

1. Description

The SP0504S has ultra low capacitance rail-to-rail diodes with an additional zener diode fabricated in a proprietary silicon avalanche technology to protect each I/O pin providing a high level of protection for electronic equipment that may experience destructive electrostatic discharges (ESD).

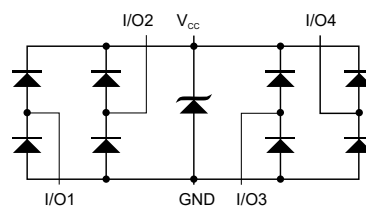
2. Features

- Low capacitance of 0.85 pF (TYP) per I/O
- ESD protection of $\pm 12\text{kV}$ contact
- discharge, $\pm 15\text{kV}$ air discharge, (IEC 61000-4-2)
- EFT protection, IEC 61000-4-4, 40A (5/50ns)
- Low leakage current of $0.5\mu\text{A}$ (MAX) at 5V
- Small packaging options saves board space
- Lightning Protection, IEC 61000-4-5, 4.5A (8/20 μs)

3. Applications

- Computer Peripherals
- Mobile Phones
- PDA's
- Digital Cameras
- Network Hardware/Ports
- Test Equipment
- Medical Equipment
- Automotive Network

4. Pinning information



SOT23-6



5. Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

Parameter	Symbol	Value	Units
Peak Current ($t_p=8/20\mu\text{s}$)	I_{PP}	4.5	A
Junction Temperature	T_{OP}	-40 to 125	$^\circ\text{C}$
Storage Temperature	T_{STOR}	-55 to 150	$^\circ\text{C}$

Notes:

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

6. Thermal Information

Parameter	Rating	Units
Storage Temperature Range	-55 to 150	$^\circ\text{C}$
Maximum Junction Temperature	150	$^\circ\text{C}$
Maximum Lead Temperature (Soldering 20-40s)	260	$^\circ\text{C}$



