



Features

- Solid-state silicon-avalanche technology
- Low operating and clamping voltage
- ESD Protection for super speed differential signaling channels
- Ultra low capacitance: 0.3pF typical(I/O to I/O)
- Low Leakage
- Low operating voltage:5V
- "feed through" layout

IEC Compatibility (EN61000-4)

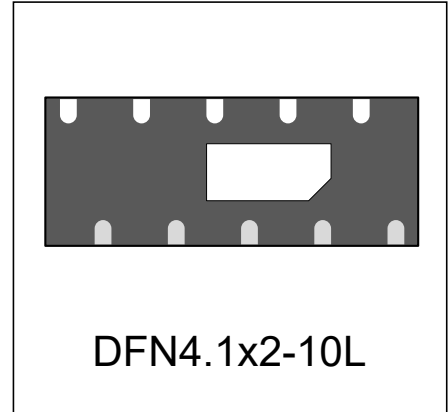
- IEC 61000-4-2 (ESD) $\pm 18\text{kV}$ (air), $\pm 12\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 4.0A (8/20 μs)

Mechanical Characteristics

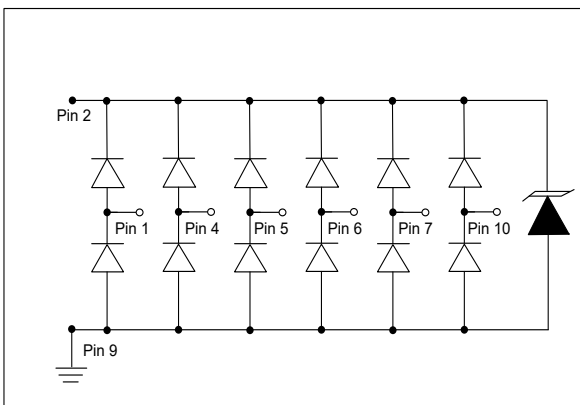
- DFN4.1x2-10L package
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

Applications

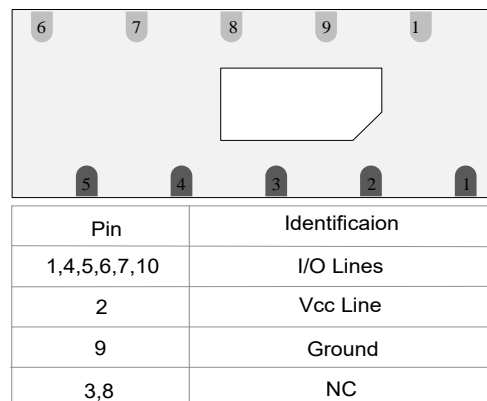
- USB 3.0
- HDMI 1.4
- High speed port protection
- Portable electronics



Circuit Diagram



Schematic & PIN Configuration

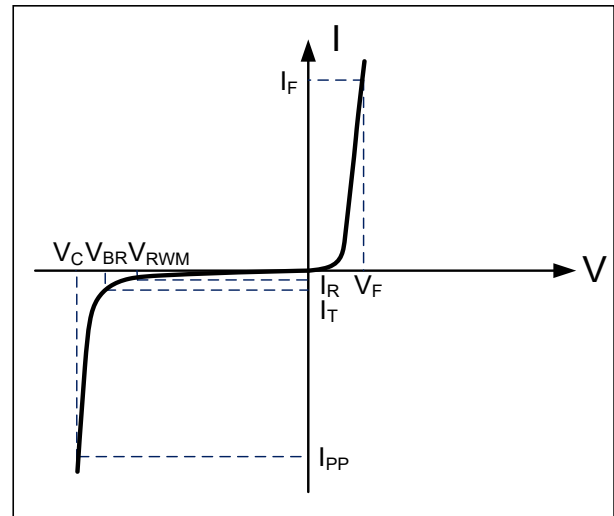


Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	60	Watts
Peak Pulse Current ($t_p = 8/20\mu s$)	I_{pp}	4.0	A
ESD per IEC 61000-4-2(Air)	V_{ESD}	+/-18	kV
ESD per IEC 61000-4-2(contact)		+/-12	
Operating Temperature	T_J	-55 to + 125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Parameters (T=25°C)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



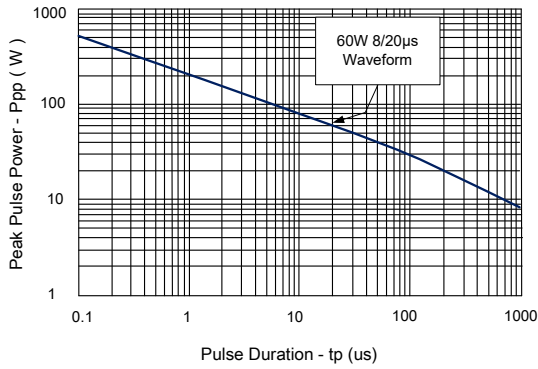
Electrical Characteristics

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}	Any I/O pin to ground			5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_t = 1mA$ Any I/O pin to ground	6.0			V
Reverse Leakage Current	I_R	$V_{RWM} = 5V, T=25°C$ Any I/O pin to ground			1	μA
Clamping Voltage	V_C	$I_{pp}=4A, t_p=8/20\mu s$ Any I/O pin to ground			15	V
Junction Capacitance	C_j	$V_R = 0V, f = 1MHz$ I/O pin to GND			0.8	pF
		$V_R = 0V, f = 1MHz$ Between I/O pins		0.3	0.4	pF

