

# Product Selection Guide

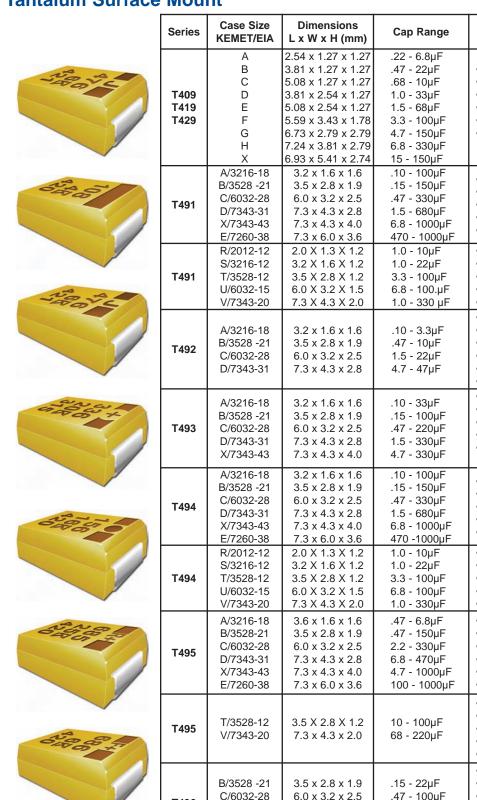
www.kemet.com F3296N







# **Tantalum Surface Mount**



Series	KEMET/EIA	L x W x H (mm)	Cap Range	Characteristics
	Α	2.54 x 1.27 x 1.27	.22 - 6.8µF	
	В	3.81 x 1.27 x 1.27	.47 - 22µF	• Mil-PRF-55365/4 & 11 (CWR09/19/29
	C	5.08 x 1.27 x 1.27	.68 - 10µF	• 4 - 50 Volts
T409	D	3.81 x 2.54 x 1.27	1.0 - 33µF	• ±20%; ±10%; ±5% Cap tolerance
T419	E	5.08 x 2.54 x 1.27	1.5 - 68µF	• 100% Surge Current Test available
T429	F	5.59 x 3.43 x 1.78	3.3 - 100µF	
1429	G	6.73 x 2.79 x 2.79		<ul><li>Tape and reel packaging</li><li>Termination Options Available</li></ul>
	H	7.24 x 3.81 x 2.79	4.7 - 150µF 6.8 - 330µF	l Termination Options Available
	X	1	•	
	A/3216-18	6.93 x 5.41 x 2.74	15 - 150µF	
		3.2 x 1.6 x 1.6	.10 - 100µF	Industrial/commercial grade
	B/3528 -21	3.5 x 2.8 x 1.9	.15 - 150µF	• 2.5 - 50 Volts
T491	C/6032-28	6.0 x 3.2 x 2.5	.47 - 330µF	• ±20%; ±10% Cap tolerance
	D/7343-31	7.3 x 4.3 x 2.8	1.5 - 680µF	Tape and reel packaging
	X/7343-43	7.3 x 4.3 x 4.0	6.8 - 1000µF	RoHS Compliant
	E/7260-38	7.3 x 6.0 x 3.6	470 - 1000µF	1 61-
	R/2012-12	2.0 X 1.3 X 1.2	1.0 - 10µF	• Low profile
T404	S/3216-12	3.2 X 1.6 X 1.2	1.0 - 22µF	• 2.5 - 50 Volts
T491	T/3528-12	3.5 X 2.8 X 1.2	3.3 - 100µF	• ±20%; ±10% Cap tolerance
	U/6032-15	6.0 X 3.2 X 1.5	6.8 - 100.µF	Tape and reel packaging
	V/7343-20	7.3 X 4.3 X 2.0	1.0 - 330 μF	RoHS Compliant
				• Mil-PRF-55365/8 (CWR11)
	A/3216-18	3.2 x 1.6 x 1.6	.10 - 3.3μF	• 4 - 50 Volts
T492	B/3528 -21	3.5 x 2.8 x 1.9	.47 - 10µF	• ±20%; ±10%; ±5% Cap tolerance
02	C/6032-28	6.0 x 3.2 x 2.5	1.5 - 22µF	Tape and reel packaging
	D/7343-31	7.3 x 4.3 x 2.8	4.7 - 47µF	• 100% Surge Current Test Available.
				Termination Options Available
	A/3216-18	3.2 x 1.6 x 1.6	.10 - 33µF	Commercial-Off-The-Shelf (COTS)
	B/3528 -21	3.5 x 2.8 x 1.9	.15 - 100µF	• 4 - 50 Volts
