

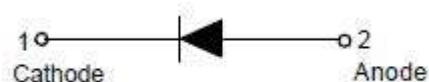


PRIMARY CHARACTERISTICS

V_{RRM}	75V
$I_{F(AV)}$	100mA
$V_F@I_F=10mA$	1.0V
$T_{J,Max}$	150°C

SCHEMATIC DIAGRAM

0603 PACKAGE



FEATURES

- Silicon epitaxial planar diode
- Leadfree and RoHS compliance components
- For small signal switching and operating ambient temperature less than 55oC and voltage withstand less than 60V; not suitable for AC switching input as rectified circuit and high reverse voltage location.
CD4148-0603 is suitable for those application
- Moisture Sensitivity Level 1

MECHANICAL DATA

- Case : Molded plastic,0603
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame retardant

THERMAL CHARACTERISTICS¹⁾

Parameter at $T_{amb}=25^{\circ}C^{1)}$	Symbol	Value	Unit
Forward Power Dissipation Power derating above 25°C	P_{tot}	200	mW
		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 electrodes are kept at ambient temperature.

MAXIMUM RATING¹⁾

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)}	100	mA
Repetitive Peak Forward Current at T _{amb} =25°C	I _{FRM}	200	mA
Non-Repetitive Surge Forward Current at t<1s and T _j =25°C at t≤8.3ms and T _j =25°C	I _{FSM}	400	mA
		800	mA

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

ELECTRICAL CHARACTERISTICS¹⁾

Parameter at T _{amb} =25°C ¹⁾	Symbol	Value	Unit
Forward Voltage at I _F =10mA at I _F =100mA	V _F	1.0 _{MAX}	V
		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.

TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

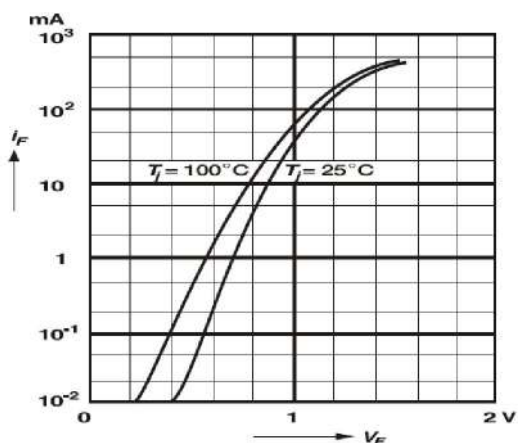


Figure 2. Power De-rating

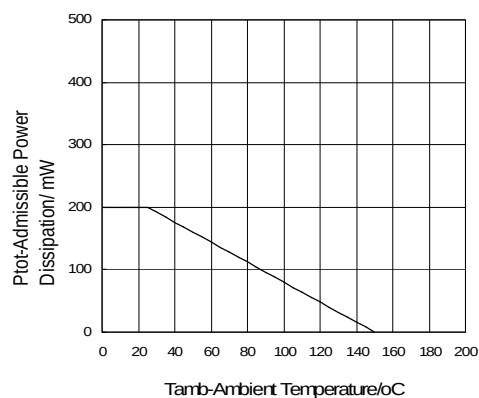




Figure 3. Forward Current Derating

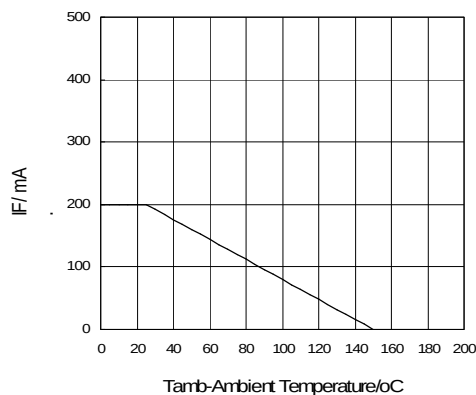
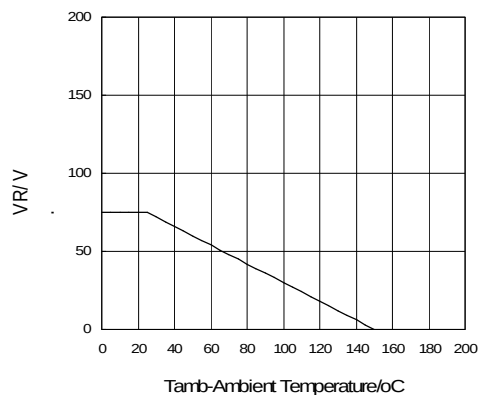


