■ Switching Diode

lead-free ROHS

■ 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. CD4148WN is suitable for those application



■ Simplified outline(SMD-1206)

■ MECHANICAL CHARACTERISTICS

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

■ THERMAL CHARACTERISTICS [1)]

Parameter at T_{amb}=25°C[1)]	Symbol	Value	Unit
Forward Power Dissipation	P_{tot}	400	mW
Power derating above 25°C		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[1)]

Parameter at T_{amb}=25°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°C	I_{FRM}	300	mA
Non-Repetitive Surge Forward Current at t<1s and T_j=25°C	I_{FSM}	500	mA
at t≦8.3ms and T_j=25°C		1000	mA

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

■ ELECTRICAL CHARACTERISTICS[1)]

Parameter at T_{amb}=25°C[1)]	Symbol	Value	Unit
Forward Voltage at I_F=10mA	V_F	1.0 MAX	V
at I_F=100mA		1.25 MAX	V
Leakage Current at V_R=20V	I_R	0.025 MAX	uA
Leakage Current at V_R=75V		5 MAX	uA
Capacitance at V_R=0V, f=1MHz	C_{tot}	4 MAX	pF
Reverse Recovery Time at I_F =I_R=10mA,R_L=100Ω	t_{rr}	4 MAX	ns

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

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■ TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

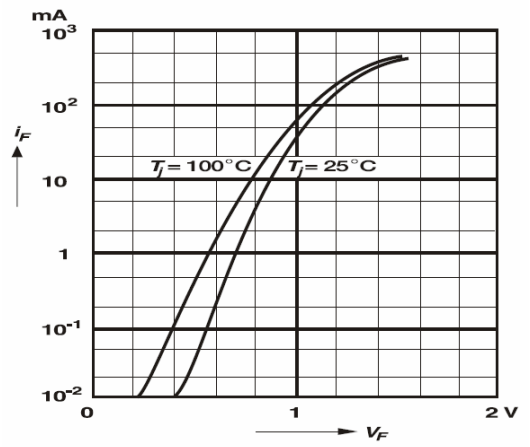


Figure 2. Power De-rating

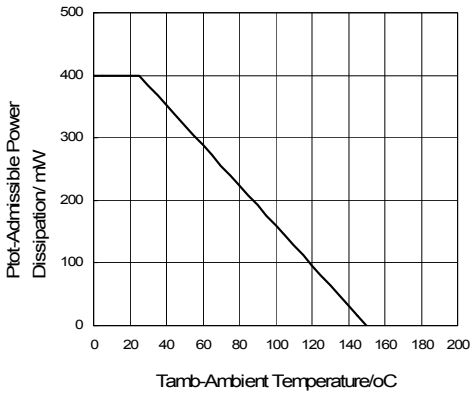


Figure 3. Forward Current De-rating

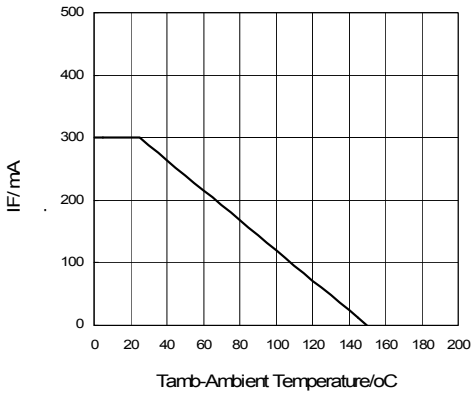
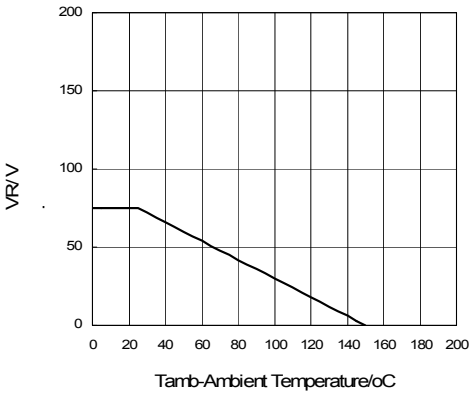


