

Description

RClamp®01811PW is a low capacitance FemtoClamp® ESD protection device specifically designed to protect high-speed differential lines. It offers desirable characteristics for board-level protection including fast response time, low operating and clamping voltage, and no device degradation.

The RClamp01811PW ESD protection characteristics include a low typical dynamic resistance of 0.15 Ohms, low peak ESD clamping voltage, and a high ESD withstand voltage per IEC 61000-4-2 ($\pm 30\text{kV}$ contact). It also features a high EOS peak pulse current rating of 8A ($t_p = 8/20\mu\text{s}$). RClamp01811PW maximum capacitance is limited to 1.2pF with low insertion loss at 2.5GHz and 5GHz.

RClamp01811PW is in a 2-pin DFN 1.0 x 0.6 x 0.55mm 2-Lead package. The small package gives the designer the flexibility to protect single lines in space-constrained applications.

Features

- ESD withstand voltage: $\pm 30\text{kV}$ (Contact), $\pm 30\text{kV}$ (Air) per IEC 61000-4-2
- Low capacitance: 1.2pF Maximum
- Protects one line
- Working voltage: 1.8V
- Low reverse leakage current: 100nA max at $V_R = 1.8\text{V}$
- Solid-state silicon-avalanche technology

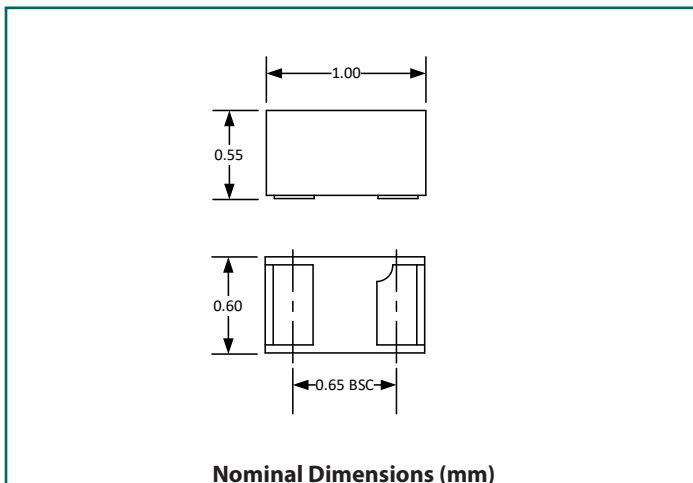
Mechanical Characteristics

- Package: DFN 1.0 x 0.6 x 0.55mm 2-Lead
- Pb-free, Halogen Free, RoHS/WEEE Compliant
- Lead Finish: Pb-free
- Marking: Marking Code
- Packaging: Tape and Reel

