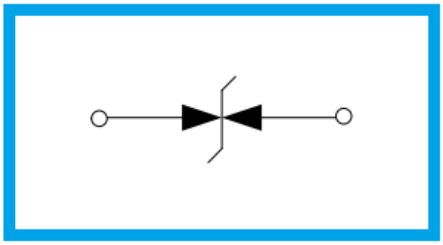
PCS Series ESD Protection Devices

Features

- Operating voltages ranging from 5 to 24 Vdc
- Protection against ESD transiens (IEC61000-4-2 Level 4)
- Withstand more than to 1000 level 4 pulses
- Bi-directional device
- Extremely quick response time (<1ns)
- Extremely low capacitance (0.1pF typ.)
- Extremely low leakage current
- No signal distortion to keep excellent transmission



Applications

- Antenna circuits
- Bluetooth
- USB2.0/3.0
- IEEE-1394
- DVI
- HDMI2.0

General Characteristics Definition

- Operating temperature: -55 ~ 125°C
- Storage temperature: -55 ~ 125°C

Material

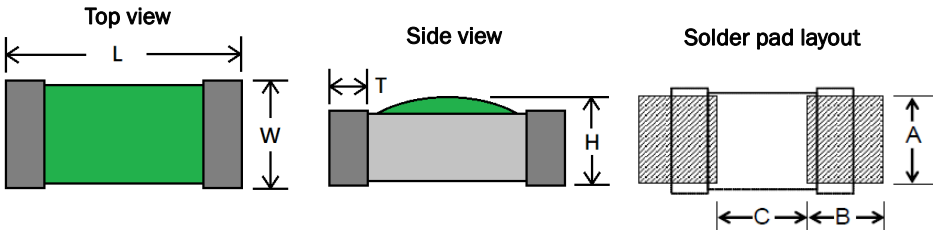
- Electrode: Ag/Ni/Sn
- Chip body: Ceramic (Alumina)

Part Number Code

PCS □□□□ V□□

- Maximum Rated DC Voltage (V05: 5Vdc max)
- Chip Size (0402: 0.04"x0.02" / 0201: 0.02"x0.01")
- PolyTrans Ceramic Suppressor

Physical Dimensions



Symbol	Dimension (mm)	
	0201	0402
L	0.63±0.05	1.00±0.10
W	0.30±0.03	0.50±0.10
H	0.23±0.05	0.34±0.10
T	0.165±0.05	0.20±0.10
A	0.35±0.05	0.5±0.1
B	0.35±0.05	0.5±0.1
C	0.35±0.05	0.5±0.1

Note:
1. All dimensions are in millimeters.
2. No marking on the device.

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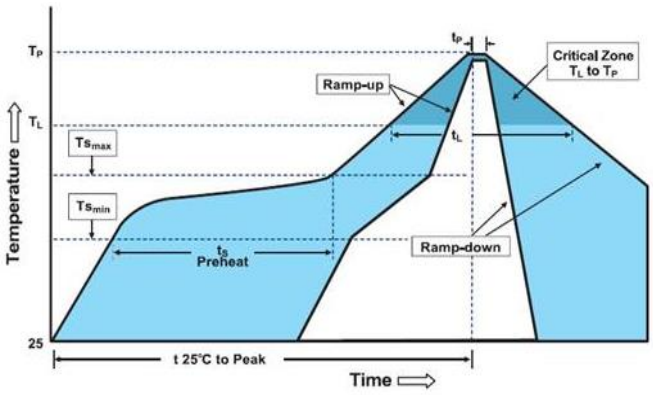
Electrical Characteristics

Part Number	Rated Voltage	Trigger Voltage, V_t	Clamping Voltage, V_c	Leakage Current, I_L	Capacitance, Cp
	Max.	Typ.	Typ.	Max	Typ.
	(V_{DC})	(V)	(V)	(μA)	(pF)
PCS0201V05	5	300	30	0.01	0.1
PCS0201V07	7	300	30	0.01	0.1
PCS0201V12	12	300	30	0.01	0.1
PCS0201V15	15	300	30	0.01	0.1
PCS0201V24	24	300	30	0.01	0.1
PCS0402V05	5	300	30	0.01	0.1
PCS0402V07	7	300	30	0.01	0.1
PCS0402V12	12	300	30	0.01	0.1
PCS0402V15	15	300	30	0.01	0.1
PCS0402V24	24	300	30	0.01	0.1

Remark:

- Leakage current IL is measured at rated voltage
- Vt and Vc were measured using TLP (Transmission Line Pulse) method
- Capacitance, Cp was measured under 1Vrms voltage

Lead Free Reflow Soldering Recommendations



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts_{max} to T_P)	3°C/second max.
Preheat	
-Temperature Min (Ts_{min})	150°C
-Temperature Max (Ts_{max})	200°C
-Time (Ts_{min} to Ts_{max})	60-180 seconds
Time maintained above:	
-Temperature (T_L)	217°C
-Time (t_L)	60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-Down Rate	6 °C /second max.
Time 25°C to Peak Temperature	8 minutes max.
Storage Condition	0°C ~35°C, ≦ 70%RH

Note: If the wave soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

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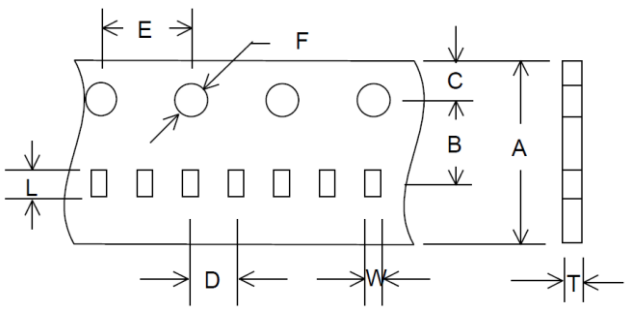
Reliability Test

Environmental Ratings			
Test Item	Specification	Test Condition	Reference
Bias Humidity	$I_L \leqq 10\mu A$	Rated voltage, 90%RH, 40°C , 1000 hrs	MIL-STD-202 Method 103
Thermal Shock	$I_L \leqq 10\mu A$	-55°C to 125°C, 30 min. each, 5 cycles	JIS C 0025 (1998) Test Na
High Temp Load Voltage	$I_L \leqq 10\mu A$	Rated voltage, 125°C, 1000 hrs	MIL-STD-202G Method 108
Solder Leach Resistance	$I_L \leqq 10\mu A$	260°C, 10 sec.	MIL-STD-202G Method 210F

- The leakage current, I_L, was measured after reliability tests at rated voltage.

Packaging Information

Part Number	Carrier Material	Quantity (EA/Roll)	Reel Dimension (mm)	
			Diameter	Thickness
PCS0201 Series	Paper	15000	178.0±2.0 (7" Paper Reel)	9.0±0.5
PCS0402 Series	Paper	10000	178.0±2.0 (7" Paper Reel)	9.0±0.5



Symbol	Dimension (mm)	
	0201	0402
A	8.00±0.30	8.00±0.30
B	3.50±0.05	3.50±0.05
C	1.75±0.10	1.75±0.10
D	2.00±0.05	2.00±0.05
E	4.00±0.10	4.00±0.10
F	1.50±0.10	1.50±0.10
L	0.71±0.02	1.13±0.03
W	0.37±0.02	0.63±0.03
T	0.42±0.03	0.43±0.03