

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current ($t_p=8/20\mu s$)	20	A
P_{PK}	Peak Pulse Power ($t_p=8/20\mu s$)	400	W
T_{OP}	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 ($T_{OP}=25^\circ C$)

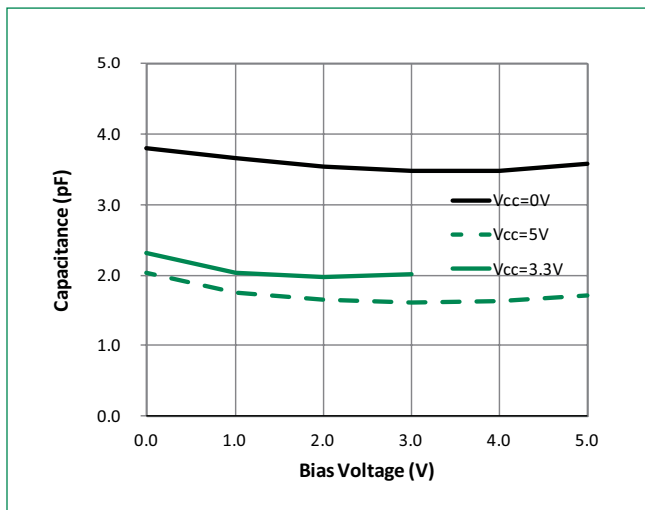
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}	$I_R = 1\mu A$			6.0	V
Breakdown Voltage	V_R	$I_R = 1mA$		8.0		V
Reverse Leakage Current	I_{LEAK}	$V_R=5V$		0.1	0.5	μA
Clamp Voltage ¹	V_C	$I_{PP}=1A, t_p=8/20\mu s, I/O$ to GND ³		9.0	10.5	V
		$I_{PP}=10A, t_p=8/20\mu s, I/O$ to GND ³		11.5	15.0	V
		$I_{PP}=20A, t_p=8/20\mu s, I/O$ to GND ³		14.3	17.0	V
Dynamic Resistance ²	R_{DYN}	TLP, $t_p=100ns, I/O$ to GND		0.2		Ω
ESD Withstand Voltage ¹	V_{ESD}	IEC 61000-4-2 (Contact)	± 30			kV
		IEC 61000-4-2 (Air)	± 30			kV
Diode Capacitance ¹	$C_{I/O-GND}$	Reverse Bias=0V, f=1MHz		3.8	4.2	pF
		Vcc=5V, Reverse Bias=2.5V, f=1MHz		1.7	2.0	pF
Diode Capacitance ¹	$C_{I/O-I/O}$	Reverse Bias=0V		2.0		pF

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

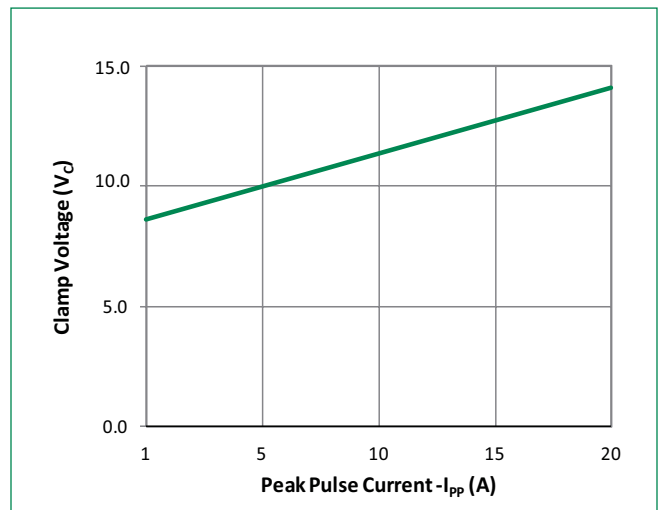
² Repetitive pulse per waveform shown on page 3.

³ Transmission Line Pulse (TLP) with 100ns width, 2ns rise time, and average window $t_1=70ns$ to $t_2=90ns$

