Absolute Maximum Ratings

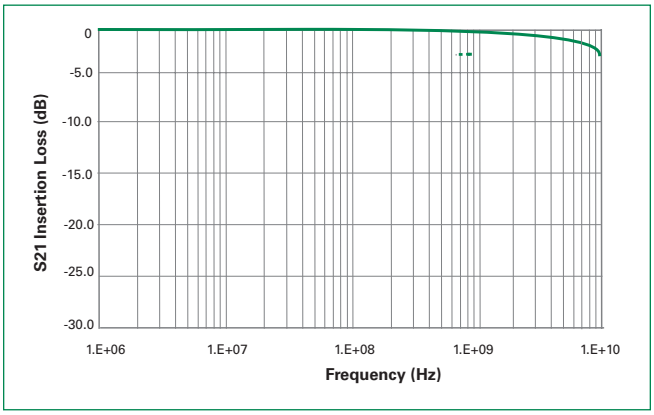
Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p=8/20µs)	2.0	A
T_{OP}	Operating Temperature	-55 to 125	°C
T_{STOR}	Storage Temperature	-55 to 150	°C

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.

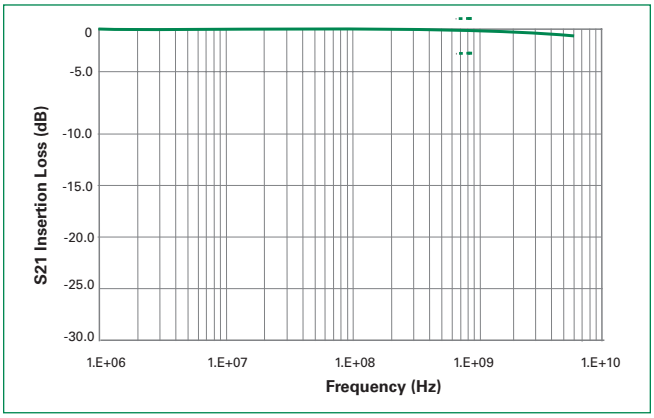
Electrical Characteristics - (T_{OP}=25°C)

Parameter	Test Conditions	Min	Typ	Max	Units
Input Capacitance	@ V_R = 0V, f = 3GHz		0.20	0.22	pF
Breakdown Voltage	V_{BR} @ I_T=1mA		9.00		V
Reverse Working Voltage				7.0	V
Reverse Leakage Current	I_L @ V_{RWM}=5.0V		25	50	nA
Clamping Voltage	V_{CL} @ I_{PP}=2.0A		9.20		V
Peak Pulse Current	t_p=8/20µs			2.0	A
ESD Withstand Voltage	IEC61000-4-2 (Contact)	±20			kV
	IEC 61000-4-2 (Air)	±20			

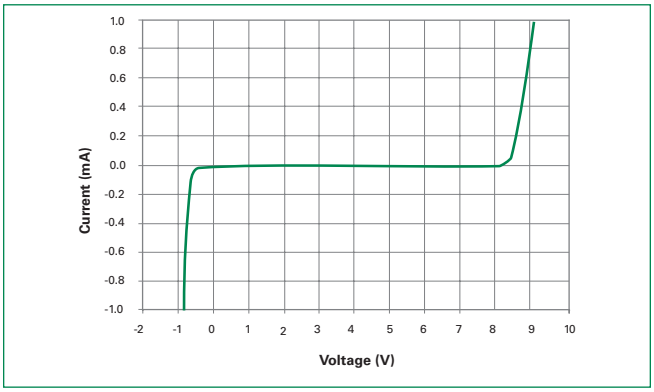
Insertion Loss Diagram



Insertion Loss Diagram - 1103 DFN Array



Component IV Curve



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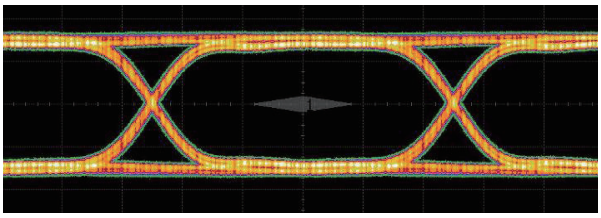
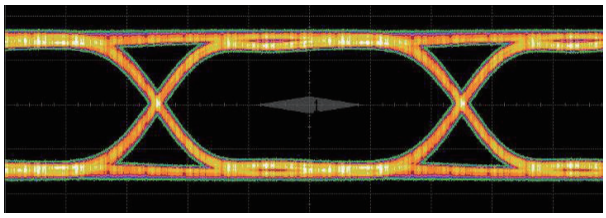
USB3.0 Eye Diagram