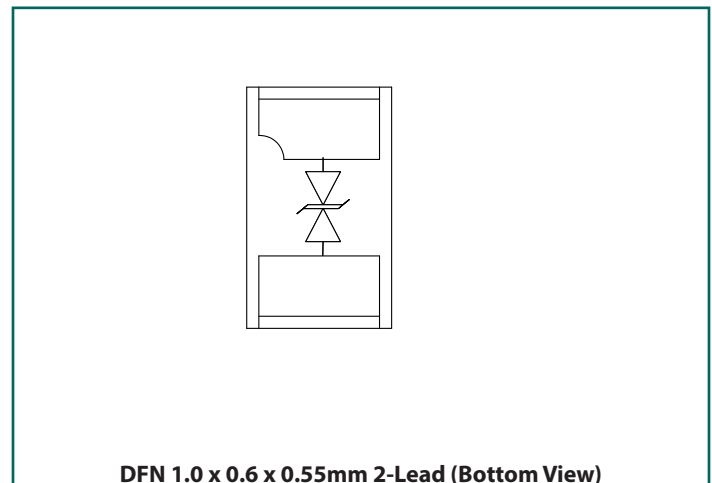
Applications

- Cellphones and accessories
- Notebooks & Handhelds

Package Dimension



Schematic and Pin Configuration



Absolute Maximum Ratings

Rating	Symbol	Value	Units
Peak Pulse Power (tp = 8/20μs)	P _{PK}	45	W
Peak Pulse Current (tp = 8/20μs)	I _{PP}	8	A
ESD per IEC 61000-4-2 (Contact) ⁽¹⁾	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Air) ⁽¹⁾		±30	
Operating Temperature	T _{OP}	-40 to +85	°C
Junction Temperature and Storage Temperature	T _J and T _{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-Off Voltage	V _{RWM}				1.8	V
Reverse Breakdown Voltage	V _{BR}	I _t = 10mA	2.2	2.6	3.4	V
Reverse Leakage Current	I _R	V _{RWM} = 1.8V		<10	100	nA
Clamping Voltage ⁽²⁾	V _C	I _{PP} = 8A, tp = 1.2/50μs (Voltage), 8/20μs (Current) Combination Waveform, R _s = 2Ω		4.6	5.8	V
ESD Clamping Voltage ⁽³⁾	V _C	tp = 0.2/100ns (TLP)	I _{PP} = 4A	4		V
			I _{PP} = 16A	5.7		
Dynamic Resistance ⁽³⁾⁽⁴⁾	R _{DYN}	tp = 0.2/100ns (TLP)		0.15		Ohms
Junction Capacitance	C _J	V _R = 0V to V _{RWM} , f = 1MHz		0.52	1.2	pF
Insertion Loss	I _L	f = 2.5GHz		0.16		dB
		f = 5GHz		0.40		dB

Notes:

(1): ESD gun return path connected to Ground Reference Plane (GRP).

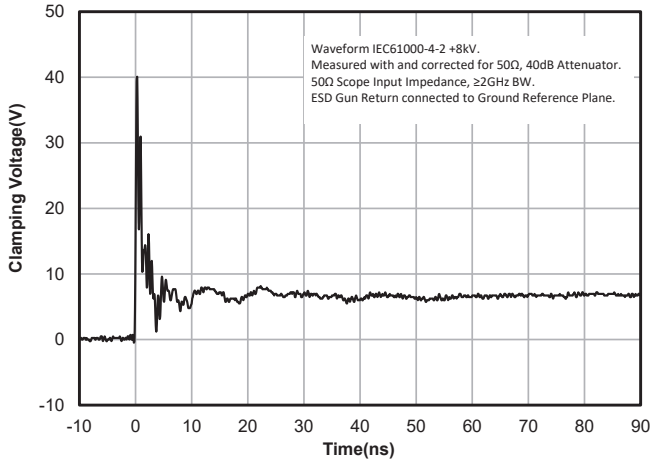
(2): Measured using a 1.2/50μs voltage, 8/20μs current combination waveform, R_s = 2 Ohms. Clamping is defined as the peak voltage across the device after the device snaps back to a conducting state.

(3): Transmission Line Pulse Test (TLP) Settings: tp = 100ns, tr = 0.2ns, I_{TLP} and V_{TLP} averaging window: t₁ = 70ns to t₂ = 90ns.

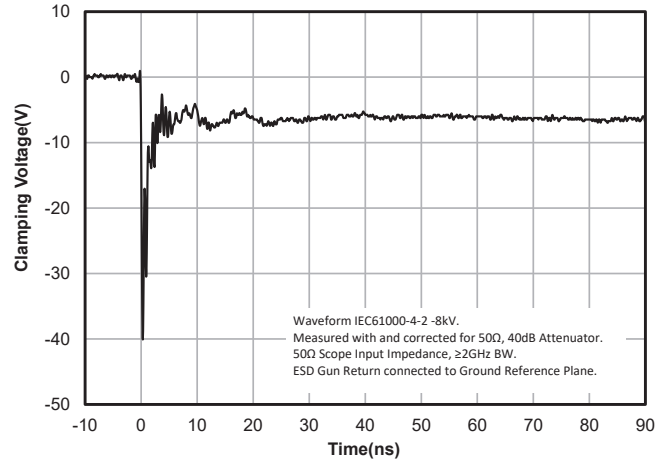
(4): Dynamic resistance calculated from I_{TLP} = 4A to I_{TLP} = 16A

