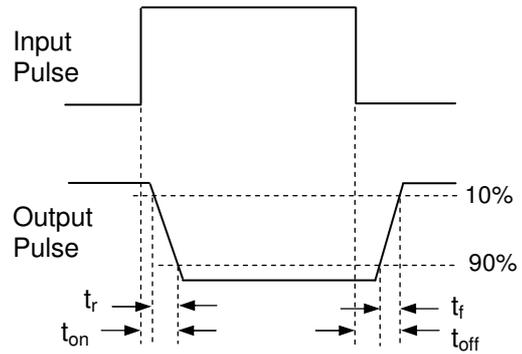
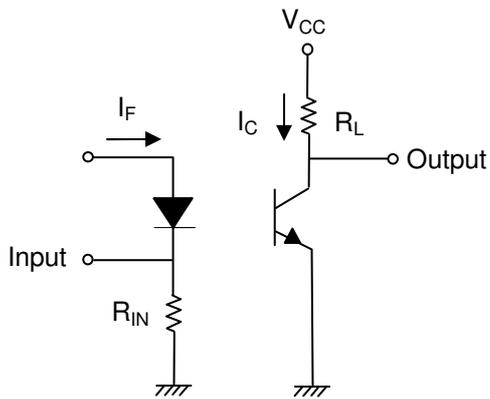
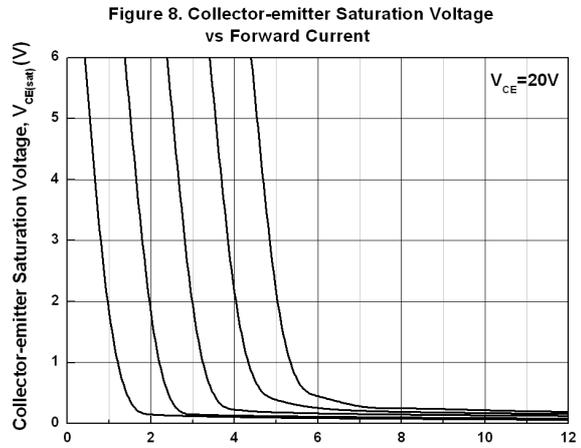
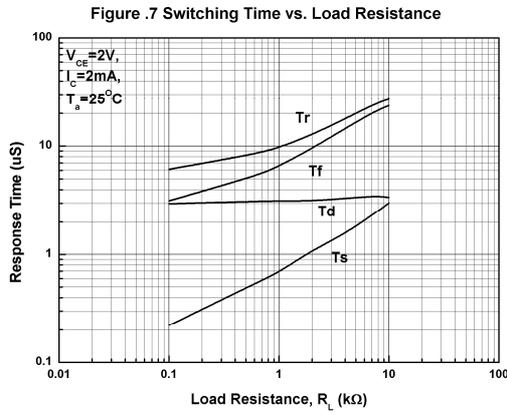


Figure 9. Switching Time Test Circuit & Waveforms

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EL851 series

Order Information

Part Number

EL851Y(Z)-V

Note

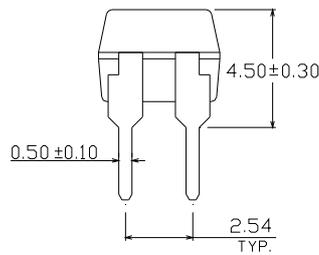
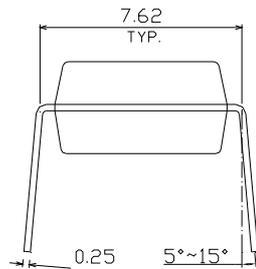
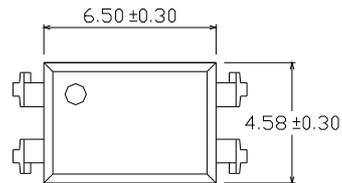
- Y = Lead form option (S, S1, M or none)
- Z = Tape and reel option (TA, TB, TU, TD or none)
- V = VDE safety (optional)

Option	Description	Packing quantity
None	Standard DIP-4	100 units per tube
M	Wide lead bend (0.4 inch spacing)	100 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
S (TU)	Surface mount lead form + TU tape & reel option	1500 units per reel
S (TD)	Surface mount lead form + TD tape & reel option	1500 units per reel
S1 (TU)	Surface mount lead form (low profile) + TU tape & reel option	1500 units per reel
S1 (TD)	Surface mount lead form (low profile) + TD tape & reel option	1500 units per reel

