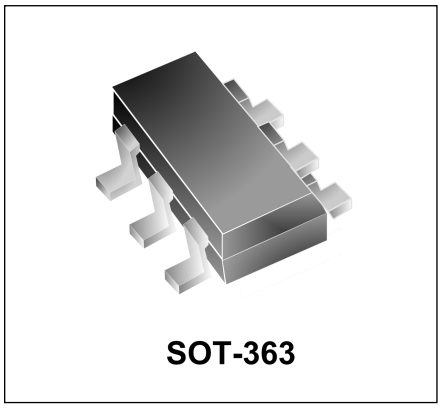
DW05-2RT3-E

Features

- 100Watts Peak Power per Line (tp = 8/20μs)
- Protects two I/O lines
- Low operating voltage: 5V
- Ultra Low capacitance(<1.0pF) for high-speed interfaces
- Solid-state technology



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IEC Compatibility (EN61000-4)

- IEC 61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 4A (8/20μs)

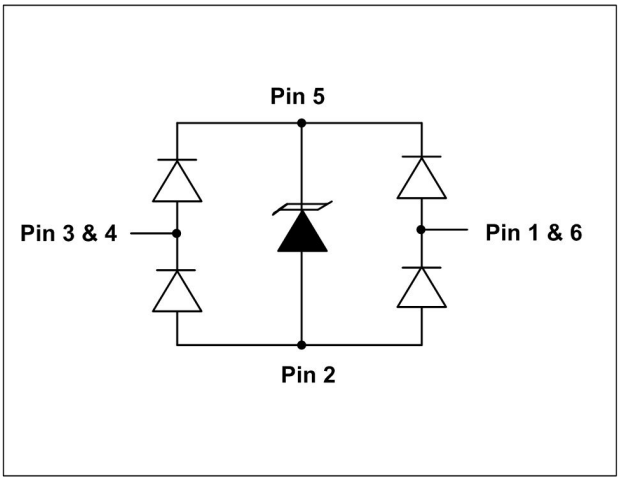
Mechanical Characteristics

- JEDEC SOT-363 package
- Molding compound flammability rating: UL 94V-0
- Marking : Making Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

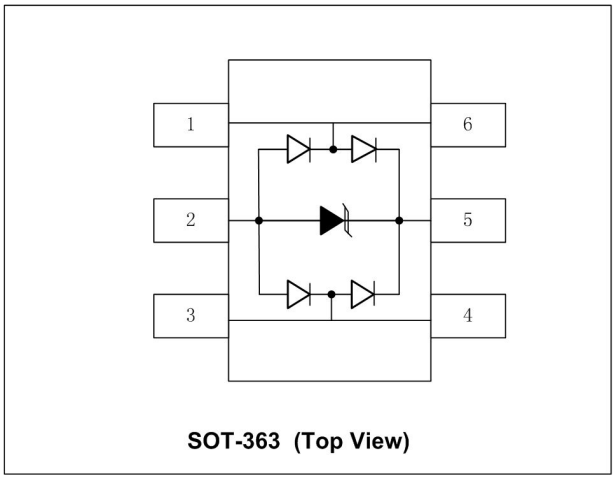
Applications

- FireWire & USB
- Sensitive Analog Inputs
- Portable Electronics
- LAN/WAN equipment
- Video Line Protection
- Microcontroller Input Protection

Circuit Diagram



Schematic & PIN Configuration

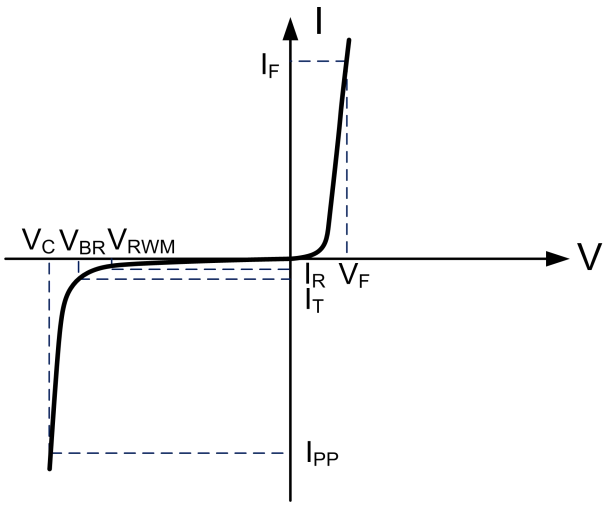


SOT-363 (Top View)

Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power (t_p=8/20μs)	P_{PP}	100	Watts
Peak Pulse Current (t_p=8/20μs)	I_{PP}	4	A
Lead Soldering Temperature	T_L	260(10sec)	℃
Operating Temperature	T_J	-55 to + 125	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Electrical Parameters (T=25℃)

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



Electrical Characteristics

DW05-2RT3-E						
Parameter	**Symbol**	**Conditions**	**Minimum**	**Typical**	**Maximum**	**Units**
Reverse Stand-Off Voltage	V_{RWM}				5.0	V
Breakdown Voltag	V_{BR}	I_T=1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM}=5V,T=25℃			1.0	μA
Clamping Voltage	V_C	I_{PP}=1A, t_p=8/20μs		10		V
Clamping Voltage	V_C	I_{PP}=4A, t_p=8/20μs		25		V
Junction Capacitance	C_j	Between I/O pins and Ground V_R=0V, f=1MHz		0.8	1.0	pF
		Between I/O pins V_R=0V, f=1MHz		0.4	0.6	pF

Typical Characteristics

Figure 1: Peak Pulse Power Vs Pulse Time

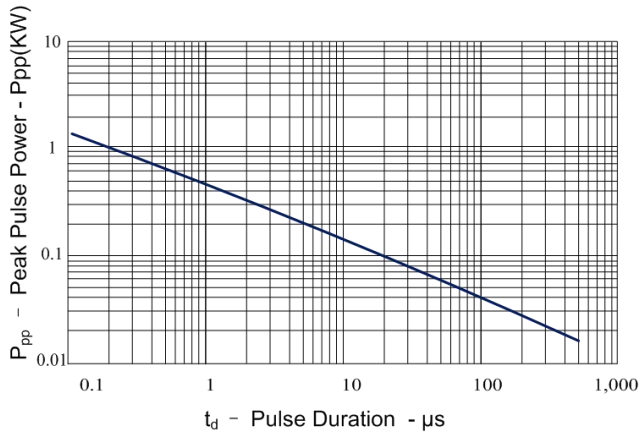


Figure 2: Power Derating Curve

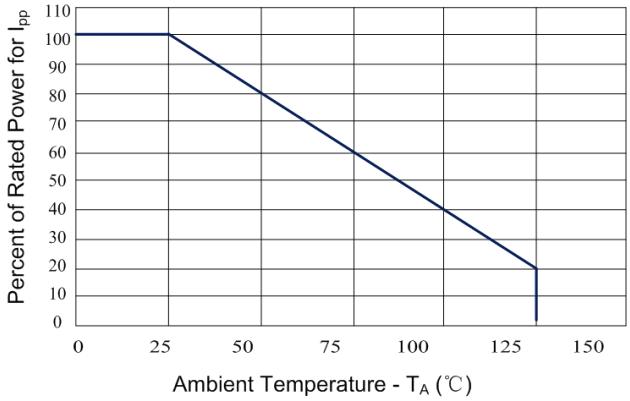