Typical Characteristics

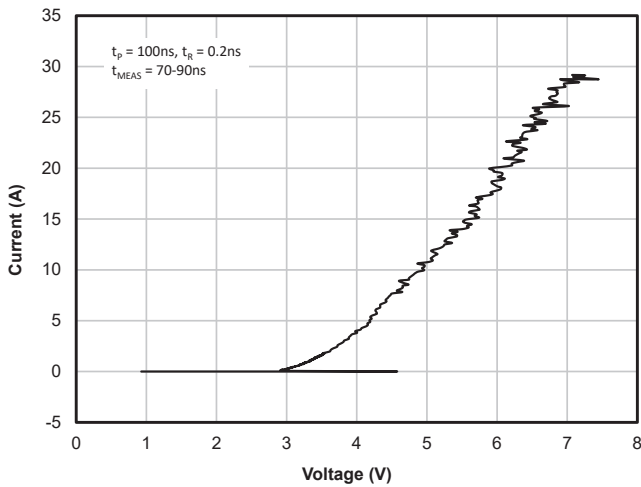
ESD Clamping (+8kV Contact per IEC 61000-4-2)



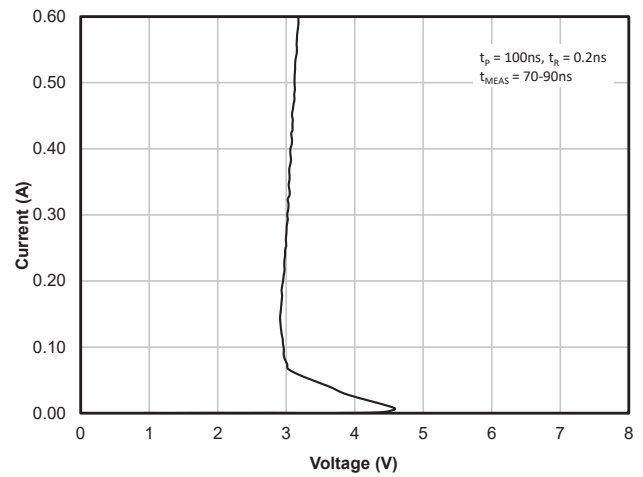
ESD Clamping (-8kV Contact per IEC 61000-4-2)



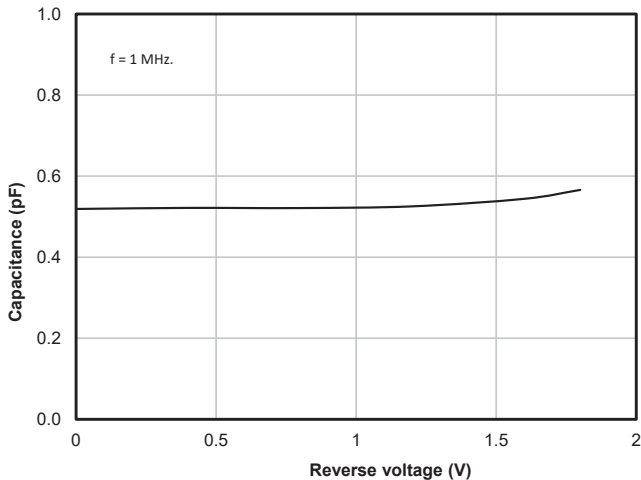
TLP Characteristic (Positive Pulse)



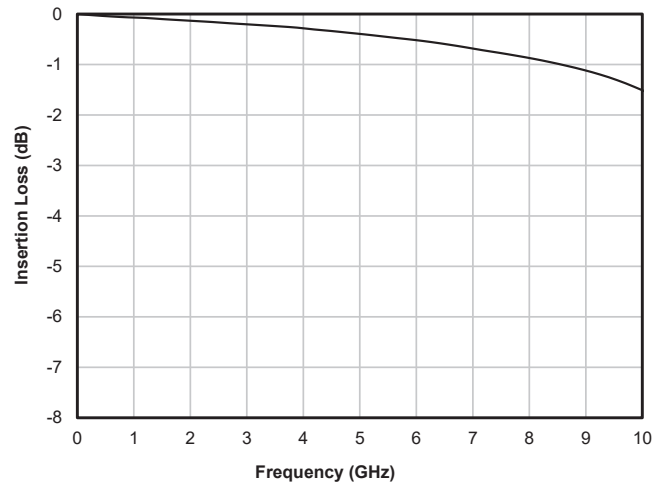
TLP Characteristic (Low Current Detail)