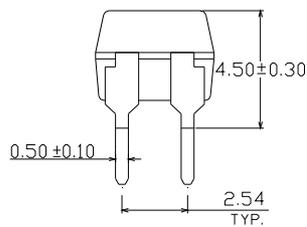
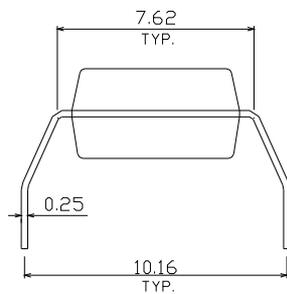
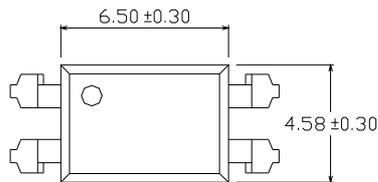
Package Drawings

(Dimensions in mm)

Standard DIP Type



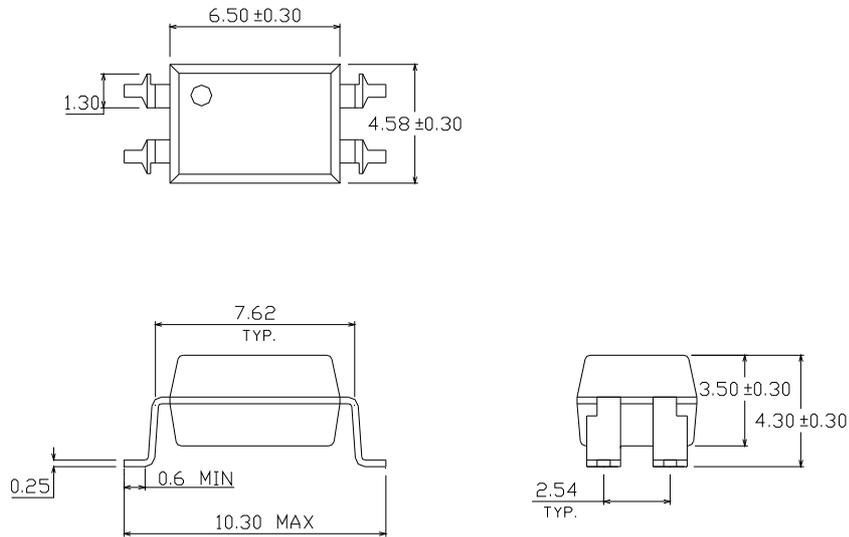
Option M Type



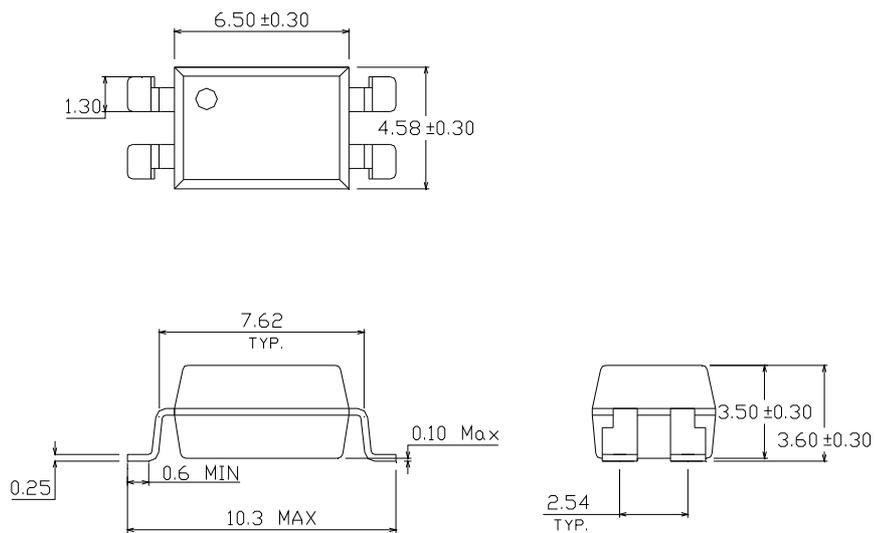
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Option S Type



