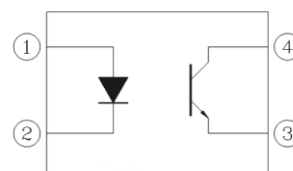
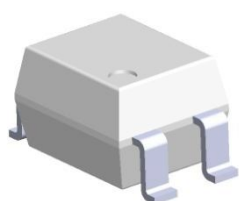


### 4 PIN DIP VERY HIGH ISOLATION VOLTAGE PHOTOCOUPLER CNY64(DFS) Series



#### Features:

- High Voltage , $BV_{CEO}=80V$  (min)
- Operating temperature up to  $+85^{\circ}C$
- High isolation voltage between input and output  
 $V_{IOTM} = 8200$  V peak for CNY64  
 $V_{IOTM} = 10000$  V peak for CNY64-V
- Rated recurring peak voltage (repetitive),  $V_{IORM} = 2200$  V
- Creepage current resistance according to VDE 0303/IEC 60112 comparative tracking index:  $CTI \geq 200$
- Thickness through insulation  $\geq 3mm$
- Pb free and RoHS compliant.
- CUL approved (No. E214129)
- VDE approved (No. 40027351)
- FIMKO approved (No. 28110)

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

#### Description

The CNY64(DFS)series contains an infrared emitting diode optically coupled to a phototransistor. These devices are packaged in an 4-pin SMD package and providing a distance between input and output for highest safety requirement of  $>3mm$ .

#### Applications

- Switch mode power supply
- Line receiver
- Computer peripheral interface
- Microprocessor system interface
- Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation):
  - for appl. class I - IV at mains voltage  $\leq 300$  V
  - for appl. class I - IV at mains voltage  $\leq 600$  V
  - for appl. class I - III at mains voltage  $\leq 1000$  V according to DIN EN 60747-5-5.

**Absolute Maximum Ratings (T<sub>a</sub>=25°C)**

	Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	75	mA
	Peak forward current (<10μs)	I <sub>FM</sub>	1.5	A
	Reverse voltage	V <sub>R</sub>	5	V
	Power dissipation	P <sub>D</sub>	120	mW
Output	Collector current	I <sub>C</sub>	50	mA
	Collector power dissipation	P <sub>C</sub>	150	mW
	Collector-Emitter voltage	V <sub>CEO</sub>	80	V
	Emitter-Collector voltage	V <sub>ECO</sub>	7	V
Total Power Dissipation		P <sub>TOT</sub>	250	mW
Isolation Voltage* <sup>1</sup>		V <sub>ISO</sub>	8200	V rms
Operating Temperature		T <sub>OPR</sub>	-55 to 85	°C
Storage Temperature		T <sub>STG</sub>	-55 to 100	°C
Soldering Temperature* <sup>2</sup>		T <sub>SOL</sub>	260	°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 2mm from case, <10 seconds

**Electro-Optical Characteristics (Ta=25°C unless specified otherwise)**

**Input**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage	$V_F$	-	1.6	2.0	V	$I_F = 50\text{mA}$
Reverse current	$I_R$	-	-	10	$\mu\text{A}$	$V_R = 5\text{V}$
Input capacitance	$C_{in}$	-	-	100	pF	$V = 0, f = 1\text{MHz}$

**Output**

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Collector-Emitter dark current	$I_{CEO}$	-	-	200	nA	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	$BV_{CEO}$	80	-	-	V	$I_C = 1\text{mA}$
Emitter-Collector breakdown voltage	$BV_{ECO}$	7	-	-	V	$I_E = 0.1\text{mA}$
Collector-Emitter capacitance	$C_{CE}$	-	-	50	pF	$V_{CE} = 0\text{V}, f = 1\text{MHz}$

**Transfer Characteristics**

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Current Transfer ratio	CTR	63	-	300	%	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$
Collector-Emitter saturation voltage	$V_{CE(sat)}$	-	-	0.3	V	$I_F = 10\text{mA}, I_C = 1\text{mA}$
Coupling capacitance	$C_{IO}$	0.3			pF	$f=1\text{MHz}$
Isolation resistance	$R_{IO}$	$10^{11}$	-	-	$\Omega$	$V_{IO} = 500\text{Vdc},$
Turn-on time	$T_{on}$	-	6	18	$\mu\text{s}$	$V_{CC} = 5\text{V},$ $I_C = 5\text{mA}, R_L = 100\Omega$
Turn-off time	$T_{off}$	-	7	18		
Rise time	$t_r$	-	3	18		
Fall time	$t_f$	-	5	18		

