

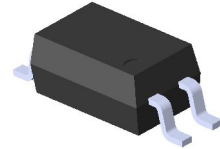


THE DATASHEET OF EL3H7(E)(TA)-G

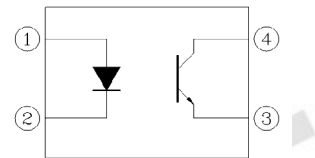


Features:

- Halogens free
- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
(CTR: 40~320% at $I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output ($V_{iso} = 3750\text{ V rms}$)
- Compact 4 Pin SSOP with a 2.0 mm profile
- Pb free and RoHS compliant.
- UL approved (No. 214129)
- VDE approval (132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CSA approved



Schematic



Pin Configuration

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

Description

The EL3H7-G series devices consist of an infrared emitting diode, optically coupled to a phototransistor detector encapsulated with green compound.

They are packaged in a 4-pin small outline SMD package.

Applications

- DC-DC Converters
- Programmable controllers
- Telecommunication equipments
- Signal transmission between circuits of different potentials and impedances

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

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current (1us, pulse)	I_{FP}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation Derating factor (above $T_a = 90^{\circ}\text{C}$)	P_D	70	mW
2.0			mW/ $^{\circ}\text{C}$	
Output	Power dissipation Derating factor (above $T_a = 70^{\circ}\text{C}$)	P_C	150	mW
			3.1	mW/ $^{\circ}\text{C}$
	Collector current	I_C	50	mA
	Collector-Emitter voltage	V_{CEO}	80	V
	Emitter-Collector voltage	V_{ECO}	7	V
Total power dissipation		P_{TOT}	200	mW
Isolation voltage ^{*1}		V_{ISO}	3750	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.

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}	-	-	100	nA	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	BV_{CEO}	80	-	-	V	$I_C = 0.1\text{mA}$
Emitter-Collector breakdown voltage	BV_{ECO}	7	-	-	V	$I_E = 0.1\text{mA}$

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

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer ratio	EL3H7	50	-	600	%	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$
	EL3H7A	80	-	160		
	EL3H7B	130	-	260		
	EL3H7C	200	-	400		
	EL3H7D	300	-	600		
	EL3H7E	100	-	200		
	EL3H7F	150	-	300		$I_F = 10\text{mA}, V_{CE} = 5\text{V}$
	EL3H7H	40	-	80		
	EL3H7I	63	-	125		
	EL3H7J	100	-	200		
	EL3H7K	160	-	320		
		CTR				

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

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Emitter saturation voltage	$V_{CE(sat)}$	-	0.1	0.2	V	$I_F = 10\text{mA}$, $I_C = 1\text{mA}$
Isolation resistance	R_{IO}	5×10^{10}	-	-	Ω	$V_{IO} = 500\text{Vdc}$, 40~60% R.H.
Floating capacitance	C_{IO}	-	0.3	1.0	pF	$V_{IO} = 0$, $f = 1\text{MHz}$
Rise time	t_r	-	5	18	μs	$V_{CE} = 2\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$
Fall time	t_f	-	3	18	μs	

