



### Features

- Solid-state silicon-avalanche technology
- 200 Watts Peak Pulse Power per Line ( $t_p=8/20\mu s$ )
- Low operating and clamping voltages
- Protects five I/O lines
- Working Voltages: 3.3 V
- Low Leakage Current

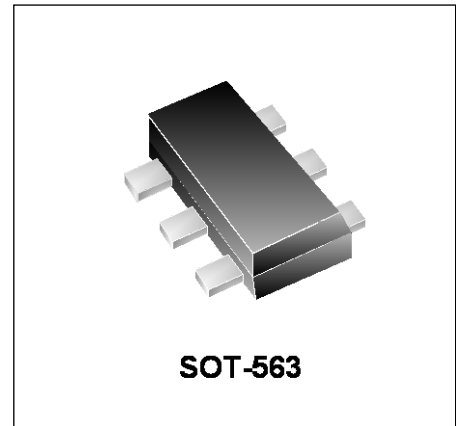
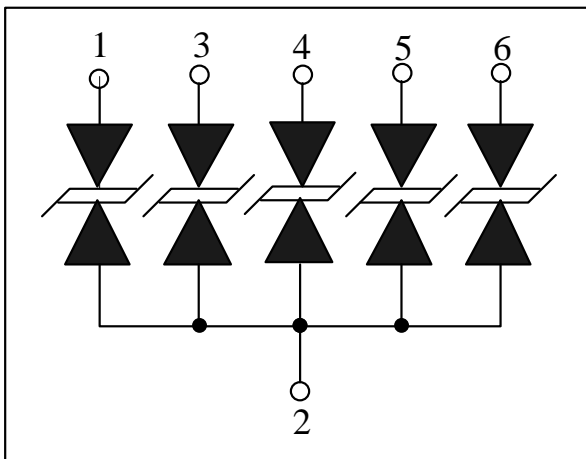
### IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$  (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 15A (8/20 $\mu s$ )

### Mechanical Characteristics

- SOT-563 package
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant

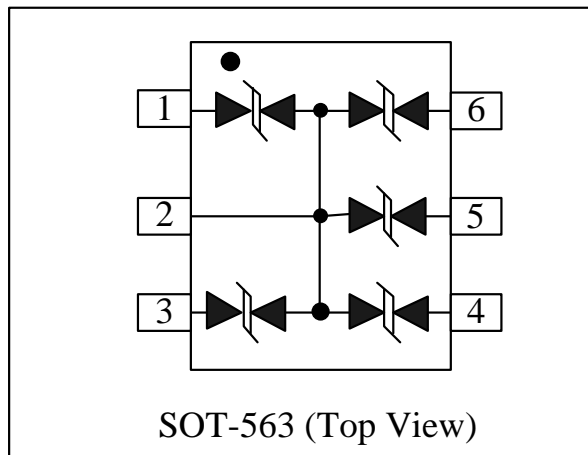
### Circuit Diagram



### Applications

- Cellular Handsets & Accessories
- Personal Digital Assistants (PDAs)
- Notebooks & Handhelds
- Portable Instrumentation
- Digital Cameras
- MP3 Player

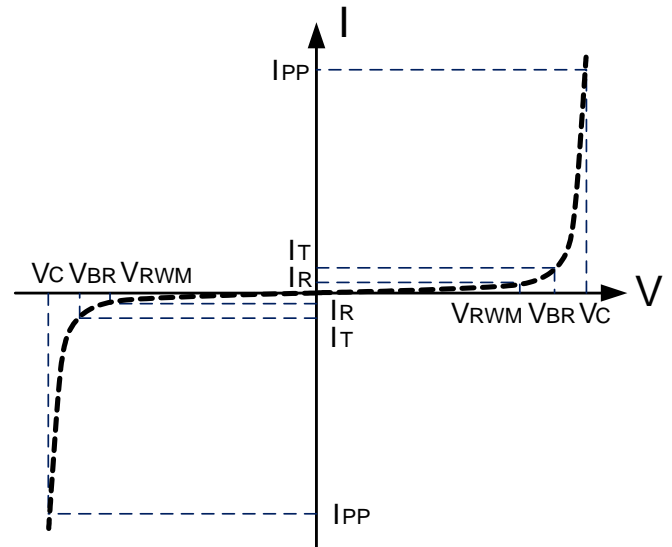
### Schematic & PIN Configuration



Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{PP}$	200	Watts
Peak Pulse Current ( $t_p = 8/20\mu s$ )	$I_{PP}$	15	A
Operating Temperature	$T_J$	-55 to + 125	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C