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

Typical Electro-Optical Characteristics Curves

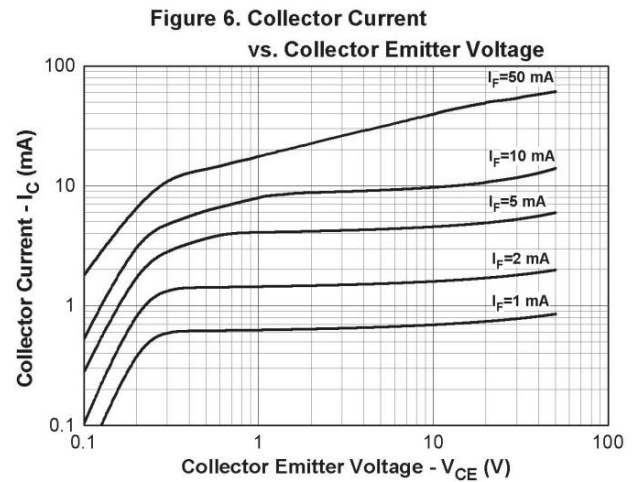
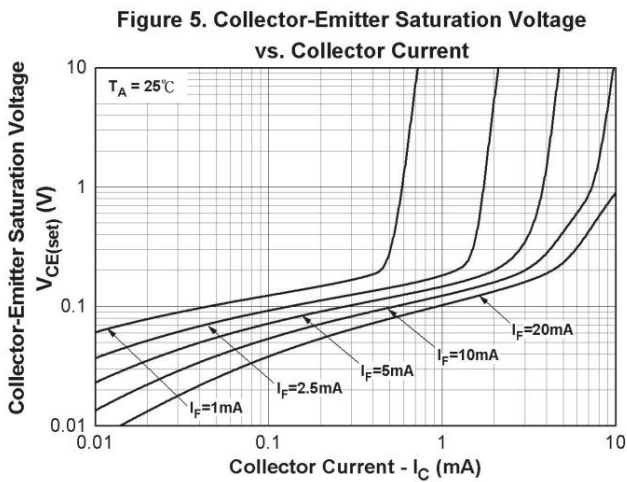