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

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Typical Performance Curves

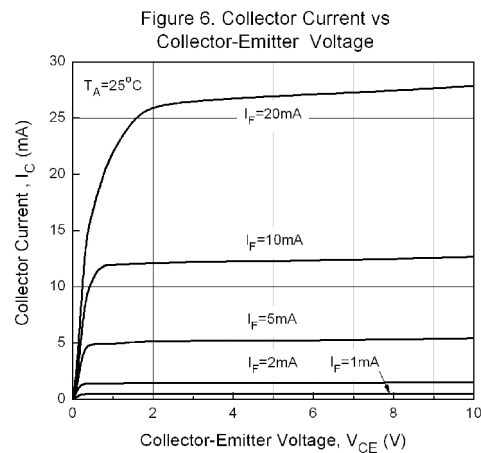
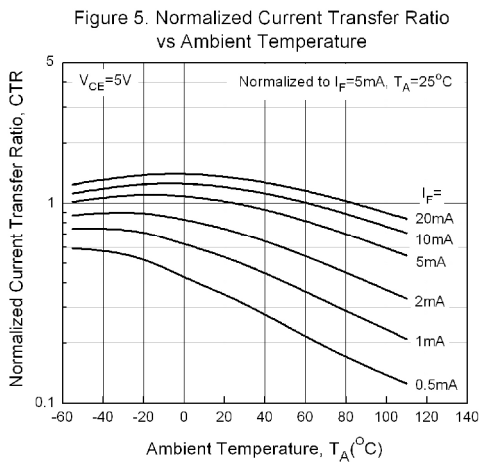
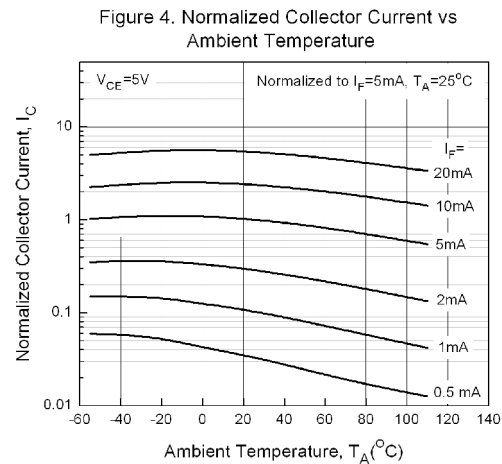
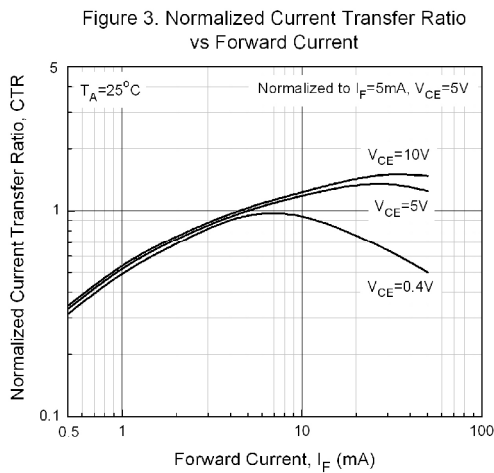
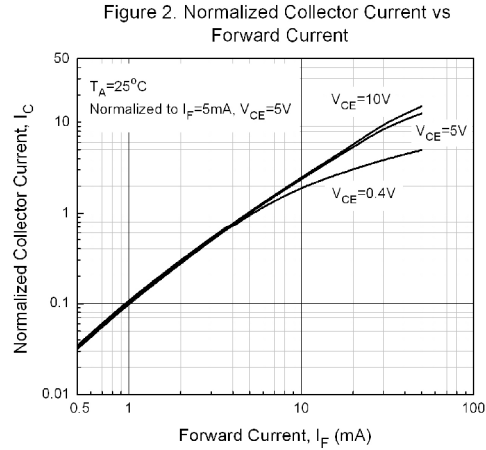
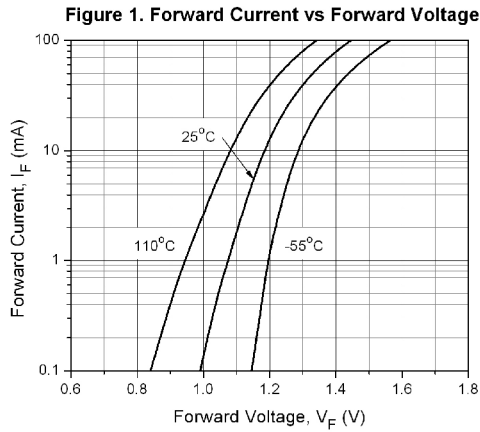