Figure 4. Reverse Voltage De-rating



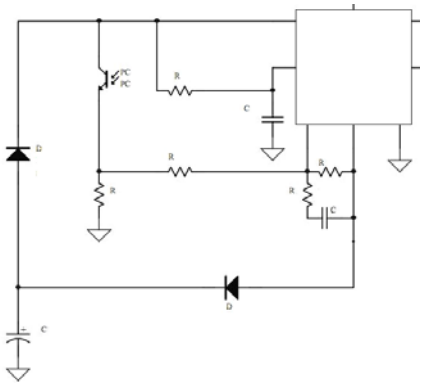
■ TEST CHARACTERISTICS

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_F,V_R & I_R within spec; no mechanical damage
Humidity Steady State	At 85°C 85%RH for 168hrs	V_F,V_R & I_R within spec
Continue Forward Operating Life	At 25°C I_F =1.1I_F for 1000hrs	V_F,V_R & I_R within spec
Thermal Shock	-55 ±5°C/5min to 150±5°C/5min for 10cycles	V_F,V_R & I_R within spec
Bending Strength	Bending up to 2mm for 1cycle	V_F,V_R & I_R 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	△T<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			

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Recommended Soldering Profile

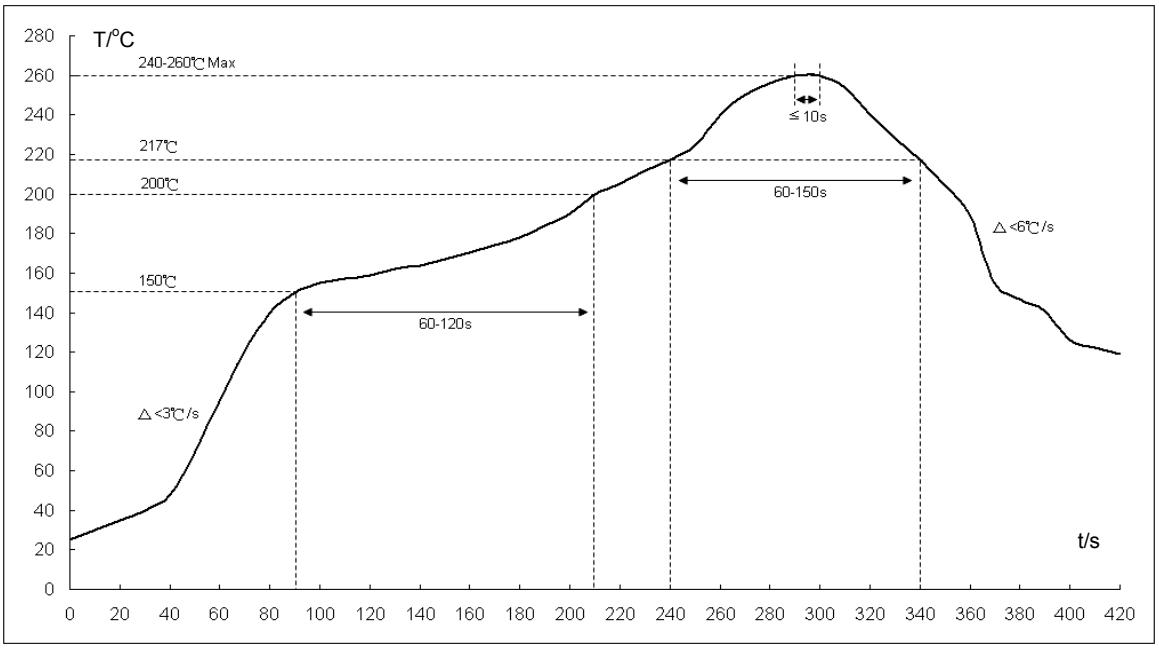


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

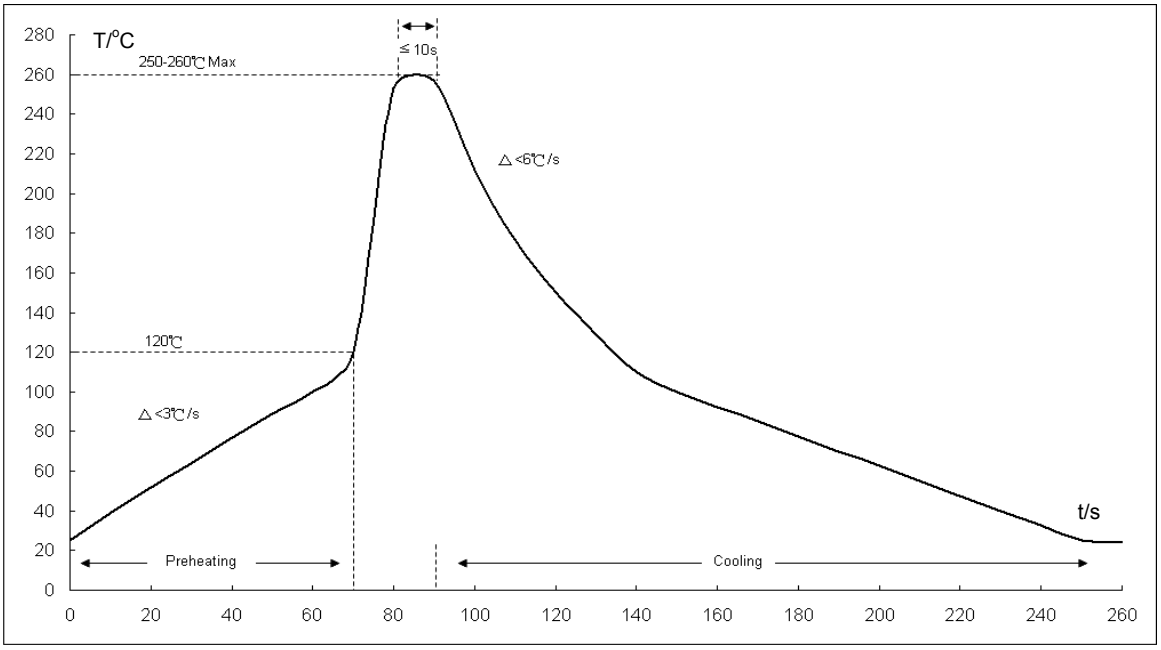
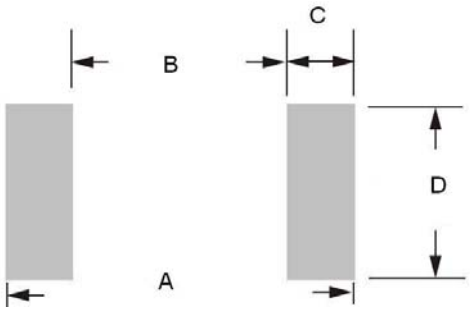


