



DWC0428NS-Q ESD Protection Diode

Feature

- Bi-directional ESD protection of one line
- 24Watts peak pulse power ($t_p=8/20\mu s$)
- Working voltage: 3.3V
- Junction Capacitance: 0.13pF(Typ)
- Low clamping voltage
- Low leakage current
- AEC-Q101 qualified
- IEC 61000-4-2 $\pm 8kV$ contact $\pm 15kV$ air
- IEC 61000-4-5 (Lightning) 4A (8/20 μs)

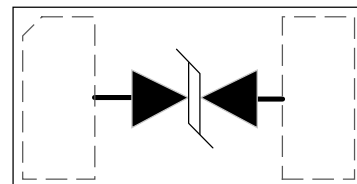
Application

- USB4 and Thunderbolt data lines
- Ultra-high-speed data line
- Communications systems
- Cellular handsets and accessories
- Notebooks,Desktops,and Servers

Mechanical Data

- Package: DFN0603-2L
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

Schematic & PIN Configuration



Ordering Information

Part Number	Package	Marking	Packing	Reel Size
DWC0428NS-Q	DFN0603-2L	CF	10000 Tape & Reel	7 inches



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

Parameter	Symbol	Value	Unit
Peak Pulse Current ($t_p=8/20\mu\text{s}$) (Note1)	I_{pp}	4	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 15 ± 8	kV
Lead Soldering Temperature	T_L	260 (10seconds)	$^{\circ}\text{C}$
Junction Temperature	T_J	-55 to + 125	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 to + 125	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse Stand-Off Voltage	V_{RWM}		-3.3		3.3	V
Reverse Leakage Current	I_R	$V_{RWM}=\pm 3.3\text{V}, T=25^{\circ}\text{C}$			0.1	μA
Trigger Voltage	V_T	$I_T=1\text{mA}$	5			V
Holding Voltage	V_H	$I_H=100\text{mA}$	2		3.3	V
Clamping Voltage	V_C	$I_{PP}=4\text{A}, t_p=8/20\mu\text{s}$			6	V
ESD Clamping Voltage	V_C	$I_{TLP}=4\text{A}, t_p=0.2/100\text{ns}$		5.4		V
ESD Clamping Voltage	V_C	$I_{TLP}=16\text{A}, t_p=0.2/100\text{ns}$		14.5		V
ESD Dynamic Resistance	R_{DYN}	$TLP=0.2/100\text{ns}$		0.75		Ω
Junction Capacitance	C_j	$V_R = 0\text{V}, f = 1\text{MHz}$		0.13	0.17	pF

Electrical Parameters

V_{RWM} Reverse Working Voltage Max.

I_R Maximum Reverse Leakage Current @ V_{RWM}

V_T Trigger Voltage

V_H Holding Voltage

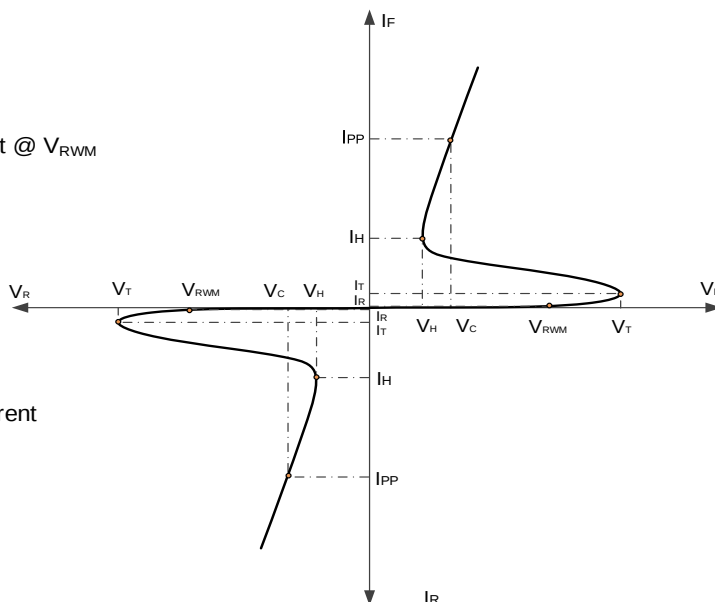
I_H Holding Current

V_{BR} Reverse Breakdown Voltage

I_{PP} Maximum Reverse Peak Pulse Current

V_C Clamping Voltage @ I_{PP}

Note1: 8/20 μs pulse waveform.