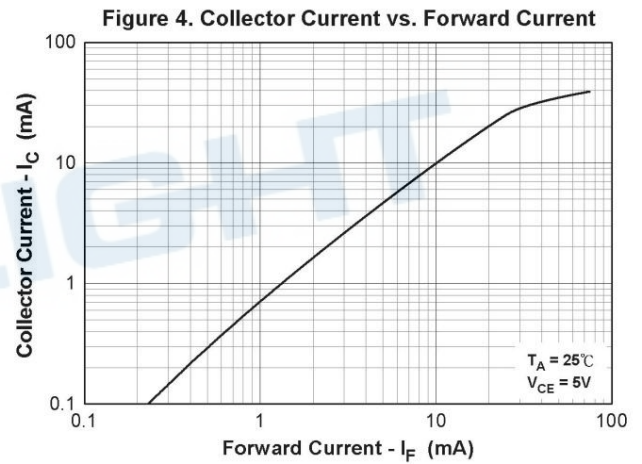
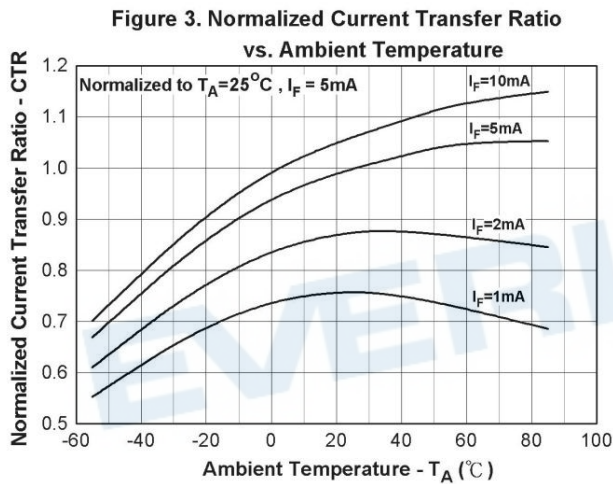
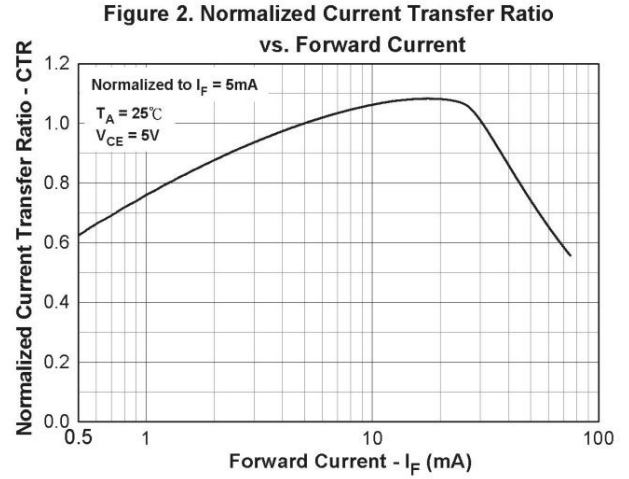
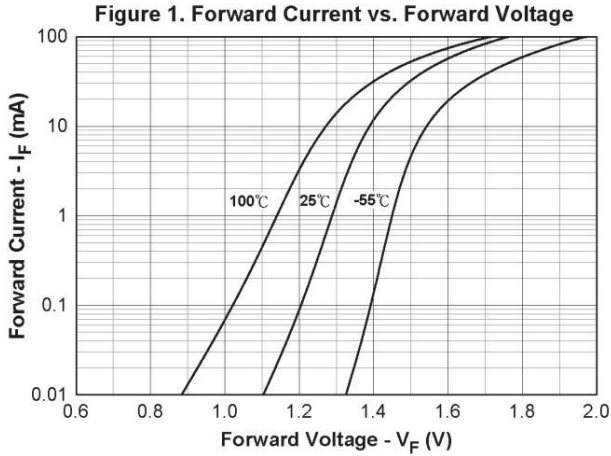