T493	C/6032-28	6.0 x 3.2 x 2.5	.47 - 220μF	• ±20%; ±10% Cap tolerance
1433	D/7343-31	7.3 x 4.3 x 2.8	1.5 - 330µF	Tape and reel packaging
	X/7343-43	7.3 x 4.3 x 4.0	4.7 - 330μF	<ul> <li>Low ESR, surge tested, Weibull graded,</li> </ul>
	A/1343-43	7.5 x 4.5 x 4.0	4.7 - 330μΓ	termination options
	A/3216-18	3.2 x 1.6 x 1.6	.10 - 100µF	Low ESR/Industrial grade
	B/3528 -21	3.5 x 2.8 x 1.9	.15 - 150µF	• 3 - 50 Volts
T494	C/6032-28	6.0 x 3.2 x 2.5	.47 - 330µF	• ±20%; ±10% Cap tolerance
1434	D/7343-31	7.3 x 4.3 x 2.8	1.5 - 680µF	Tape and reel packaging
	X/7343-43	7.3 x 4.3 x 4.0	6.8 - 1000µF	RoHS Compliant
	E/7260-38	7.3 x 6.0 x 3.6	470 -1000μF	'
	R/2012-12	2.0 X 1.3 X 1.2	1.0 - 10µF	Low profile/Low ESR T494 product
	S/3216-12	3.2 X 1.6 X 1.2	1.0 - 22µF	• 4 - 50 Volts
T494	T/3528-12	3.5 X 2.8 X 1.2	3.3 - 100µF	• ±20%; ±10% Cap tolerance
	U/6032-15	6.0 X 3.2 X 1.5	6.8 - 100µF	Tape and reel packaging
	V/7343-20	7.3 X 4.3 X 2.0	1.0 - 330µF	RoHS Compliant
	A/3216-18	3.6 x 1.6 x 1.6	.47 - 6.8µF	Low ESR/surge robust series
	B/3528-21	3.5 x 2.8 x 1.9	.47 - 150µF	• 4 - 50 Volts
T40-	C/6032-28	6.0 x 3.2 x 2.5	2.2 - 330µF	• ±20%; ±10% Cap tolerance
T495	D/7343-31	7.3 x 4.3 x 2.8	6.8 - 470µF	Tape and reel packaging
	X/7343-43	7.3 x 4.3 x 4.0	4.7 - 1000µF	RoHS Compliant
	E/7260-38	7.3 x 6.0 x 3.6	100 - 1000µF	Available DSCC Dwg. 95158
			r	, v
				Low profile/Low ESR/Surge Robust     S 16 Volte
T495	T/3528-12	3.5 X 2.8 X 1.2	10 - 100μF	• 6 -16 Volts
1490	V/7343-20	7.3 x 4.3 x 2.0	68 - 220µF	• ±20%; ±10% Cap tolerance
			-	Tape and reel packaging     RoHS Compliant
				·
	D/0500 0:	05.00	45 00 5	• Fail-safe fused series
	B/3528 -21	3.5 x 2.8 x 1.9	.15 - 22µF	• 2.5 - 50 Volts
T496	C/6032-28	6.0 x 3.2 x 2.5	.47 - 100µF	• ±20%; ±10% Cap tolerance
	D/7343-31	7.3 x 4.3 x 2.8	2.2 - 330µF	Tape and reel packaging
	X/7343-43	7.3 x 4.3 x 4.0	10 - 470μF	RoHS Compliant
	i	1		Available DSCC Dwg. 04053



