Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p=8/20μs)	2.5	A
T_{OP}	Operating Temperature	–40 to 125	°C
T_{STOR}	Storage Temperature	–55 to 150	°C

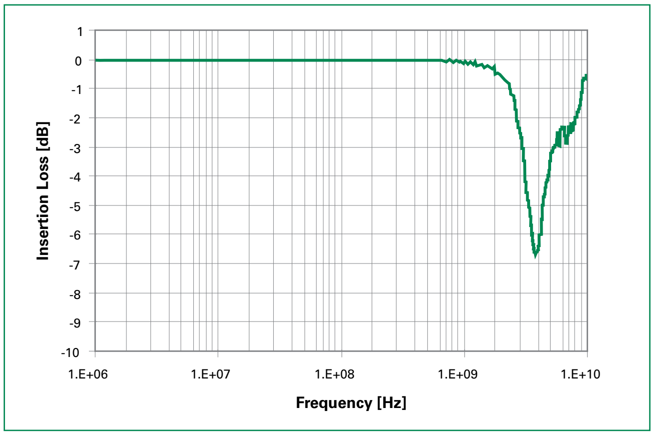
CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

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

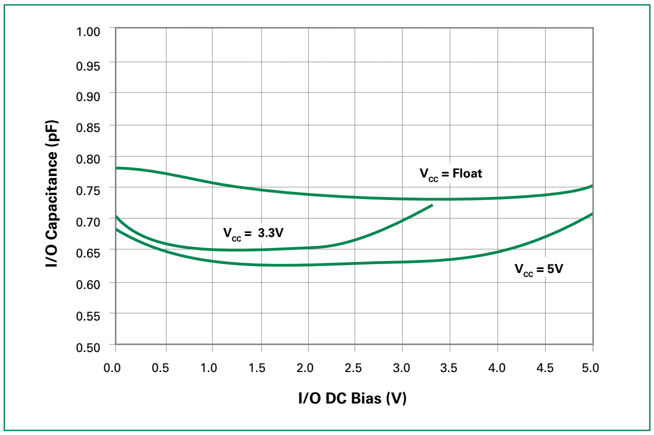
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Standoff Voltage	V_{RWM}	I_R ≤ 1μA			6	V
Reverse Leakage Current	I_{LEAK}	V_R=5V			0.5	μA
Clamp Voltage[1]	V_C	I_{PP}=1A, t_p=8/20μs, Fwd		10.0	12.0	V
		I_{PP}=2A, t_p=8/20μs, Fwd		11.8	15.0	V
ESD Withstand Voltage[1]	V_{ESD}	IEC61000-4-2 (Contact)	±8			kV
		IEC61000-4-2 (Air)	±15			kV
Diode Capacitance[1]	$C_{I/O\text{-}GND}$	Reverse Bias=0V	0.7	0.8	0.95	pF
		Reverse Bias=1.65V	0.55	0.65	0.8	pF
Diode Capacitance[1]	$C_{I/O\text{-}I/O}$	Reverse Bias=0V		0.35		pF

