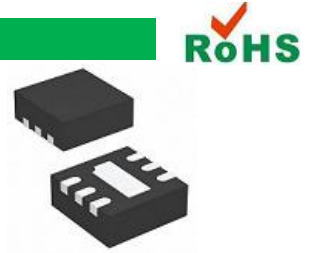


Ultra Low Capacitance TVS Diode Array

**APPLICATION**

- ◆ USB 2.0 and USB OTG
- ◆ Multi-Media Card Interfaces
- ◆ SD Card Interfaces
- ◆ MDDI Ports
- ◆ SIM Ports



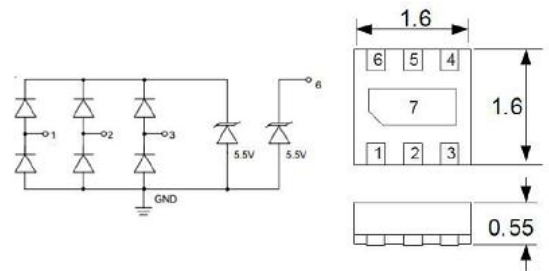
**IEC COMPATIBILITY**

Package: DFN1616-6

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

**FEATURES**

- ◆ Ultra low capacitance: 0.4pF typical (I/O to I/O)
- ◆ Ultra low leakage: nA level
- ◆ Working voltage: 5V
- ◆ Low clamping voltage
- ◆ Up to 3 data lines and one power line protects



Circuit Diagram

Pin Schematic

**Electrical Characteristics**

Parameter	Symbol	Value	Unit
DP, DM, USB ID (Pins1, 2, 3)			
Peak Pulse Power (tp=8/20µs waveform)	P <sub>ppp</sub>	75	W
Peak Pulse Current (8/20µs)	I <sub>pp</sub>	5	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±25	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C
VBus (Pin 6)			
Peak Pulse Power (tp=8/20µs waveform)	P <sub>ppp</sub>	100	W
Peak Pulse Current (8/20µs)	I <sub>pp</sub>	8	A
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	±25	kV
ESD per IEC 61000-4-2 (Contact)		±20	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

Ultra Low Capacitance TVS Diode Array



Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
DP, DM, USB ID TVS						
Reverse Working Voltage	$V_{RWM}$			5	V	Any I/O to GND
Breakdown Voltage	$V_{BR}$	6			V	$I_T = 1\text{mA}$ , any I/O to GND
Reverse Leakage Current	$I_R$			0.5	$\mu\text{A}$	$V_{RWM} = 5\text{V}$ , any I/O to GND
Clamping Voltage	$V_C$			10	V	$I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse) any I/O pin to ground
Clamping Voltage	$V_C$			20	V	$I_{PP} = 5\text{A}$ (8 x 20 $\mu\text{s}$ pulse) any I/O pin to ground
Junction Capacitance	$C_J$		0.4	0.5	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ , I/O to I/O
Junction Capacitance	$C_J$		0.6	0.8	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ , I/O to GND

Note: I/O Pins are 1, 2, 3

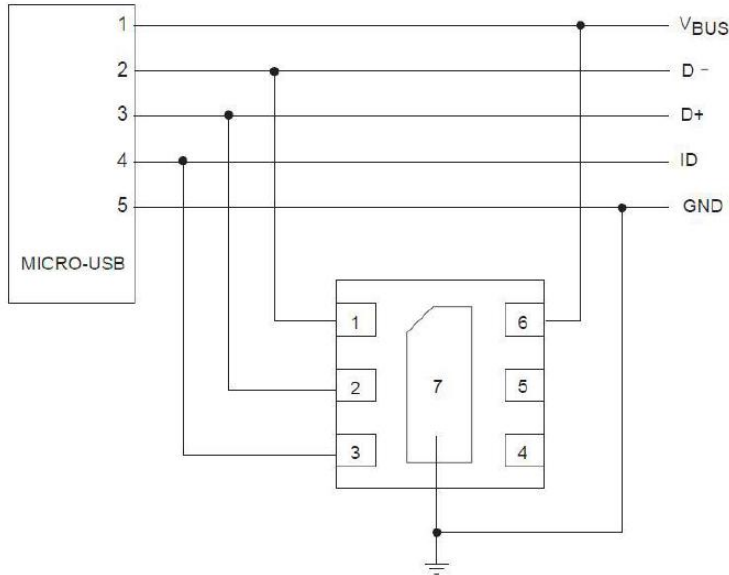
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
VBus TVS						
Reverse Working Voltage	$V_{RWM}$			5.5	V	Pin 6 to Gnd
Breakdown Voltage	$V_{BR}$	6		8.5	V	$I_T = 1\text{mA}$ , Pin 6 to Gnd
Reverse Leakage Current	$I_R$			0.5	$\mu\text{A}$	$V_{RWM} = 5\text{V}$ , Pin 6 to Gnd
Clamping Voltage	$V_C$			8	V	$I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse) Pin 6 to Gnd
Clamping Voltage	$V_C$			12	V	$I_{PP} = 8\text{A}$ (8 x 20 $\mu\text{s}$ pulse) Pin 6 to Gnd
Junction Capacitance	$C_J$		60		pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ , Pin 6 to Gnd

ultra Capacitance TVS Diode Array

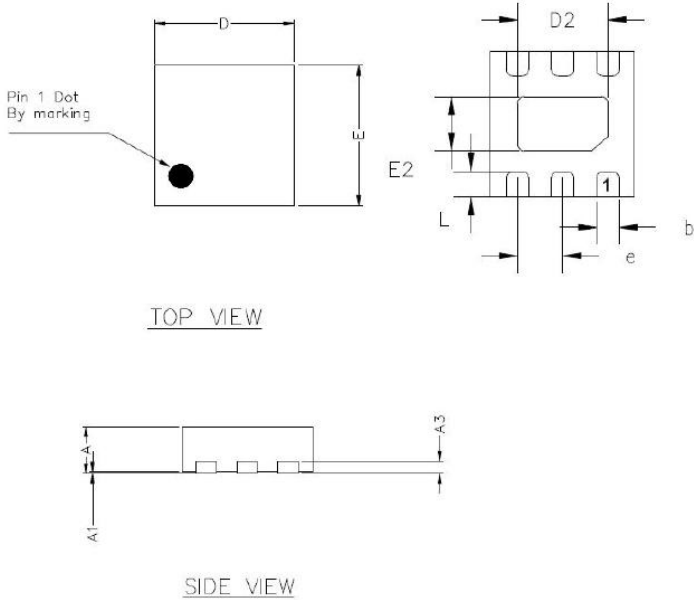
Soldering Parameters



HAH0514P3 on USB Port Application



Package Mechanical Data



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	--	0.05
A3	0.15REF		
D	1.55	1.60	1.65
E	1.55	1.60	1.65
D2	0.90	1.00	1.05
E2	0.50	0.60	0.65
e	0.50 BSC		
L	0.20	0.25	0.30
b	0.20	0.25	0.30

Part Number	Qty per Reel	Reel Size	Package	Delivery Time
<b>HAH0514P3</b>	3000pcs	7inch	DFN1616-6	7days