

ECPLC0504N

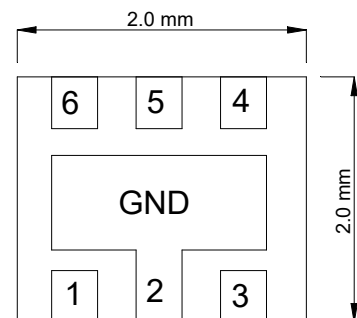
Ultra Low Capacitance Array for ESD Protection

The ECPLC0504N provides a typical line to line capacitance of 0.6pF and low insertion loss up to 2.5GHz providing greater signal integrity making it ideally suited for USB 3.0 applications, such as Digital TVs, DVD players, Computer, set-top boxes and MDDI applications in mobile computing devices.

It has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

Features

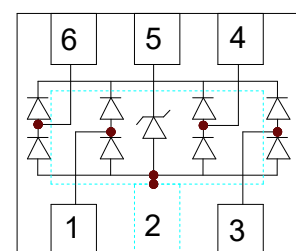
- Protects four I/O lines and one Vcc line
- Low capacitance
- Working voltages : 5V
- Low leakage current
- Response Time is < 1 ns
- Low capacitance (<1.5pF) for high-speed interfaces
- No insertion loss to 2.5GHz
- Solid-state silicon avalanche technology
- Meets MSL 1 Requirements
- ROHS compliant



Main applications

- Digital Visual Interface (DVI)
- 10/100/1000 Ethernet
- USB 1.1/2.0/3.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box
- Projection TV

DFN2020-6L



Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 5A (8/20µs)

Ordering Information

Device	Qty per Reel	Reel Size
ECPLC0504N	3000	7 Inch

Maximum ratings (Tamb=25°C Unless Otherwise Specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20µs waveform)	P _{PPP}	150	Watts
Peak Pulse Current(tp=8/20µs waveform)	I _{PP}	5	A
ESD Rating per IEC61000-4-2:	Contact	8	KV
	Air	15	
Lead Soldering Temperature	T _L	260 (10 sec.)	°C
Operating Temperature Range	T _J	-55 ~ 150	°C
Storage Temperature Range	T _{STG}	-55 ~ 150	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*Other voltages may be available upon request.

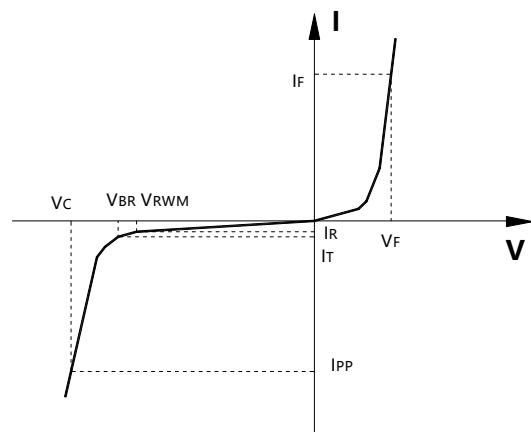
1. Non-repetitive current pulse, per Figure 1.

Electrical characteristics (Tamb=25°C Unless Otherwise Specified)

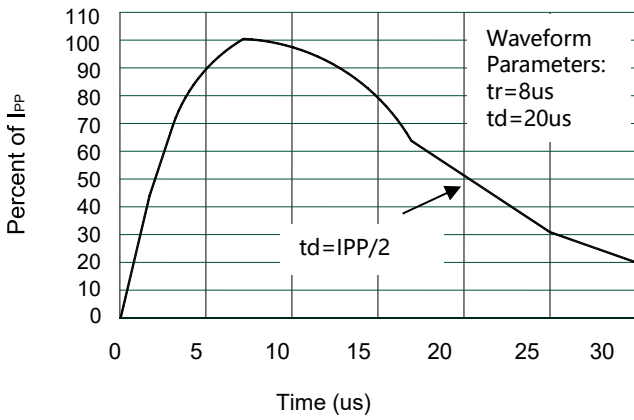
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V _{RWM}	Reverse Working Voltage	Any I/O to Ground			5.0	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA, Any I/O to Ground	6.0			V
I _R	Reverse Leakage Current	V _{RWM} = 5V, Any I/O to Ground			1	µA
V _F	Diode Forward Voltage	I _F = 15mA		0.85	1.2	V
V _C	Clamping Voltage	I _{PP} = 1A, tp =8/20µs, any I/O pin to Ground			15.5	V
		I _{PP} = 5A, tp =8/20µs, any I/O pin to Ground			25	V
I _{PP}	Peak Pulse Current	tp =8/20µs			5	A
C _J	Junction Capacitance	V _R = 0V, f = 1MHz, between I/O pins		0.6	0.8	pF
		V _R = 0V, f = 1MHz, any I/O pin to Ground		1.0	1.5	pF

