

SP1064 Series 8.5pF, 15 kV Diode Array

RoHS 🗭 GREEN



Pinout



Functional Block Diagram



Description

The SP1064 is an avalanche breakdown diode fabricated in a proprietary silicon avalanche technology protect each I/O pin to provide a high level of protection for electronic equipment that may experience destructive electrostatic discharges (ESD). These robust diodes can safely absorb repetitive ESD strikes above the maximum level specified in IEC 61000-4-2 international standard (Level 4, ±8kV contact discharge) without performance degradation. Their very low loading capacitance also makes them ideal for protecting high speed signal pins.

Features

- ESD, IEC 61000-4-2, ±15kV contact, ±20kV air
- EFT, IEC 61000-4-4, 40A (5/50ns)
- Lightning, 2A (8/20µs as defined in IEC 61000-4-5, 2nd Edition)
- Low capacitance of 8.5pF (TYP) per I/O
- Low leakage current of 0.05µA (TYP) at 60V
- Small form factor µDFN(JEDEC MO-229) package saves board space
- Lead free and RoHS compliant
- AEC-Q101 qualified

Applications

LCD/PDPTVs

- DVD Players
- Desktops
- MP3/PMP
- Set Top Boxes
- Mobile Phones
- Notebooks
- Digital Cameras

Application Example



Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
l _{pp}	Peak Current (t _p =8/20µs)	2.0	А
Т _{ор}	Operating Temperature	-40 to 125	°C
T _{STOR}	Storage Temperature	-55 to 150	°C

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

Electrical Characteristics (T_{OP}=25°C)

Parameter	Symbol	Test Conditions	Min	Тур	Мах	Units
Reverse Standoff Voltage	V _{RWM}	I _R ≤ 1µA			60	V
Reverse Leakage Current	I _{LEAK}	V _B =60V, Any I/O to GND		0.05		μA
Clamp Voltage ¹	V _c	$I_{pp}=1A$, $t_p=8/20\mu s$, Fwd		81		V
		$I_{pp}=2A$, $t_p=8/20\mu s$, Fwd		95		V
Dynamic Resistance ³	R _{DYN}	TLP, t _p =100ns, I/O to GND		4		Ω
ESD Withstand Voltage ¹	V _{ESD}	IEC 61000-4-2 (Contact)	±15			kV
		IEC 61000-4-2 (Air)	±20			kV
Line Capacitance ^{1, 2}	C	Reverse Bias=0V; f=1MHz		8.5		pF

Note 1: Parameter is guaranteed by design and/or component characterization.

Note 2: Test equipment accuracy ±50fF Note 3: Transmission Line Pulse (TLP) with 100ns width, 2ns rise time, and average window t1=70ns to t2= 90ns



Capacitance vs. Reverse Bias





Transmission Line Pulsing (TLP) Plot



Soldering Parameters

Reflow Condition Pb – Free asser		Pb – Free assembly	
Pre Heat	- Temperature Min (T _{s(min)})	150°C	
	- Temperature Max (T _{s(max)})	200°C	
	- Time (min to max) (t _s)	60 – 180 secs	
Average ramp up rate (Liquidus) Temp (T_L) to peak		3°C/second max	
T _{S(max)} to T _L - Ramp-up Rate		3°C/second max	
Reflow	- Temperature (T _L) (Liquidus)	217°C	
	- Temperature (t _L)	60 – 150 seconds	
Peak Temperature (T _P)		260+ ^{0/-5} °C	
Time within 5°C of actual peak Temperature (t _p)		20 – 40 seconds	
Ramp-down Rate		6°C/second max	
Time 25°C to peak Temperature (T _p)		8 minutes Max.	
Do not exceed		260°C	

Product Characteristics

Tin
Copper Alloy
0.0004 inches (0.102mm)
Silicon
Molded Compound
UL Recognized compound meeting flammability rating V-0





Ordering Information			
Part Number	Package	Min. Order Qty.	
SP1064-04UTG	μDFN-10	3000	



Package Dimensions - µDFN-10 (2.5x1.0x0.5mm)





Recommended Soldering Layout

µDFN-10 (2.5x1.0x0.5mm) Package JEDEC MO-229 Millimeters Inches Symbol Min Min Мах Max Α 0.45 0.55 0.018 0.022 A1 0.00 0.05 0.000 0.002 0.10 0.20 0.004 0.008 A2 0.15 0.25 0.010 0.006 b 0.35 0.45 0.018 b1 0.014 b2 0.25 REF (Optional) 0.010 REF (Optional) D 2.40 2.60 0.098 0.106 Е 0.90 1.10 0.037 0.045 0.30 0.45 0.012 0.018 L 0.50 BSC 0.020 BSC е R 0.05 0.15 0.002 0.006



TVS Diode Array (SPA®Diodes) General Purpose ESD Protection - SP1064 Series

Embossed Carrier Tape & Reel Specification – µDFN-10



Package	µDFN-10 (2.5x1.0x0.5mm)
Symbol	Millimeters
A0	1.30 +/- 0.10
B0	2.83 +/- 0.10
D0	Ø 1.50 + 0.10
D1	Ø 1.00 + 0.25
E	1.75 +/- 0.10
F	3.50 +/- 0.05
КО	0.65 +/- 0.10
P0	4.00 +/- 0.10
P1	4.00 +/- 0.10
P2	2.00 +/- 0.05
Т	0.254 +/- 0.02
W	8.00 + 0.30 /- 0.10

8mm TAPE AND REEL

5° Max

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