# **Tantalum Surface Mount**















	Case Size	Dimensions		
Series	KEMET/EIA	L x W x H (mm)	Cap Range	Characteristics
T497	A B C D E F G H X	2.54 x 1.27 x 1.27 3.81 x 1.27 x 1.27 5.08 x 1.27 x 1.27 3.81 x 2.54 x 1.27 5.08 x 2.54 x 1.27 5.59 x 3.43 x 1.78 6.73 x 2.79 x 2.79 7.24 x 3.81 x 2.79 6.93 x 5.41 x 2.74	.33 - 4.7µF .68 - 15µF  1.5 - 33µF 2.2 - 68µF 4.7 - 68µF 6.8 - 68µF 15 - 100µF	<ul> <li>High Grade COTS</li> <li>4 - 50 Volts</li> <li>±20%; ±10% Cap tolerance</li> <li>100% Accelerated Steady State Aging</li> <li>100% Thermal Shock</li> <li>Surge Current Testing Available</li> <li>Tape and reel packaging</li> <li>RoHS Compliant</li> <li>Termination Options Available</li> </ul>
T498	A/3216-18 B/3528 -21 C/6032-28 D/7343-31 X/7343-43	3.2 x 1.6 x 1.6 3.5 x 2.8 x 1.9 6.0 x 3.2 x 2.5 7.3 x 4.3 x 2.8 7.3 x 4.3 x 4.0	.33 - 4.7μF 2.2 - 33μF 1.5 - 47μF 10 - 100μF 22 - 220μF	<ul> <li>150°C Maximum High Temperature</li> <li>6 - 50 Volts</li> <li>±20%; ±10% Cap tolerance</li> <li>Tape and reel packaging</li> <li>RoHS Compliant</li> </ul>
T499	A/3216-18 B/3528 -21 C/6032-28 D/7343-31 X/7343-43	3.2 x 1.6 x 1.6 3.5 x 2.8 x 1.9 6.0 x 3.2 x 2.5 7.3 x 4.3 x 2.8 7.3 x 4.3 x 4.0	.15 - 4.7μF .47 - 33μF 1.5 - 68μF 3.3 - 150μF 33 - 220μF	175°C Maximum High Temperature     6 - 50 Volts     ±20%; ±10% Cap tolerance     Tape and reel packaging     RoHS Compliant
T510	X/7343-43 E/7260-38	7.3 x 4.3 x 4.0 7.3 x 6.0 x 3.6	22 - 1000μF 47 - 1000μF	Low ESR (<10-80mΩ)  4 - 25 Volts  ±20%; ±10% Cap tolerance  Tape and reel packaging  ROHS Compliant
T520	A/3216-18 B/3528 -21 C/6032-28 D/7343-31 Y/7343-40 X/7343-43	3.2 x 1.6 x 1.6 3.5 x 2.8 x 1.9 6.0 x 3.2 x 2.5 7.3 x 4.3 x 2.8 7.3 x 4.3 x 4.0 max 7.3 x 4.3 x 4.0	10 - 68µF 33 - 330µF 68 - 330µF 15 - 1000µF 330 - 1000µF 330 - 1000µF	<ul> <li>KEMET organic with polymer cathode</li> <li>2 - 25 Volts</li> <li>±20% Cap tolerance</li> <li>Tape and reel packaging</li> <li>RoHS Compliant</li> <li>Low ESR (6 to 80mΩ)</li> </ul>
T520	T/3528-12 U/6032-15 W/7343-15 V/7343-20	3.5 x 2.8 x 1.2 max 6.0 x 3.2 x 1.5 max 7.3 x 4.3 x 1.5 max 7.3 x 4.3 x 1.9 max	15 - 100μF 33 - 220μF 33 - 330μF 15 - 470μF	Low Profile T520 Product     KEMET organic with polymer cathode     2 - 25 Volts     ±20% Cap tolerance     Tape and reel packaging     RoHS Compliant     Low ESR (6 to 90mΩ)
T525	T/3528-12 B/3528-21 D/7343-31	3.5 x 2.8 x 1.2 3.5 x 2.8 x 1.9 7.3 x 4.3 x 2.8	33 - 100µF 33 - 150µF 47 - 680µF	KEMET organic with polymer cathode     2.5 - 16 Volts     ±20% Cap tolerance     125°C Maximum operating temperature     RoHS Compliant     Available DSCC Dwg. 04051
T528	I/3216-10 M/3528-15 Z/7343-17	3.2 x 1.6 x 1.0 3.5 x 2.8 x 1.5 7.3 x 4.3 x 1.7 max	33.0 - 100.0μF 100 - 220μF 150 - 330μF	<ul> <li>Face Down Termination Organic</li> <li>Low Profile</li> <li>Low ESL &lt;0.7nH @ 20MHz</li> <li>2.5 - 10 Volts</li> <li>±20% Cap tolerance</li> <li>RoHS Compliant</li> </ul>
T530	D/7343-31 Y/7343-40 X/7343-43	7.3 x 4.3 x 2.8 7.3 x 4.3 x 1.9 7.3 x 4.3 x 4.0	150 - 680μF 220 - 1000μF 150 - 1500μF	KEMET organic with polymer cathode     2.5 - 10 Volts     Ultra-low ESR (≤4mΩ available)     ±20% Cap tolerance     RoHS Compliant     Available DSCC Dwg. 04052