Figure 4. Reverse Voltage De-rating



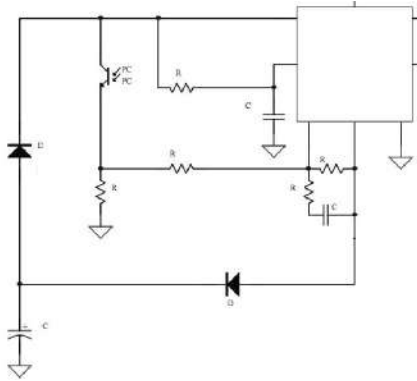
TEST CHARACTERISTICS

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

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



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

- n 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

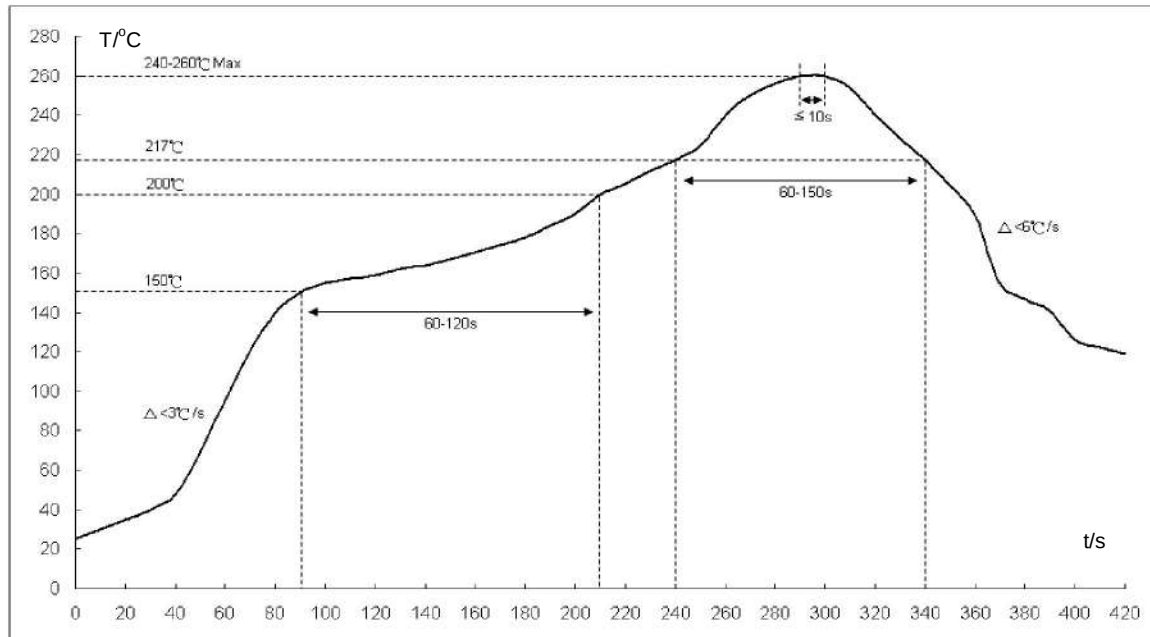


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

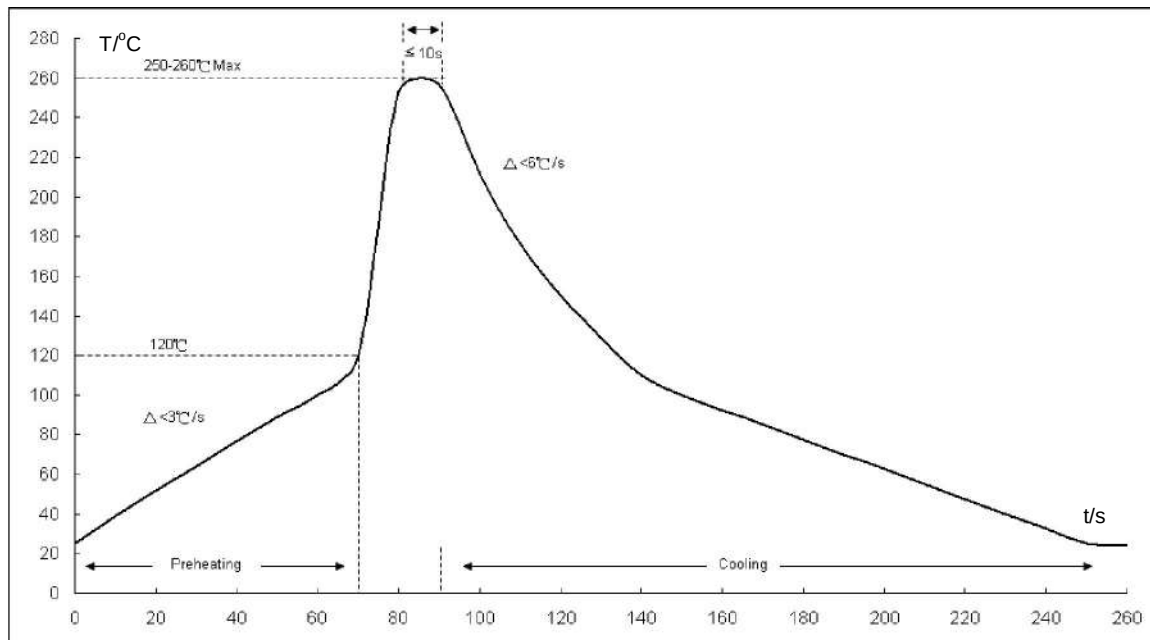


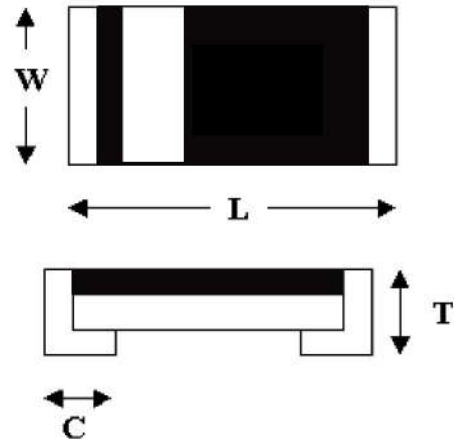
Fig2: Wave soldering profile

- *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

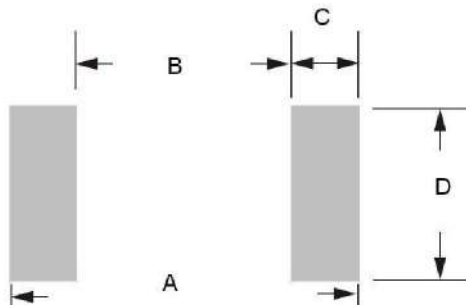


DIMENSIONS

Dimension/mm	0603
L	1.55±0.1
W	0.75±0.1
T	0.65±0.1
C	0.35±0.1



Recommended Soldering Footprint:



■ Reflow/Wave Soldering

Product Size	Dimension/ mm			
	A	B	C	D
0603	1.8-2.6	0.8	0.5-0.9	0.8-1.0

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

Hazardous Substance or Element/ppm

Product

	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



Ordering Information:

Device PN	Packing
CD4148-0603 ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 5 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

(3) WS : Willas brand abbreviation, Label Type does not display

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