

Cylindrical Types, High-Voltage Mica Capacitors

Types 291, 292, 293, 294 — Cylindrical Case, High-Current and High-Voltage Circuits



Designed for frequencies ranging from 100 kHz to 3 MHz, Mica Capacitor Types 291, 292, 293 and 294 are well suited for high-current and high-voltage circuits like radio transmitters. Cast in cylindrical cases, these capacitors are electrically equivalent to MIL-C-5 Styles CM75 through CM93 in capacitance and current ratings but are far superior in environmental capability, temperature range, physical size, mounting configuration, and reliability.

Highlights

- Cast in Cylindrical Cases
- Highly shock resistant
- Convenient mounting
- Excellent for radio transmission

Specifications

Capacitance Range:	47 pF to 0.1 μ F
Voltage Range:	1 to 30 kV _{pk}
Capacitance Tolerance:	\pm 2% (G), \pm 5% (J)
Temperature Range:	-55 °C to +125 °C

Type 291 Ratings

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C			
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)
1,000 Peak Volts					
75000	29110B753J00	18	22	22	16
82000	29110B823J00	18	22	22	16
91000	29110B913J00	18	22	22	16
100000	29110B104J00	18	22	22	18
1,500 Peak Volts					
30000	29115B303J00	18	22	18	12
33000	29115B333J00	18	22	20	13
36000	29115B363J00	18	22	20	13
39000	29115B393J00	18	22	20	13
43000	29115B433J00	18	22	22	13
47000	29115B473J00	18	22	22	15
51000	29115B513J00	18	22	22	15
56000	29115B563J00	18	22	22	15
62000	29115B623J00	18	22	22	16
68000	29115B683J00	18	22	22	16
2,000 Peak Volts					
18000	29120B183J00	18	20	16	11
20000	29120B203J00	18	22	18	11
22000	29120B223J00	18	22	18	11
24000	29120B243J00	18	22	18	12
27000	29120B273J00	18	22	18	12

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C			
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)
3,000 Peak Volts					
12000	29130B123J00	18	20	16	9.1
13000	29130B133J00	18	20	16	10
15000	29130B153J00	18	20	16	10
16000	29130B163J00	18	20	16	10
4,000 Peak Volts					
5100	29140B512J00	16	16	12	6.2
5600	29140B562J00	16	18	13	6.8
6000	29140B602J00	16	18	13	7.5
6200	29140B622J00	16	18	13	7.5
6800	29140B682J00	16	18	13	7.5
7500	29140B752J00	18	18	13	7.5
8200	29140B822J00	18	20	15	8.2
9100	29140B912J00	18	20	15	8.2
10000	29140B103J00	18	20	15	9.1
11000	29140B113J00	18	20	15	9.1
6,000 Peak Volts					
47	29160B470J00	2	1.2	0.5	0.2
50	29160B500J00	2	1.3	0.6	0.2
51	29160B510J00	2	1.3	0.6	0.2
56	29160B560J00	2.2	1.3	0.6	0.2
62	29160B620J00	2.2	1.5	0.6	0.2