#### **Ceramic Surface Mount**



Size Code *EIA/Metric	Dimensions L x W (mm)	Cap Range	Characteristics
*0201/0603	0.6 x 0.03	C0G - 10 - 100pF X5R - 0.01 - 0.10µF	
*0402/1005	1.0 x 0.5	C0G - 0.5 - 1000pF X7R - 150 - 0.1μF X5R - 12,000pF - 2.2μF Y5V - 47,000pF - 0.10μF	Standard EIA Chip Sizes     RoHS Compliant     EIA Preferred Case Sizes
*0603/1608	1.6 x 0.8	COG - 0.5pF - 0.01µF X7R - 180pF - 1.0µF X5R - 0.27 - 10µF Y5V - 0.10 - 1.0µF	• 4, 6.3, 10, 16, 25, 50, 100, 200 volts • C0G/NP0; X7R; X5R; Z5U;Y5V dielectrics
*0805/2012	2.0 x 1.25	COG - 0.5pF - 0.033µF X7R - 220pF - 2.2µF X5R - 1.2 - 47µF Z5U - 6,800pF - 0.1µF Y5V - 0.22 - 10µF	± 0.10pF; ±0.25pF; ±0.5pF; ±1%; ±2%; ±5%; ±10%; ±20%; +80%/-20%  Capacitance tolerance available     90/10 Sn/Pb L Termination Available     - COG; X7R; Other dielectrics, contact
*1206/3216	3.2 x 1.6	COG - 1.0pF - 0.10µF X7R - 1000pF - 10µF X5R - 0.1 - 100µF Z5U - 0.01 - 0.22µF Y5V - 0.022 - 22µF	factory  • Mil-PRF-55681 approved Dimension and capacitance values may vary slightly. Refer to catalog F3102 for specific information.
*1210/3225	3.2 x 2.5	COG - 10pF022µF X7R - 2,200pF - 10µF X5R - 1.0 - 100µF Z5U - 0.047 - 1.0µF Y5V - 0.22 - 22µF	Mil-PRF-123 approved and GR900     High Reliability available. Dimension and cap ranges will vary slightly. Refer to catalog F-3054 for specific
*1812/4532	4.5 x 3.2	COG - 470pF012μF X7R - 6,800pF - 10.0μF Z5U - 0.082 - 1.0μF	information. • Flexible termination available (FT-CAP) in 0603 thru 1210 case sizes, 6.3 - 200
*1825/4564	4.5 x 6.4	COG - 3,900pF - 0.027µF X7R - 0.022 - 2.2µF Z5U - 0.18 - 2.2µF	volts, X7R dielectric and AEC-Q200 qualified.  • Tape and reel packaging available
2220/5650	5.6 x 5.0	C0G - 6,800pF - 0.027μF X7R - 0.27 - 2.2μF	Bulk cassette packaging available     See KEMET F3067 for QPL information
2225/5664	5.6 x 6.3	C0G - 4,700pF033µF X7R - 0.047 - 2.2µF Z5U - 0.33 - 2.7µF	
Open-Mode	0805/2.0 x 1.25 1206/3.2 x 1.6 1210/3.2 x 2.5 1812/4.5 x 3.2	X7R - 0.01μF - 0.68μF X7R - 0.018 - 4.7μF X7R - 0.068 - 6.8μF X7R - 0.47μF - 1.0μF	0805, 1206, 1210, 1812 Chip Sizes     16, 25, 50, 100, 200 Volts     X7R Dielectric     AEC-Q200 Qualified
1632 Array (4 elements)	3.2 x 1.6	C0G - 10pF - 470pF X7R - 330pF - 0.1µF	6.3, 10, 16, 25, 50, 100 and 200 volts     COG/NP0, X7R Dielectrics     Tape and reel packaging available
Floating Electrode Design (FE-CAP)	0402/1.0 x 0.5 0603/1.6 x 0.8 0805/2.0 x 1.25 1206/3.2 x 1.6 1210/3.2 x 2.5 1812/4.5 x 3.2	X7R - 0.15 - 1.0nF X7R - 0.18 - 22nF X7R - 0.18 - 56nF X7R - 1.0 - 120nF X7R - 2.2 - 220nF X7R - 6.8 - 220nF	<ul> <li>Floating Electrode Design</li> <li>0402, 0603, 0805, 1206, 1210, 1812</li> <li>Chip Sizes</li> <li>6.3, 10, 16, 25, 50, 100, 200, 250 volts</li> <li>X7R dielectric</li> <li>AEC-Q200 Qualified</li> </ul>
High Voltage 0805 - 2225	See above	C0G - 1.0pF01μF X7R - 10pF22μF	High Voltage - 500 – 3000 VDC     Ceramic Chip (+125°C)     Commercial, RoHS Compliant
Tip & Ring 0805 - 2225	See above	X7R - 1,000pF - 1.2μF	<ul><li>250 Volts</li><li>Operating Temperature -55° to +125°C</li><li>RoHS Compliant</li></ul>