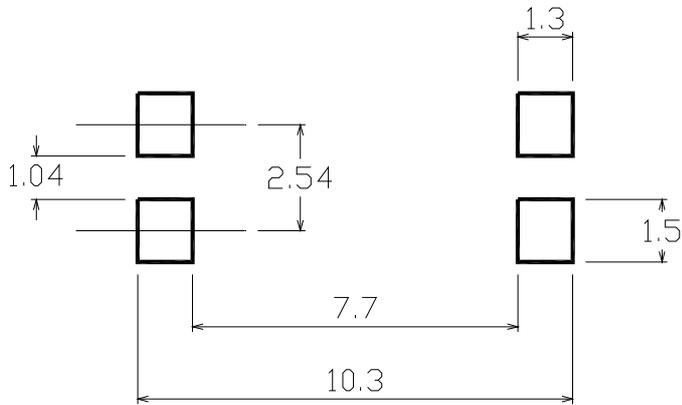
Option S1 Type



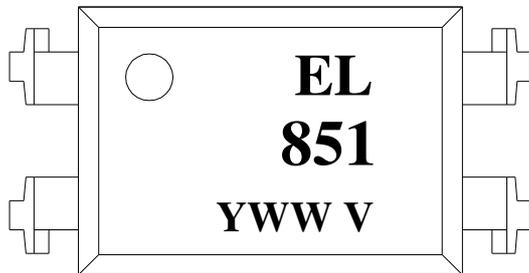
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Recommended pad layout for surface mount leadform



Device Marking

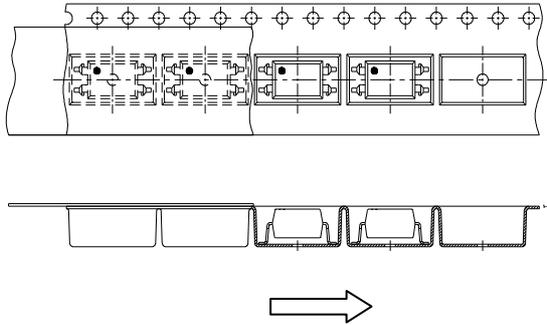


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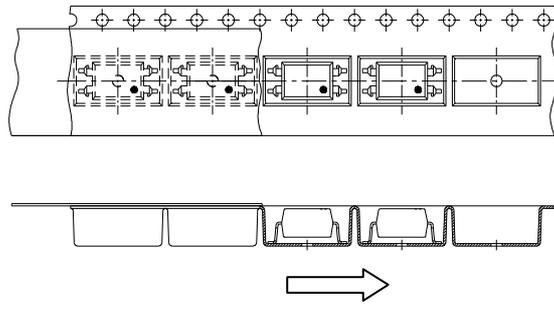
EL	denotes Everlight
851	denotes Part Number
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE safety

Tape & Reel Packing Specifications

Option TA



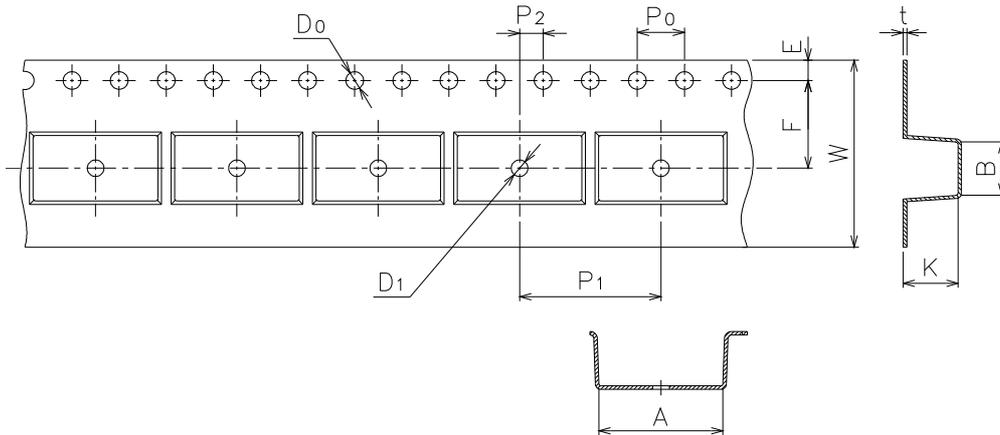
Option TB



Direction of feed from reel

Direction of feed from reel

Tape dimensions

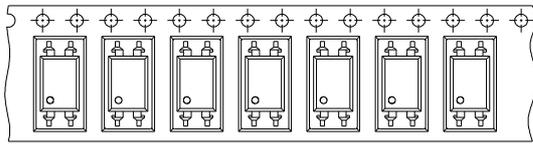


Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	10.4±0.1	4.55±0.1	1.5±0.1	1.5±0.05	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.1	0.33±0.1	16.0+0.3/ -0.1	4.55±0.1

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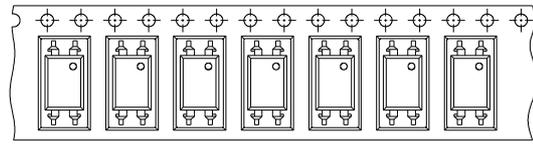
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Option TD



