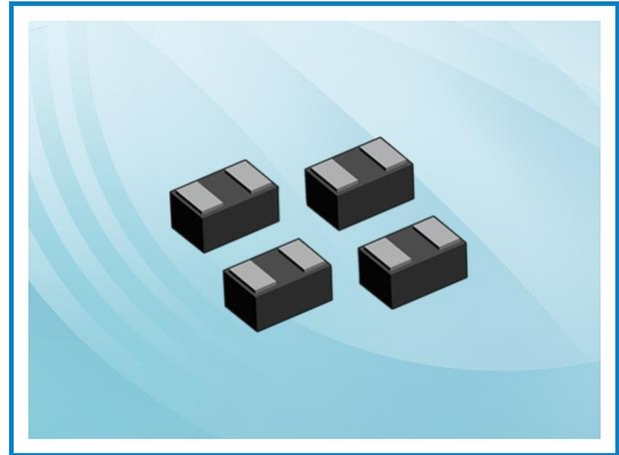


PTUC0521NS – ESD Protection Diode

Feature

- 50 Watts peak pulse power (8/20μs)
- Tiny DFN0603 package
- Bidirectional configurations
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (C_j = 0.2 pF typ.)
- Protect one data/power line
- IEC61000-4-2 (ESD) ±20kV (Air), ±15kV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning): 3A (8/20μs)



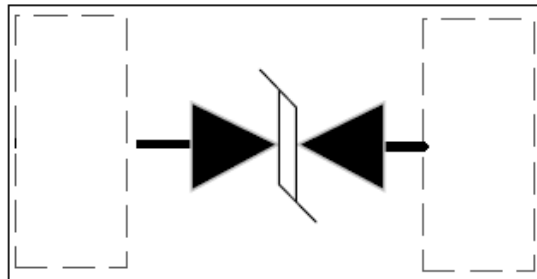
Applications

- USB3.0, HDMI2.0, Thunderbolt
- Notebooks, Desktops and Servers
- Portable Instrumentation

Mechanical Data

- DFN0603 package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant
- Moisture Sensitivity Level: Level 1
- Halogen Free

Schematic and PIN Configuration



Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	V _{ESD} ⁽¹⁾	±20	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±15	
Peak Pulse Power	P _{pp} ⁽²⁾	50	W
Peak Pulse Current	I _{pp} ⁽²⁾	3	A
Maximum Lead Solder Temperature (10 seconds duration)	T _L	260	°C
Junction Temperature	T _J	-55~125	°C
Storage Temperature Range	T _{stg}	-55~125	°C

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of T_A = 25 °C unless otherwise noted.

PTUC0521NS – ESD Protection Diode

Electrical Characteristics

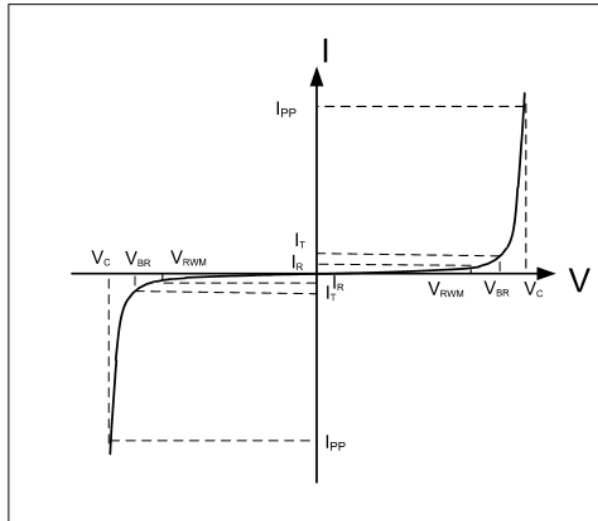
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5.5	8.5		V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$			100	nA
Peak Pulse Current	I_{PP}				3.0	A
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 3\text{A}$		17		V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		0.2	0.3	pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of $T_A = 25^\circ\text{C}$ unless otherwise noted.

