

CD914, CD3600, CD4148, CD4150, CD4153, CD4454, CD4531, CD6640, CD6642

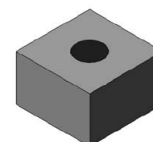


Silicon Switching Diode Chips

Rev. V2

Features

- All Junctions Completely Protected with Silicon Dioxide



Description

These silicon switching diode chips are compatible with all wire bonding and die attach techniques with the exception of solder reflow.

Available in JANHC and JANKC per:

- CD914, CD4148 & CD4531: MIL-PRF-19500/116
- CD4153: MIL-PRF-19500/133
- CD6642: MIL-PRF-19500/578
- CD6640: MIL-PRF-19500/609

Electrical Specifications: $T_A = +25^\circ\text{C}$ (unless otherwise specified)

Parameter	Test Conditions	Units	CD914	CD4148 CD4531	CD6642	CD4454
Breakdown Voltage	@ 100 mA	Volts (min)	100	100	100	75
VRWM	—	Volts (pk)	75	75	75	50
IO	—	mA	200	200	300	200
Forward Voltage1	$I_F = 10 \text{ mA}$	Vdc	0.8	0.8	0.8	1
Forward Voltage2	$I_F = 50 \text{ mA}$	Vdc	1.2	N/A	N/A	N/A
Forward Voltage3	$I_F = 100 \text{ mA}$	Vdc	N/A	1.2	1.2	N/A
Trr	—	nsec	5	5	5	4
Reverse Current1	@ 20 Vdc	nA	25	25	25	N/A
Reverse Current2	—	$\mu\text{A @ V}$	0.5 @ 75	0.5 @ 75	0.5 @ 75	0.1 @ 50
Reverse Current3	20 Vdc, $T_A = +150^\circ\text{C}$	μA	35	35	50	N/A
Reverse Current4	$T_A = +150^\circ\text{C}$	$\mu\text{A @ V}$	75 @ 75	75 @ 75	100 @ 75	100 @ 50
Capacitance	@ 0 V	pF	4	4	5	2
Capacitance	@ 1.5 V	pF	2.8	2.8	2.8	N/A

Parameter	Test Conditions	Units	CD3600	CD4150	CD6640	CD4153
Breakdown Voltage	$I_R = 10 \text{ mA}^1$	Volts (min)	75	75	75	100 ¹
VRWM	—	Volts (pk)	50	50	50	75
Reverse Current1	$V_R = 50 \text{ Vdc}$	$\mu\text{A Vdc}$	0.1	0.1	0.1	0.05
Reverse Current2	$V_R = 50 \text{ Vdc}$ $T_A = +150^\circ\text{C}$	$\mu\text{A Vdc}$	100	100	90	50
Capacitance	$V_R = 0$; $f = 1 \text{ MHz}$; ac signals = 50 mV (p-p)	pF	2.5	2.5	2.5	2
Trr	μA	nsec	4	4	4	4

1. @ 5 μA for CD4153

1 * Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

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Forward Voltage Limits for CD3600, CD4150 and CD6640:

Parameter	Test Conditions	Limits	Minimum	Maximum
Forward Voltage1	$I_F = 1 \text{ mA dc (Pulsed)}$	Vdc	0.54	0.62
Forward Voltage2	$I_F = 10 \text{ mA dc (Pulsed)}$	Vdc	0.68	0.74
Forward Voltage3	$I_F = 50 \text{ mA dc (Pulsed)}$	Vdc	0.76	0.86
Forward Voltage4	$I_F = 100 \text{ mA dc (Pulsed)}$	Vdc	0.82	0.92
Forward Voltage5	$I_F = 200 \text{ mA dc (Pulsed)}$	Vdc	0.87	1.00

Forward Voltage Limits for CD4153:

