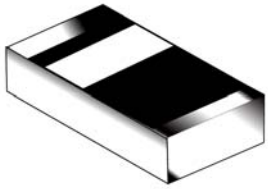
CD4148WS

Switching Diode

FEATURES

- Silicon epitaxial planar diode
- SMD chip pattern, available in various dimension included 1206
- Leadfree and RoHS compliance components
- For AC switching input as rectified circuit and high reverse voltage location

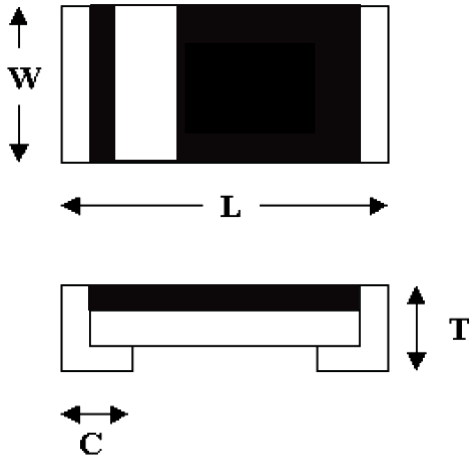


MECHANICAL CHARACTERISTICS

- Size: 0805
- Weight: approx. 6mg
- Marking: Cathode terminal

DIMENSIONS

Dimension/mm	0805
L	2.0±0.2
W	1.25±0.2
T	0.85±0.1
C	0.45±0.2



THERMAL CHARACTERISTICS[1)]

Parameter at T_{amb}=25°C[1)]	Symbol	Value	Unit
Forward Power Dissipation	P_{tot}	200	mW
Power derating above 25°C		1.6	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 components are kept at ambient temperature.

MAXIMUM RATING

Parameter at T_{amb}=25°C[1)]	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	100	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 components 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=80V		0.5 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 components are kept at ambient temperature.

TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

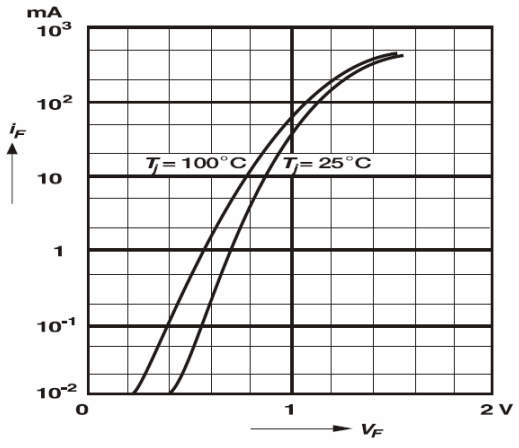


Figure 2. Power De-rating

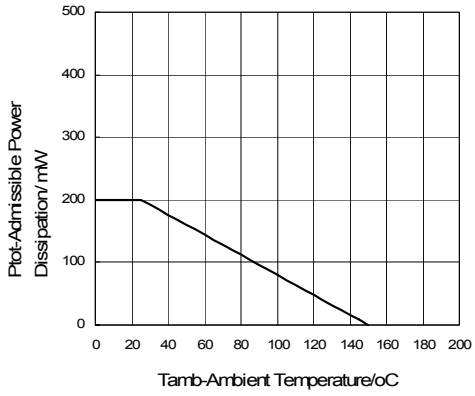


Figure 3. Forward Current De-rating

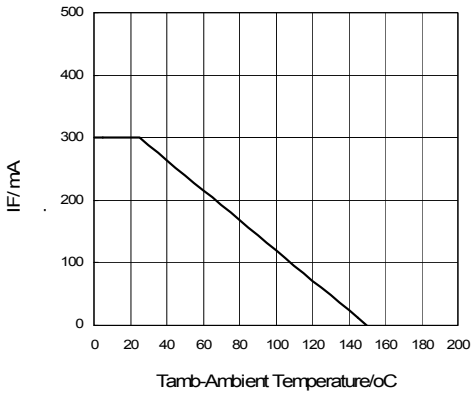
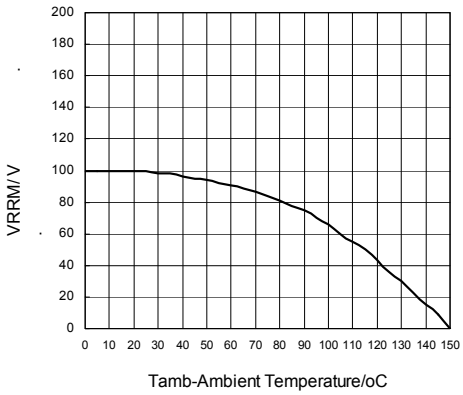


Figure 4. Reverse Voltage De-rating

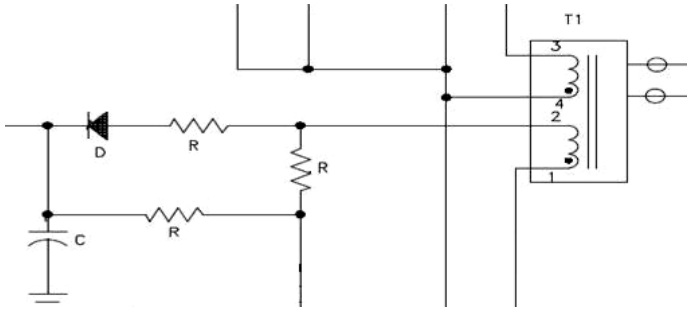


TEST CHARACTERISTICS

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_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

APPLICATIONS

- Function: Fast switching, suit for AC switching input as rectified circuit and high reverse voltage location application
- Typical Application circuit:



- Typical Product field: Power supply, adapter & inverter

- 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

Recommended Soldering Profile

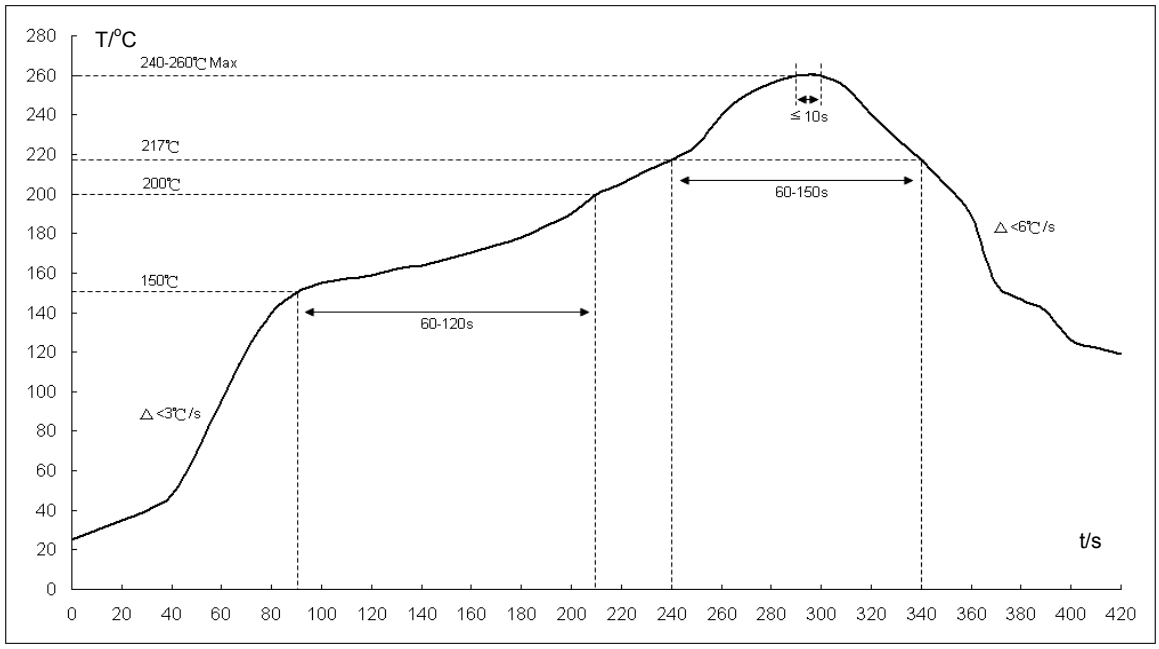


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

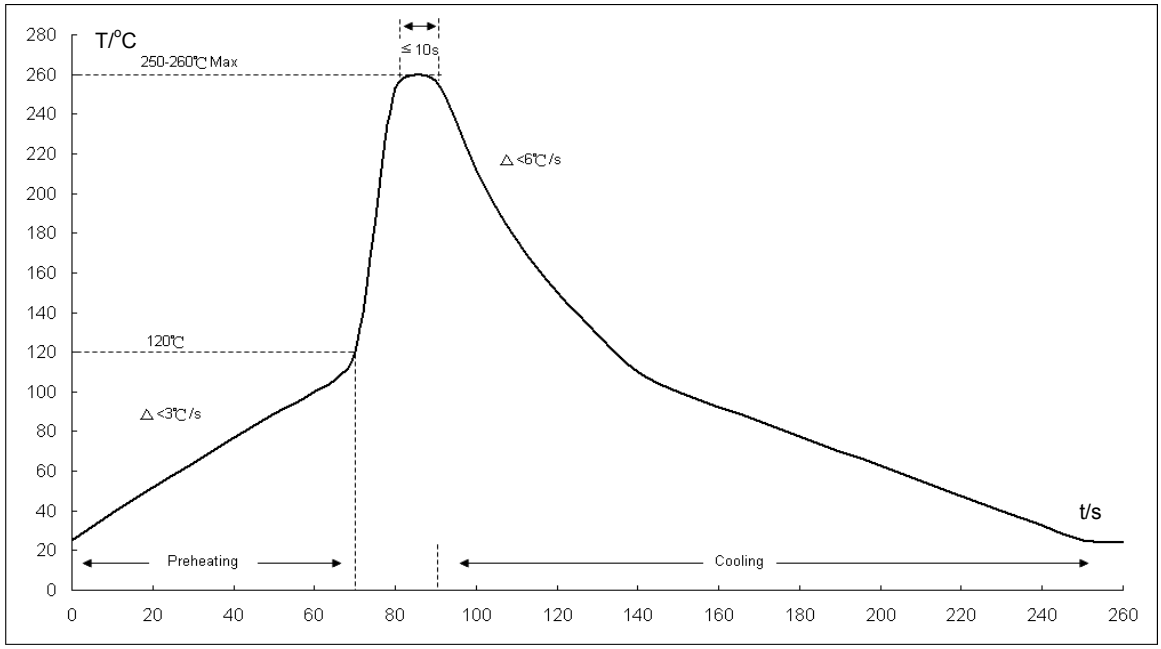
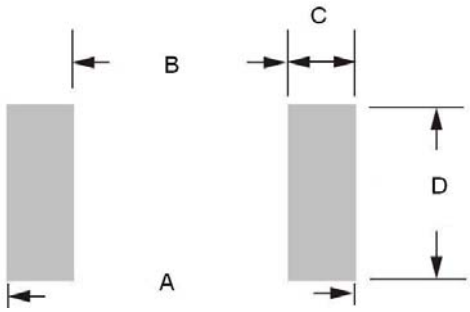


Fig2: Wave soldering profile

*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

■ Recommended Soldering Footprint:



▪ Reflow/Wave Soldering

Product Size	Dimension/ mm			
	A	B	C	D
0805	2.6-3.4	1.2	0.7-1.1	1.2-1.4

■ 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