Electrical Parameters

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Stand-off Voltage



PTUC0521NS – ESD Protection Diode

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

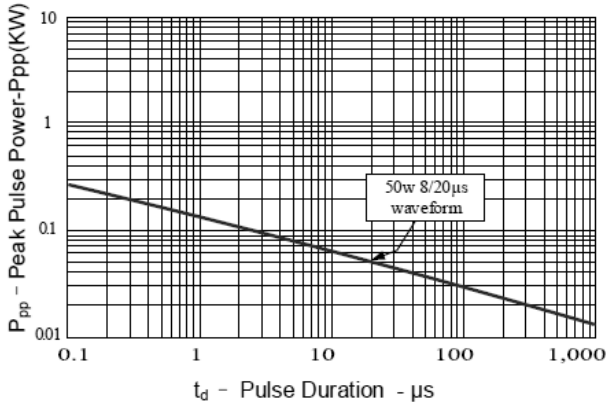


Figure 2: Power Derating Curve

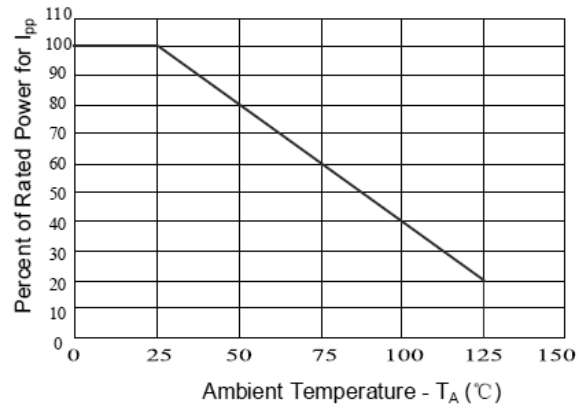


Figure 3: Pulse Waveform

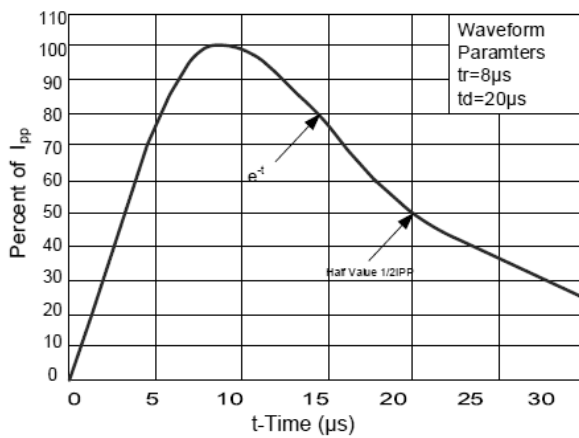
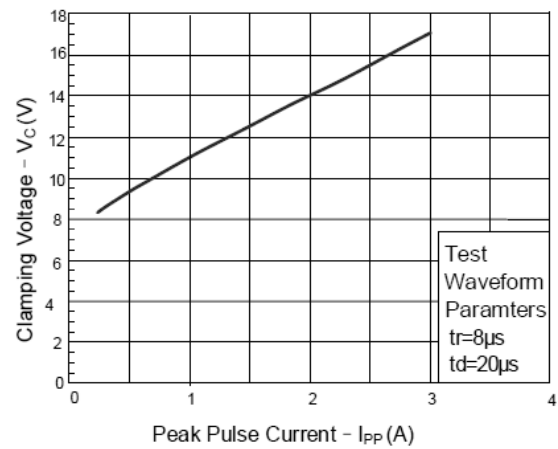
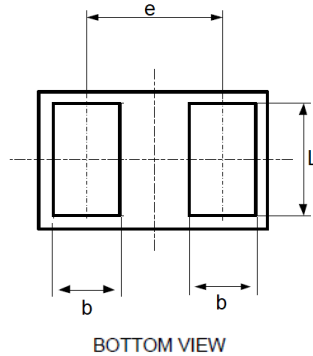
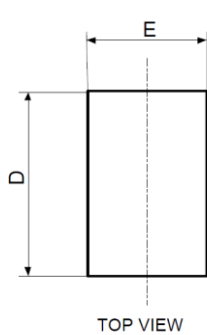


Figure 4: Clamping Voltage vs. I_pp



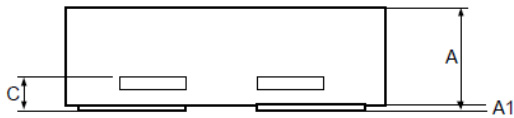
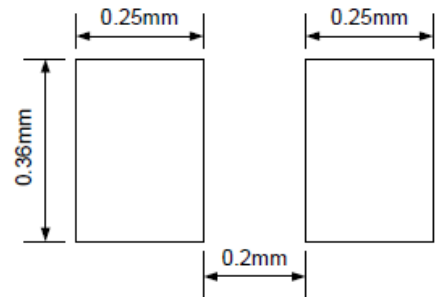
PTUC0521NS – ESD Protection Diode