Figure 3: Pulse Waveform

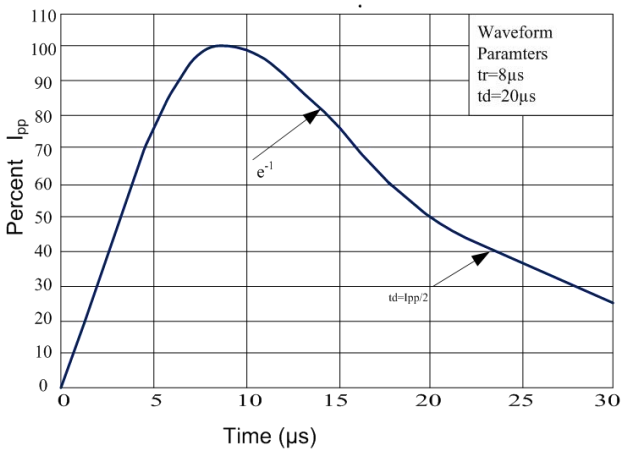


Figure 4: Clamping Voltage vs. Peak Pulse Current

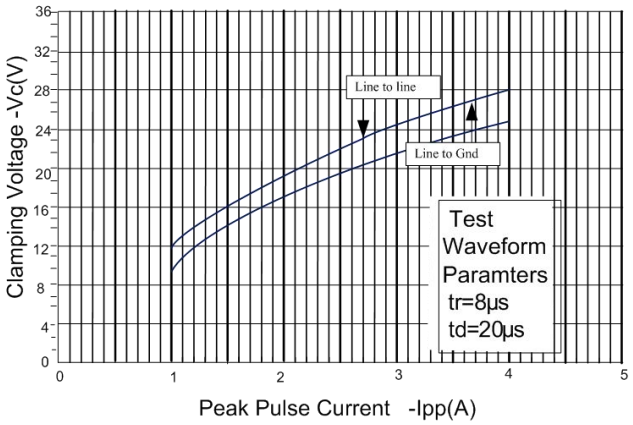


Figure 5: Forward Voltage vs. Forward Current

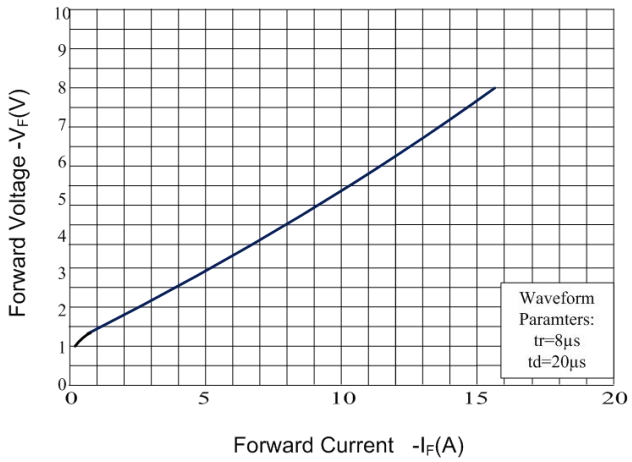
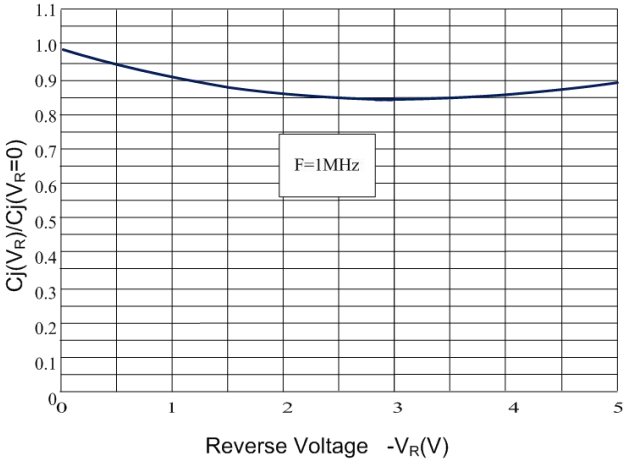


Figure 6: Capacitance vs. Reverse Voltage

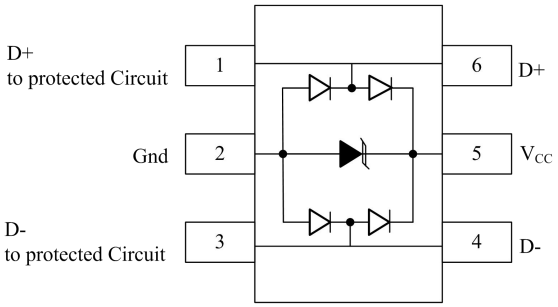


Application Information

USB2.0 ESD Protection

The DW05-2RT3-E may also be used to protect both upstream and downstream USB ports on monitors, computers, peripherals or portable systems. Each device will protect up to one USB port (Figure 1). When the voltage on the data lines exceed the bus voltage (plus one diode drop), the internal rectifiers are forward biased conducting the transient current away from the protected controller chip. The TVS diode directs the surge to ground. The TVS diode also acts to suppress ESD strikes directly on the voltage bus. Thus, both power and data pins are protected with a single device.

