Features

- RoHS compliant*
- Leadless
- High speed

Applications

- Cellular phones
- PDAs
- Desktop PCs and notebooks
- Digital cameras
- MP3 players

Switching Chip Diode Series - 0603/1005

General Information

The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers small-signal high-speed Switching Diodes for switching digital signal applications, in compact chip package 0603 and 1005 size format, which offer PCB real estate savings and are considerably smaller than competitive parts. The Switching Diodes offer a forward current of 100 mA or 150 mA, a reverse voltage of 80 V or 75 V and also have a low leakage reverse current option. The diodes are RoHS compliant with Cu/Ni/Au plated terminations and are compatible with lead-free manufacturing processes, conforming to many industry and government regulations on lead-free components.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle on standard pick and place equipment and their flat configuration minimizes roll away.

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CDxxxx-S0180	CD1005-S01575	CDxxxx-S0180R	Unit
Forward Voltage (Max.)	V_F	1.00 (I_f = 100 mA)	1.00 (I_f = 50 mA)	1.00 (I_f = 100 mA)	V
Capacitance Between Terminals (Max.)	C_T	4 (f = 100 MHz, V_r = 1 V DC)			pF
Reverse Recovery Time (Max.)	t_{rr}	4 (V_r = 6 V, I_f = 10 mA, R_L = 50 ohms)			nS
Reverse Current (Max.)	I_R	0.1 (V_r = 80 V)	2.5 (V_r = 75 V)	0.05 (V_r = 75 V)	μA

Absolute Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CDxxxx-S0180	CD1005-S01575	CDxxxx-S0180R	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	90	100	90	V
Reverse Voltage	V_R	80	75	80	V
Average Forward Current	I_o	100	150	100	mA
Forward Current, Surge Peak	I_{surge}	1**	4***	1**	A
Power Dissipation CD0603 CD1005	P_D		150 300		mW
Storage Temperature	T_{STG}	-40 to +125			°C
Junction Temperature	T_J	-40 to +125			°C

** Condition: 8.3 ms single half sine-wave superimposed on rate load (JEDEC method).
*** Condition: 1.0 μs single half sine-wave superimposed on rate load (JEDEC method).

How to Order

CD 0603 - S 01 80 R

Common Code
Chip Diode

Package
- 0603
- 1005

Model
S = High-Speed Switching

Average Forward Current (I_O) Code
01 = 100 mA
015 = 150 mA
(Code x 1000 mA = Average Forward Current)

Reverse Voltage (V_R) Code
80 = 80 V
75 = 75 V

Reverse Current Suffix
R = Low Leakage I_R (CDxxxx-S0180R)

BOURNS®

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Switching Chip Diode Series - 0603/1005

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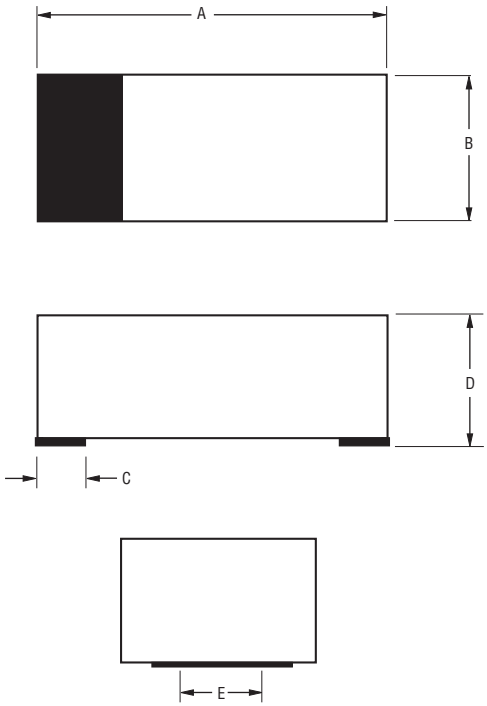
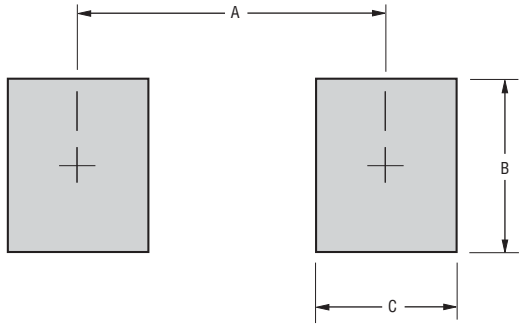
Product Dimensions