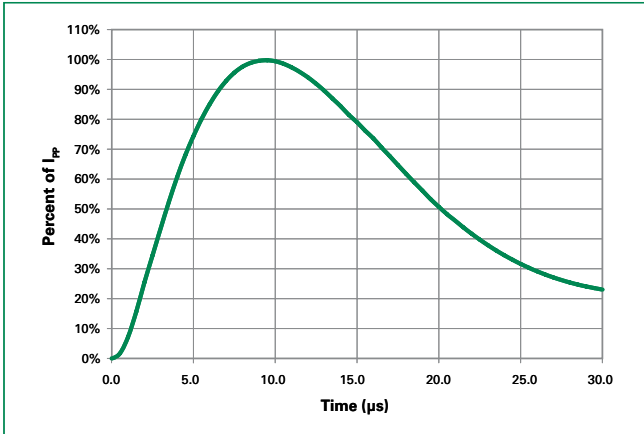
Capacitance vs. Reverse Voltage



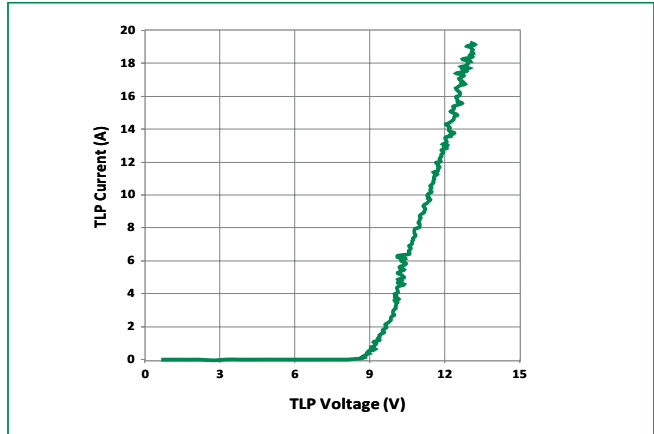
Clamping Voltage vs. Peak Pulse Current



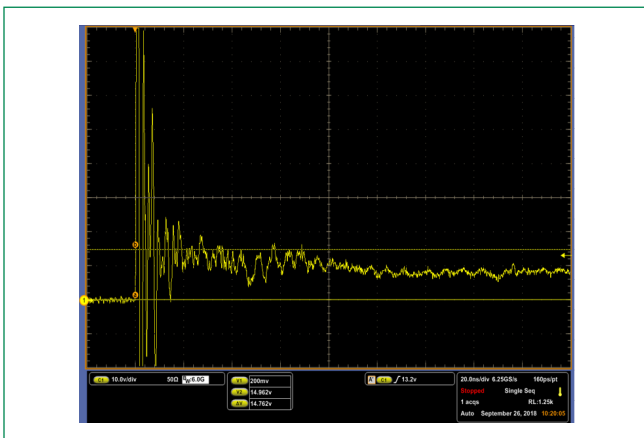
8/20µs Pulse Waveform



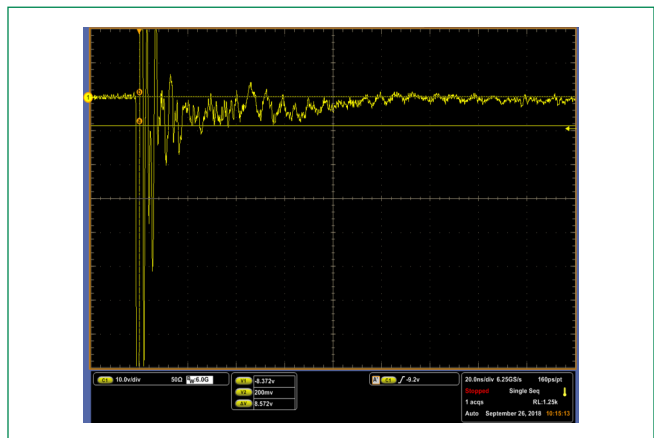
Transmission Line Pulsing(TLP) Plot



IEC 61000 -4-2 +8 kV Contact ESD Clamping Voltage

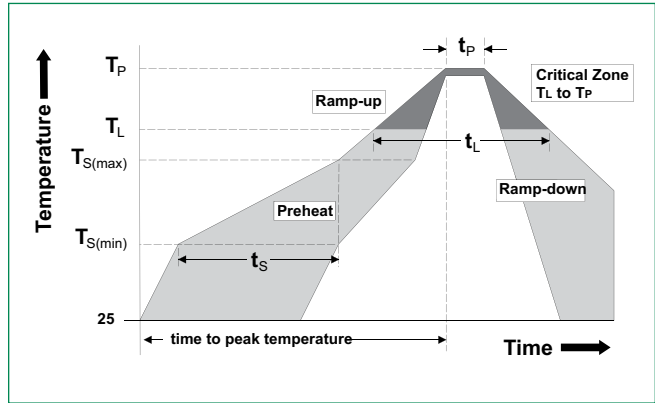


IEC 61000 -4-2 -8 kV Contact ESD Clamping Voltage

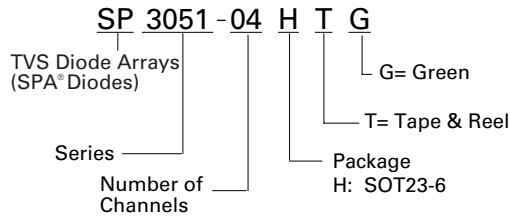


Soldering Parameters

Reflow Condition		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



Part Numbering System



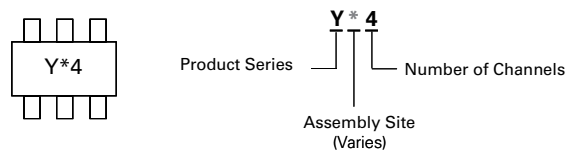
Product Characteristics

Lead Plating	Pre-Plated Frame or Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.004 inches(0.102mm)
Substrate Material	Silicon
Body Material	Molded Compound
Flammability	UL Recognized compound meeting flammability rating V-0

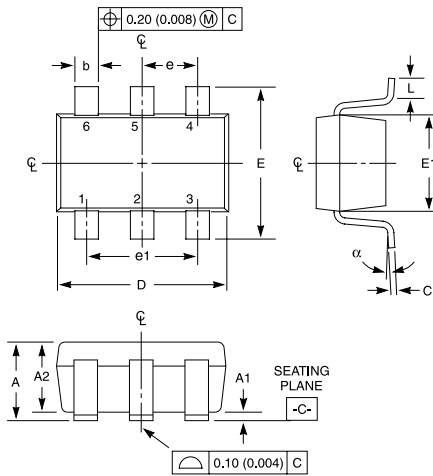
Ordering Information

Part Number	Package	Min. Order Qty.
SP3051-04HTG	SOT23-6	3000

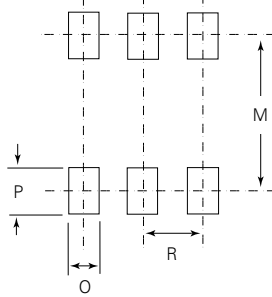
Part Marking System



Package Dimensions — SOT23-6



Recommended Solder Pad Layout



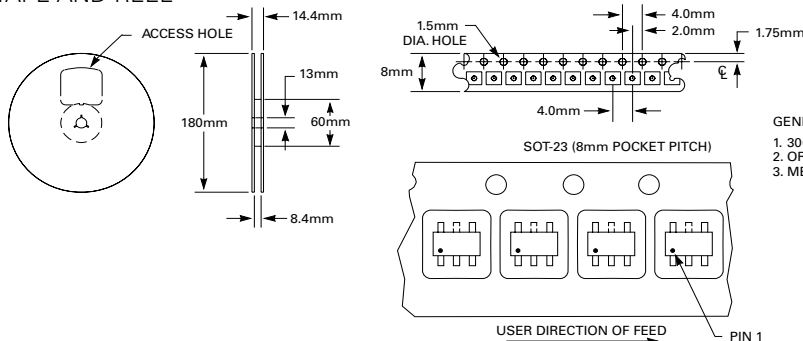