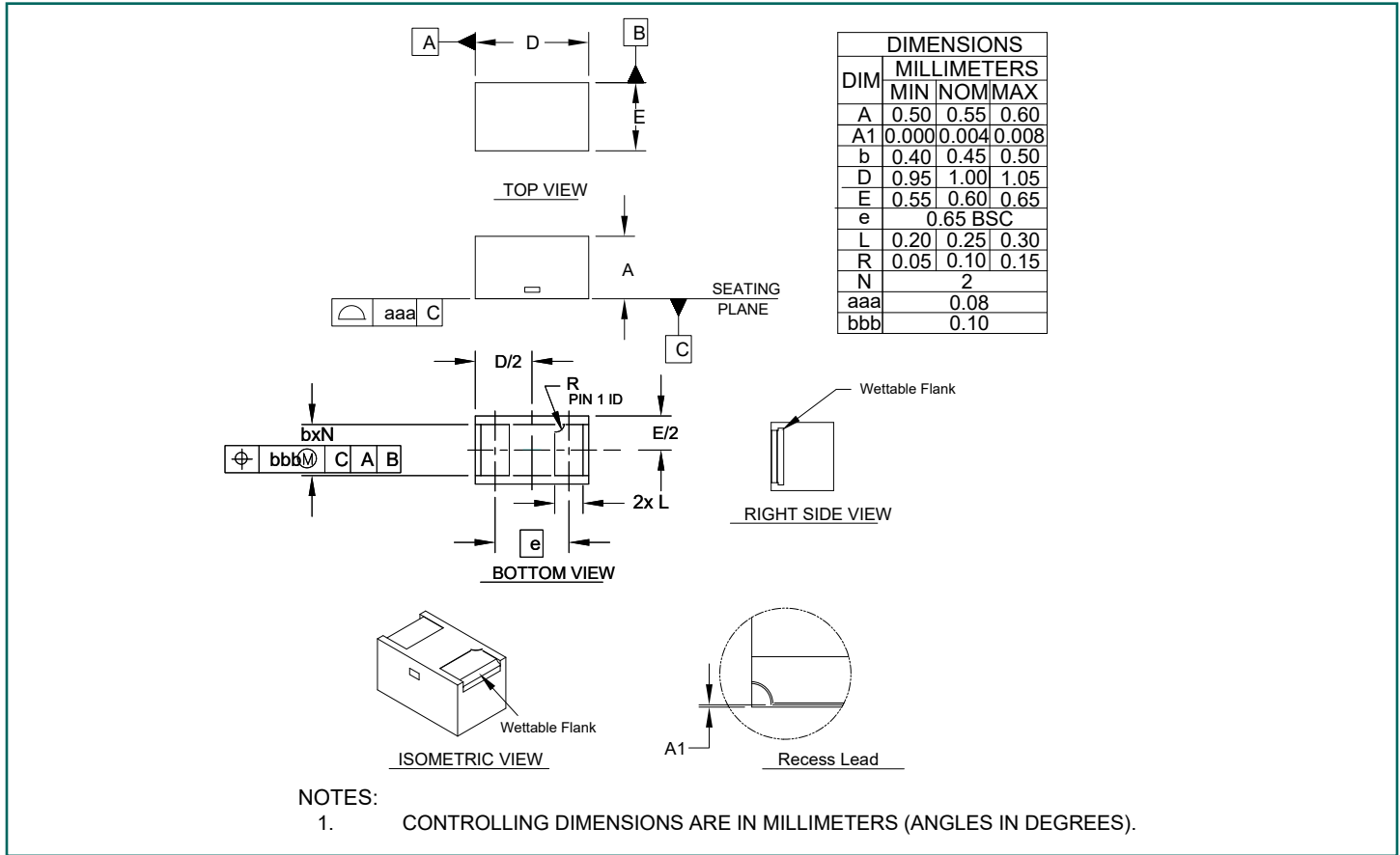
Capacitance vs. Reverse Voltage



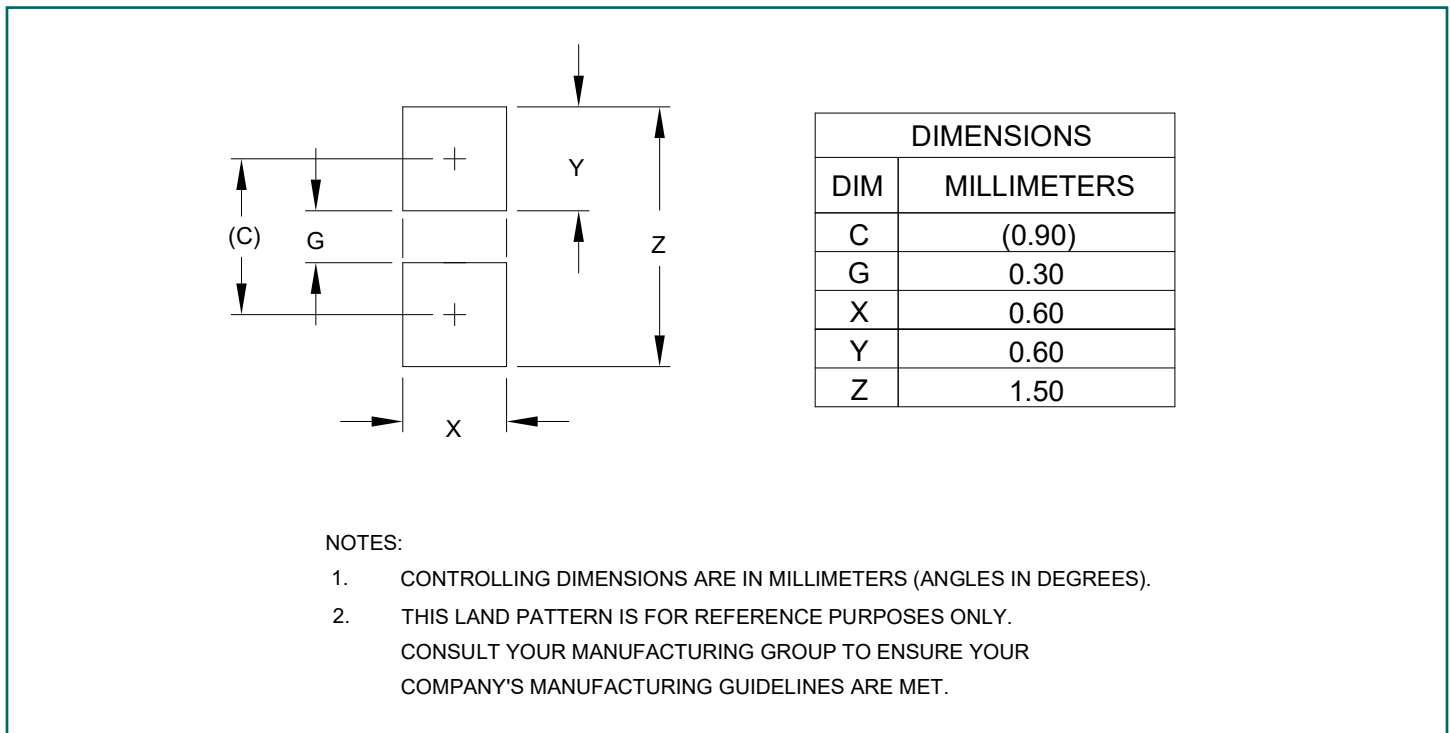
Insertion Loss (S21)



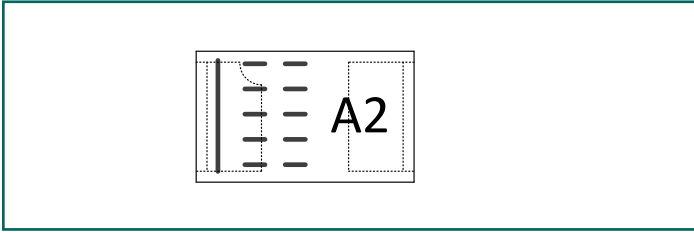
Outline Drawing - DFN 1.0 x 0.6 x 0.55mm 2-Lead