Junction capacitance is measured in VR=0V,F=1MHz

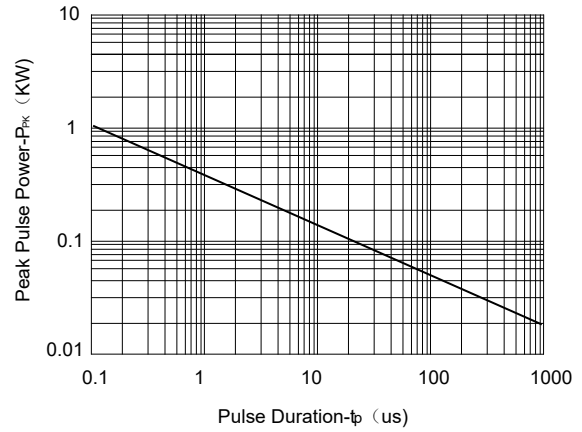
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{BR}	Breakdown Voltage @ I _T
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance



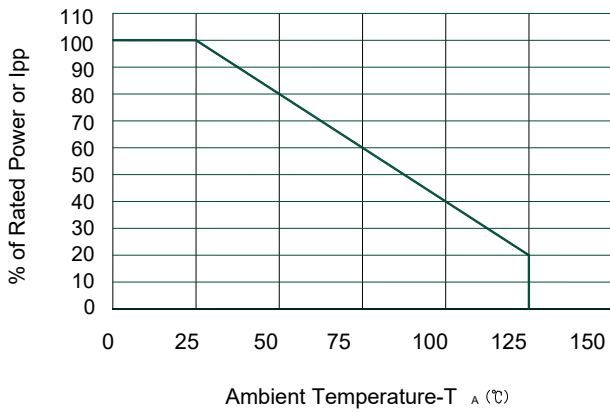
Typical electrical characterist applications



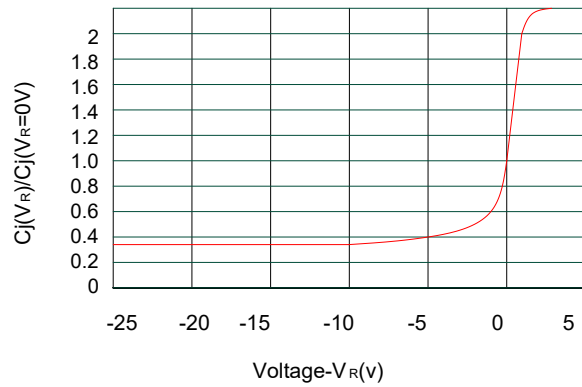
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time