5.0 Gb/s, 1000mV differential, CPO Compliant Test Pattern



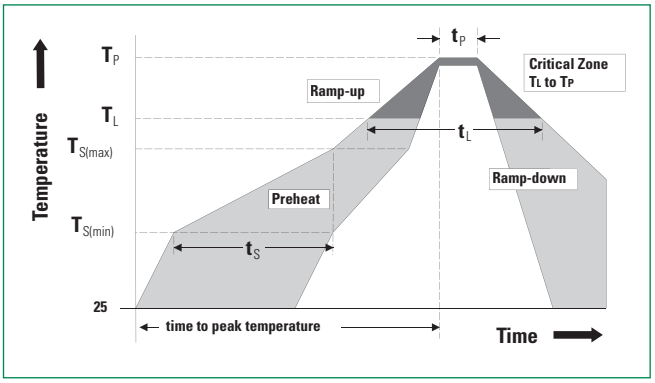
Without SESD Device



With SESD Device

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



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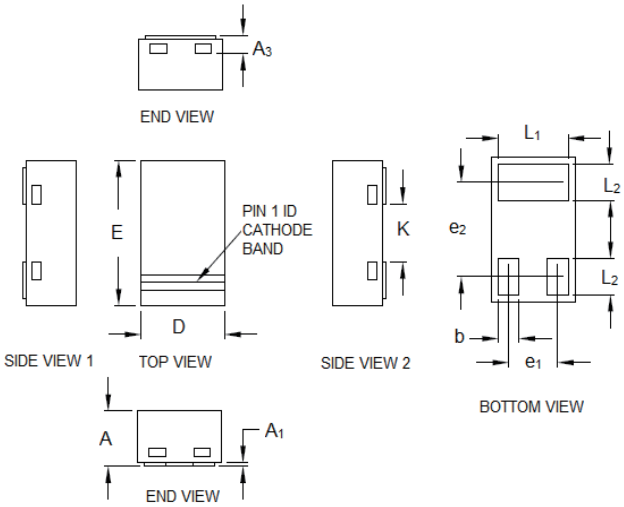
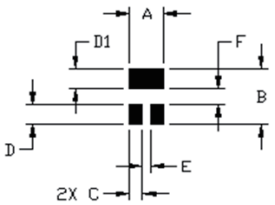
Package Dimensions — 0402 DFN Array



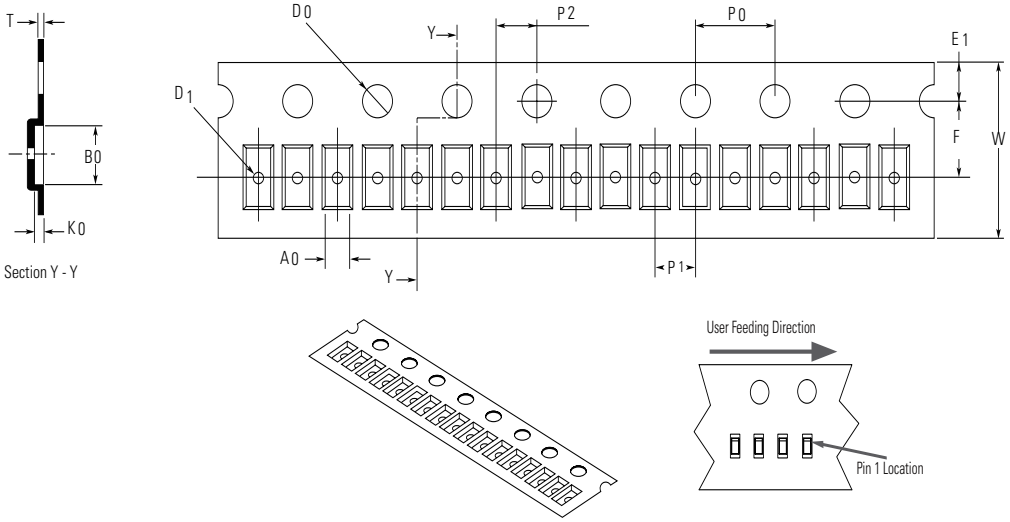
Symbol	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.33	0.38	0.43	0.013	0.015	0.017
A1	0	-	0.05	0	-	0.002
A3		0.13 ref.			0.005 ref.	
D	0.55	0.60	0.65	0.022	0.024	0.026
E	0.95	1.00	1.05	0.037	0.039	0.041
K	0.35	0.40	0.45	0.014	0.016	0.018
L1	0.45	0.50	0.55	0.018	0.020	0.022
L2	0.20	0.25	0.30	0.008	0.010	0.012
b	0.10	0.15	0.20	0.004	0.006	0.008
e1		0.35 BSC			0.014 BSC	
e2		0.65 BSC			0.026 BSC	