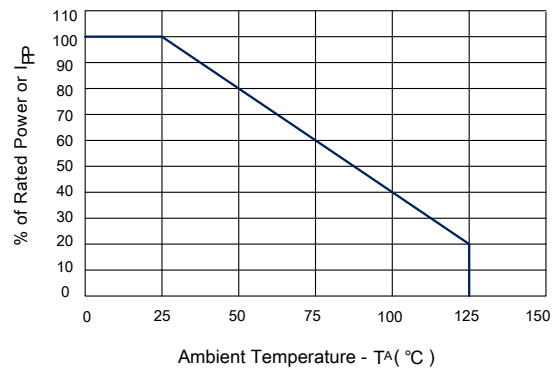


Typical Characteristics

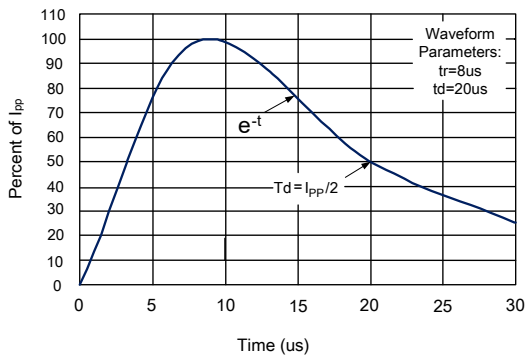
Non-Repetitive Peak Pulse Power vs. Pulse Time