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

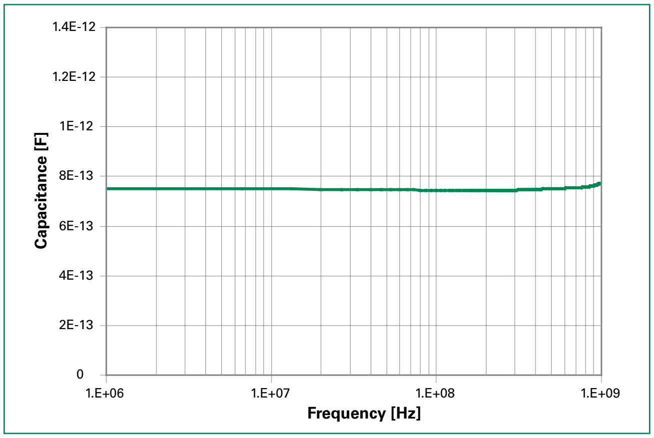
Insertion Loss (S21) I/O to GND



Capacitance $_{I/O\text{ - }GND}$ vs. Bias Voltage



Capacitance vs. Frequency

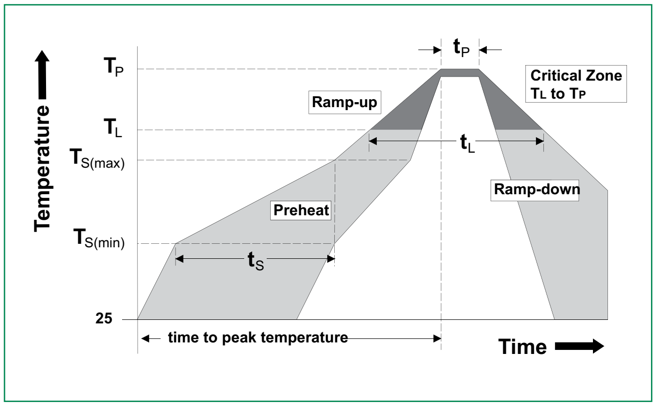


Product Characteristics

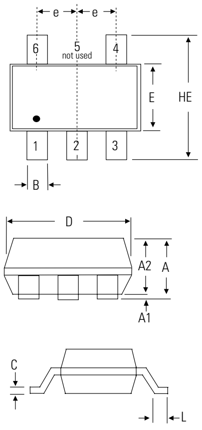
Lead Plating	Matte Tin (SC70-x, MSOP-10) Pre-Plated Frame (SOT5x3, µDFN-6)
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Substrate Material	Silicon
Body Material	Molded Compound
Flammability	UL Recognized compound meeting flammability rating V-0

Soldering Parameters

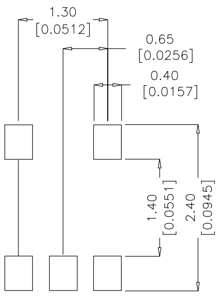
Reflow Condition		Pb – Free assembly
Pre Heat	**- Temperature Min ($T_{s(min)}$)**	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus) Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	**- Temperature (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



Package Dimensions — SC70-5

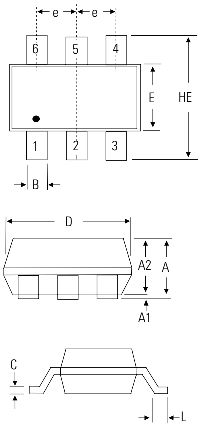


Recommended Solder Pad Layout

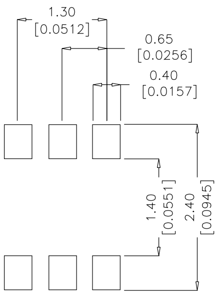


Package	SC70-5			
Pins	5			
JEDEC	MO-203			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.70	1.00	0.028	0.039
B	0.15	0.30	0.006	0.012
c	0.08	0.25	0.003	0.010
D	1.85	2.25	0.073	0.089
E	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
HE	2.00	2.40	0.079	0.094
L	0.26	0.46	0.010	0.018

Package Dimensions — SC70-6

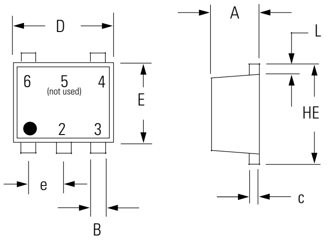


Recommended Solder Pad Layout

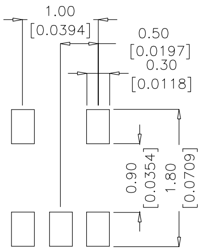


Package	SC70-6			
Pins	6			
JEDEC	MO-203			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.70	1.00	0.028	0.039
B	0.15	0.30	0.006	0.012
c	0.08	0.25	0.003	0.010
D	1.85	2.25	0.073	0.089
E	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
HE	2.00	2.40	0.079	0.094
L	0.26	0.46	0.010	0.018