Cylindrical Types, High-Voltage Mica Capacitors

Types 291 and 292 Ratings

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C			
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)
68	29160B680J00	2.4	1.5	0.7	0.2
75	29160B750J00	2.4	1.6	0.7	0.2
82	29160B820J00	2.7	1.8	0.8	0.2
91	29160B910J00	2.7	1.8	0.9	0.3
100	29160B101J00	3	2	0.9	0.3
110	29160B111J00	3	2.2	1	0.3
120	29160B121J00	3.3	2.2	1	0.3
130	29160B131J00	3.3	2.4	1.1	0.4
150	29160B151J00	3.6	2.4	1.2	0.4
160	29160B161J00	3.9	2.7	1.3	0.4
180	29160B181J00	4.3	3	1.5	0.5
200	29160B201J00	4.3	3	1.5	0.5
220	29160B221J00	4.7	3.3	1.6	0.6
240	29160B241J00	4.7	3.6	1.8	0.6
270	29160B271J00	5.1	3.6	2	0.6
300	29160B301J00	5.1	3.9	2	0.7
330	29160B331J00	5.6	4.3	2.2	0.8
360	29160B361J00	6.2	4.3	2.4	0.8
390	29160B391J00	6.2	4.7	2.7	0.8
400	29160B401J00	6.2	4.7	2.7	0.8
430	29160B431J00	6.8	4.7	2.7	0.8
470	29160B471J00	6.8	5.1	3	0.9
500	29160B501J00	6.8	5.1	3	1
510	29160B511J00	6.8	5.1	3	1
560	29160B561J00	7.5	5.6	3.3	1.1
620	29160B621J00	8.2	6.2	3.6	1.2
680	29160B681J00	8.2	6.2	3.9	1.3
750	29160B751J00	8.2	6.8	3.9	1.5
820	29160B821J00	9.1	6.8	4.3	1.5
910	29160B911J00	9.1	7.5	4.7	1.6
1000	29160B102J00	10	7.5	5.1	1.8
1100	29160B112J00	10	8.2	5.1	2
1200	29160B122J00	11	8.2	5.6	2.2
1300	29160B132J00	11	9.1	6.2	2.2
1500	29160B152J00	12	9.1	6.2	2.4
1600	29160B162J00	12	10	6.8	2.7
1800	29160B182J00	13	11	7.5	3.0
2000	29160B202J00	13	11	7.5	3.3
2200	29160B222J00	13	12	8.2	3.6
2400	29160B242J00	15	13	9.1	3.9
2700	29160B272J00	15	13	9.1	3.9
3000	29160B302J00	15	13	9.1	4.3
3300	29160B332J00	15	15	10	4.7
3600	29160B362J00	16	15	11	5.1
3900	29160B392J00	16	15	11	5.6
4000	29160B402J00	16	15	11	5.6
4300	29160B432J00	16	15	11	5.6
4700	29160B472J00	16	16	12	6.2
5000	29160B502J00	16	16	12	6.2
1,500 Peak Volts					
75000	29215B753J00	20	39	33	20
82000	29215B823J00	20	39	33	20
91000	29215B913J00	20	39	33	20
100000	29215B104J00	20	39	36	20
2,000 Peak Volts					
30000	29220B303J00	20	33	24	15
33000	29220B333J00	20	33	24	15
36000	29220B363J00	20	33	27	16
39000	29220B393J00	20	36	27	16
43000	29220B433J00	20	36	27	16
47000	29220B473J00	20	36	27	18
51000	29220B513J00	20	36	30	18
56000	29220B563J00	20	36	30	18
62000	29220B623J00	20	39	30	18
68000	29220B683J00	20	39	33	20
3,000 Peak Volts					
18000	29230B183J00	20	30	20	12
20000	29230B203J00	20	30	22	13
22000	29230B223J00	20	30	22	13
24000	29230B243J00	20	33	24	13
27000	29230B273J00	20	33	24	13
4,000 Peak Volts					
12000	29240B123J00	20	27	18	10
13000	29240B133J00	20	27	20	10
15000	29240B153J00	20	27	20	11
16000	29240B163J00	20	27	20	11
5,000 Peak Volts					
5600	29250B562J00	20	20	13	6.8
6000	29250B602J00	20	22	15	6.8
6200	29250B622J00	20	22	15	6.8
6800	29250B682J00	20	22	15	7.5
7500	29250B752J00	20	22	15	7.5
8200	29250B822J00	20	24	16	8.2
9100	29250B912J00	20	24	16	8.2
10000	29250B103J00	20	24	18	9.1
11000	29250B113J00	20	27	18	9.1
6,000 Peak Volts					
4700	29260B472J00	20	20	13	6.2
5000	29260B502J00	20	20	13	6.2
5100	29260B512J00	20	20	13	6.2