Figure 7. Collector Current vs Collector-Emitter Voltage

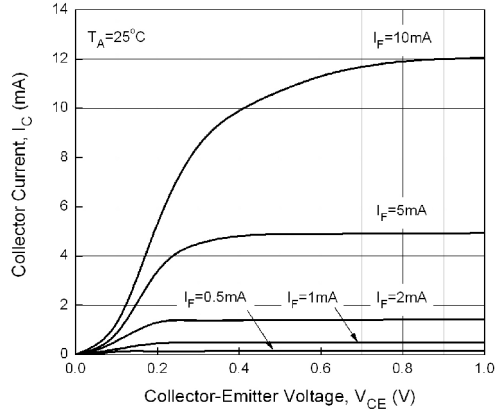


Figure 8. Collector Dark Current vs Ambient Temperature

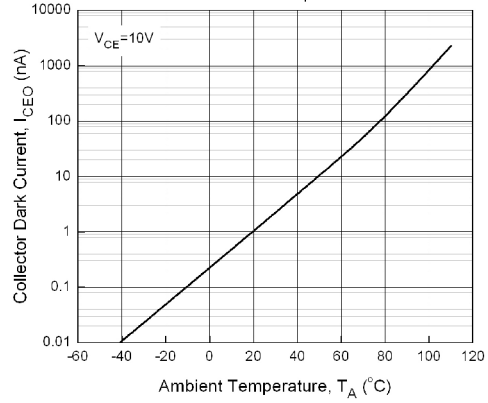


Figure 9. Collector-Emitter Saturation Voltage vs Ambient Temperature

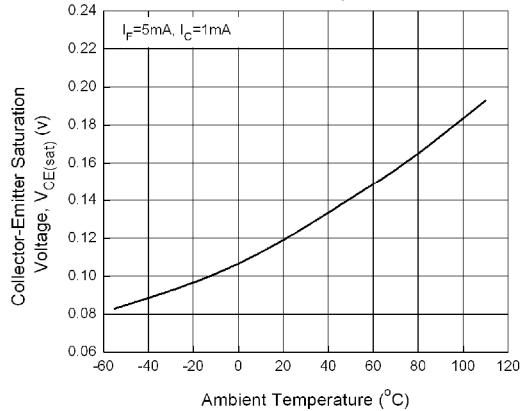


Figure 10. Switching Time vs Load Resistance

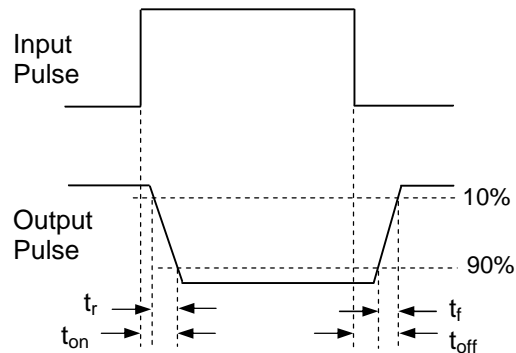
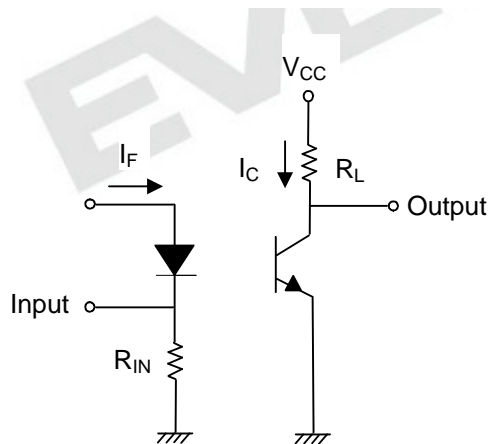
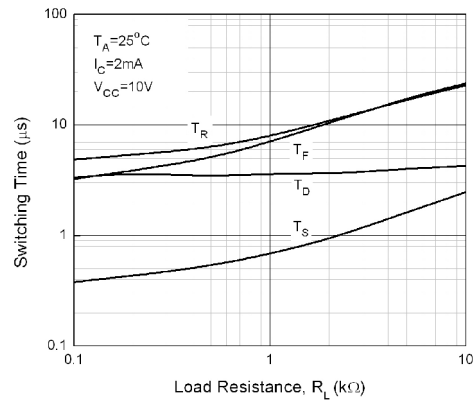


Figure 11. Switching Time Test Circuit & Waveforms

Order Information

Part Number

EL3H7(X)(Y)-VG

Note

3H7 = Part No.