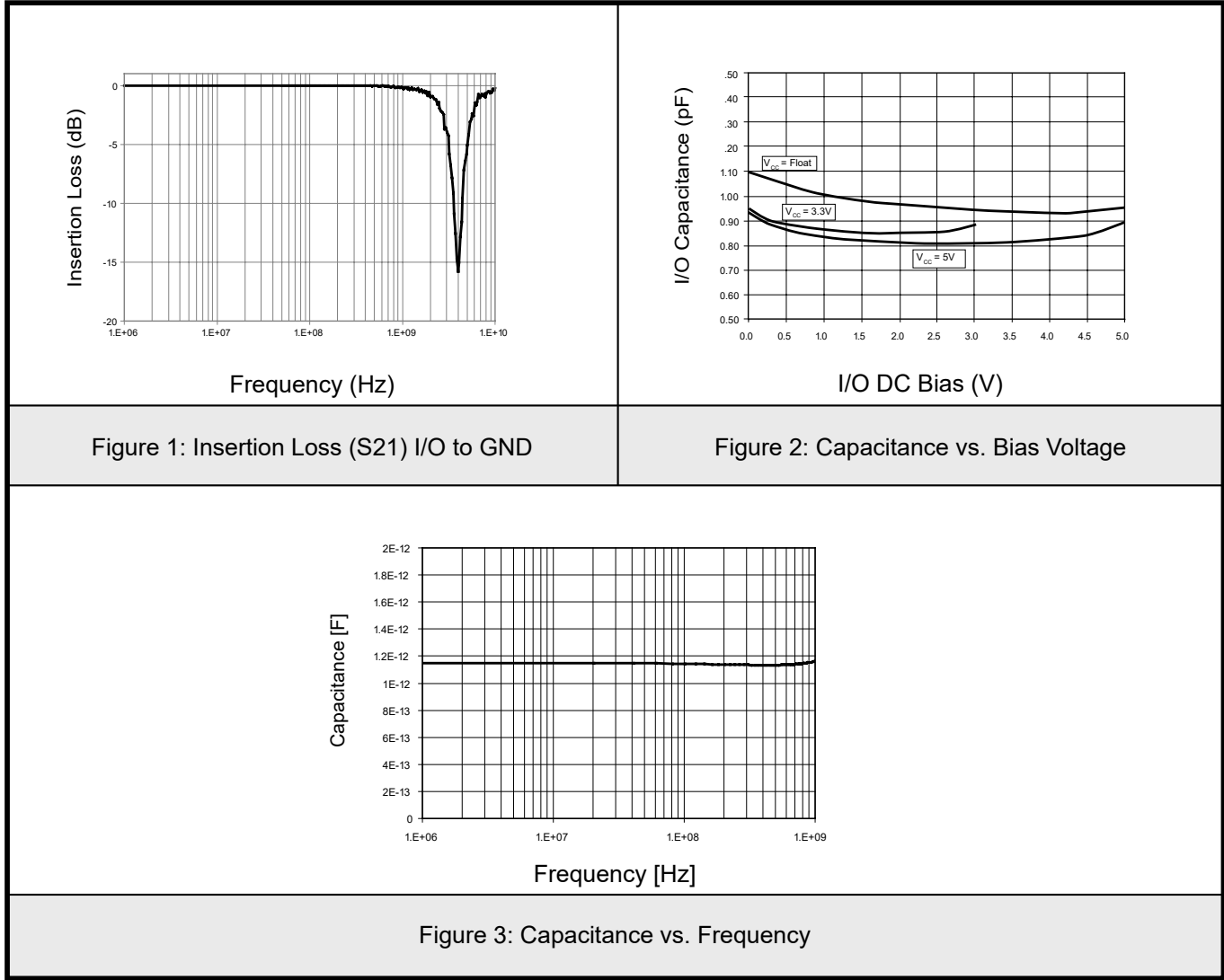
7. Electrical Characteristic ($T_{OP}=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse stand-off voltage	V_{RWM}	$I_R \leq 1\mu\text{A}$			5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	6			V
Reverse breakdown voltage	I_{LEAK}	$V_R = 5\text{V}$			0.5	μA
Clamp Voltage ¹	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$, Fwd		9.5	11	V
		$I_{PP} = 2\text{A}$, $t_p = 8/20\mu\text{s}$, Fwd		10.6	13	V
ESD Withstand Voltage ¹	V_{ESD}	IEC 61000-4-2 (Contact)	± 12			kV
		IEC 61000-4-2 (Air)	± 15			kV
Diode Capacitance ¹	$C_{I/O-GND}$	Reverse Bias=0V	0.95	1.1	1.25	pF
		Reverse Bias=1.65V	0.7	0.85	1	pF
Diode Capacitance ¹	$C_{I/O-I/O}$	Reverse Bias=0V		0.5		pF

Notes: 1. Parameter is guaranteed by design and/or device characterization.



8. Typical characteristic



10. Product Characteristics

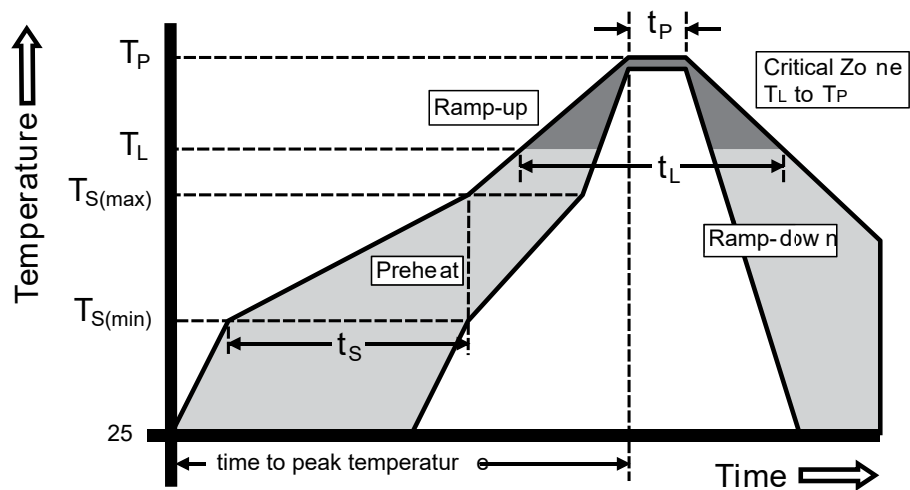
Lead Plating	Matte Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Substitute Material	Silicon
Body Material	Molded Epoxy
Flammability	UL 94 V-0

- Notes: Notes :
1. All dimensions are in millimeters
 2. Dimensions include solder plating.
 3. Dimensions are exclusive of mold flash & metal burr.
 4. Blo is facing up for mold and facing down for trim/form, i.e. reverse trim/form.