Cylindrical Types, High-Voltage Mica Capacitors

Types 292 and 293 Ratings

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C			
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)
8,000 Peak Volts					
2200	29280B222JO0	18	13	9.1	3.9
2400	29280B242JO0	18	15	10	4.3
2700	29280B272JO0	18	15	10	4.3
3000	29280B302JO0	18	16	10	4.7
3300	29280B332JO0	20	16	11	4.7
3600	29280B362JO0	20	18	11	5.1
3900	29280B392JO0	20	18	12	5.6
4000	29280B402JO0	20	18	12	5.6
4300	29280B432JO0	20	18	12	5.6
10,000 Peak Volts					
47	292100B470JO0	2.7	2	0.9	0.3
51	292100B510JO0	2.7	2	1	0.3
56	292100B560JO0	3	2.2	1	0.3
62	292100B620JO0	3.3	2.2	1.1	0.3
68	292100B680JO0	3.3	2.4	1.2	0.3
75	292100B750JO0	3.6	2.4	1.2	0.4
82	292100B820JO0	3.6	2.7	1.3	0.4
91	292100B910JO0	3.9	2.7	1.5	0.4
100	292100B101JO0	4.3	3	1.5	0.5
110	292100B111JO0	4.3	3	1.6	0.5
120	292100B121JO0	4.7	3.3	1.6	0.6
130	292100B131JO0	4.7	3.6	1.8	0.6
150	292100B151JO0	5.1	3.6	1.8	0.6
160	292100B161JO0	5.1	3.9	2	0.8
180	292100B181JO0	5.6	4.3	2.2	0.8
200	292100B201JO0	6.2	4.3	2.4	0.8
220	292100B221JO0	6.2	4.7	2.4	0.9
240	292100B241JO0	6.8	5.1	2.7	1.0
250	292100B251JO0	6.8	5.1	2.7	1.0
270	292100B271JO0	6.8	5.1	2.7	1.0
300	292100B301JO0	7.5	5.6	3	1.1
330	292100B331JO0	7.5	5.6	3	1.2
360	292100B361JO0	8.2	6.2	3.6	1.2
390	292100B391JO0	8.2	6.2	3.6	1.3
430	292100B431JO0	9.1	6.2	3.6	1.3
470	292100B471JO0	9.1	6.8	3.9	1.5
500	292100B501JO0	9.1	6.8	3.9	1.6
510	292100B511JO0	9.1	6.8	3.9	1.6
560	292100B561JO0	10	7.5	4.3	1.6
620	292100B621JO0	11	8.2	4.7	1.8
680	292100B681JO0	11	8.2	4.7	1.8
750	292100B751JO0	11	8.2	5.1	2.0
820	292100B821JO0	12	9.1	5.1	2.2
910	292100B911JO0	12	9.1	5.6	2.2
1000	292100B102JO0	12	10	6.2	2.4

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C			
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)
1100	292100B112JO0	13	10	6.2	2.7
1200	292100B122JO0	15	11	6.8	2.7
1300	292100B132JO0	15	11	6.8	2.7
1500	292100B152JO0	15	12	7.5	3.0
1600	292100B162JO0	16	12	7.5	3.3
1800	292100B182JO0	16	13	8.2	3.6
2000	292100B202JO0	16	13	8.2	3.6

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C				Case Height (in)
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)	
75000	29320B753JO0	24	51	39	24	2.50
82000	29320B823JO0	24	51	39	24	2.50
91000	29320B913JO0	24	51	39	24	2.75
100000	29320B104JO0	24	51	39	24	2.75
3,000 Peak Volts						
27000	29330B273JO0	24	51	33	18	2.50
30000	29330B303JO0	24	51	33	20	2.50
33000	29330B333JO0	24	51	33	20	2.50
36000	29330B363JO0	24	51	36	22	2.50
39000	29330B393JO0	24	51	36	22	2.50
43000	29330B433JO0	24	51	36	22	2.50
47000	29330B473JO0	24	51	36	22	2.50
51000	29330B513JO0	24	51	36	24	2.75
56000	29330B563JO0	24	51	36	24	2.75
62000	29330B623JO0	24	51	39	24	3.00
68000	29330B683JO0	24	51	39	24	3.00
5,000 Peak Volts						
12000	29350B123JO0	24	43	27	13	2.50
13000	29350B133JO0	24	43	27	13	2.50
15000	29350B153JO0	24	43	27	15	2.50
16000	29350B163JO0	24	47	30	15	2.50
18000	29350B183JO0	24	47	30	16	2.75
20000	29350B203JO0	24	47	30	18	2.75
22000	29350B223JO0	24	47	30	18	3.00
24000	29350B243JO0	24	51	33	18	3.25
8,000 Peak Volts						
9100	29380B912JO0	24	39	24	12	3.25
10000	29380B103JO0	24	39	24	12	3.25
11000	29380B113JO0	24	39	27	13	3.25
10,000 Peak Volts						
4700	293100B472JO0	22	27	18	8.2	2.75
5000	293100B502JO0	24	30	18	9.1	2.75
5100	293100B512JO0	24	30	18	9.1	2.75
5600	293100B562JO0	24	33	20	9.1	3.00