## Electrical Parameters (T=25°C)

Symbol	Parameter
$I_{PP}$	Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	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

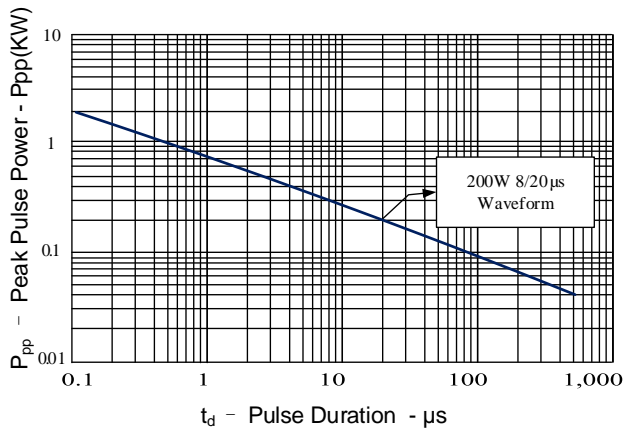
DW03MFC-B-S						
Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	$V_{RWM}$				3.3	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	3.7			V
Reverse Leakage Current	$I_R$	$V_{RWM}=3.3V, T=25^\circ C$			100	nA
Peak Pulse Current	$I_{PP}$	$t_p = 8/20\mu s$			15	A
Clamping Voltage	$V_C$	$I_{PP}=15A, t_p=8/20\mu s$			12	V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	$Tlp=0.2/100ns$		0.202		$\Omega$
Junction Capacitance	$C_j$	Between I/O pins and Ground $V_R = 0V, f = 1MHz$		15	18	pF

### Notes

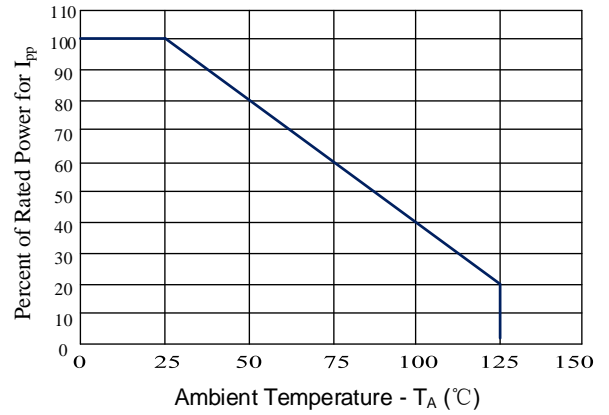
- 1、 TLP Setting :  $t_p=100ns, t_r=0.2ns, I_{TLP}$  and  $V_{TLP}$  sample window:  $t_1=70ns$  to  $t_2=90ns$ .
- 2、 Dynamic resistance calculated from  $I_{PP}=4A$  to  $I_{PP}=16A$  using "Best Fit".

# Typical Characteristics

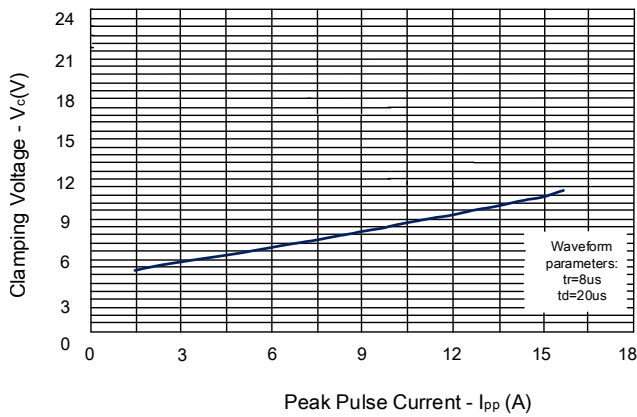
**Figure 1: Peak Pulse Power vs. Pulse Time**