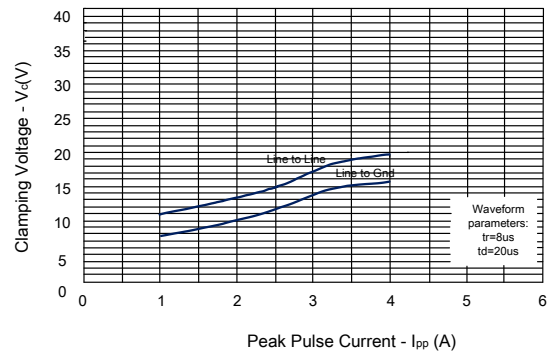
Power Derating curve



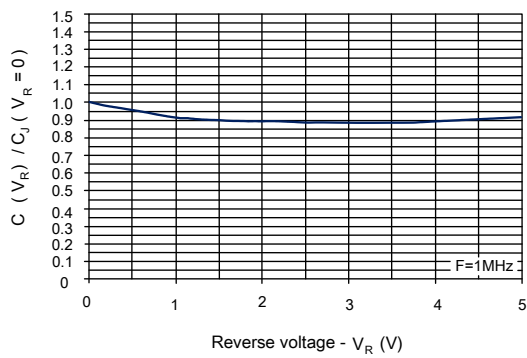
Pulse Waveform



Clamping Voltage vs. Peak Pulse Current

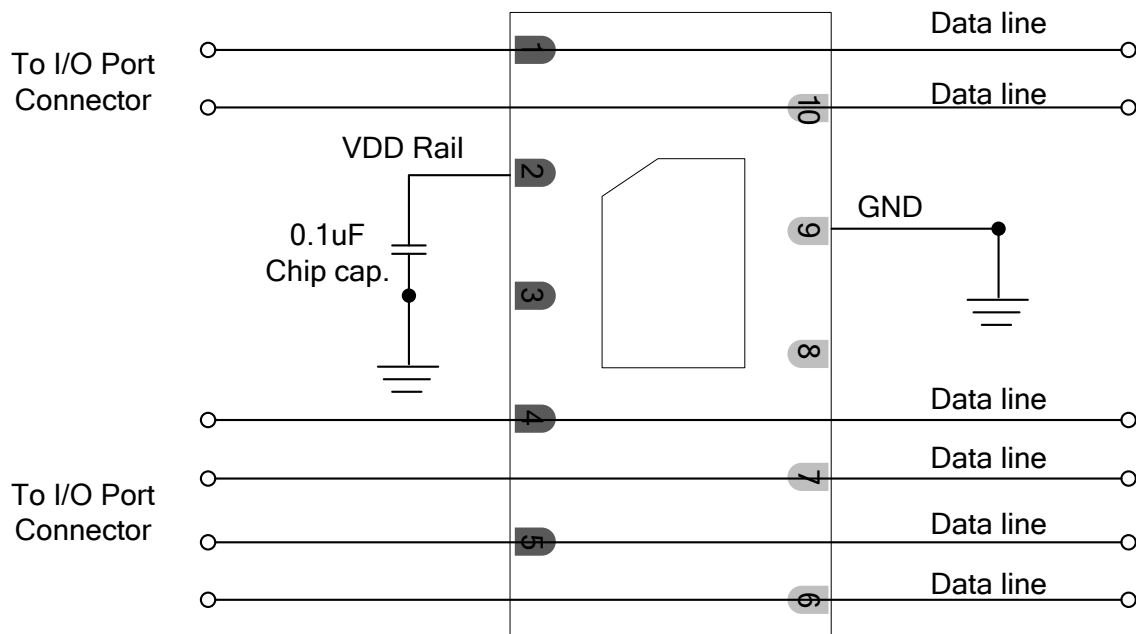


Normalized Capacitance vs. Reverse Voltage



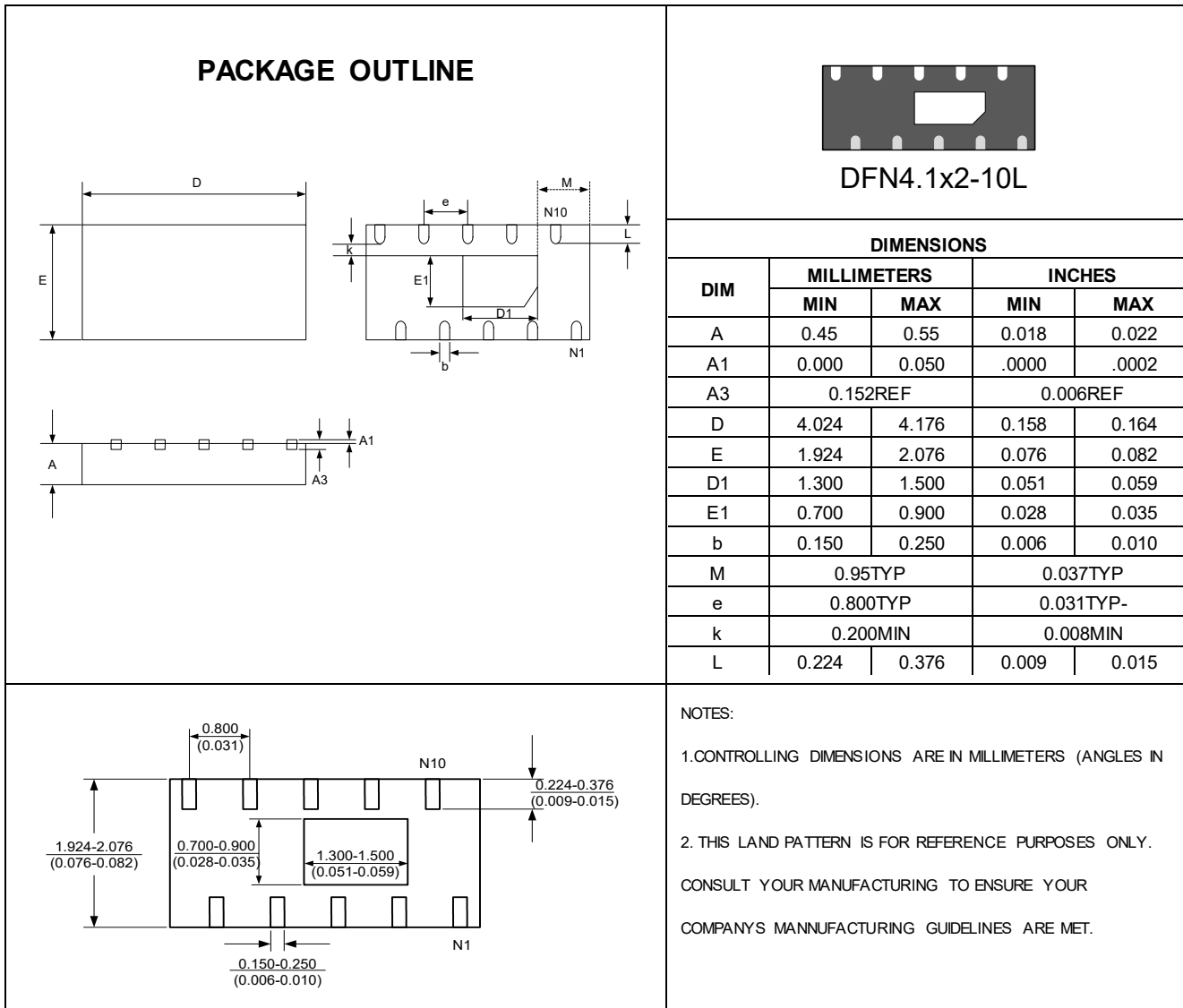
Reference Application

DW05-6R1N-E is designed to protect high speed data ports from ESD transients. For high speed ports above 5 Gb/s such as USB 3.0, differential signaling is used where the need to keep impedance constant is a critical requirement. The use of a DFN4.1x2-10L package using a “feed through” layout provides a minimum impedance change on the high speed data line while the ultralow capacitance performance of the device limits the signal loss degradation of each channel.



USB3.0 ESD Protection by using DW05-6R1N-E.

Outline Drawing –DFN4.1x2-10L



Marking Codes

Part Number	DW05-6R1N-E	Marking Code	DW05-6R1N-E
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Package Information

Qty: 3k/Reel