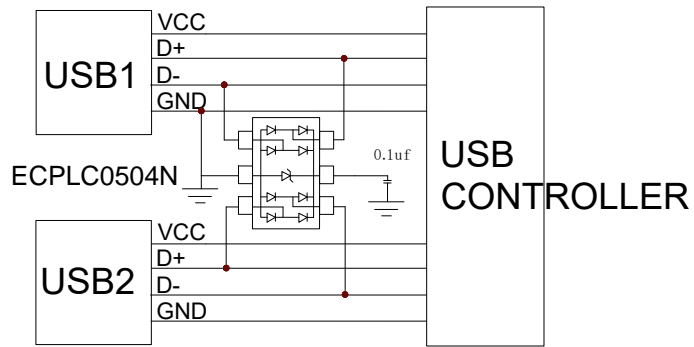


Power Derating Curve



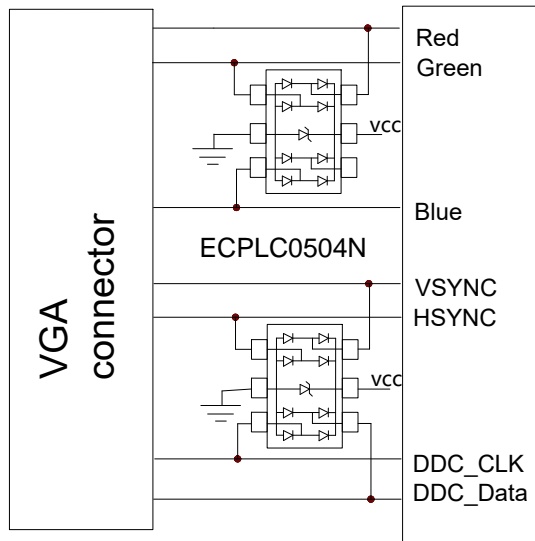
Junction Capacitance vs. Reverse Voltage

Typical applications



DUAL USB PROTECTION FOR ESD

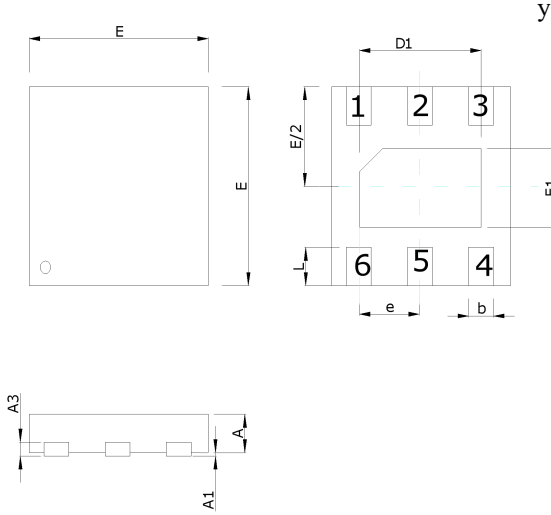
ESD protection for USB port



ESD protection for VGA port

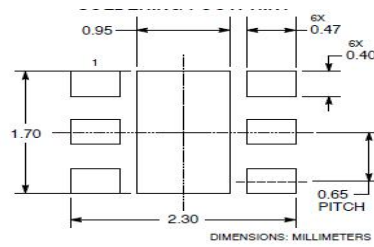
Package Information

DFN2020-6L

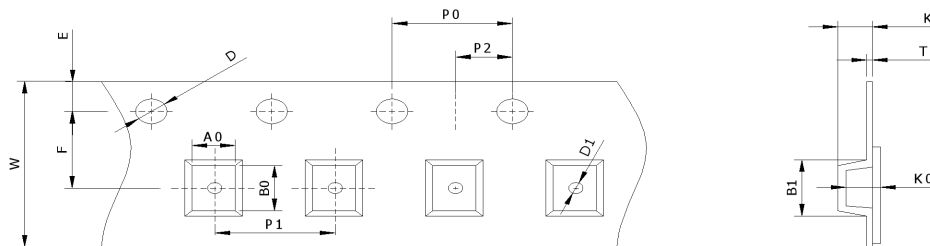


DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.75	0.85	0.030	0.033
A1	0.05		0.002	
A3	0.203REF		0.008REF	
b	0.20	0.3	0.008	0.012
D	1.55	2.00	0.061	0.079
E	1.924	2.067	0.076	0.081
E1	0.6	0.85	0.024	0.033
D1	1.10	1.30	0.043	0.051
e	0.650BSC		0.026BSC	
L	0.274	0.426	0.011	0.017

Recommended Pad outline



DFN2020-6L Reel Dim



Package	Chip Size (mm)	Pocket Size B0×A0×K0(mm)	Tape Width	Reel Diameter	Quantity Per Reel	P0	P1
DFN2020-6L	2.0×2.0×0.80	2.20×2.20×1.00	8mm	178mm(7")	5000	4mm	4mm
D0	D1	E	F	K	T	W	
1.5mm	0.5mm	1.75mm	3.5mm	0.85mm	0.2mm	8mm	