Cylindrical Types, High-Voltage Mica Capacitors

Types 293 and 294 Ratings

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C				Case Height (in)
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)	
6000	293100B602JO0	24	33	20	10	3.00
6200	293100B622JO0	24	33	20	10	3.00
6800	293100B682JO0	24	33	20	10	3.00
7500	293100B752JO0	24	36	22	11	3.25
8000	293100B802JO0	24	36	22	11	3.25
8200	293100B822JO0	24	36	22	11	3.25
12,000 Peak Volts						
2200	293120B222JO0	20	20	12	5.6	2.50
2400	293120B242JO0	20	22	13	6.2	2.75
2700	293120B272JO0	20	22	13	6.2	2.75
3000	293120B302JO0	20	24	15	6.8	3.00
3300	293120B332JO0	22	24	15	6.8	3.00
3600	293120B362JO0	22	24	15	7.5	3.00
3900	293120B392JO0	22	27	16	7.5	3.00
4000	293120B402JO0	22	27	16	7.5	3.25
4300	293120B432JO0	22	27	16	8.2	3.25
15,000 Peak Volts						
1200	293150B122JO0	16	15	8.2	4.3	2.50
1300	293150B132JO0	16	15	9.1	4.3	2.50
1500	293150B152JO0	16	16	9.1	4.7	2.75
1600	293150B162JO0	18	18	10	4.7	2.75
1800	293150B182JO0	18	18	11	5.1	3.00
2000	293150B202JO0	18	20	11	5.6	3.00
20,000 Peak Volts						
47	293200B470JO0	5.1	2.2	0.5	0.1	2.50
50	293200B500JO0	5.1	2.4	0.5	0.2	2.50
51	293200B510JO0	5.1	2.4	0.5	0.2	2.50
56	293200B560JO0	5.6	2.4	0.6	0.2	2.50
62	293200B620JO0	5.6	2.7	0.7	0.2	2.50
68	293200B680JO0	5.6	2.7	0.8	0.2	2.50
75	293200B750JO0	6.2	3	0.9	0.3	2.50
82	293200B820JO0	6.2	3	1	0.3	2.50
91	293200B910JO0	6.8	3.3	1.1	0.4	2.50
100	293200B101JO0	6.8	3.6	1.3	0.5	2.50
110	293200B111JO0	7.5	3.9	1.5	0.5	2.50
120	293200B121JO0	7.5	4.3	1.6	0.6	2.50
130	293200B131JO0	7.5	4.3	1.8	0.7	2.50
150	293200B151JO0	8.2	4.7	2	0.8	2.50
160	293200B161JO0	8.2	5.1	2.2	0.9	2.50
180	293200B181JO0	9.1	5.1	2.4	1	2.50
200	293200B201JO0	9.1	5.6	2.7	1.1	2.50
220	293200B221JO0	9.1	6.2	3	1.2	2.50
240	293200B241JO0	10	6.2	3.6	1.3	2.50
250	293200B251JO0	10	6.2	6.8	1.3	2.50
270	293200B271JO0	10	6.8	3.6	1.5	2.50
300	293200B301JO0	10	6.8	3.9	1.6	2.50
330	293200B331JO0	11	7.5	3.9	1.6	2.50

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C				Case Height (in)
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)	
360	293200B361JO0	11	7.5	3.9	1.8	2.50
390	293200B391JO0	11	8.2	4.3	2	2.50
430	293200B431JO0	12	8.2	4.7	2.2	2.50
470	293200B471JO0	12	9.1	4.7	2.2	2.50
500	293200B501JO0	12	9.1	5.1	2.4	2.50
510	293200B511JO0	12	9.1	5.1	2.4	2.50
560	293200B561JO0	13	10	5.6	2.7	2.50
620	293200B621JO0	13	11	6.2	2.7	2.50
680	293200B681JO0	13	11	6.2	2.7	2.75
750	293200B751JO0	13	12	6.8	3	2.75
800	293200B801JO0	15	12	6.8	3.3	2.75
820	293200B821JO0	15	12	6.8	3.3	2.75
910	293200B911JO0	15	13	7.5	3.6	2.75
1000	293200B102JO0	15	13	7.5	3.6	2.75
1100	293200B112JO0	16	15	8.2	3.9	2.75
3,000 Peak Volts						
82000	29430B823JO0	30	62	43	39	5.00
91000	29430B913JO0	30	62	43	39	5.00
100000	29430B104JO0	30	62	43	39	5.00
4,000 Peak Volts						
68000	29440B683JO0	30	56	39	36	5.00
75000	29440B753JO0	30	62	43	36	5.00
5,000 Peak Volts						
33000	29450B333JO0	30	56	39	27	4.50
36000	29450B363JO0	30	56	39	30	4.50
39000	29450B393JO0	30	56	39	30	5.00
40000	29450B403JO0	30	56	39	30	5.00
43000	29450B433JO0	30	56	39	30	5.00
47000	29450B473JO0	30	56	39	30	5.00
51000	29450B513JO0	30	56	39	33	5.00
56000	29450B563JO0	30	56	39	33	5.00
62000	29450B623JO0	30	56	39	33	5.00
6,000 Peak Volts						
18000	29460B183JO0	30	51	36	22	4.00
20000	29460B203JO0	30	51	36	24	4.00
22000	29460B223JO0	30	51	36	24	4.00
24000	29460B243JO0	30	56	39	27	4.50
27000	29460B273JO0	30	56	39	27	4.50
30000	29460B303JO0	30	56	39	27	5.00
8,000 Peak Volts						
12000	29480B123JO0	30	43	30	20	4.50
13000	29480B133JO0	30	47	30	20	4.50
15000	29480B153JO0	30	47	33	20	5.00
16000	29480B163JO0	30	47	33	22	5.00
10,000 Peak Volts						
10000	294100B103JO0	30	43	30	18	5.00