Dimension	0603	1005
A	1.60 - 1.80 (0.063 - 0.071)	2.40 - 2.60 (0.095 - 0.102)
B	0.80 - 100 (0.031 - 0.039)	1.10 - 1.30 (0.043 - 0.051)
C	0.45 (0.018) Typ.	0.50 (0.020) Typ.
D	0.70 - 0.85 (0.027 - 0.033)	0.70 - 0.90 (0.027 - 0.035)
E	0.70 (0.028) Typ.	1.00 (0.039) Typ.

DIMENSIONS: MM (INCHES)

Recommended Pad Layout



Dimension	0603	1005
A (Max.)	1.25 (0.049)	2.00 (0.079)
B (Min.)	1.00 (0.039)	1.3 (0.051)
C (Min.)	0.6 (0.024)	0.7 (0.028)

DIMENSIONS: MM (INCHES)

Physical Specifications

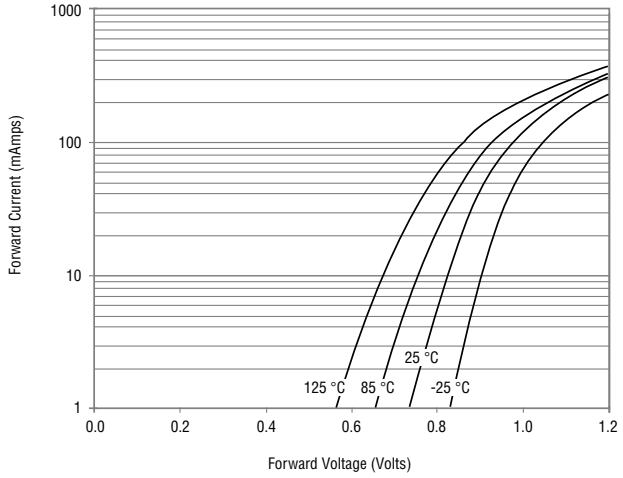
Case ..... 0603(1608) / 1005(2512) Molded plastic
Terminals ..... Solder plated, solderable per MIL-STD-750, Method 2026
Polarity ..... Indicated by cathode band
Mounting Position ..... Any

Typical Part Marking

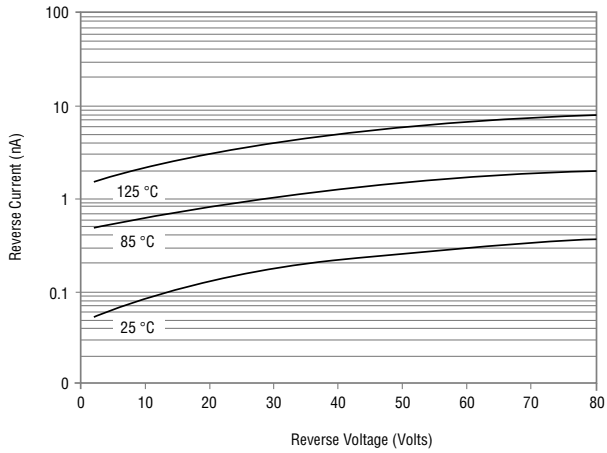
CDxxxx-S0180 ..... S1
CD1005-S01575 ..... S3
CDxxxx-S0180R S2