Pad Layout

Symbol	Millimeters	Inches
A	0.60	0.024
B	1.00	0.039
C	0.23	0.009
D	0.35	0.014
D1	0.35	0.014
E	0.15	0.006
F	0.30	0.012

Embossed Carrier Tape & Reel Specification — 0402 DFN Array



Symbol	Millimeters
A0	0.70+/-0.05
B0	1.15+/-0.05
D0	ø 1.55 + 0.05
D1	ø 0.40 +/- 0.05
E1	1.75+/-0.10
F	3.50+/-0.05
K0	0.47+/-0.05
P0	4.00+/-0.10
P1	2.00+/-0.05
P2	2.00+/-0.05
W	8.00 +/-0.10
T	0.20+/-0.05

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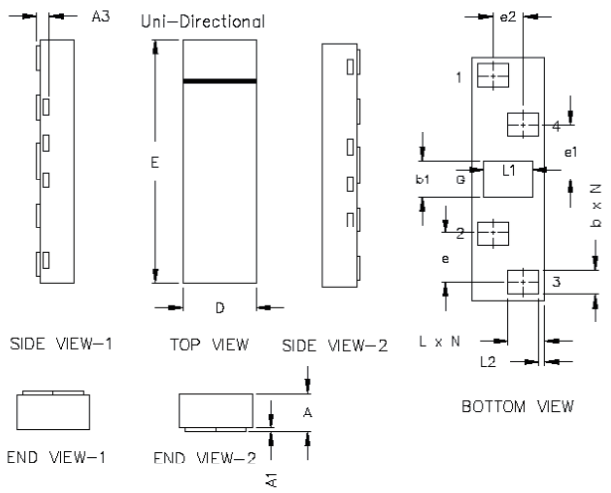
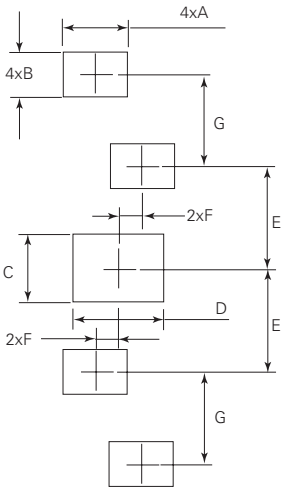
Package Dimensions — 0802 DFN Array



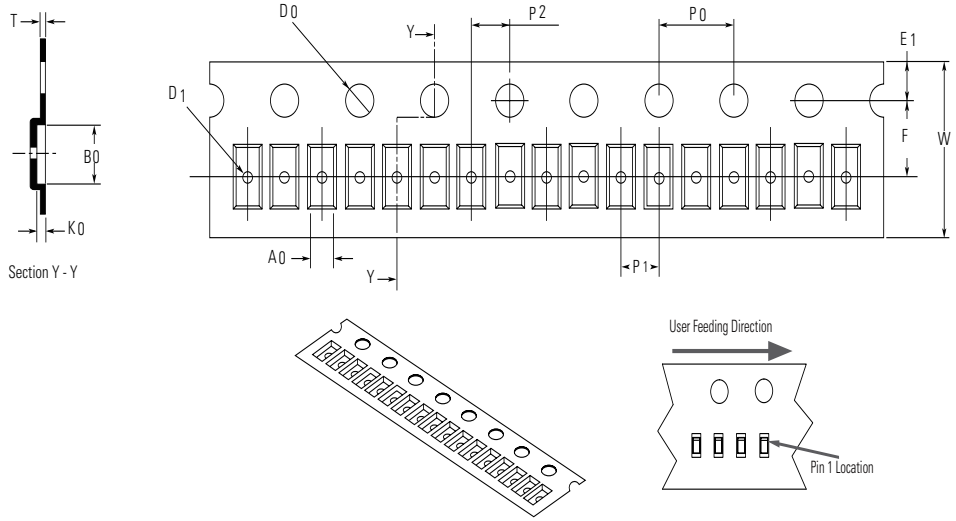
Symbol	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.33	0.38	0.43	0.013	0.015	0.017
A1	0	0.02	0.05	0	–	0.002
A3		0.127 ref			0.005 ref.	
D	0.50	0.60	0.70	0.020	0.024	0.028
E	1.90	2.00	2.10	0.075	0.079	0.083
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.25	0.30	0.36	0.010	0.012	0.014
L	0.25	0.30	0.36	0.010	0.012	0.014
L1	0.35	0.40	0.45	0.014	0.016	0.018
L2		0.05 BSC			0.002 BSC	
e		0.40 BSC			0.016 BSC	
e1		0.45 BSC			0.018 BSC	
e2		0.25 BSC			0.010 BSC	
N		4			4	