Cylindrical Types, High-Voltage Mica Capacitors

Type 294 Ratings

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C				Case Height (in)
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)	
11000	294100B113J00	30	43	30	18	5.00
12,000 Peak Volts						
8000	294120B802J00	30	39	27	16	5.00
8200	294120B822J00	30	39	27	16	5.00
9100	294120B912J00	30	39	27	16	5.00
15,000 Peak Volts						
4300	294150B432J00	27	30	20	11	4.50
4700	294150B472J00	27	30	22	12	4.50
5000	294150B502J00	27	33	22	12	4.50
5100	294150B512J00	27	33	22	12	4.50
5600	294150B562J00	27	36	22	13	5.00
6000	294150B602J00	27	36	24	15	5.00
6200	294150B622J00	27	36	24	15	5.00
6800	294150B682J00	27	36	24	15	5.00
7500	294150B752J00	30	36	27	16	5.00
20,000 Peak Volts						
2000	294200B202J00	22	22	15	7.5	4.50
2200	294200B222J00	22	24	15	8.2	4.50
2400	294200B242J00	22	24	16	8.2	4.50
2700	294200B272J00	22	24	16	9.1	5.00
3000	294200B302J00	24	27	18	9.1	5.00
3300	294200B332J00	24	27	18	10	5.00
3600	294200B362J00	24	27	18	10	5.00
3900	294200B392J00	24	30	20	11	5.00
4000	294200B402J00	24	30	20	11	5.00
25,000 Peak Volts						
1100	294250B112J00	18	18	11	5.6	4.50
1200	294250B122J00	18	18	11	5.6	4.50
1300	294250B132J00	18	18	12	6.2	4.50
1500	294250B152J00	20	20	12	6.2	5.00

Cap (pF)	Catalog Part Number	Maximum AC Current at 65 °C				Case Height (in)
		3 MHz (A)	1 MHz (A)	300 kHz (A)	100 kHz (A)	
1600	294250B162J00	20	20	13	6.8	5.00
1800	294250B182J00	20	22	13	7.5	5.00
30,000 Peak Volts						
100	294300B101J00	7.5	5.1	2	0.7	4.00
110	294300B111J00	8.2	5.1	2.2	0.8	4.00
120	294300B121J00	8.2	5.6	2.4	1	4.00
130	294300B131J00	9.1	6.2	2.7	1.1	4.00
150	294300B151J00	9.1	6.2	3	1.3	4.00
160	294300B161J00	9.1	6.8	3.3	1.5	4.00
180	294300B181J00	10	6.8	3.6	1.6	4.00
200	294300B201J00	10	7.5	3.9	1.8	4.00
220	294300B221J00	11	7.5	3.9	2	4.00
240	294300B241J00	11	8.2	4.3	2	4.00
250	294300B251J00	11	8.2	4.3	2	4.00
270	294300B271J00	11	9.1	4.7	2.2	4.00
300	294300B301J00	12	9.1	5.1	2.4	4.00
330	294300B331J00	12	9.1	5.1	2.4	4.00
360	294300B361J00	12	10	5.6	2.7	4.00
390	294300B391J00	13	11	6.2	3	4.00
430	294300B431J00	13	11	6.2	3	4.00
470	294300B471J00	13	11	6.8	3.3	4.00
500	294300B501J00	13	12	6.8	3.3	4.00
510	294300B511J00	13	12	6.8	3.3	4.00
560	294300B561J00	15	13	7.5	3.6	4.00
620	294300B621J00	15	13	8.2	3.9	4.00
680	294300B681J00	15	13	8.2	4.3	4.50
750	294300B751J00	16	15	8.2	4.3	4.50
800	294300B801J00	16	15	9.1	4.7	4.50
820	294300B821J00	16	15	9.1	4.7	4.50
910	294300B911J00	16	15	10	5.1	4.50
1000	294300B102J00	18	16	10	5.1	4.50

Cylindrical Types, High-Voltage Mica Capacitors

Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.