Figure.7 Collector Dark Current vs. Ambient Temperature

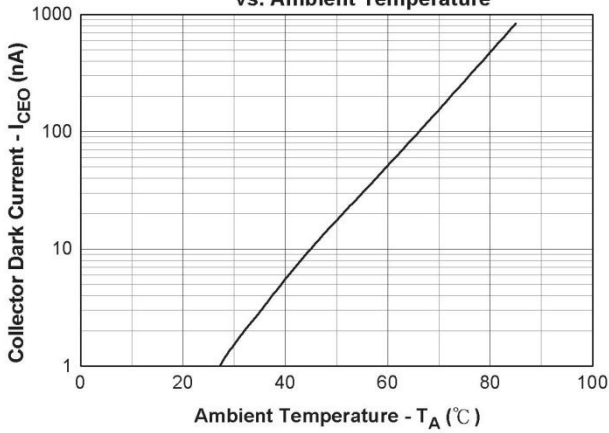


Figure 8. Turn on/off Time vs. Forward Current

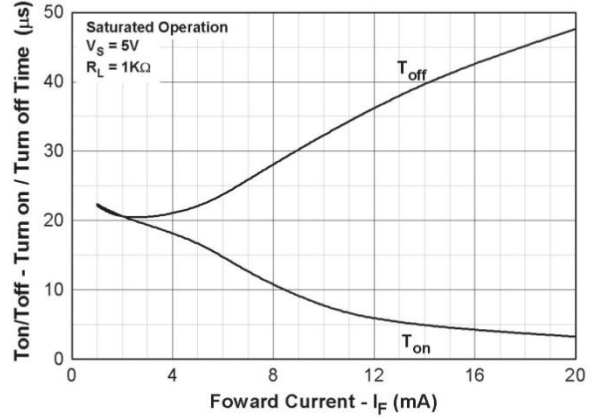


Figure 9. Turn on/off Time vs. Collector Current

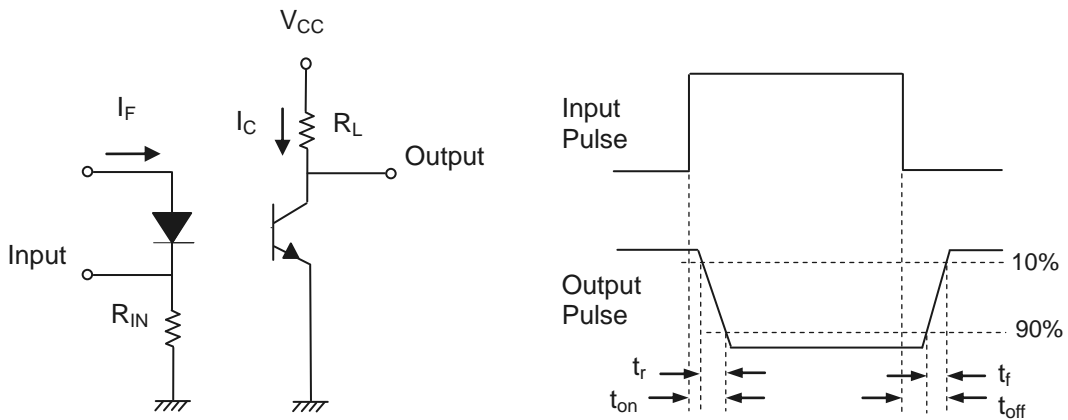
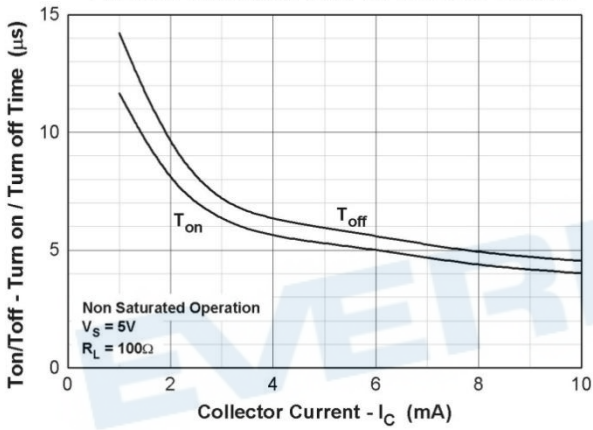