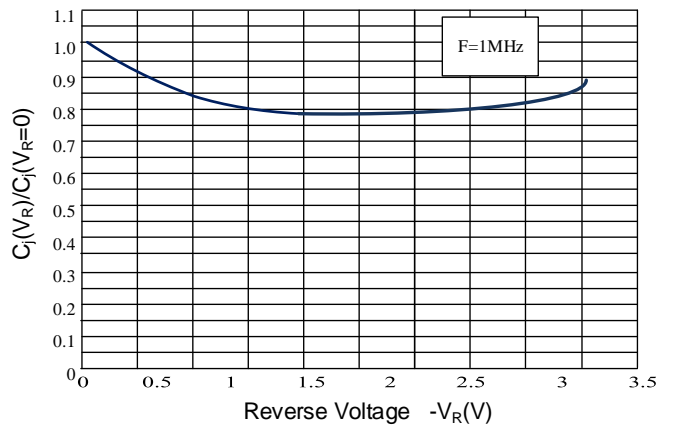
**Figure 2: Power Derating Curve**



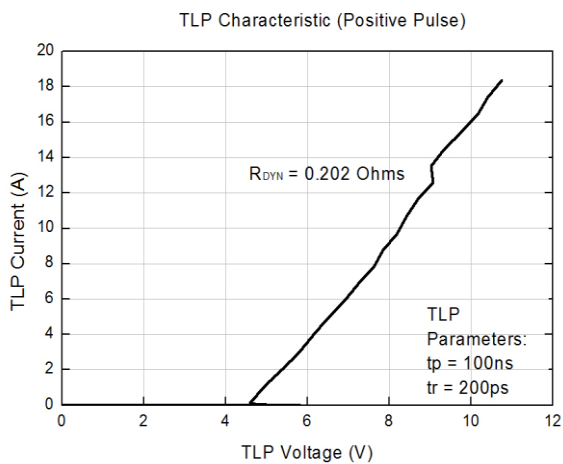
**Figure 3: Clamping Voltage vs. Peak Pulse Current**



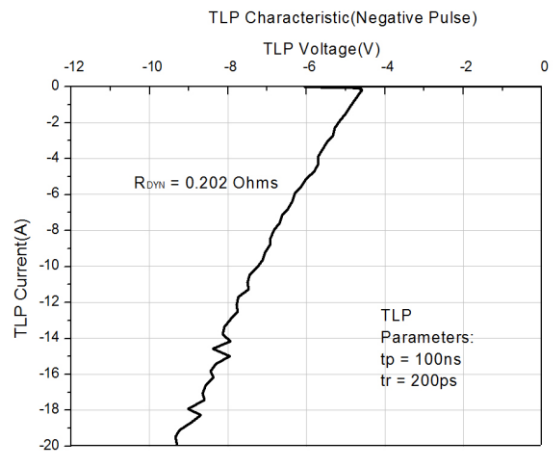
**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**



**Figure 5: TLP Positive I-V Curve**



**Figure 6: TLP Negative I-V Curve**



## Application Information

The DW03MFC-B-S was designed to protect I/O or data lines from the damaging effects of ESD or EFT. This product provides bidirectional protection; the device is connected as follows:

### BIDIRECTIONAL COMMON-MODE CONFIGURATION

The DW03MFC-B-S provides up to four (4) lines of protection in a common-mode configuration as depicted in Figure 6.

Circuit connectivity is as follows:

- I/O 1 is connected to Pin 3.
- I/O 2 is connected to Pin 1.
- I/O 3 is connected to Pin 6.
- I/O 4 is connected to Pin 4.
- Pin 2 is connected to ground.

