

# CD4148WP



## FEATURES

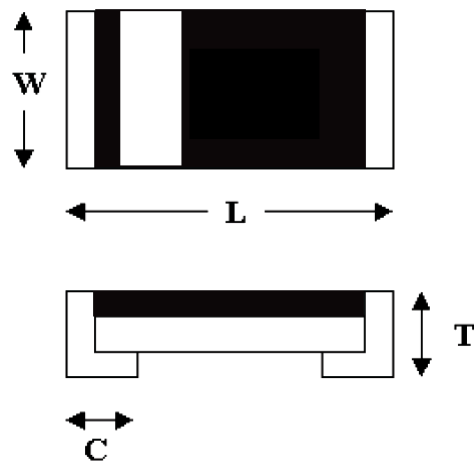
- Silicon epitaxial planar diode
- SMD chip pattern, available in various dimension included 0805 & 0603
- Leadfree and RoHS compliance components
- For small signal switching and operating ambient temperature less than 55°C and voltage withstand less than 60V; not suitable for AC switching input as rectified circuit and high reverse voltage location. is suitable for those application

## MECHANICAL CHARACTERISTICS

- Size: 1206
- Weight: approx. 10mg
- Marking: Cathode terminal

## DIMENSIONS

Dimension/mm	1206
L	3.2±0.2
W	1.5±0.2
T	0.85±0.1
C	0.55±0.2



## THERMAL CHARACTERISTICS<sup>1)</sup>

Parameter at $T_{amb}=25^{\circ}C^{1)}$	Symbol	Value	Unit
Forward Power Dissipation Power derating above 25°C	$P_{tot}$	400	mW
		3.2	mW/°C
Junction Temperature	$T_j$	150	°C
Thermal Resistance Junction to Ambient air	$R_{\theta JA}$	375	°C/W
Operating & Storage Temperature range	$T_{stg}$	-55 to 150	°C

1) Valid provided that electrodes are kept at ambient temperature.

## MAXIMUM RATING<sup>1)</sup>

Parameter at $T_{amb}=25^{\circ}C^{1)}$	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$	75	V
Average rectified current sin half wave rectification with resistive load	$I_{F(AV)}$	150	mA
Repetitive Peak Forward Current at $T_{amb}=25^{\circ}C$	$I_{FRM}$	300	mA
Non-Repetitive Surge Forward Current at $t < 1s$ and $T_j=25^{\circ}C$ at $t \leq 8.3ms$ and $T_j=25^{\circ}C$	$I_{FSM}$	500	mA
		1000	mA

1) Valid provided that electrodes are kept at ambient temperature.

## ELECTRICAL CHARACTERISTICS<sup>1)</sup>

Parameter at $T_{amb}=25^{\circ}C^{1)}$	Symbol	Value	Unit
Forward Voltage at $I_F=10mA$ at $I_F=100mA$	$V_F$	1.0 <small>MAX</small>	V
		1.25 <small>MAX</small>	V
Leakage Current at $V_R=20V$	$I_R$	0.025 <small>MAX</small>	$\mu A$
Leakage Current at $V_R=75V$		5 <small>MAX</small>	$\mu A$
Capacitance at $V_R=0V, f=1MHz$	$C_{tot}$	4 <small>MAX</small>	pF
Reverse Recovery Time at $I_F=I_R=10mA, R_L=100\Omega$	$t_{rr}$	4 <small>MAX</small>	ns

1) Valid provided that electrodes are kept at ambient temperature.

## TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

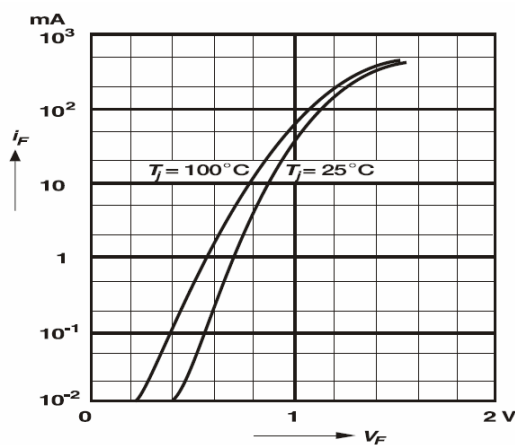


Figure 2. Power De-rating

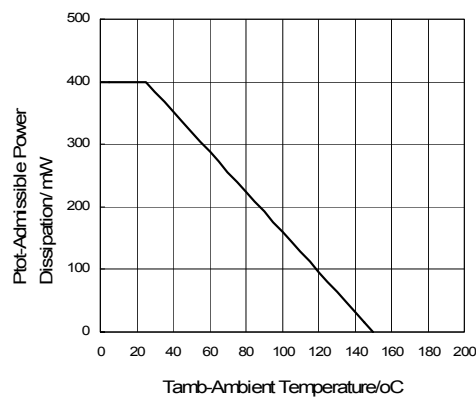


Figure 3. Forward Current De-rating

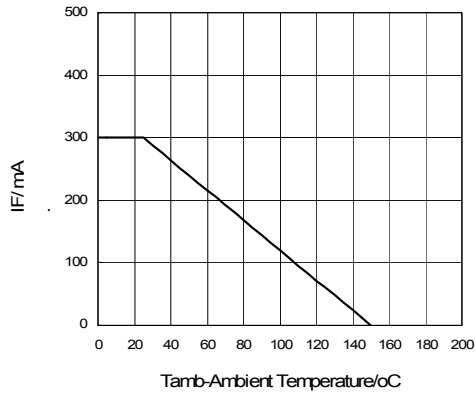
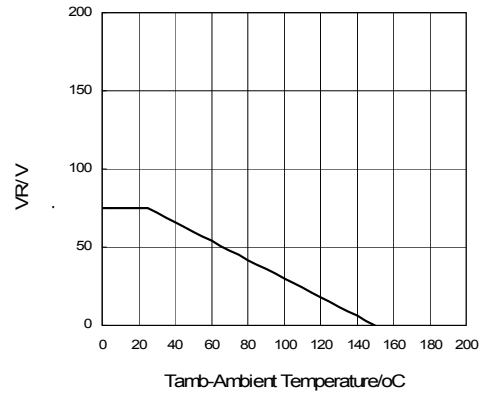


Figure 4. Reverse Voltage De-rating



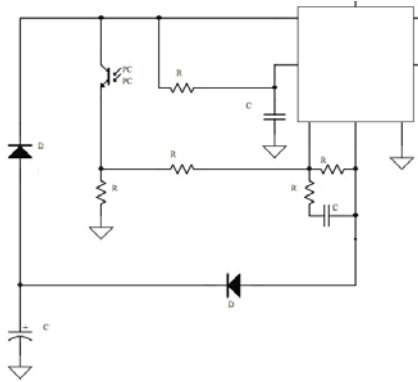
## TEST CHARACTERISTICS

Test Item	Test Condition	Requirement
Solderability	Sn bath at 245±5°C for 2±0.5s	>95% area tin covered
Resistance to Soldering Heat	Sn bath at 260±5°C for 10±2s	V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec; no mechanical damage
Humidity Steady State	At 85°C 85%RH for 168hrs	V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec
Continue Forward Operating Life	At 25°C I <sub>F</sub> = 1.1I <sub>F</sub> for 1000hrs	V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec
Thermal Shock	-55 ±5°C/5min to 150±5°C/5min for 10cycles	V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec
Bending Strength	Bending up to 2mm for 1cycle	V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec; no mechanical damage

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## APPLICATIONS

- Function: suit for small signal switching application
- Typical Application circuit:



- Typical Product field: General application except high reverse voltage location
- Soldering Condition:

### Soldering Condition & Caution

- Recommended Soldering Condition  
(Refer to IPC/JEDEC J-STD-020D 4-1&5.2)

Recommended Profile Condition	Sn-Pb Soldering	Leadfree Soldering	Wave Soldering
Ramp-up rate (from pre-heat stage)	<3°C/s	<3°C/s	ΔT<150°C
Pre-heat Temperature & Time	100-150 °C 60-120s	150-200 °C 60-120s	100-150 °C 60-120s
Soldering Temperature & Time	183 °C 60-150s	217 °C 60-150s	260±5°C 5±2s
Peak Temperature	230±5°C <260°C	245±5°C <260°C	260±5°C
Time within 5°C of peak temperature	10-20s	20-30s	-
Ramp-down rate	<6°C/s	<6°C/s	<6°C/s
Time 25°C to peak temperature	<6min	<8min	-

Manual Soldering: Approx. 350°C for 3s, avoid solder iron tip direct touch the components body