Rating & Characteristic Curves: CDxxxx-S0180

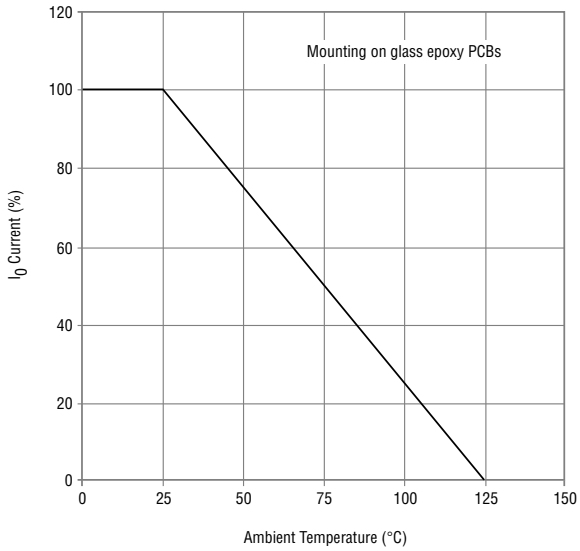
Forward Characteristics



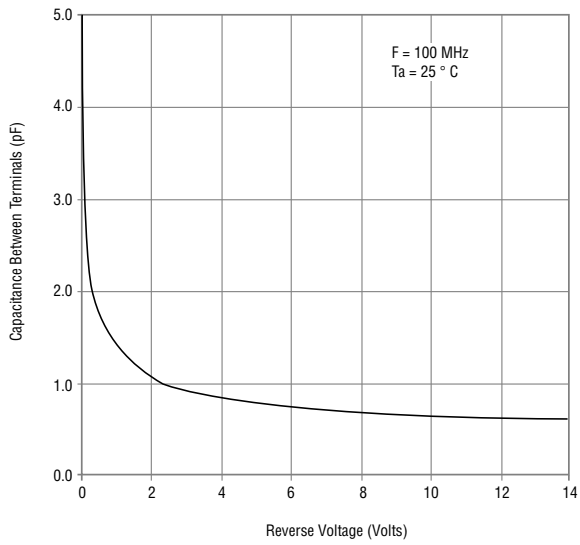
Reverse Characteristics



Derating Curve

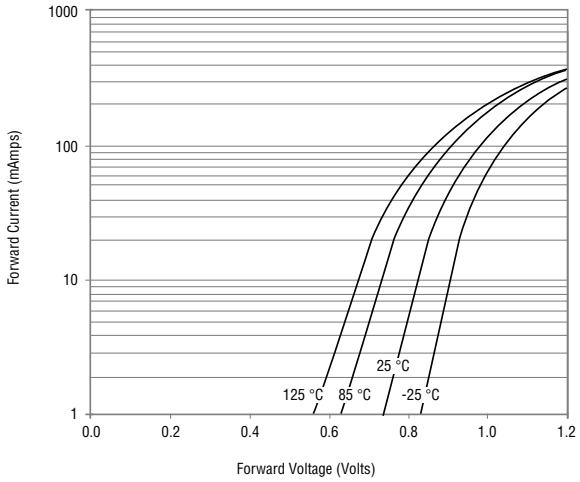


Capacitance Between Terminals

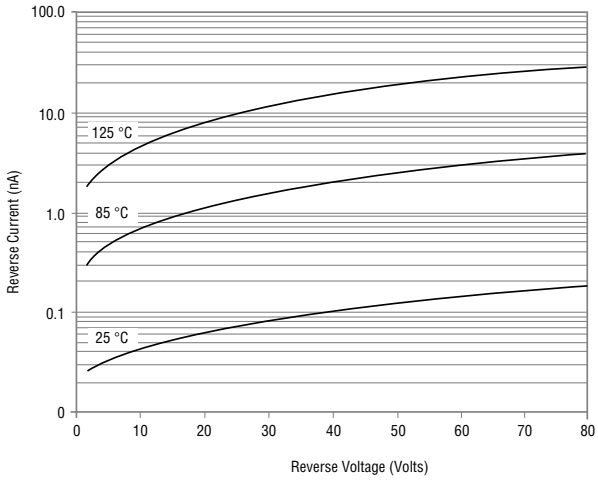


Rating & Characteristic Curves: CD1005-S01575

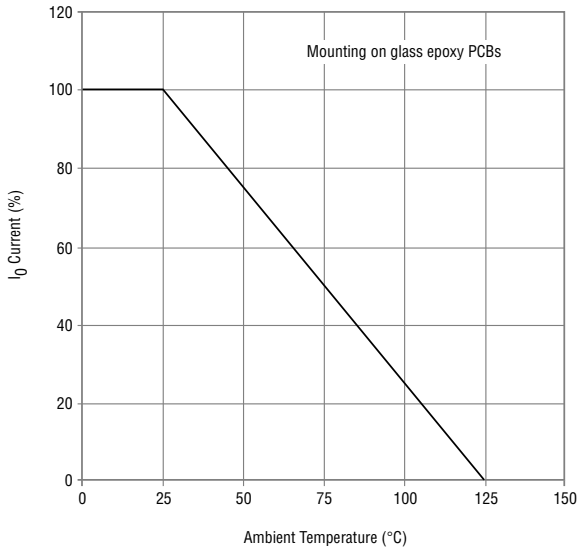
Forward Characteristics



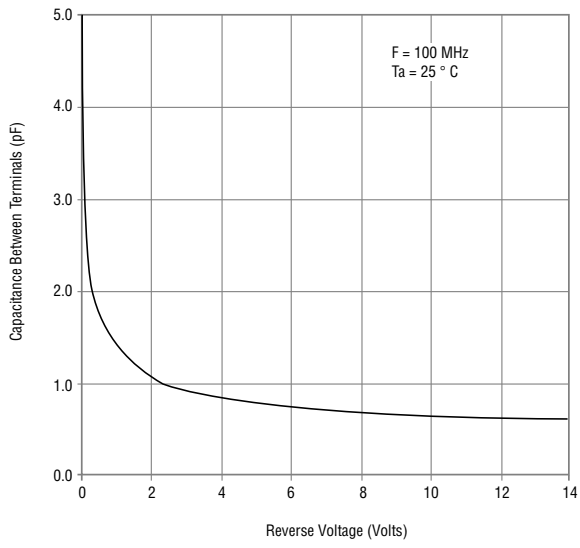
Reverse Characteristics



Derating Curve