Typical Characteristic

Figure1: 8/20 μ s pulse waveform according to IEC61000-45

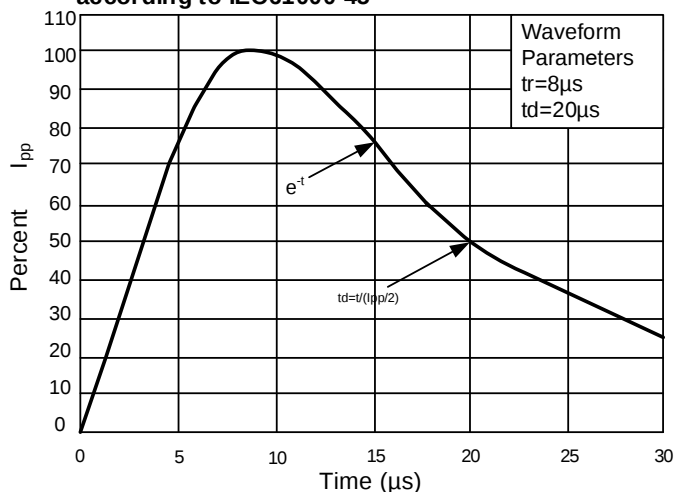


Figure2: ESD pulse waveform according to IEC 61000-4-2

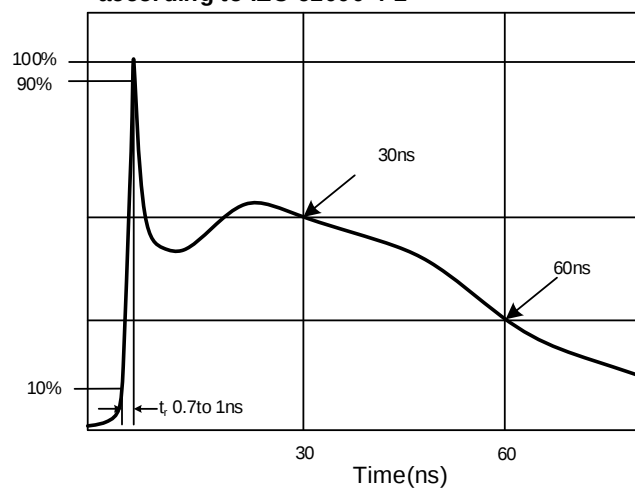


Figure3: Power Derating Curve

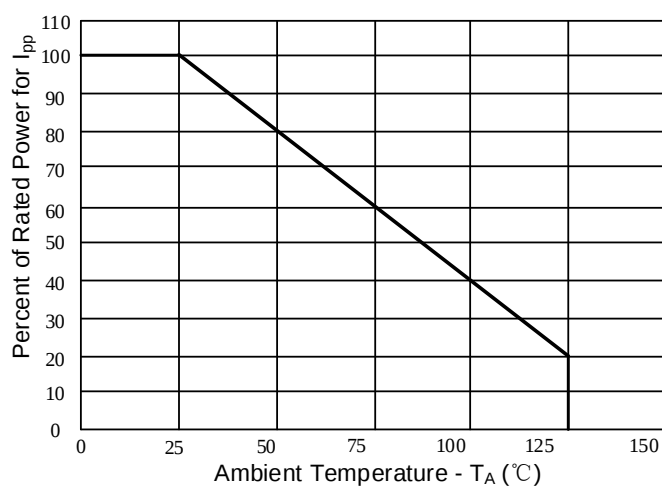


Figure 4: Clamping Voltage vs. I_{pp}

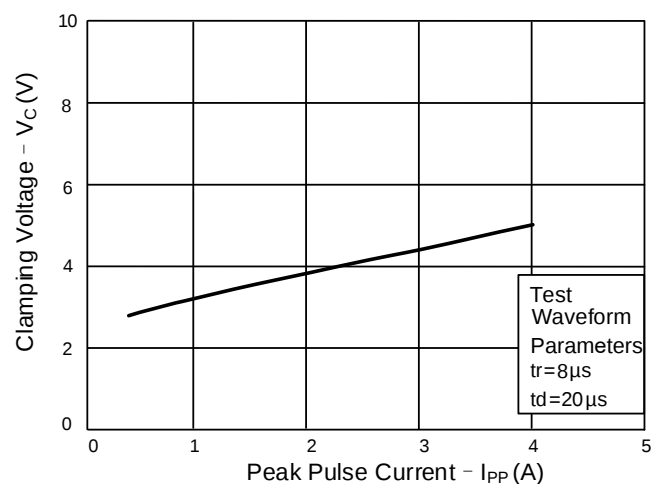


Figure5: TLP Positive I-V Curve

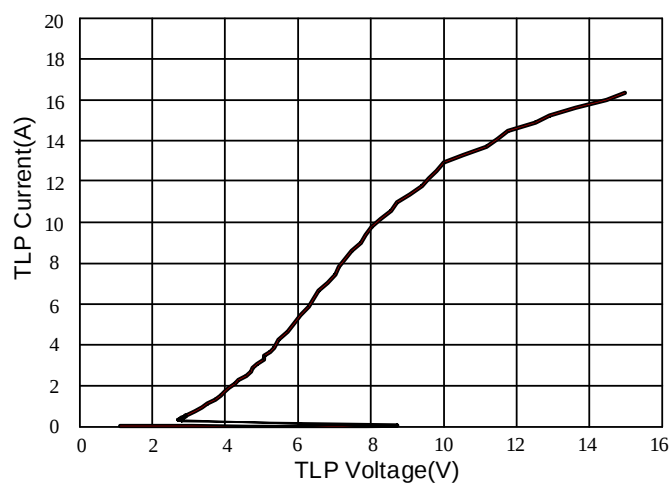
