

TVS Diode Arrays

TVS Rail Clamp Array in a Surface Mount Package

SP0502AAH, SP0506AAA, SP0506AAB

Electrical Specifications $T_A = 25^\circ\text{C}$ Unless Otherwise Specified

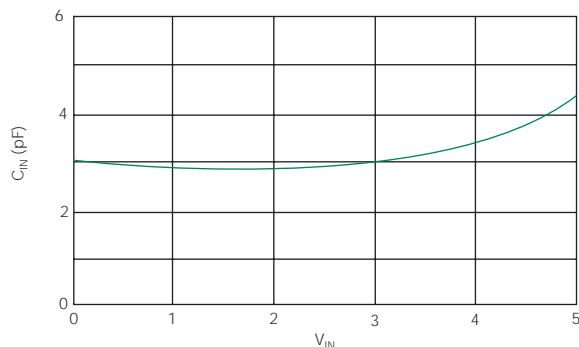
PARAMETER	TEST CONDITIONS	MIN	TYPICAL	MAX	UNITS
Operating Supply Voltage	$V_p - V_n$	-	-	6.0	V
Supply Current	$V_p - V_n = 5.5\text{V}$			10	μA
Channel Leakage Current			0.1	1.0	μA
Signal Clamp Voltage ⁽²⁾	15kV ESD HBM				
Positive				$V_p + 13$	V
Negative				$V_n - 13$	V
Diode Forward Voltage $I_f = 20\text{mA}$		0.65		0.95	V
Maximum Forward current ⁽¹⁾					
SP0502 and SP0506x				20	mA
Power Rating (SOT143)				275	μW
SOIC8				350	μW
MSOP8				200	μW
Maximum DC Input voltage		$V_n - 0.5$		$V_p + 0.5$	V
ESD Test Level (SP0502 and SP0506x) ⁽³⁾					
IEC-61000-4-2, Contact discharge		8			kV
MIL-STD-883 Method 3015 (HBM)		15			kV
Capacitance					
SP0502 and SP0506x	2.5VDC @ 1Mhz		3	5	pF
Turn on/off Time			<1		ns
Temperature Range					
Operating		- 40		+85	$^\circ\text{C}$
Storage		- 65		+150	$^\circ\text{C}$

SILICON PROTECTION CIRCUITS

- 1) One diode conducting at a time.
- 2) These parameters guaranteed by design and characterization.
- 3) From I/O pins to V_p or V_n only. V_p bypassed to V_n with a 0.22 μF ceramic capacitor.

Typical Capacitance

SP0502 and SP0506x



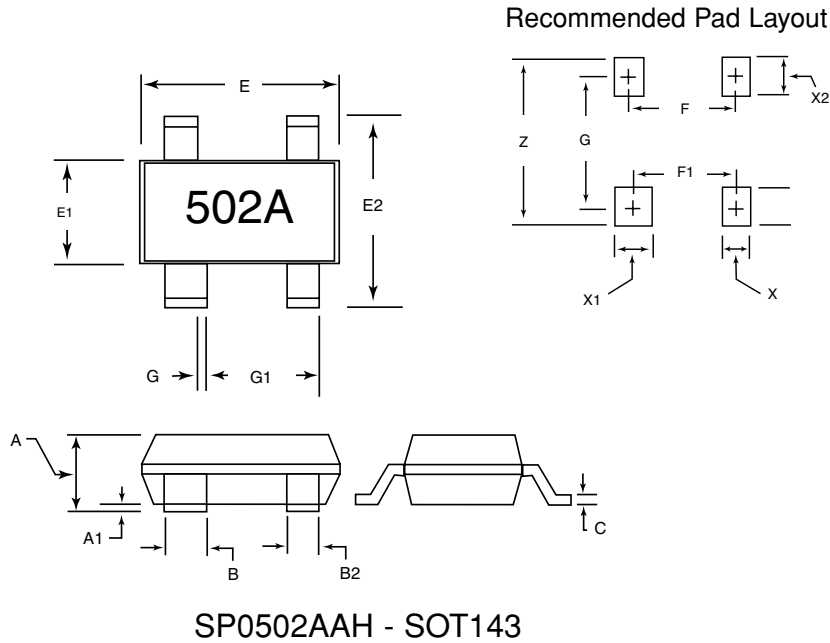
Typical Variation of C_{IN} with V_{IN}
 ($V_p=5\text{V}$, $V_n=0\text{V}$, 0.1 μF chip capacitor between V_p & V_n)