Figure 10. Switching Time Test Circuit & Waveforms

## Order Information

### Part Number

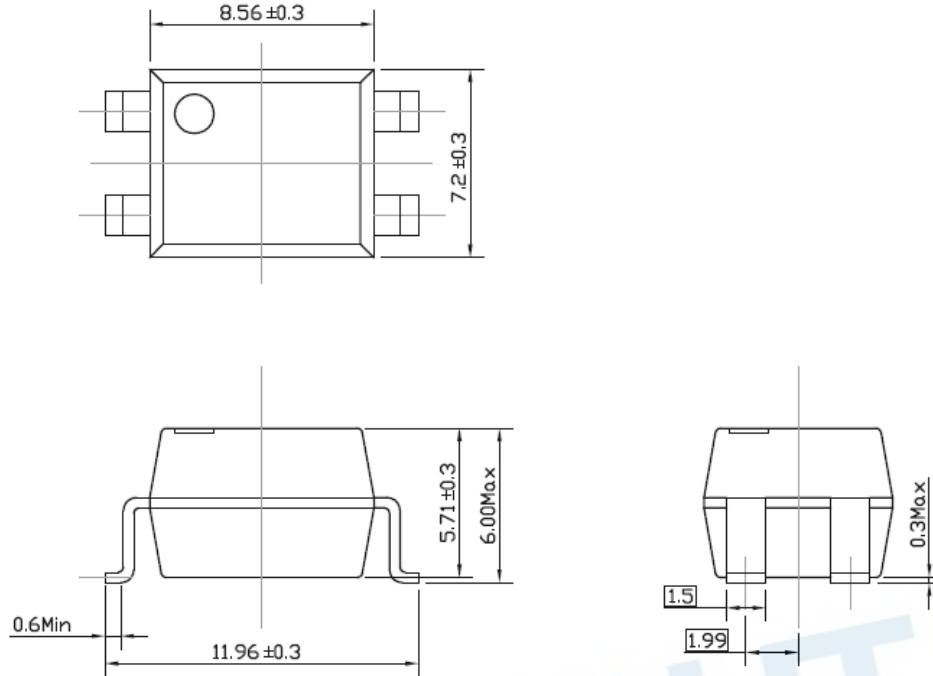
**CNY64S(Z)(DFS)-V**

### Note

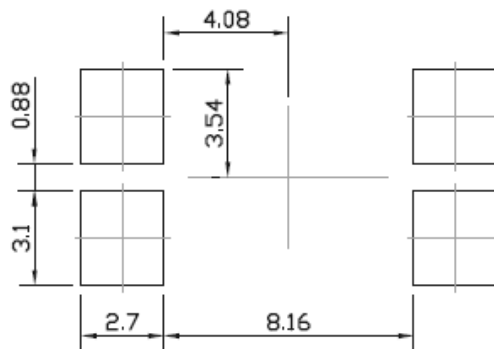
S = Lead frame option SMD type  
Z = Tape and reel (TA)  
DFS= Customer code  
V = VDE safety (optional)

Option	Description	Packing quantity
CNY64S	Standard	60 units per tube
CNY64S-V	Standard + VDE	60 units per tube
CNY64S(TA)	Surface mount lead form + tape & reel option	500 units per reel
CNY64S(TA)-V	Surface mount lead form + tape & reel option + VDE	500 units per reel

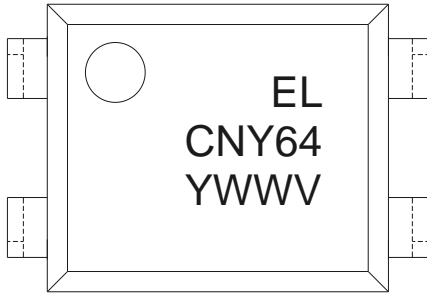
Package Dimension (Dimensions in mm)



Recommended pad layout for surface mount leadform



## Device Marking



## Notes

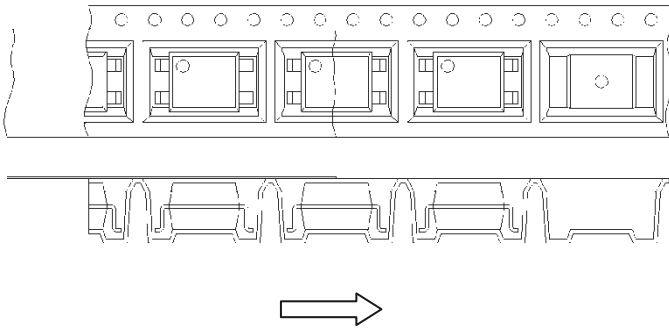
EL	denotes Everlight
CNY64	denotes Part no.
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE safety (optional)