X = CTR Rank (A, B, C, D, E, F, H, I, J, K or none)

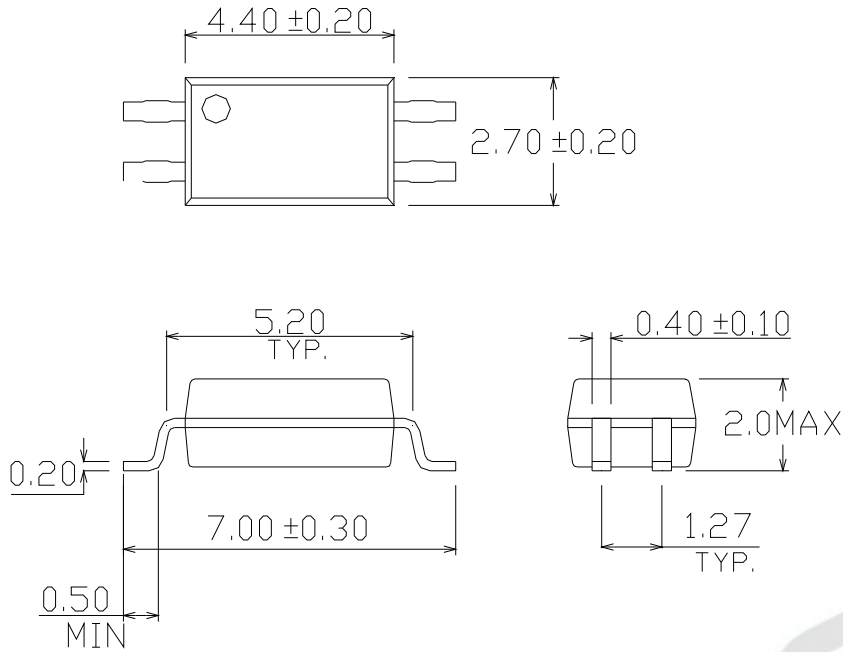
Y = Tape and reel option (TA, TB, EA, EB or none).

V = VDE (optional)

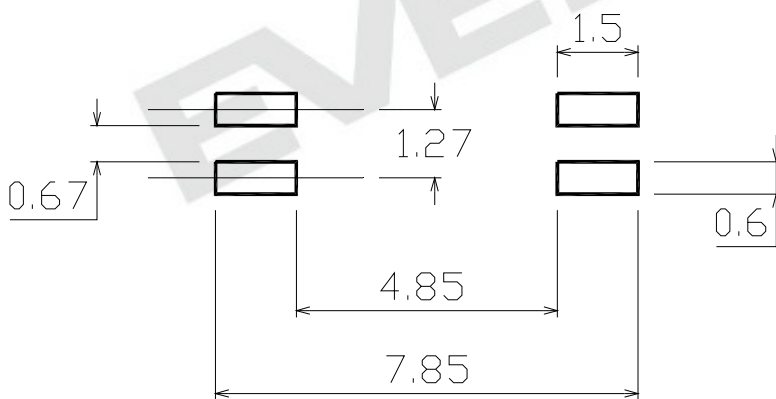
G = Halogens free

Option	Description	Packing quantity
None	Standard SMD option	100 units per tube
-V	Standard SMD option + VDE	100 units per tube
(TA)	TA Tape & reel option	5000 units per reel
(TB)	TB Tape & reel option	5000 units per reel
(TA)-V	TA Tape & reel option + VDE	5000 units per reel
(TB)-V	TB Tape & reel option + VDE	5000 units per reel
(EA)	TA Tape & reel option	1000 units per reel
(EB)	TB Tape & reel option	1000 units per reel
(EA)-V	TA Tape & reel option + VDE	1000 units per reel
(EB)-V	TB Tape & reel option + VDE	1000 units per reel