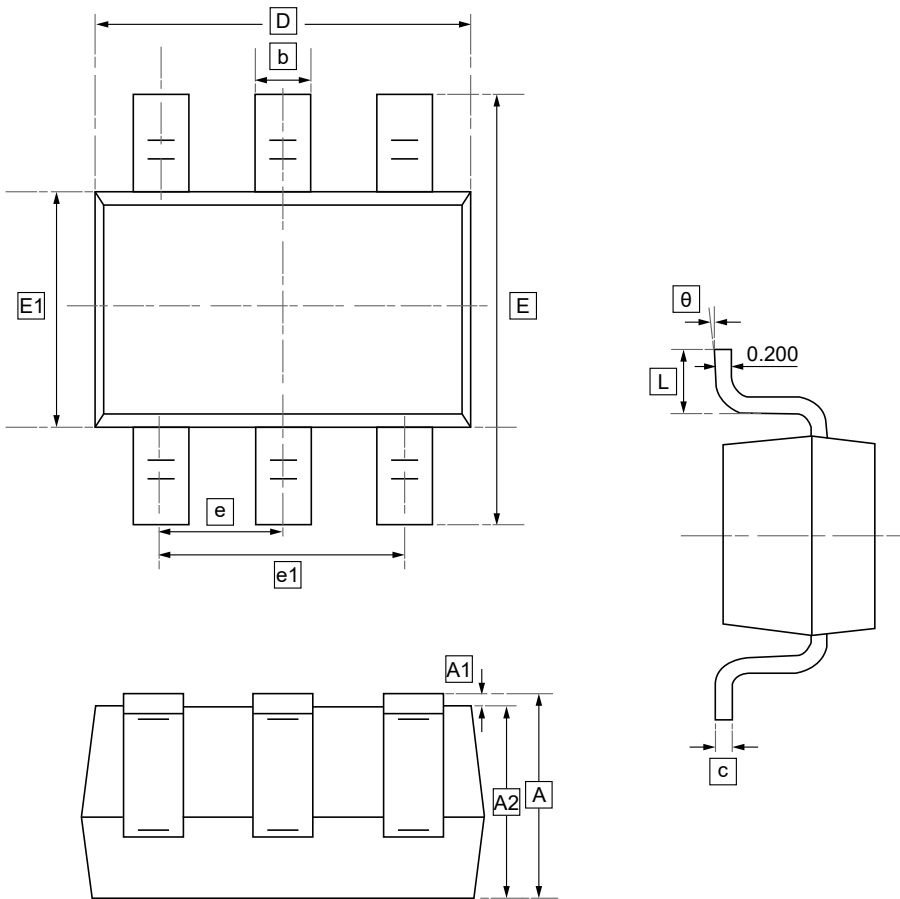
9.Soldering Parameters

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquidus)	217°C
	-Temperature(T_L)	60-150 secs.
Peak Temp (T_p)		+250 ^{+0/-5} °C
Time within 5°C of actual Peak Temp (T_p)		20-40 seconds
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		260°C





10.SOT-23-6 Package Outline Dimensions

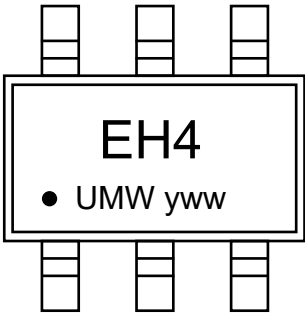


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E1	E	e	e1	L	θ
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0°
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	8°



11.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SP0504SHTG	SOT23-6	3000	Tape and reel



12.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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