DFN0603 Package Outline Dimensions



* There is a chamfer on electrode to indicate different P/N

Soldering Pad Layout



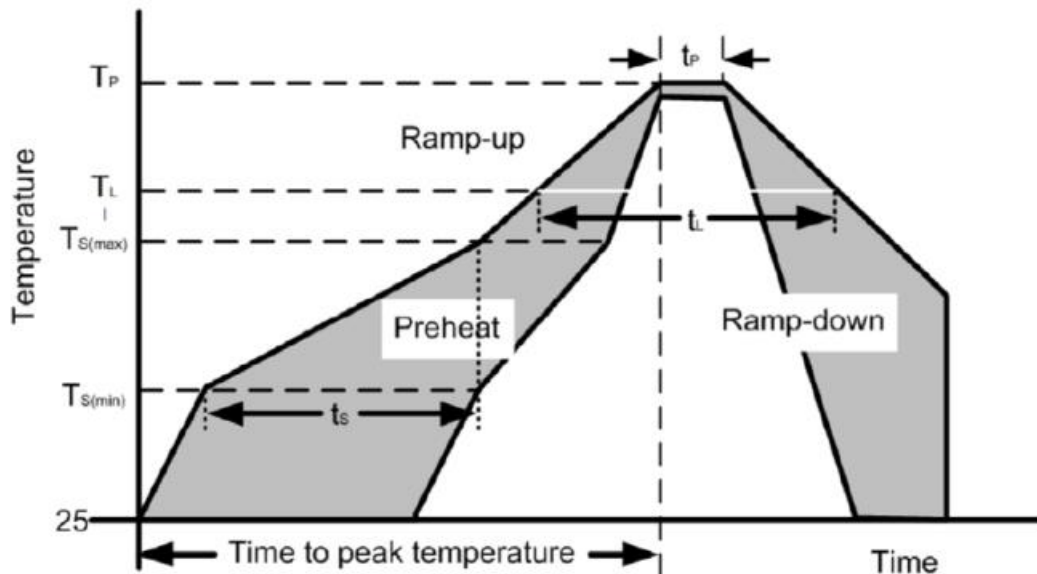
Symbol	Dimensions (mm)		
	Min	Typ	Max
A	0.28	0.30	0.32
A1	0.00	0.02	0.05
C	0.05	0.10	0.15
D	0.55	0.60	0.65
E	0.25	0.30	0.35
L	0.20	0.25	0.30
b	0.13	0.19	0.24
e	0.40 BSC		

Marking



PTUC0521NS – ESD Protection Diode

Soldering Parameters

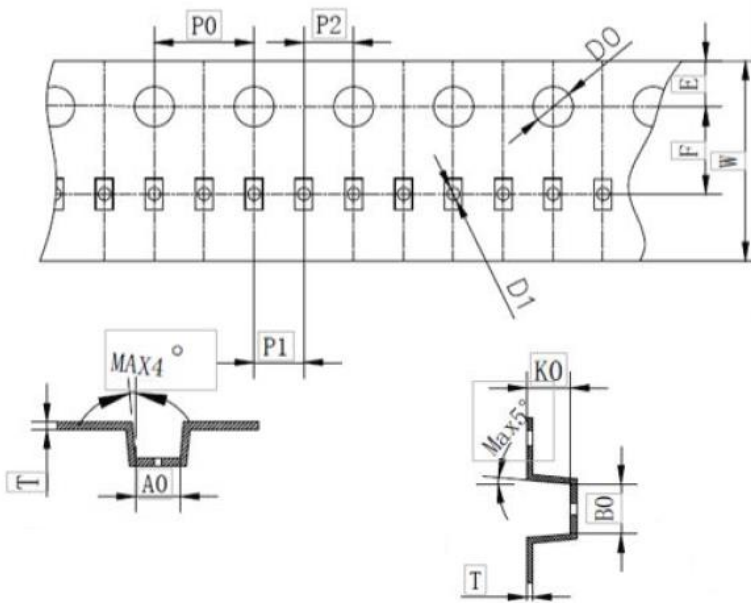


Refl	
Pre Heat Temperature Min (Ts (min)) 150°C	Temperature Min (Ts (min)) 150°C
Pre Heat Temperature Min (Ts (max)) 200°C	Temperature Min (Ts (max)) 200°C
Pre Heat Time (min to max) (ts) 60-190 secs	Time (min to max) (ts) 60-190 secs
Average ramp up rate (Liquidus Temp) (TL) to peak	5°C/seconds max
Ts(max)to TL—Ramp-up Rate	5°C/seconds max
Reflow Temperature (TL) (Liquidus)	217°C
Reflow Temperature (tl)	60-150 seconds
Peak Temperature (Tp)	260+0/-5°C
Time within actual peak Temperature (tp)	20-40 seconds
Ramp-down Rate	5°C/seconds max
Time 25°C to peak Temperature (Tp)	8 minutes Max.
Do not exceed	280°C

PTUC0521NS – ESD Protection Diode

Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTUC0521NS	DFN0603	7 inch	10,000



Carrier Tape	DFN0603 (mm)	Tolerance
A0	0.38	±0.03
B0	0.68	±0.03
K0	0.34	±0.03
P0	4.00	±0.10
P1	2.00	±0.05
P2	2.00	±0.05
T	0.18	±0.03
E	1.75	±0.10
F	3.50	±0.05
D0	1.55	±0.05
D1	0.20	±0.05
W	8.00	±0.10

