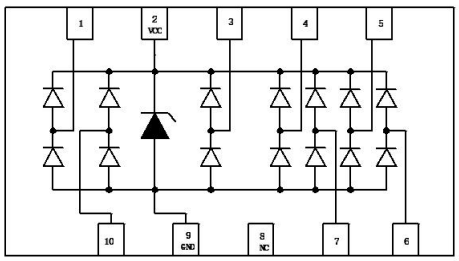
Description

The SRC4120-8 is an ultra low capacitance TVS array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The SRC4120-8 has an ultra-low capacitance with a typical value at 0.2pF, and complies with the IEC 61000-4-2 (ESD) standard with ±25kV air and ±20kV contact discharge. It is assembled into a 10-pin 4.1x2.0x0.55mm lead-free DFN package. The flow through style package allows for easy PCB lay-out and matched trace lengths necessary to maintain consistent impedance between high speed differential lines. The small size, ultra-low capacitance and high ESD surge protection make SRC4120-8 an ideal choice to protect HDMI 1.4, USB 3.0 and other high speed ports.

Features

- Ultra low capacitance: 0.3pF typical
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Protects one power line and six data lines
- Leadless flow-through package
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±25kV
    - Contact discharge: ±20kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)
  - – IEC61000-4-5 (Lightning) 5A (8/20μs)
- RoHS Compliant

Circuit Diagram



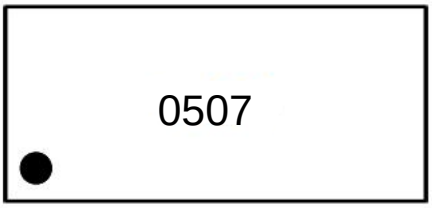
Mechanical Characteristics

- Package: DFN4120-10
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- USB 3.0
- HDMI 1.4
- High-Speed Data Lines

Marking Information



Ordering Information

Part Number	Packaging	Reel Size
SRC4120-8	3000/Tape & Reel	7 inch

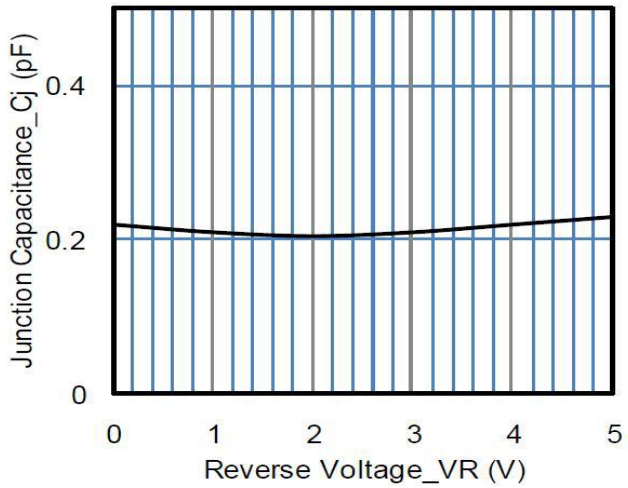
Absolute Maximum Ratings (T_A=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power(tp=8/20uS waveform)	P_{PPP}	100	W
Peak Pulse Current(tp=8/20uS waveform)	I_{PP}	5	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±25 ±20	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

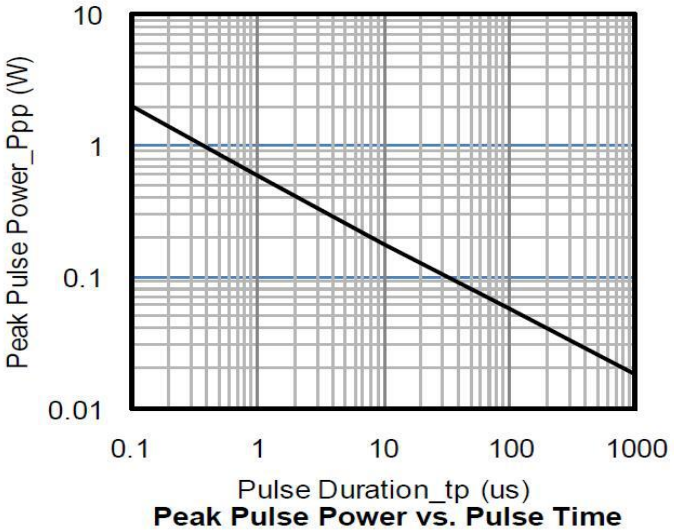
Electrical Characteristics (T_A=25℃)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	any I/O pin to ground
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA,any I/O pin to ground
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 5.0V any I/O pin to ground
Clamping Voltage	V_C			15	V	I_{PP} =1A (8 x 20μs pulse) any I/O pin to ground
Clamping Voltage	V_C			20	V	I_{PP} = 5A (8 x 20μs pulse) any I/O pin to ground
Junction Capacitance	C_J		0.3	0.4	pF	VR = 0V, f = 1MHz any I/O pin to ground