## Recommended Soldering Profile

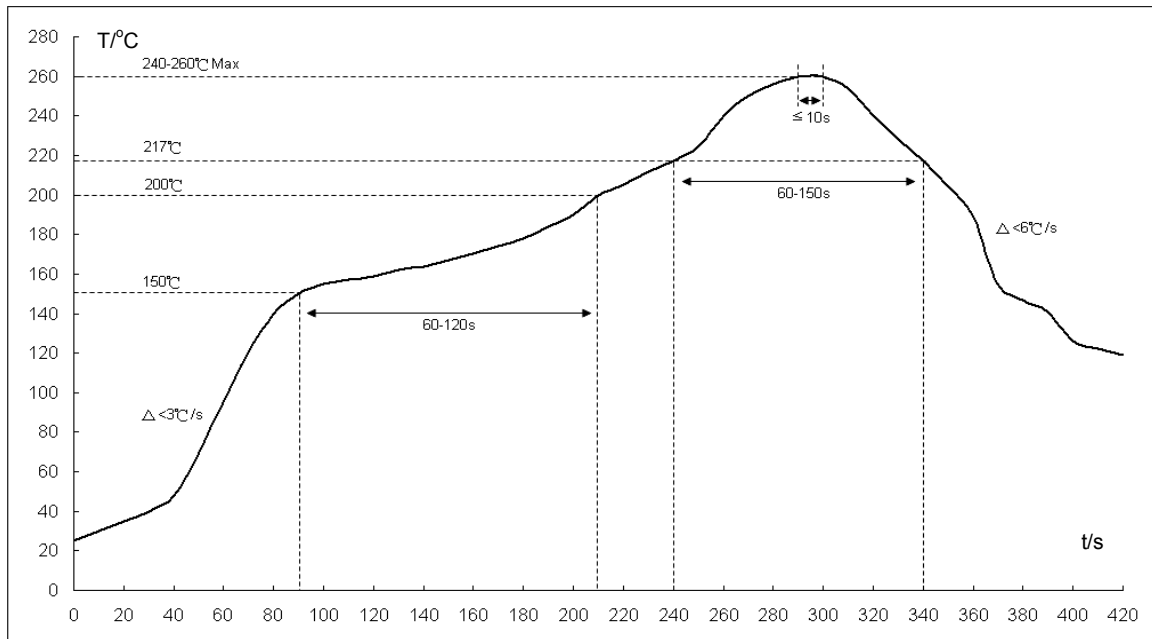


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

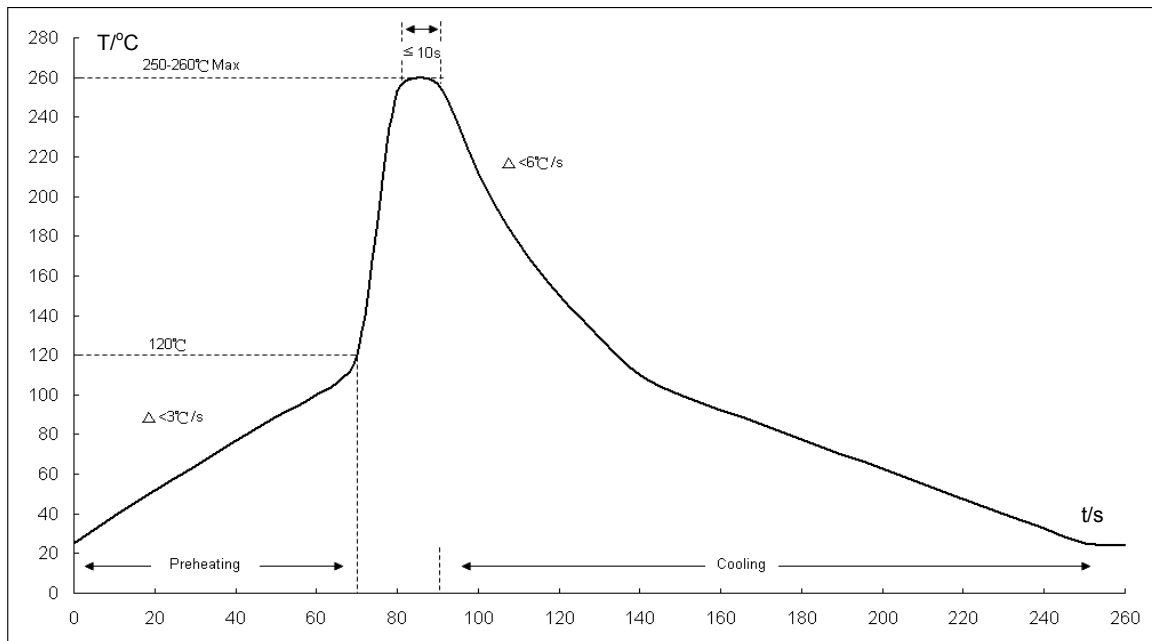
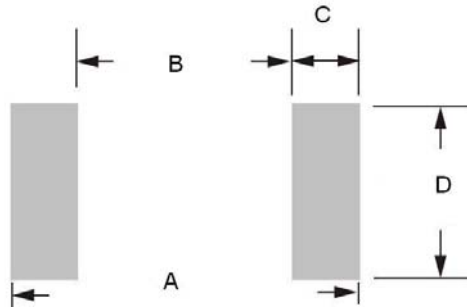


Fig2: Wave soldering profile

- \*1. The recommended profiles are referring to IPC/JEDEC J-STD-020D & IEC-60068-2-58
- \*2. Chip diodes are able to stand maximum soldering temperature up to 260°C max for 10s, and the soldering cycles with max 3 times, referring to IEC-60068-2-58

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■ Recommended Soldering Footprint:



■ Reflow/Wave Soldering

Product Size	Dimension/ mm			
	A	B	C	D
1206	3.8-4.6	2.2	0.8-1.2	1.5-1.7

- Storage Condition: Product termination solderability can degrade due to high temperature and humidity or chemical environment. Storage condition must be in an ambient temperature of <40°C and ambient humidity of <75%RH, and free from chemical.

## ENVIRONMENTAL CHARACTERISTICS

Product	Hazardous Substance or Element/ppm					
	Pb	Cd	Hg	Cr <sup>6+</sup>	PBB	PBDE
	<1000	<100	<1000	<1000	<1000	<1000

Product	Halogen Substance/ ppm				
	F	Cl	Br	I	Total
	<900	<900	<900	<900	<1500

## PACKING METHOD

Product	Quantity/Reel	Reel Size	Tape
	5,000pcs	7"	Paper

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