Land Pattern - DFN 1.0 x 0.6 x 0.55mm 2-Lead



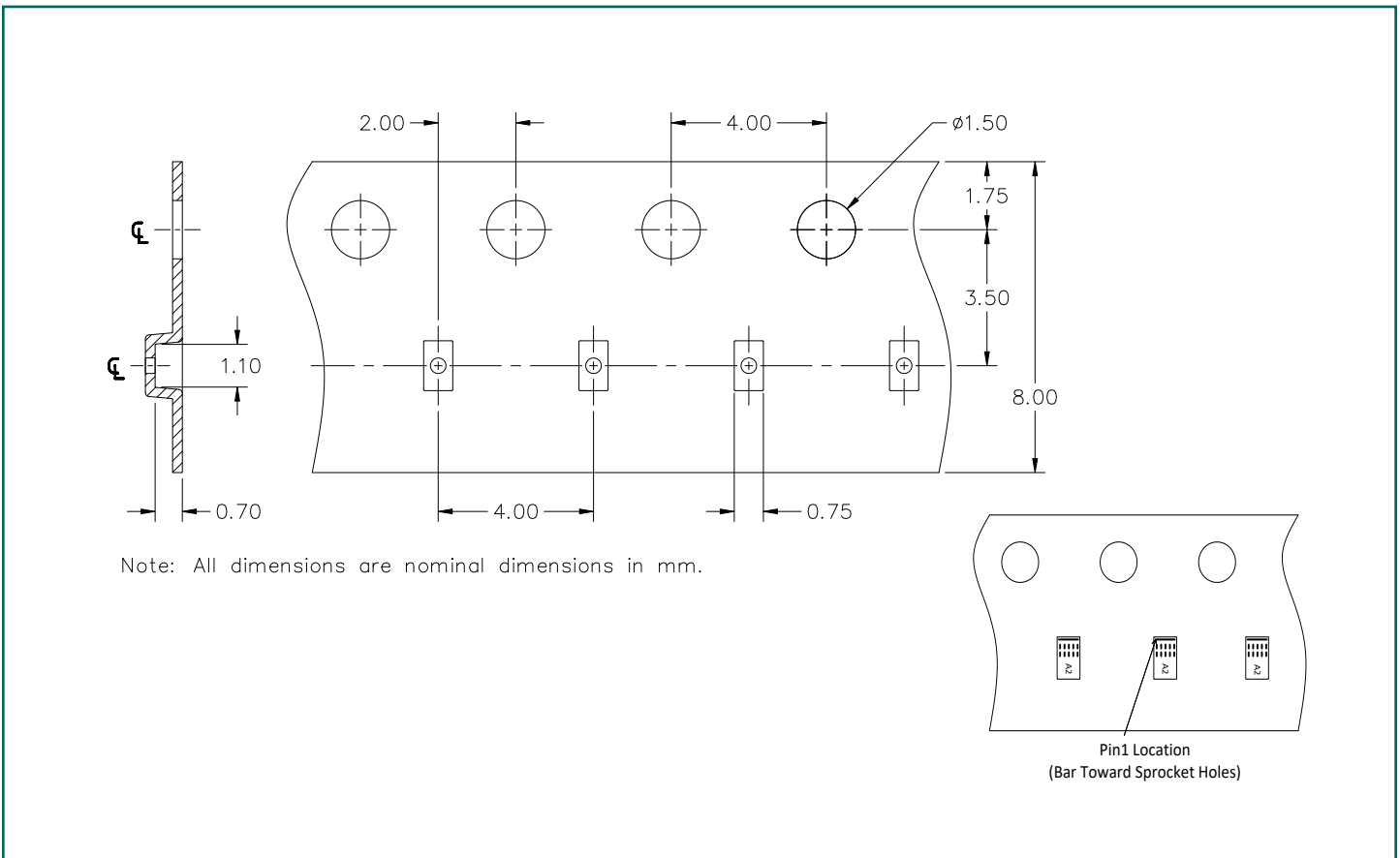
Marking Code



Notes:

1. Device is electrically symmetrical
2. Marking will also include line matrix date code
3. Bar indicates Pin 1 location

Tape and Reel Specification



Ordering Information

Part Number	Qty per Reel	Reel Size
RClamp01811PW.C	3,000	7 Inch
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