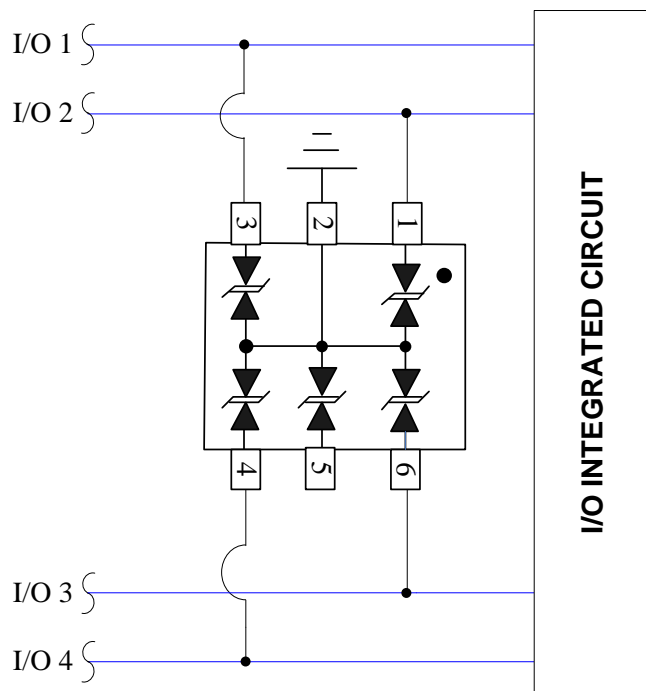


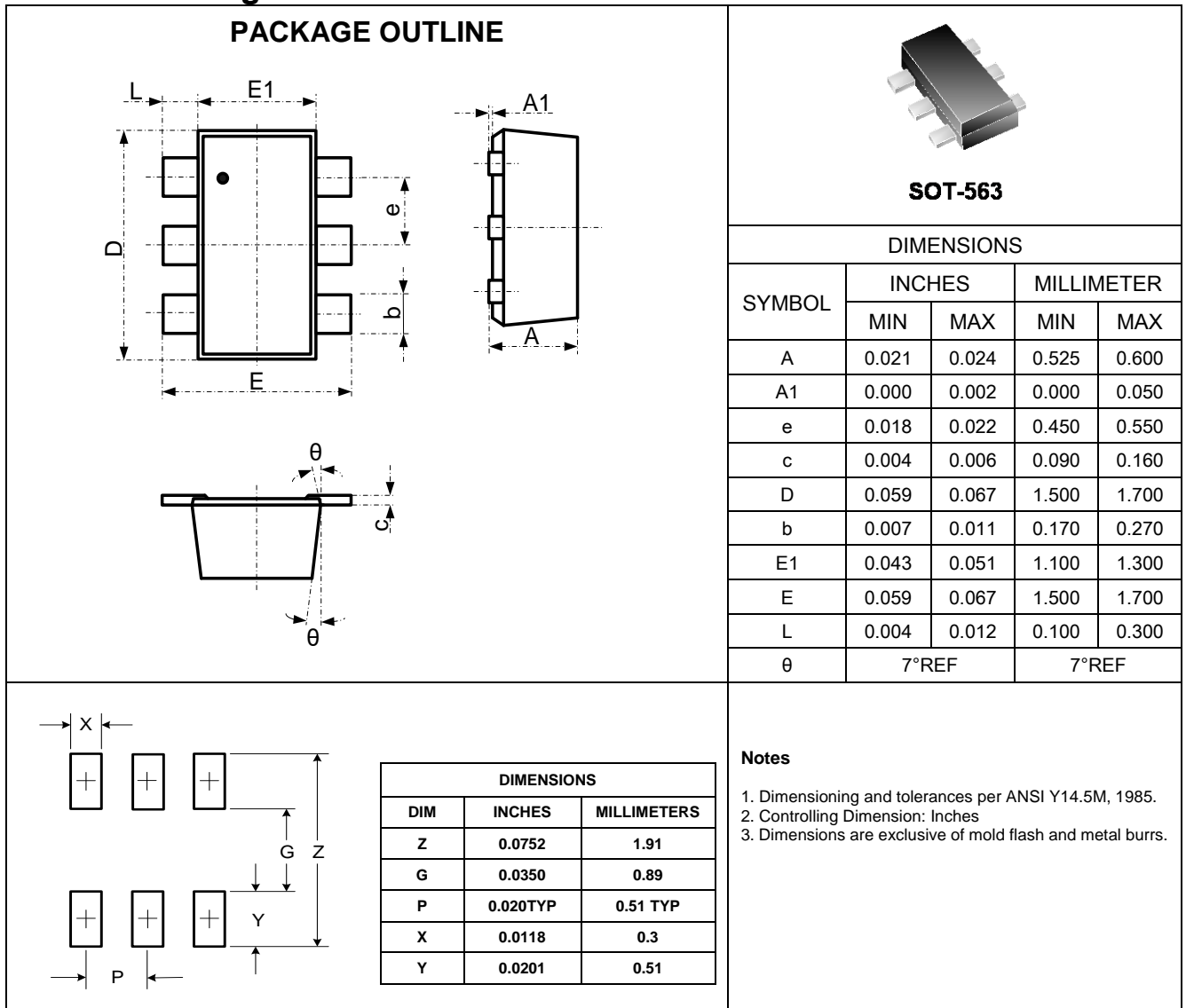
Figure 6 Bidirectional Configuration Common-Mode I/O Port Protections

### CIRCUIT BOARD LAYOUT RECOMMENDATIONS

Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following guidelines are recommended:

- The protection device should be placed near the input terminals or connectors, the device will divert the transient current immediately before it can be coupled into the nearby traces.
- The path length between the TVS device and the protected line should be minimized.
- All conductive loops including power and ground loops should be minimized.
- The transient current return path to ground should be kept as short as possible to reduce parasitic inductance.
- Ground planes should be used whenever possible. For multilayer PCBs, use ground vias.

## Outline Drawing – SOT-563



## Marking Codes

Part Number	DW03MFC-B-S
Marking Code	B3FC

## Package Information

Qty: 3k/Reel