Package Dimensions — SOT553

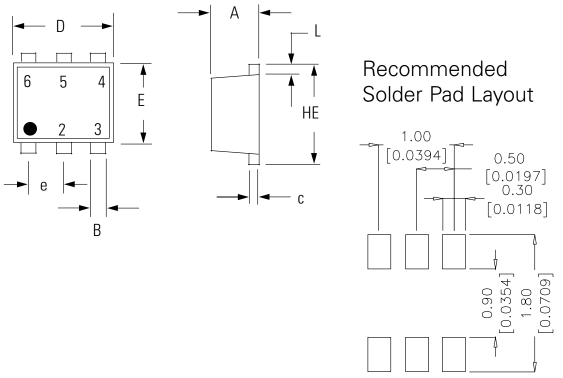


Recommended
Solder Pad Layout



Package	SOT 553			
Pins	5			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.50	0.60	0.020	0.024
B	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50 BSC		0.020 BSC	
L	0.10	0.30	0.004	0.012
HE	1.50	1.70	0.059	0.067

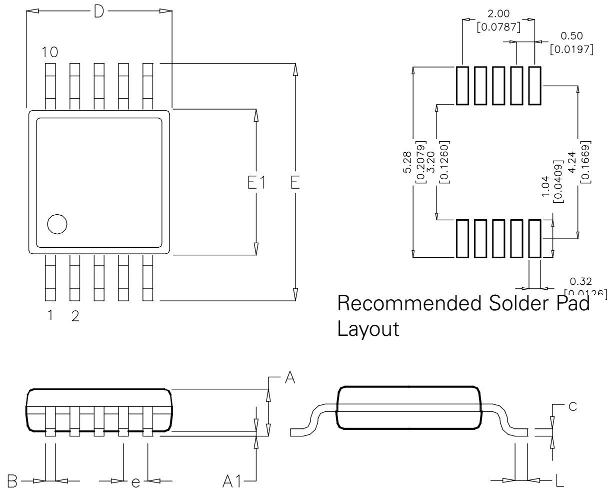
Package Dimensions — SOT563



Recommended Solder Pad Layout

Package	SOT 563			
Pins	6			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.50	0.60	0.020	0.024
B	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50 BSC		0.020 BSC	
L	0.10	0.30	0.004	0.012
HE	1.50	1.70	0.059	0.067

Package Dimensions — MSOP10

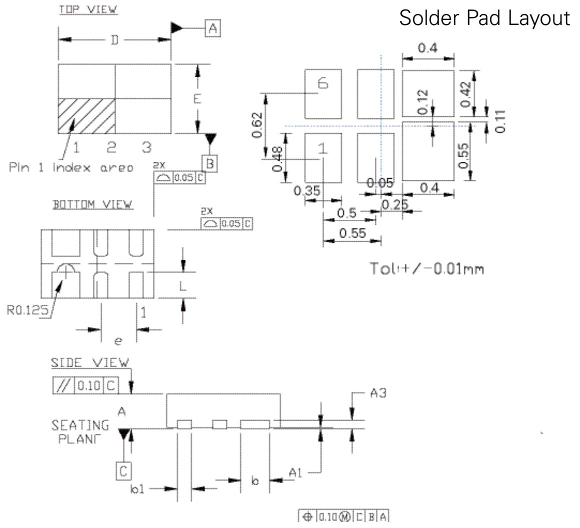


Recommended Solder Pad Layout

Package	MSOP10			
JEDEC	MO-187			
Pins	10			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	-	1.10	-	0.043
A1	0.00	0.15	0.000	0.006
B	0.17	0.27	0.007	0.011
c	0.08	0.23	0.003	0.009
D	2.90	3.10	0.114	0.122
E	4.67	5.10	0.184	0.200
E1	2.90	3.10	0.114	0.122
e	0.50 BSC		0.020 BSC	
HE	0.40	0.80	0.016	0.031