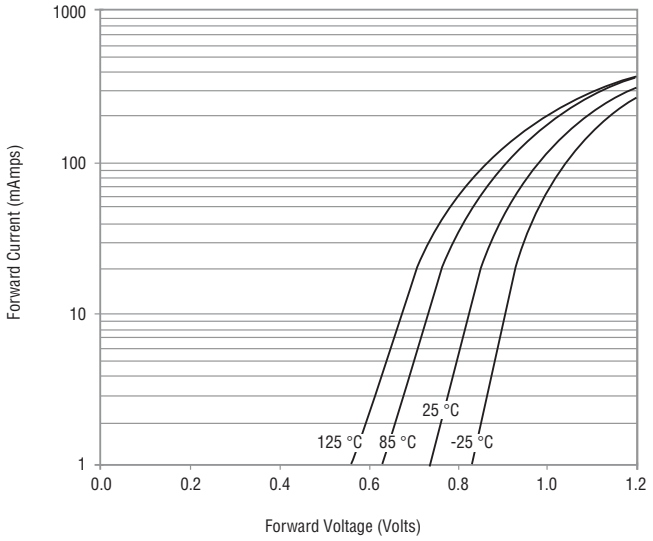


Capacitance Between Terminals

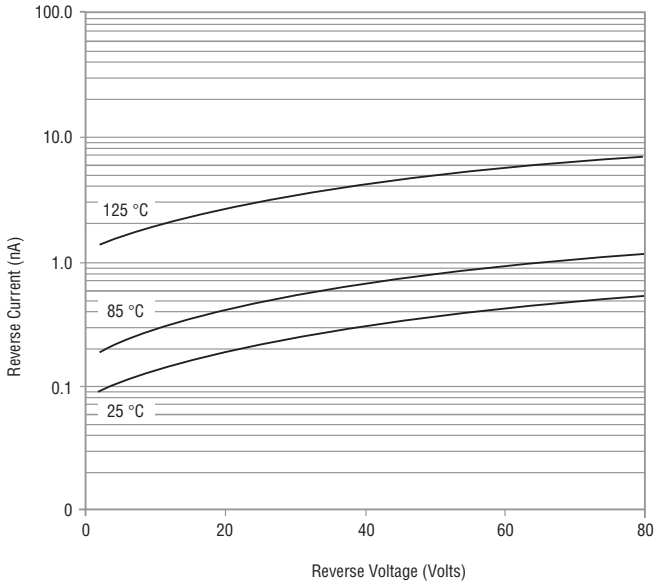


Rating & Characteristic Curves: CDxxxx-S0180R

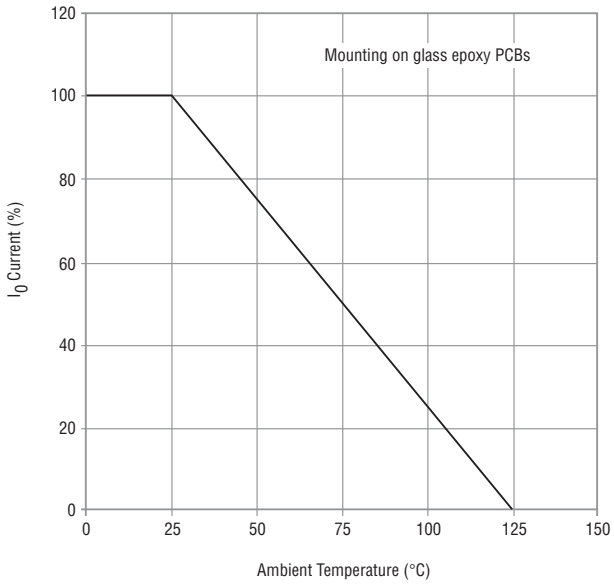
Forward Characteristics



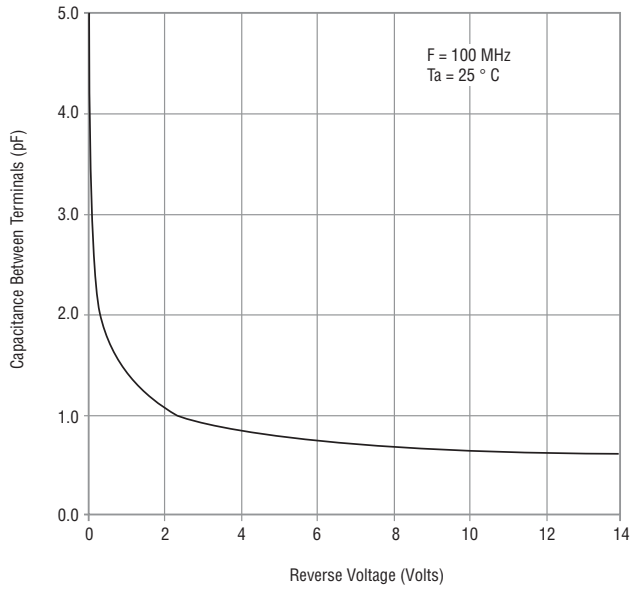
Reverse Characteristics



Derating Curve

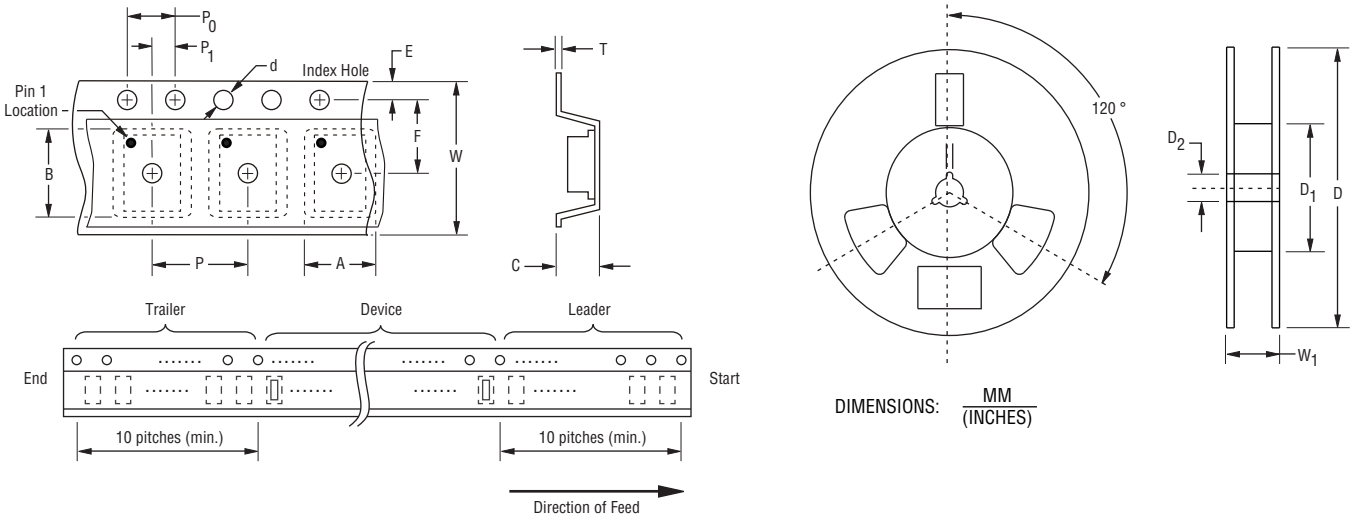


Capacitance Between Terminals



Packaging Information

The product is packaged in tape and reel format per EIA-481 standard.



Item	Symbol	0603	1005