Package	SOT23				Notes
Pins	6				
JEDEC	MO-178AB				
	Millimeters		Inches		
	Min	Max	Min	Max	
A	0.900	1.450	0.035	0.057	-
A1	0.000	0.150	0.000	0.006	-
A2	0.900	1.300	0.035	0.051	-
b	0.350	0.500	0.0138	0.0196	-
C	0.080	0.220	0.0031	0.009	-
D	2.800	3.000	0.11	0.118	3
E	2.600	3.000	0.102	0.118	-
E1	1.500	1.750	0.06	0.069	3
e	0.95 Ref		0.0374 ref		-
e1	1.9 Ref		0.0748 Ref		-
L	0.30	0.600	0.012	0.023	4,5
N	6		6		6
a	0°	8°	0°	8°	-
M	-	2.590	-	0.102	-
O	-	0.690	-	.027 TYP	-
P	-	0.990	-	.039 TYP	-
R	-	0.950	-	0.038	-

Notes:

1. Dimensioning and tolerancing Per ASME Y14.5M-1994.
2. Package conforms to EIAJ SC-74 (1992).
3. Dimensions D and E1 are exclusive of mold flash, protrusions, or gate burrs.
4. Foot length L measured at reference to seating plane.
5. "L" is the length of flat foot surface for soldering to substrate.
6. "N" is the number of terminal positions.
7. Controlling dimension: MILLIMETER. Converted inch dimensions are not necessarily exact.

Embossed Carrier Tape & Reel Specification — SOT23-6

8mm TAPE AND REEL



GENERAL INFORMATION

1. 3000 PIECES PER REEL.
2. ORDER IN MULTIPLES OF FULL REELS ONLY.
3. MEETS EIA-481 REVISION "A" SPECIFICATIONS.

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