Recommended Soldering Pattern

Symbol	Millimeters	Inches
A	0.35	0.014
B	0.20	0.008
C	0.30	0.012
D	0.50	0.020
E	0.45 BSC	0.018 BSC
F	0.125 BSC	0.005 BSC
G	0.40 BSC	0.016 BSC

Embossed Carrier Tape & Reel Specification — 0802 DFN Array



Symbol	Millimeters
A0	0.81+/-0.05
B0	2.21+/-0.05
D0	ø 1.50+0.10/-0
D1	ø 0.40 min
E1	1.75+/-0.10
F	3.50+/-0.05
K0	0.46+/-0.05
P0	4.00+/-0.10
P1	2.00+/-0.10
P2	2.00+/-0.05
W	8.00+0.30/-0.10
T	0.25+/-0.20

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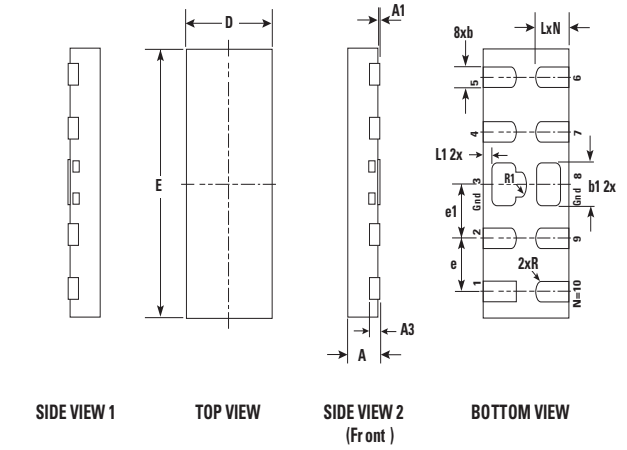
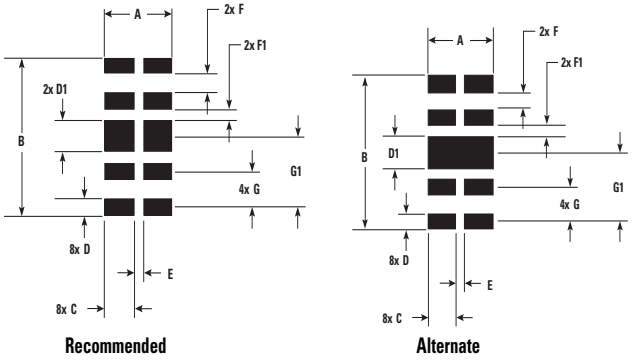
Package Dimensions — 1004 DFN Array



SIDE VIEW 1 | TOP VIEW | SIDE VIEW 2 (Front) | BOTTOM VIEW

END VIEW 1 | END VIEW 2

Symbol	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.33	0.38	0.43	0.013	0.015	0.017
A1	0.00	0.02	0.05	0	–	0.002
A3		0.127 ref.			0.005 ref.	
D	0.90	1.00	1.10	0.035	0.039	0.043
E	2.40	2.50	2.60	0.094	0.098	0.102
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.35	0.40	0.45	0.014	0.016	0.018
L	0.33	0.38	0.43	0.013	0.015	0.017
L1	0.00	0.10	0.15	0.000	0.004	0.006
e		0.50 BSC			0.020 BSC	
e1		0.50 BSC			0.020 BSC	
R		0.08 BSC			0.003 BSC	
R1		0.13 BSC			0.005 BSC	
N		10			10	