Package Drawing (Dimensions in mm)



Recommended pad layout for surface mount leadform



Device Marking



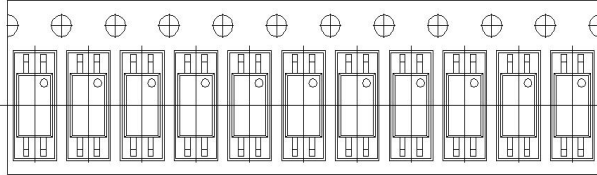
Notes

EL	denotes Everlight
3H7	denotes Device Number
R	denotes CTR Rank (A, B, C, D, E, F, H, I, J, K or none)
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE (optional)

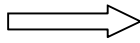
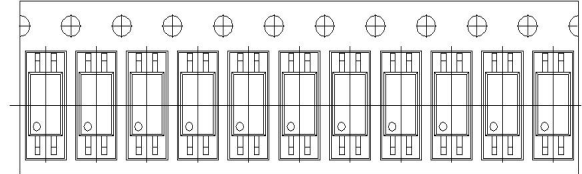
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Tape & Reel Packing Specifications

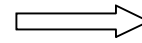
Option TA



Option TB

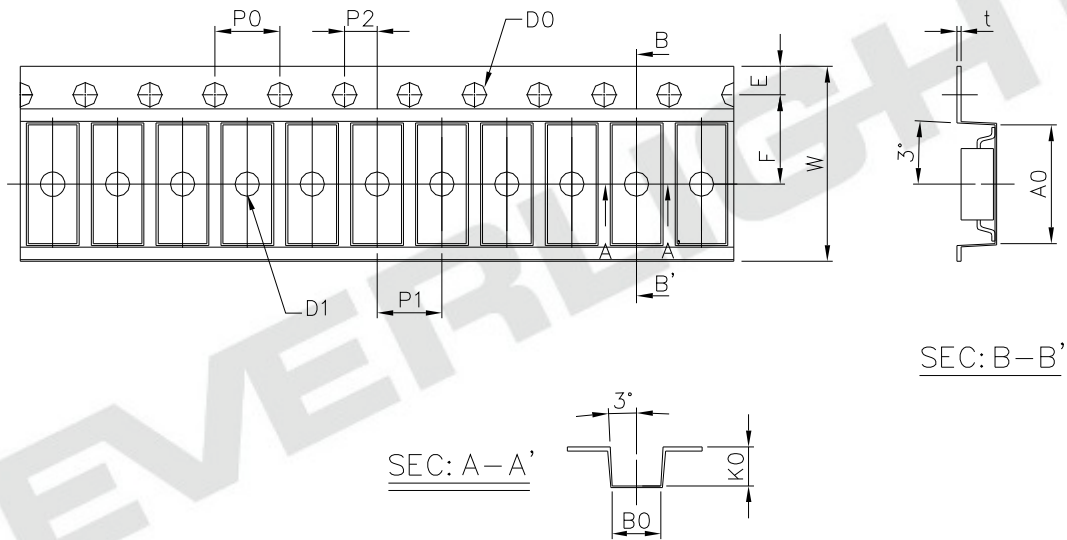


Direction of feed from reel



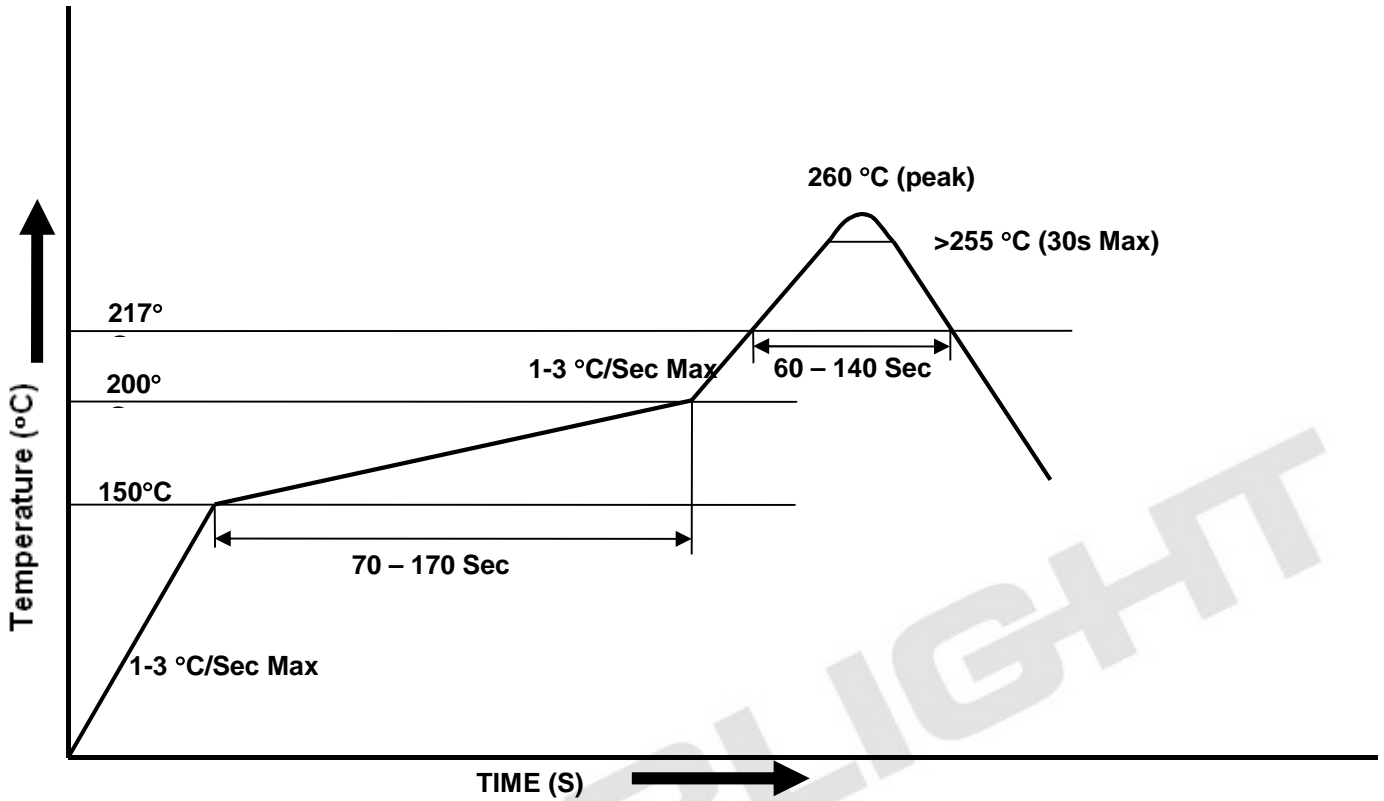
Direction of feed from reel

Tape dimensions



Dimension No.	A	B	Do	D1	E	F
Dimension (mm)	3.0 ± 0.1	7.3 ± 0.1	1.5 + 0.1/-0	1.5 ± 0.1	1.75 ± 0.1	5.5 ± 0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension (mm)	4.0 ± 0.15	4.0 ± 0.1	2.0 ± 0.1	0.25 ± 0.03	12.0 ± 0.2	2.4 ± 0.1

Solder Reflow Temperature Profile



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