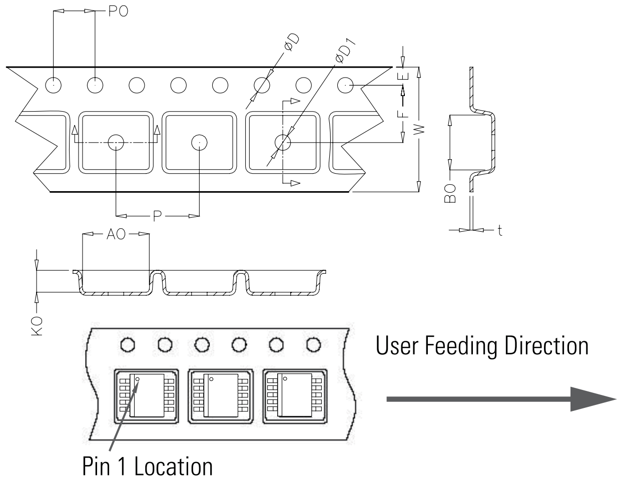
Package Dimensions —μDFN-6L

Recommended Solder Pad Layout



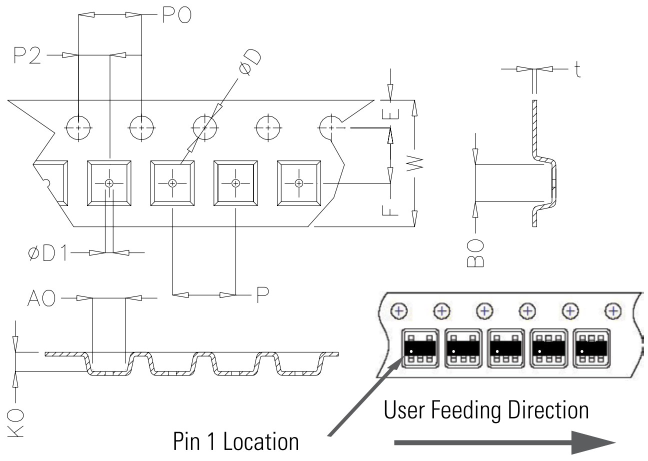
Package	μDFN-6L			
JEDEC	MO-229			
Pins	6			
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.45	0.55	0.018	0.022
A1	0.00	0.05	0.000	0.002
A3	0.125REF		0.005REF	
b	0.35	0.45	0.014	0.018
b1	0.15	0.25	0.006	0.010
D	1.55	1.65	0.062	0.065
D2	-	-	-	-
E	0.95	1.05	0.038	0.042
E2	-	-	-	-
e	0.50REF		0.020REF	
L	0.33	0.43	0.013	0.017

Embossed Carrier Tape & Reel Specification — MSOP-10



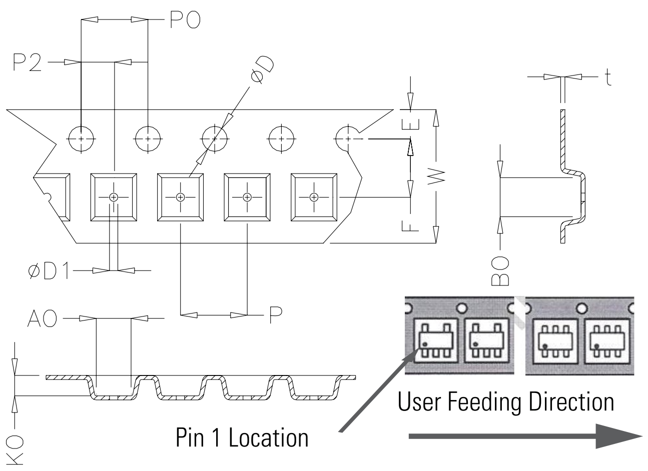
Symbol	Millimetres		Inches	
	Min	Max	Min	Max
E	1.65	1.85	0.065	0.073
F	5.40	5.60	0.213	0.220
D	1.50	1.60	0.059	0.063
D1	1.50 Min		0.059 Min	
P0	3.90	4.10	0.154	0.161
10P0	40.0± 0.20		1.574±0.008	
W	11.90	12.10	0.469	0.476
P	7.90	8.10	0.311	0.319
A0	5.20	5.40	0.205	0.213
B0	3.20	3.40	0.126	0.134
K0	1.20	1.40	0.047	0.055
t	0.30 ± 0.05		0.012± 0.002	