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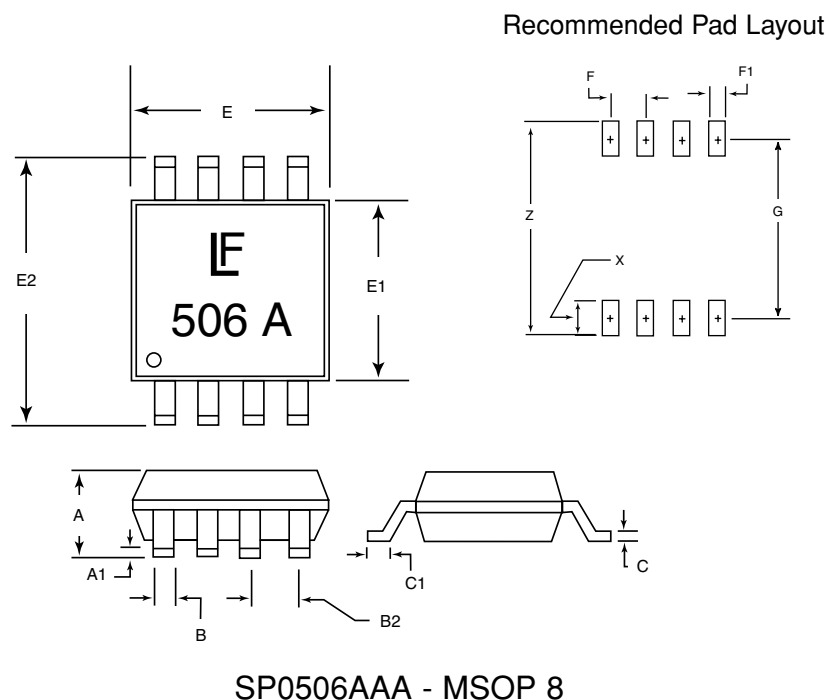
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Outline Drawings



Package	SOT143			
	mm		inches	
	min	max	min	max
E	2.80	3.04	.110	.120
E1	1.20	1.40	.047	.055
E2	2.10	2.64	.083	.104
G	-	.020REF	-	1.920REF
G1	-	1.920REF	-	.076
A	0.890	1.120	.035	.044
A1	0.013	0.100	.0005	.0040
B	0.760	0.940	.030	.037
B2	0.370	0.510	.015	.020
C	0.0850	0.180	.0033	.0071
Z	3.40	3.60	.134	.140
G	-	2.2REF	-	.087REF
F	-	1.90	-	.075
F1	-	1.70	-	.067
X	0.80	1.00	.032	.040
X1	1.00	1.20	.040	.048
X2	-	1.40	-	.055

Outline Drawings



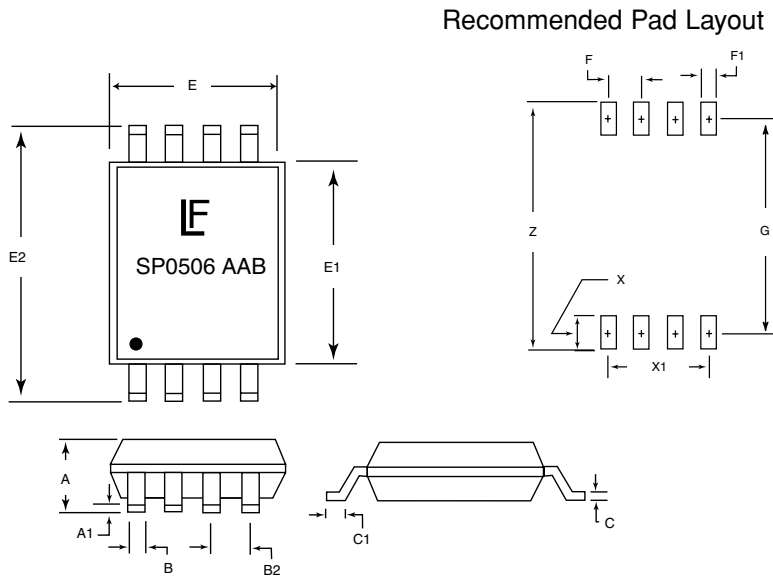
Package	MSOP 8			
	mm		inches	
	min	max	min	max
E	2.90	3.10	.114	.122
E1	2.90	3.10	.114	.122
E2	4.78	4.98	.188	.196
A	0.87	1.17	.034	.046
A1	0.05	0.25	.002	.010
B	-	0.30	-	.012TYP
B2	-	0.65	-	.25TYP
C	-	0.18	-	.007TYP
C1	0.52	0.54	.017	.025
F	-	0.65	-	.0256
F1	-	0.38	-	.015
Z	-	5.28	-	.208
X	-	1.04	-	.041
G	-	4.24	-	.167

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Outline Drawings



SP0506AAB - SOIC 8

Package	SOIC 8			
	mm		inches	
	min	max	min	max
E	4.80	5.00	.189	.197
E1	3.80	4.19	.150	.165
E2	5.80	6.20	.228	.244
A	1.35	1.75	.053	.069
A1	0.10	0.25	.004	.010
B	0.33	0.51	.013	.020
B2	-	1.27	-	.050
C	0.19	0.25	.007	.010
C1	0.40	1.27	.016	.050
F	-	1.27	-	.05
F1	0.60	0.80	.02	.03
Z	7.20	7.40	-	.29
X	-	2.40	-	.09
X1	-	3.81REF	-	.15REF
G	-	5.00REF	-	.19REF

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