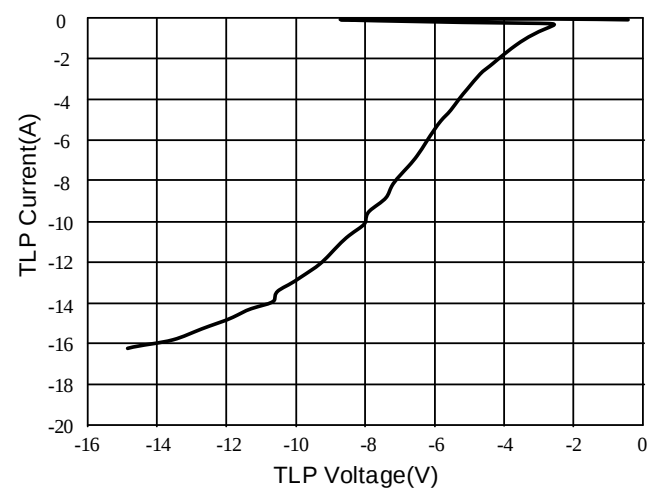
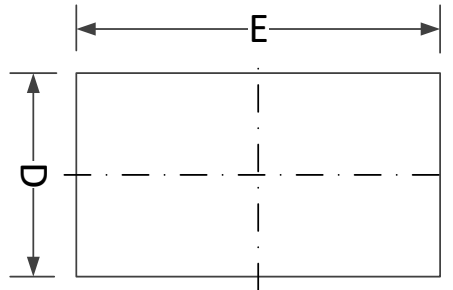


Figure6: TLP Neagitive I-V Curve

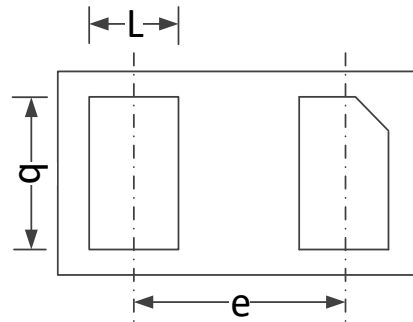




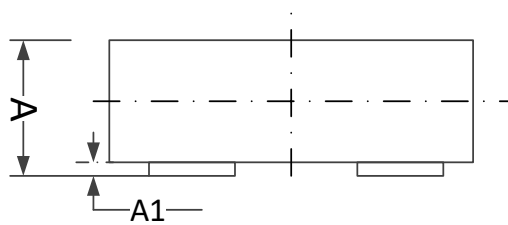
DFN0603-2L Outline Drawing



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSION (MM)			
PKG	DFN0603		
REF.	MIN.	NOM.	MAX.
A	0.28	0.30	0.34
A1	0.00	0.02	0.05
b	0.21	0.23	0.265
L	0.14		0.24
e	0.40BSC		
D	0.25	0.30	0.35
E	0.55	0.60	0.65