Parameter	Test Conditions	Limits	Minimum	Maximum
Forward Voltage1	$I_F = 100 \text{ } \mu\text{A dc}$	Vdc	0.49	0.55
Forward Voltage2	$I_F = 250 \text{ } \mu\text{A dc}$	Vdc	0.53	0.59
Forward Voltage3	$I_F = 1 \text{ mA dc}$	Vdc	0.59	0.67
Forward Voltage4	$I_F = 2 \text{ mA dc}$	Vdc	0.62	0.70
Forward Voltage5	$I_F = 10 \text{ mA dc}$	Vdc	0.70	0.81
Forward Voltage6	$I_F = 20 \text{ mA dc}$	Vdc	0.74	0.88

Absolute Maximum Ratings^{1,2}

Parameter	Absolute Maximum
Operating Temperature	-55°C to +175°C
Storage Temperature	-65°C to +175°C

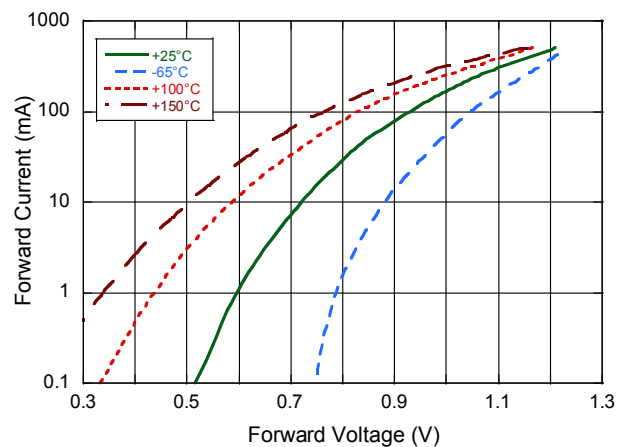
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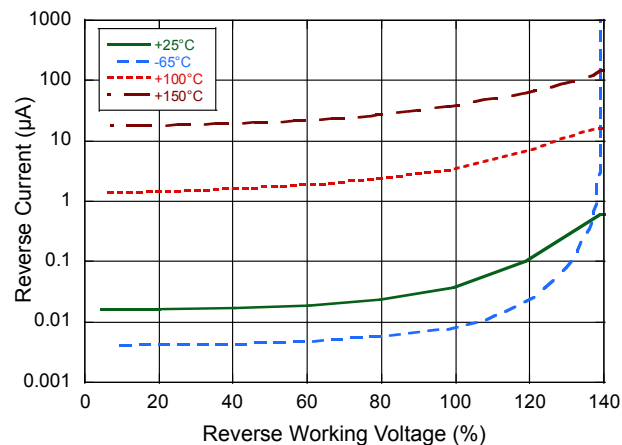
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Forward Current vs. Forward Voltage

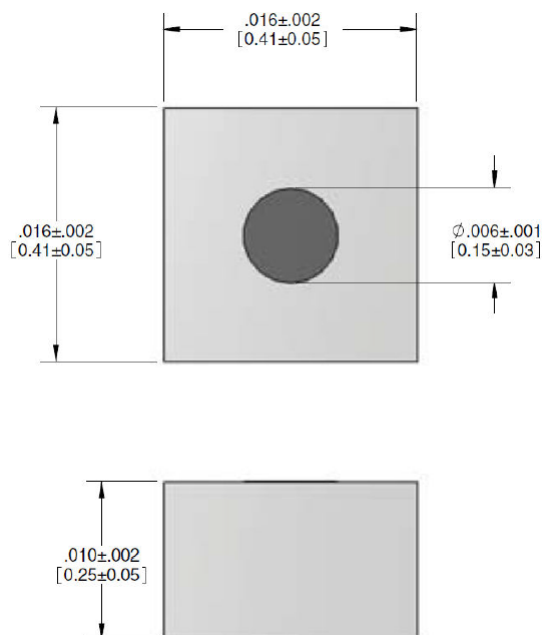


Reverse Current vs. Reverse Voltage



All temperature shown on graphs is junction temperature.

Die



Metallization: Top: (anode) AL
Back: (cathode) Au
AL Thickness: 25,000 Å Minimum
Gold Thickness: 4,000 Å Minimum
Chip Thickness: 10 mils

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