EVERLIGHT



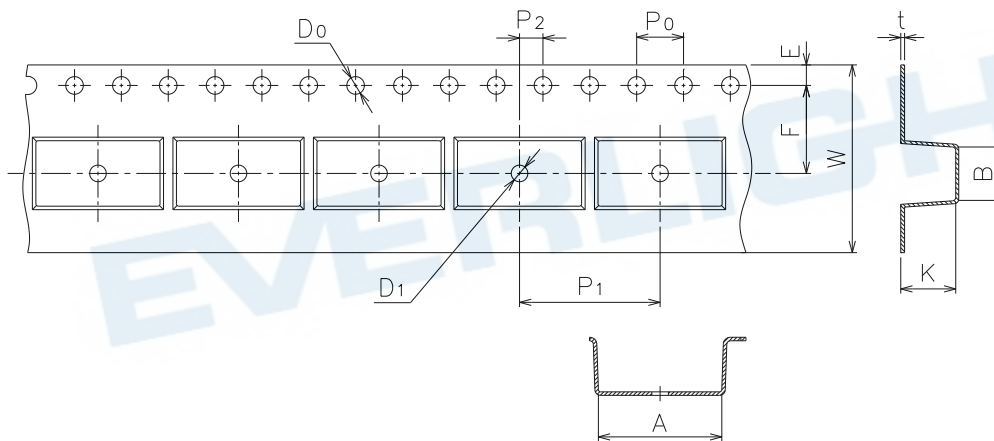
**Tape & Reel Packing Specifications**

**Option TA**



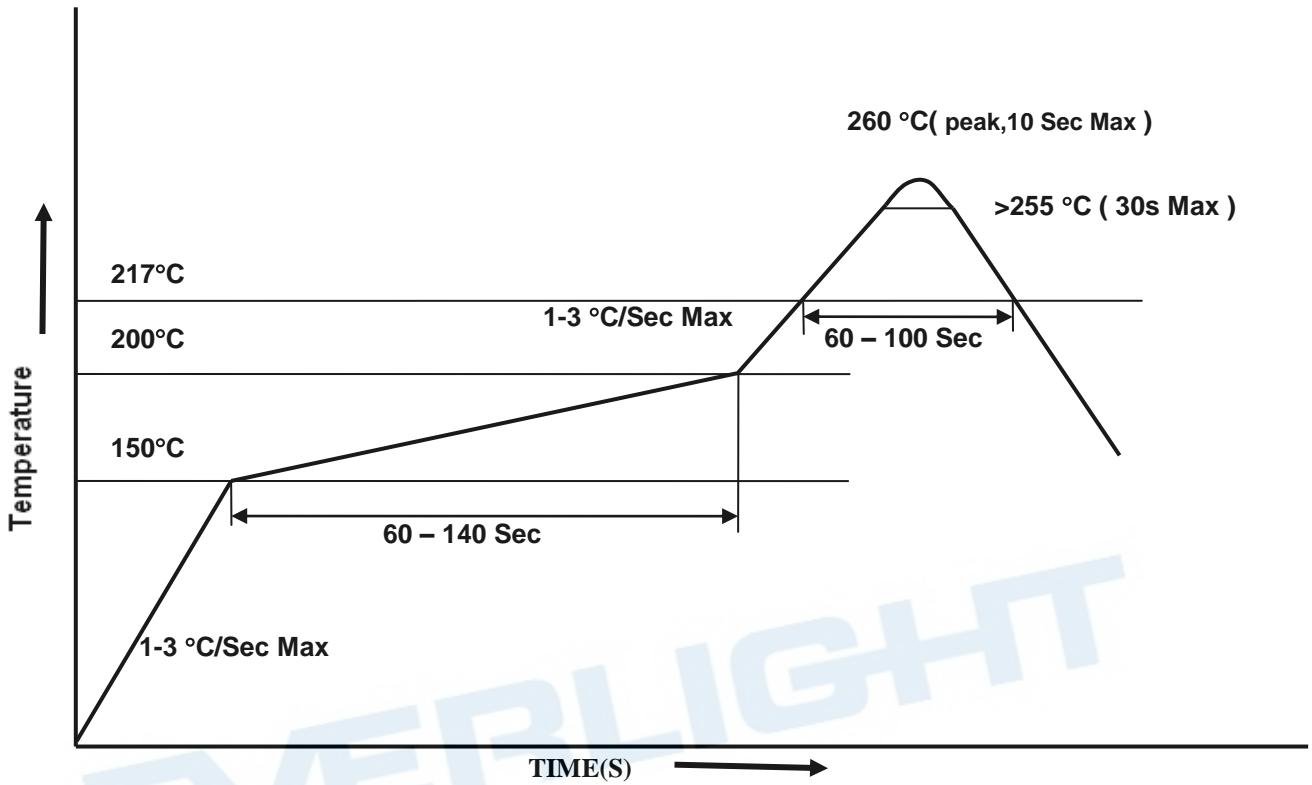
Direction of feed from reel

**Tape dimensions**



Dimension No.	<b>A</b>	<b>B</b>	<b>Do</b>	<b>D1</b>	<b>E</b>	<b>F</b>
Dimension(mm)	12.6±0.1	6.6±0.1	1.5+0.1/-0	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	<b>Po</b>	<b>P1</b>	<b>P2</b>	<b>t</b>	<b>W</b>	<b>K</b>
Dimension(mm)	4.0±0.1	16.0±0.1	2.0±0.1	0.5±0.05	16.0±0.3	7.31±0.1

### Solder Reflow Temperature Profile



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