

Descriptions

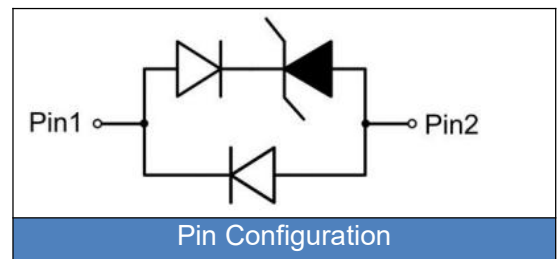
The UP1P882 series includes back-to-back TVS diodes fabricated is an ultra low capacitance Transient Voltage Suppressor (TVS) designed to protect high speed data interfaces. This device has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over-voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients). The series has a typical capacitance of only 0.60pF. They may be used to meet the ESD immunity requirements of IEC 61000-4-2. It gives the designer the flexibility to protect single lines in applications where arrays are not practical.



Features

- ◆ IEC61000-4-2 ESD 20KV Air, 20KV contact compliance
- ◆ SOD-882 surface mount package
- ◆ Working voltage: 5V
- ◆ Low leakage current
- ◆ Low operating and clamping voltages
- ◆ Lead Free/RoHS compliant
- ◆ Flammability rating UL 94V-0
- ◆ Meets MSL level 1, per J-STD-020

Schematic



Applications

- ◆ USB 3.0/USB 2.0
- ◆ MHL/MIPI/MDDI
- ◆ HDMI, Video Port, eSATA
- ◆ Set Top Boxes, Game Consoles
- ◆ Smart Phones
- ◆ External Storage
- ◆ Ultra books, Notebooks
- ◆ Tablets, eReaders

Dimensions (SOD-882)

Symbol	Dimension			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.95	1.05	0.037	0.041
B	0.55	0.65	0.022	0.026
C	0.32	0.55	0.013	0.022
D	0.45		0.018	
E	0.20	0.30	0.008	0.012
F	0.45	0.55	0.018	0.022

The mechanical drawing illustrates the SOD-882 package dimensions. The Top View shows a rectangular package with width A and height B. The Side View shows the package height C. The Bottom View shows the lead dimensions D, E, and F, with a 45° lead angle and a 0.05mm lead thickness. The Recommended Soldering Pad Layout shows two pads with a width of 0.30mm, a length of 0.55mm, and a pitch of 1.40mm, with a 0.60mm pad width and a 0.125mm pad offset.

Maximum Ratings and Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
ESD voltage (Contact discharge)	V_{ESD}	± 20	kV
ESD voltage (Air discharge)		± 20	
Storage & operating temperature range	T_{STG}, T_J	$-55\sim+150$	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5	V
Reverse breakdown voltage	V_{BR}	$I_{\text{BR}}=1\text{mA}$	6			V
Reverse leakage current	I_{R}	$V_{\text{R}}=5\text{V}$			0.08	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_{C}	$I_{\text{PP}}=1\text{A}$		13		V
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_{C}	$I_{\text{PP}}=3\text{A}$		20		V
Peak pulse current ($t_p=8/20\mu\text{s}$)	I_{PP}				3.3	A
Off state junction capacitance	C_{J}	$0\text{Vdc}, f=1\text{MHz}$		0.35		pF

Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

Figure 1. Capacitance vs. Bias Voltage

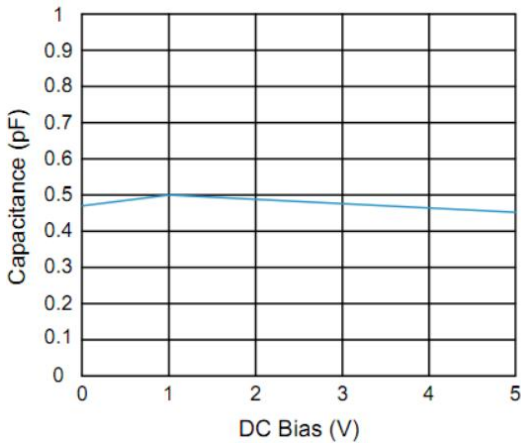


Figure 2. Insertion Loss (S21) I/O to GND

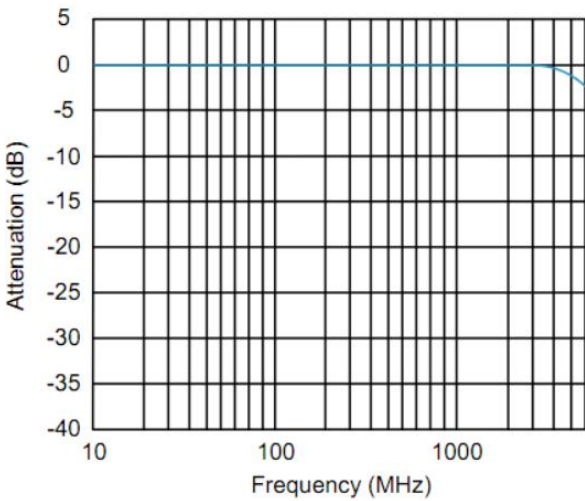


Figure 3. Pulse Waveform

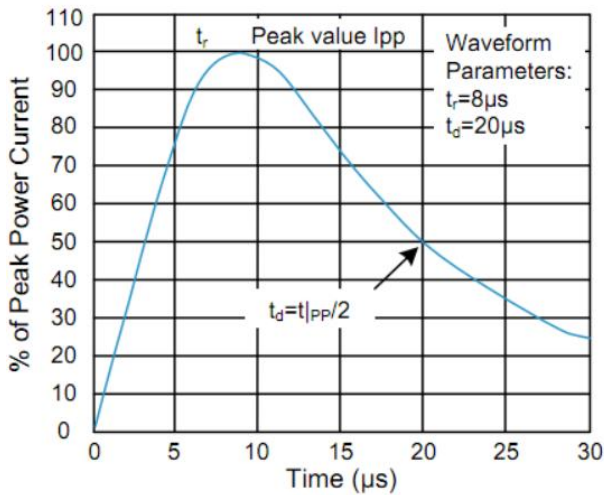
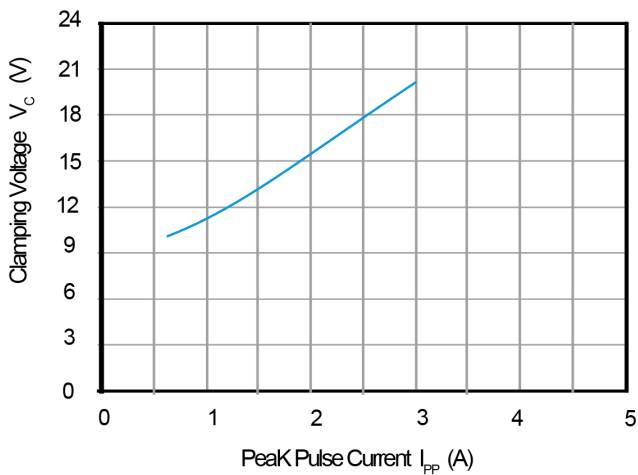
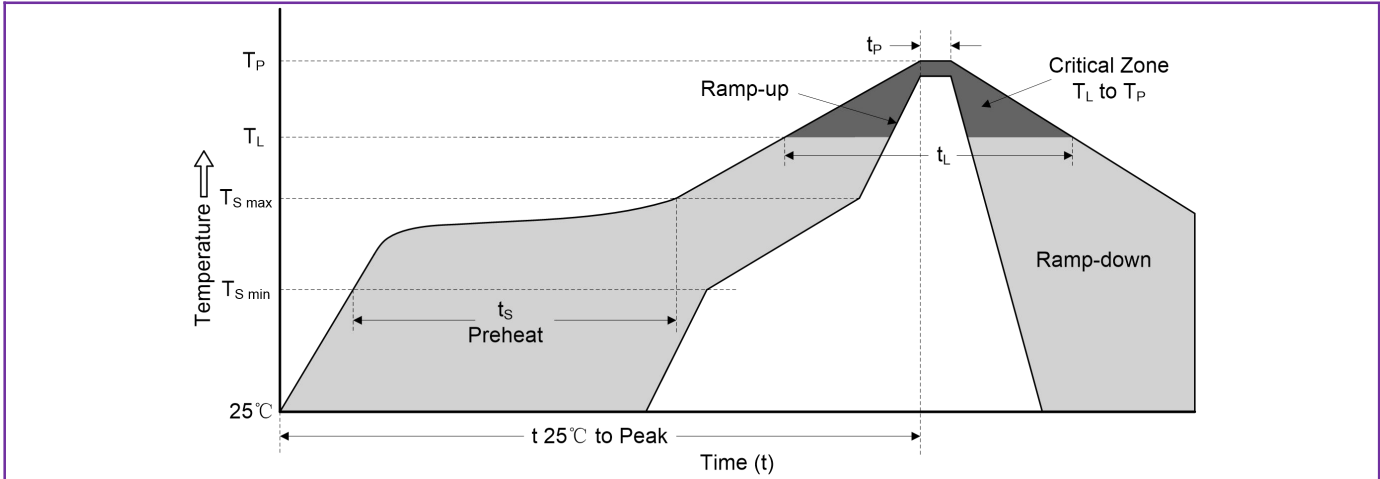


Figure 4. Clamping Voltage VS I_{PP}



Reflow Soldering Parameters



Reflow Condition		Lead-free Assembly
Pre heat	-Temperature Min ($T_{S\ min}$)	150°C
	-Temperature Max ($T_{S\ max}$)	200°C
	-Time (min to max) (t_s)	60-180 seconds
Average ramp-up rate (T_L to T_P)		3°C/second max.
$T_{S\ max}$ to T_L -Ramp-up Rate		3°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Time (min to max) (t_s)	60-150 seconds
Peak Temperature (T_P)		260(+0/-5)°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(T_p)		8 minutes max.
Do not exceed		260°C

Packaging

Tape		Symbol	Dimension (mm)
		W	8.00±0.30
		P0	4.00±0.10
		P1	2.00±0.10
		P2	2.00±0.10
		D0	Φ1.55±0.10
		D1	Φ0.40±0.05
		E	1.75±0.10
		F	3.50±0.10
		A	0.75±0.10
		B	1.15±0.10
		K	0.60±0.05
		t	0.20±0.05
Reel		D	Φ178.0±2.0
		D2	Φ13.00
		W1	9.50
		Quantity: 10000PCS	