Fig2: Wave soldering profile

*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^{6+}	PBB	PBDE
	<1000	<100	<1000	<1000	<1000	<1000

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

PACKING METHOD

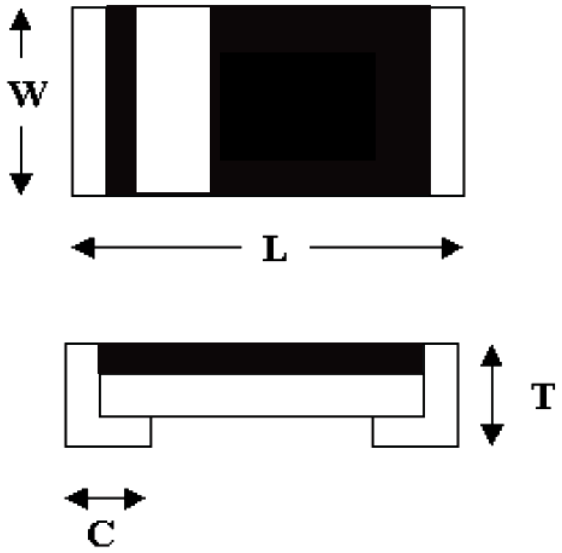
Product	Quality/Reel	Reel Size	Tape
	5,000pcs	7″	Paper

DISCLAIMERS

These products are not designed for use in applications where any failure or malfunction may resulted in personal injury, death or severe property or environmental damage such as medical, military, aircraft, space or life support equipments.

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Package Outline SMD-1206



DIMENSIONS

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

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SMD-1206	Tape/Reel,7"reel	5 000	EIA-481-1

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