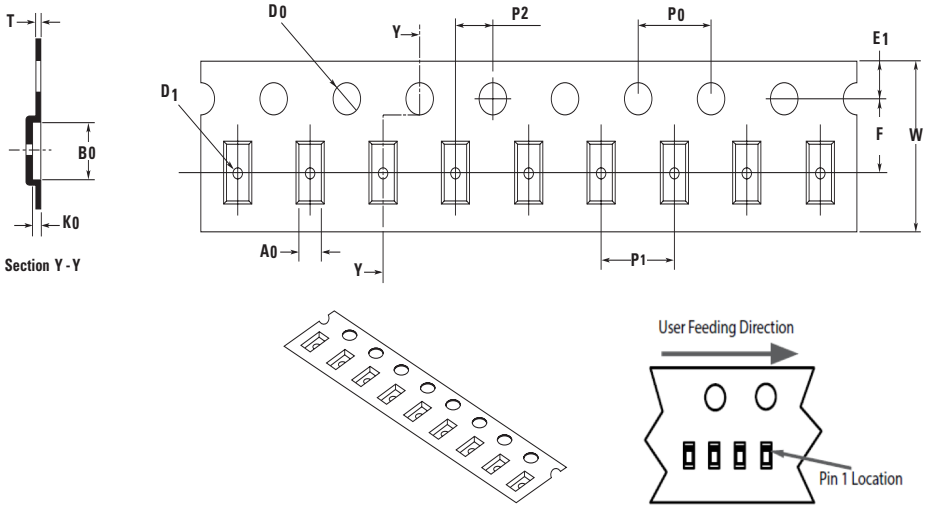


Recommended | Alternate

Symbol	Millimeters	Inches
A	1.20	0.047
B	2.20	0.087
C	0.50	0.020
D	0.20	0.008
D1	0.40	0.016
E	0.20	0.008
F	0.30	0.012
F1	0.20	0.008
G	0.50 BSC	0.020 BSC
G1	1.00 BSC	0.039 BSC

Pad Layout

Embossed Carrier Tape & Reel Specification — 1004 DFN Array



Symbol	Millimeters
A0	1.20+/-0.05
B0	2.70+/-0.05
D0	ø 1.50+0.10/-0
D1	ø 0.50 min
E1	1.75+/-0.10
F	3.50+/-0.05
K0	0.51+/-0.10
P0	4.00+/-0.10
P1	4.00+/-0.10
P2	2.00+/-0.05
W	8.00+0.30/-0.10
T	0.25+/-0.05

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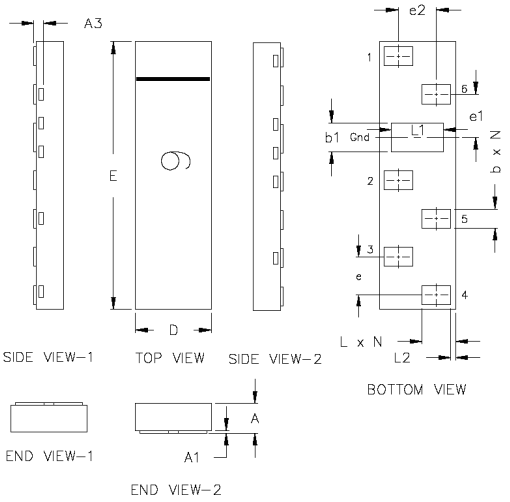
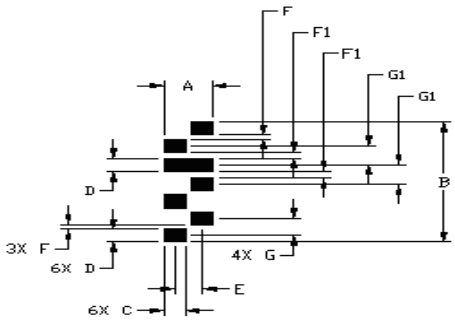
Package Dimensions — 1103 DFN Array