Embossed Carrier Tape & Reel Specifications — SC70-5 and SC70-6



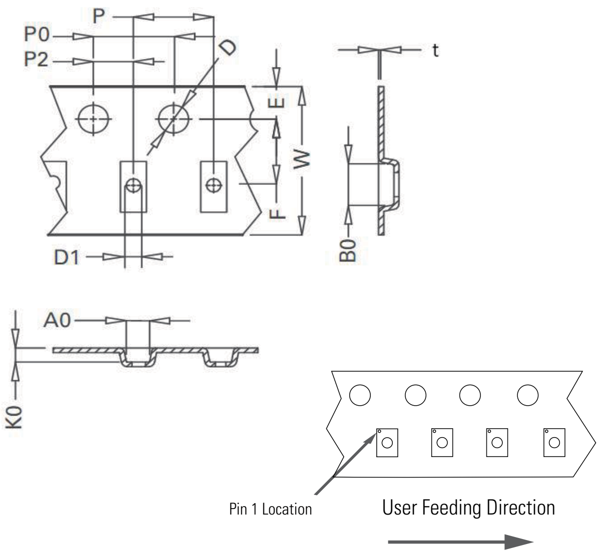
Symbol	Millimetres		Inches	
	Min	Max	Min	Max
E	1.65	1.85	0.064	0.073
F	3.45	3.55	0.135	0.139
P2	1.95	2.05	0.077	0.081
D	1.40	1.60	0.055	0.063
D1	1.00	1.25	0.039	0.049
P0	3.90	4.10	0.154	0.161
10P0	40.0± 0.20		1.574±0.008	
W	7.70	8.10	0.303	0.318
P	3.90	4.10	0.153	0.161
A0	2.14	2.34	0.084	0.092
B0	2.24	2.44	0.088	0.960
K0	1.12	1.32	0.044	0.052
t	0.27 max		0.010 max	

Embossed Carrier Tape & Reel Specifications — SOT553 and SOT563



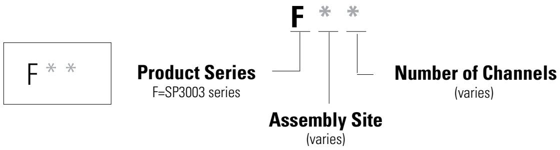
Symbol	Millimetres		Inches	
	Min	Max	Min	Max
E	1.65	1.85	0.064	0.073
F	3.45	3.55	0.135	0.139
P2	1.95	2.05	0.076	0.081
D	1.40	1.60	0.055	0.063
D1	0.45	0.55	0.017	0.021
P0	3.90	4.10	0.154	0.161
10P0	40.0± 0.20		1.574±0.008	
W	7.70	8.10	0.303	0.318
P	3.90	4.10	0.153	0.161
A0	1.73	1.83	0.068	0.072
B0	1.73	1.83	0.068	0.072
K0	0.64	0.74	0.025	0.029
t	0.22 max		0.009 max	

Embossed Carrier Tape & Reel Specification — µDFN-6L



Symbol	Millimetres		Inches	
	Min	Max	Min	Max
E	1.65	1.85	0.064	0.073
F	3.45	3.55	0.135	0.139
P2	1.95	2.05	0.076	0.081
D	1.40	1.60	0.055	0.063
D1	0.45	0.55	0.017	0.021
P0	3.90	4.10	0.154	0.161
10P0	40.0±0.20		1.574±0.008	
W	7.90	8.30	0.311	0.319
P	3.90	4.10	0.154	0.161
A0	1.15	1.25	0.045	0.049
B0	1.75	1.85	0.069	0.073
K0	0.65	0.75	0.026	0.03
t	0.22 max		0.009 max	

Part Marking System



Ordering Information

Part Number	Package	Marking	Min. Order Qty.
SP3003-02JTG	SC70-5	F*2	3000
SP3003-02UTG	µDFN-6L	F*2	3000
SP3003-02XTG	SOT553	F*2	3000
SP3003-04ATG	MSOP-10	F*4	4000
SP3003-04JTG	SC70-6	F*4	3000
SP3003-04XTG	SOT563	F*4	3000
SP3003-08ATG	MSOP-10	F*8	4000

Part Numbering System

SP 3003 -0x x T G

TVS Diode Arrays
(SPA® Diodes)

G= Green

T= Tape & Reel

Series

Package
A = MSOP-10, 4000 quantity
J = SC70-5 or SC70-6, 3000 quantity
X = SOT553 or SOT563, 5000 quantity
U= µDFN-6L, 3000 quantity

Number of Channels
-02 = 2 channel
(SC70-5, SOT553, µDFN-6L packages)
-04 = 4 channel
(SC70-6, SOT563, MSOP-10 packages)
-08 = 8 channel
(MSOP-10 packages)