Carrier Width	A	1.00 ± 0.10 (0.039 ± 0.004)	1.55 ± 0.10 (0.061 ± 0.004)
Carrier Length	B	1.85 ± 0.10 (0.073 ± 0.004)	2.65 ± 0.10 (0.104 ± 0.004)
Carrier Depth	C	1.00 ± 0.10 (0.039 ± 0.004)	1.05 ± 0.10 0.041 ± 0.004)
Sprocket Hole	d	1.55 ± 0.05 (0.061 ± 0.002)	1.55 ± 0.10 (0.061 ± 0.004)
Reel Outside Diameter	D	178 (7.008)	178 (7.008)
Reel Inner Diameter	D_1	60.0 (2.362) MIN.	60.0 (2.362) MIN.
Feed Hole Diameter	D_2	13.0 ± 0.20 (0.512 ± 0.008)	13.0 ± 0.20 (0.512 ± 0.008)
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)	1.75 ± 0.10 (0.069 ± 0.004)
Punch Hole Position	F	3.50 ± 0.05 (0.138 ± 0.002)	3.50 ± 0.05 (0.138 ± 0.002)
Punch Hole Pitch	P	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)
Embossment Center	P_1	2.00 ± 0.05 (0.079 ± 0.002)	2.00 ± 0.05 (0.079 ± 0.002)
Overall Tape Thickness	T	0.20 ± 0.05 (0.008 ± 0.002)	0.25 ± 0.05 (0.010 ± 0.002)
Tape Width	W	8.00 ± 0.20 (0.315 ± 0.008)	8.00 ± 0.20 (0.315 ± 0.008)
Reel Width	W_1	13.5 (0.531) MAX.	13.5 (0.531) MAX.
Quantity per Reel	--	4,000	4,000