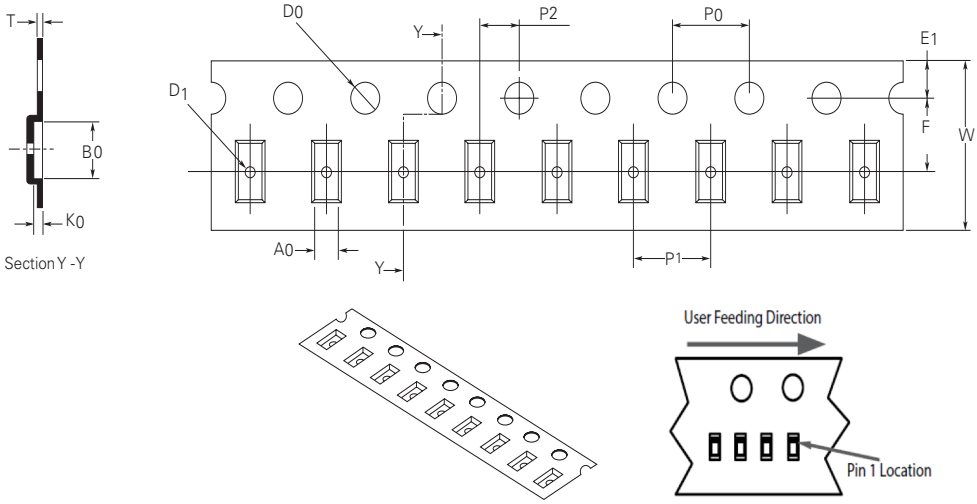
Symbol	Millimeters			Inches		
	Min	Typ	Max	Min	Typ	Max
A	0.33	0.38	0.43	0.013	0.015	0.017
A1	0.00	0.02	0.05	0	–	0.002
A3		0.127 ref.			0.005 ref.	
D	0.70	0.80	0.90	0.027	0.031	0.035
E	2.70	2.80	2.90	0.106	0.110	0.114
b	0.15	0.20	0.25	0.006	0.008	0.010
b1	0.25	0.30	0.35	0.010	0.012	0.014
L	0.30	0.35	0.40	0.012	0.014	0.016
L1	0.50	0.55	0.60	0.019	0.021	0.024
L2		0.05 BSC			0.002 BSC	
e		0.40 BSC			0.016 BSC	
e1		0.45 BSC			0.018 BSC	
e2		0.40 BSC			0.016 BSC	
N		6			6	



Pad Layout

Symbol	Millimeters	Inches
A	0.80	0.031
B	2.80	0.110
C	0.35	0.014
D	0.30	0.012
E	0.45	0.018
F	0.10	0.004
F1	0.15	0.006
G	0.40 BSC	0.016 BSC
G1	0.45 BSC	0.018 BSC

Embossed Carrier Tape & Reel Specification — 1103 DFN Array



Symbol	Millimeters
A0	1.00+/-0.05
B0	3.00+/-0.05
D0	ø 1.50+0.10/-0
D1	ø 0.50 min
E1	1.75+/-0.10
F	3.50+/-0.05
K0	0.51+/-0.05
P0	4.00+/-0.10
P1	4.00+/-0.10
P2	2.00+/-0.05
W	8.00+0.30/-0.10
T	0.25+/-0.05

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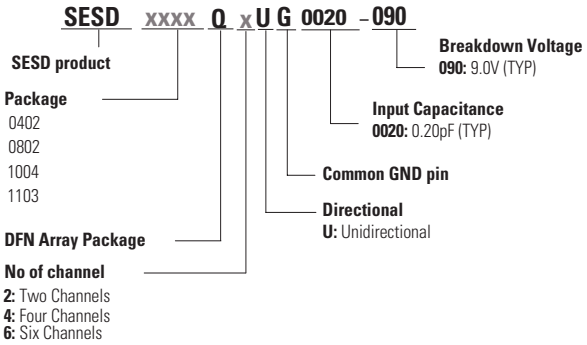
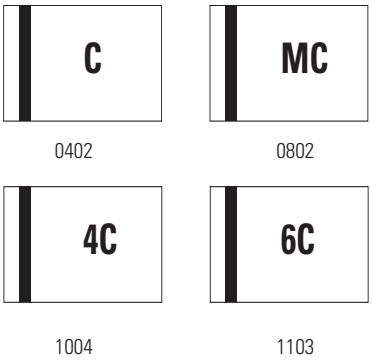
TVS Diode Arrays (SPA® Diodes)

SESD Series Ultra Low Capacitance Diode Arrays

Part Numbering System



Part Marking System



Ordering Information

Part Number	Package	Ordering Part Number	Minimum Order Quantity
SESD0402Q2UG-0020-090	0402 DFN Array	RF2946-000	50,000
SESD0802Q4UG-0020-090	0802 DFN Array	RF3076-000	25,000
SESD1004Q4UG-0020-090	1004 DFN Array	RF3077-000	25,000
SESD1103Q6UG-0020-090	1103 DFN Array	RF3078-000	25,000

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