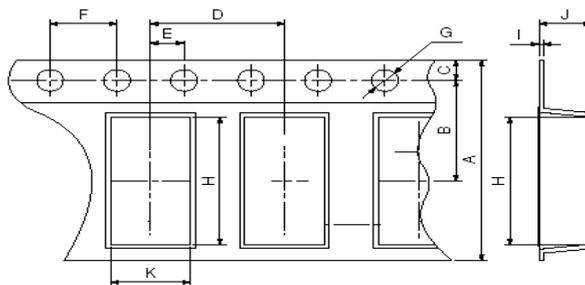
Direction of feed from reel

Option TU



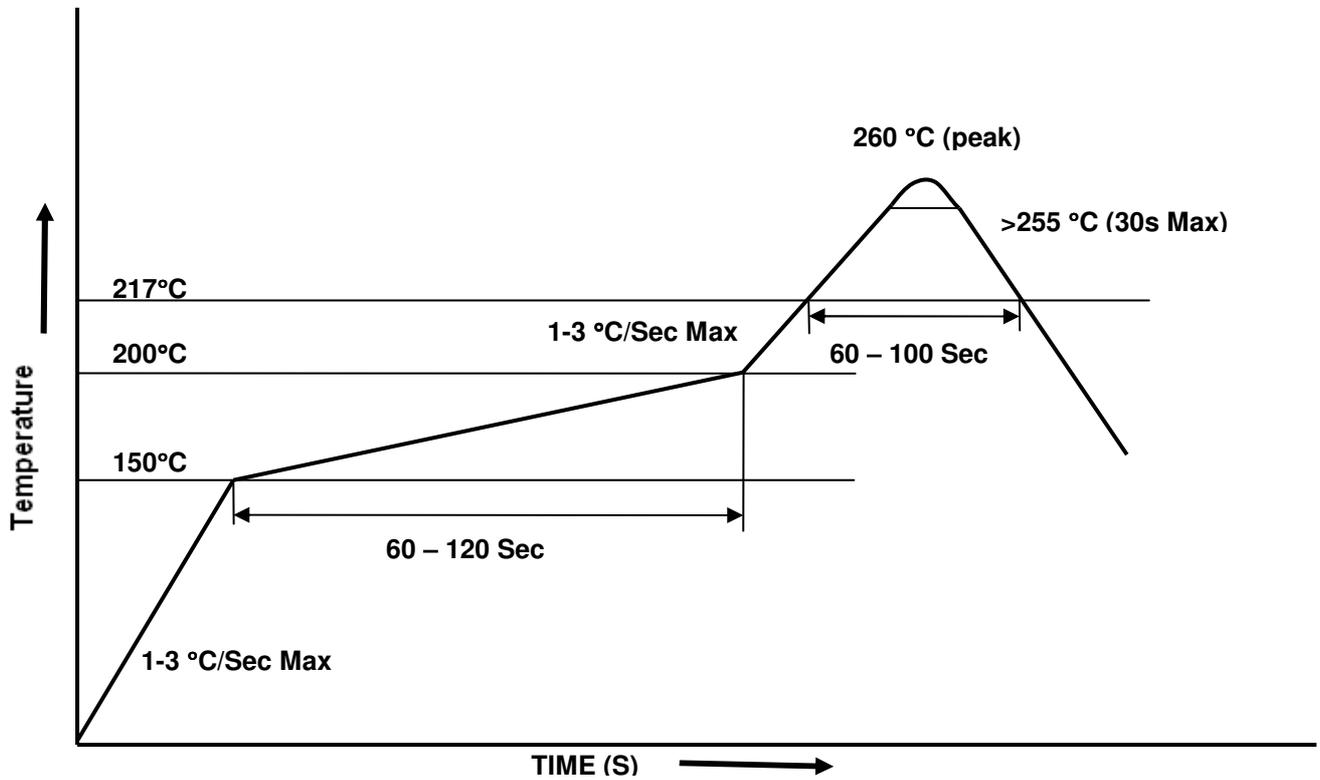
Direction of feed from reel

Tape dimensions



Dimension No.	A	B	C	D	E	F
Dimension(mm)	16.00±0.3	7.5±0.1	1.75±0.1	8.0±0.1	2.0±0.1	4.0±0.1
Dimension No.	G	H	I	J	K	
Dimension(mm)	1.5+0.1/-0	10.4±0.1	0.4±0.05	4.55±0.1	5.1±0.1	

Solder Reflow Temperature Profile



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