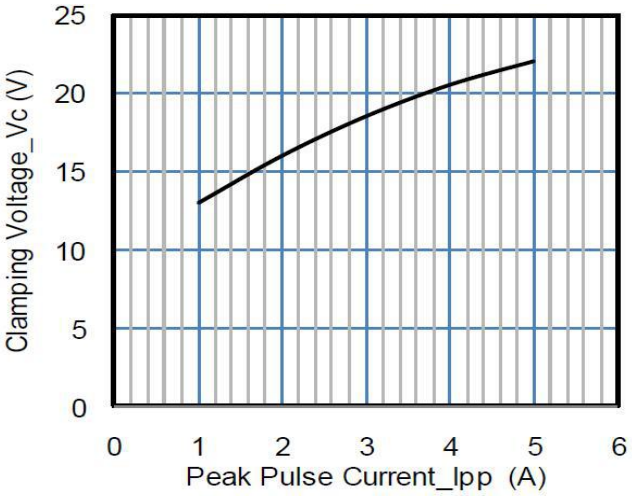
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



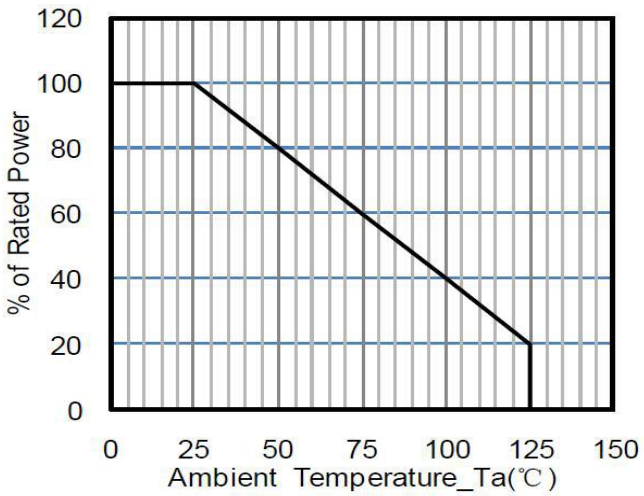
Junction Capacitance vs. Reverse Voltage



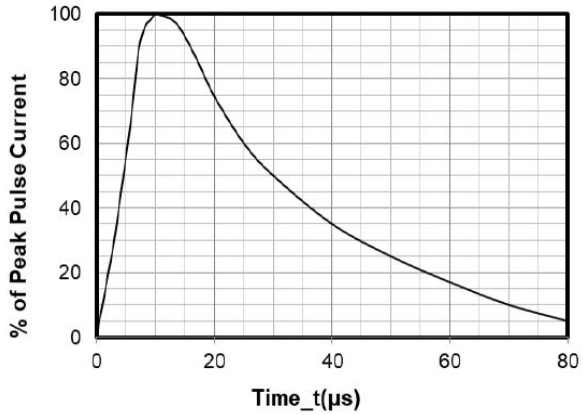
Peak Pulse Power vs. Pulse Time



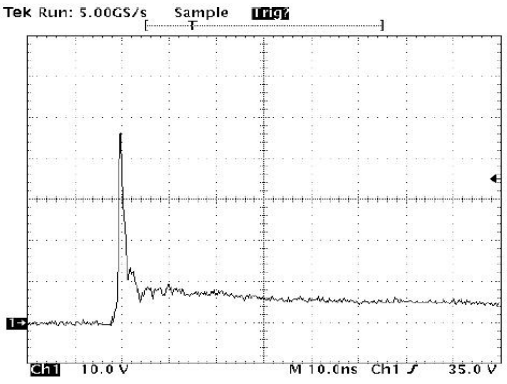
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform



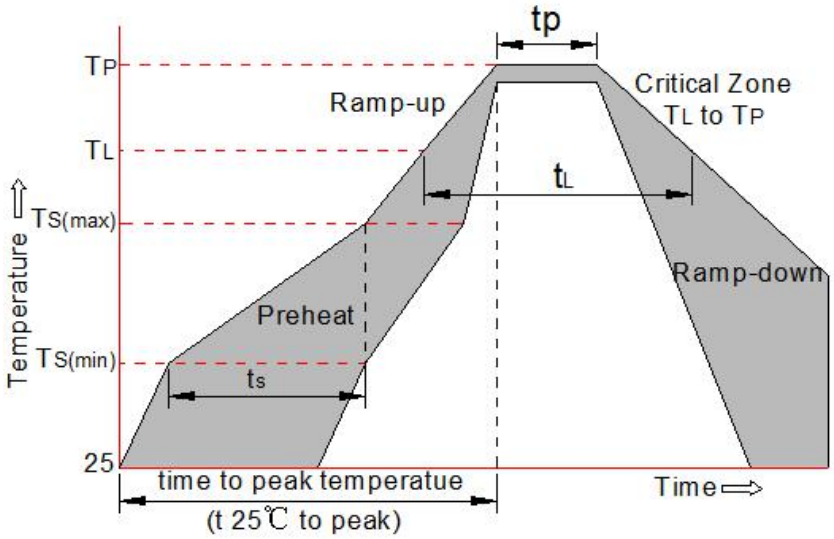
Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

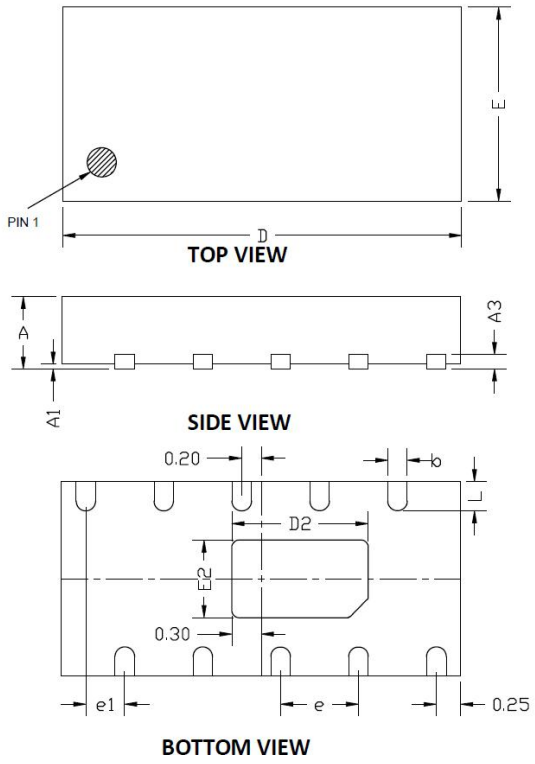
8 kV Contact per IEC61000-4-2

Soldering Parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

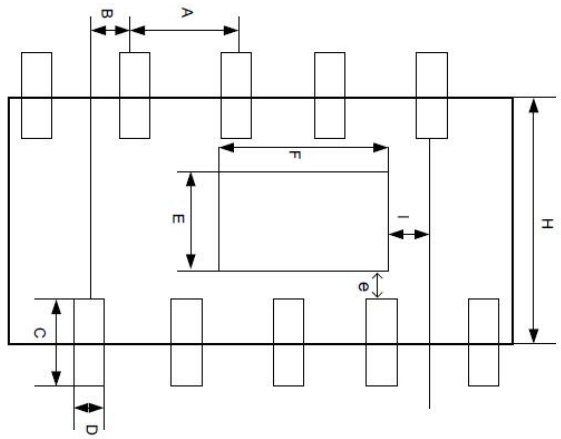


Package Mechanical Data



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	.020	.022	.024
A1	0.00	-	0.05	.000	-	.002
A3	0.15 REF			.006 REF		
D	4.05	4.10	4.15	.162	.164	.166
E	1.95	2.00	2.05	.075	.080	.082
D2	1.25	1.40	1.50	.050	.056	.060
E2	0.65	0.80	0.90	.026	.032	.036
b	0.15	0.20	0.25	.006	.008	.010
L	0.20	0.30	0.40	.008	.012	.016
e	0.80BSC			.032BSC		
e1	0.40BSC			.016BSC		

Suggested Land Pattern



DIMENSIONS		
DIM	MILLIMETERS	INCHES
A	0.800	0.032
B	0.400	0.016
C	0.600	0.024
D	0.200	0.008
E	0.800	0.032
F	1.400	0.056
H	2.000	0.080
I	0.300	0.012
e	0.200	0.008