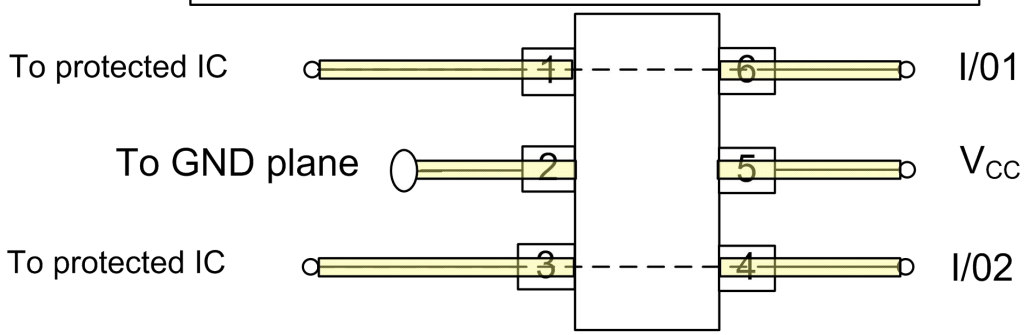
Figure 1. USB Upstream or Downstream Port ESD Protection



PCB Layout

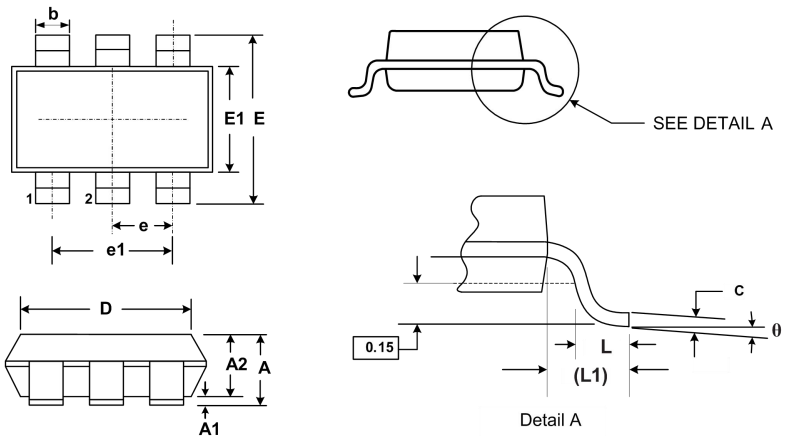
Figure 2 shows the proper way to design the PCB board trace in order to use the flow through layout for two line pairs. The solid line represents the PCB trace. Note the PCB traces are used to connect the pin pairs for each I/O (pin 1 to pin 6 and pins 3 to pin 4). For example, I/O 1 enters at pin 6 and exits at pin 1 and the PCB trace connects pins 6 and 1 together. This is also true for I/O 2. The negative reference (Gnd) is connected at pin 2. The positive reference is connected at pin 5..

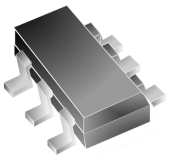
Figure 2 . Flow Through Layout for PCB design



Outline Drawing – SOT-363

PACKAGE OUTLINE





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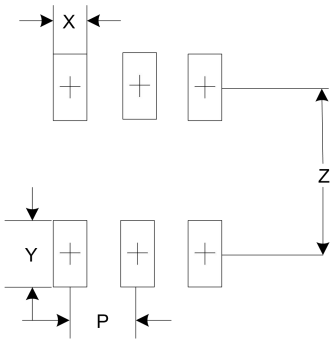
DIMENSIONS				
SYMBOL	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
D	0.079	0.087	2.000	2.200
E1	0.045	0.053	1.150	1.350
E	0.085	0.096	2.150	2.450
b	0.006	0.014	0.150	0.350
e	0.026 TYP		0.650 TYP	
e1	0.047	0.055	1.200	1.400
L1	0.021 REF		0.525 REF	
L	0.010	0.018	0.260	0.460
θ	``0°	8°	0°	8°



DIMENSIONS		
DIM	INCHES	MILLIMETERS
Z	0.0615	2.0
P	0.020 TYP	0.65 TYP
X	0.0123	0.40
Y	0.02	0.50

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.

Marking Codes

Part Number	DW05-2RT3-E
Marking Code	5R3

Package Information

Qty：3k/Reel