#### **Aluminum Surface Mount**

# Catalog F3102



Series	Case Size	Dimensions D x H (inches)	Cap Range	Characteristics
	V/7343-20	7.3 x 4.3 x 1.9	8.2 - 150µF	Organic polymer for counterelectrode material
A700	D/7343-31	7.3 x 4.3 x 2.8	56.0 - 220μF	Pb Free  Extremely low-ESR, 7mΩ–28mΩ  2 - 10 Volts
	X/7343-43	7.3 x 4.3 x 4.0	100.0 - 470μF	±20% Capacitance tolerance     Tape & reel packaging

#### Tantalum Herm Seal • Polar • T110/T140 Series

#### Catalog F3100



Case Size	Dimensions D x L (inches)		Cap Range	Characteristics
	Uninsulated	Insulated		
Α	.125 x .250	.135 x .286	.0047 - 12µF	• 6 - 125 Volts
В	.175 x .438	.185 x .474	.39 - 100µF	• ±20%; ±10%; ±5% Cap tolerance
С	.279 x .650	.289 x .686	2.7 - 470µF	Tape & reel packaging available
D	.341 x .750	.351 x .786	8.2 - 1200µF	Available RoHS Compliant

# Tantalum Herm Seal • Polar • T2XX Series • (CSR/CSS Styles) Catalog F3100



Case Size	<b>Dimensions</b> D x L (inches)		Cap Range	Characteristics
	Uninsulated	Insulated		
Α	.125 x .250	.135 x .286	.0047 - 12μF	• 6 - 100 Volts
В	.175 x .438	.185 x .474	.39 - 100µF	• ±20%; ±10%; ±5% Cap tolerance • Tape & reel packaging available
С	.279 x .650	.289 x .686	2.7 - 470µF	<ul> <li>MIL-PRF-39003/01/03/04/06/09/10</li> <li>100% Surge Current Test Available</li> </ul>
D	.341 x .750	.351 x .786	8.2 - 1000µF	1 10070 Guige Guirent Test Available

# Tantalum Herm Seal • Miniature • T222 Series (CSR09) Catalog F3100



Case Size	Case Size Dimensions D x L (inches)		Cap Range	Characteristics
	Uninsulated	Insulated		
А	.085 x .245	.090 x .250	.047 - 2.7μF	• 6 - 75 Volts • ±20%; ±10%; ±5% Cap tolerance
В	.127 x .375	.138 x .390	.22 - 18µF	MIL-PRF-39003/02 approved     100% Surge Current Test Available     See KEMET F3067 for QPL information

# Tantalum Molded • Axial • T32X Series (CX01 & CX05) Catalog F3100



Case Size	<b>Dimensions</b> D x L X W (inches)	Cap Range	Characteristics
Α	.095 x .260 x .020	.10 - 10µF	• 2 - 50 Volts
В	.110 x .290 x .020	.33 - 33µF	• ±20%; ±10%; ±5% Cap tolerance • Tape & reel packaging available
С	.180 x .345 x .020	1.2 - 68µF	• MIL-PRF-49137/1 & 5
D	.180 x .420 x .020	2.7 - 68µF	(CX01 & CX05) approved  • Miniature - polar type
E	.280 x .530 x .025	5.6 - 220μF	See KEMET F3067 for QPL information
F	.300 x .710 x .025	12.0 - 330µF	Available RoHS Compliant

#### Tantalum Molded • Radial • T330 Series

## Catalog F3100



Case Size	Dimensions H x W X T (inches)	Cap Range	Characteristics
Α	.345 x .230 x .105	.10 - 22µF	• 6 - 50 Volts
В	.225 x .285 x .170	.10 - 22µF	• ±20%; ±10%; ±5% Cap tolerance
С	.325 x .325 x .170	2.7 - 68µF	Tape & reel packaging available
D	.375 x .600 x .195	6.8 - 220µF	A - C case only

# Tantalum Molded • Radial • T340 Series

#### Catalog F3100



Case Size	<b>Dimensions</b> H x W X T (inches)	Cap Range	Characteristics
Α	.287 x .185 x .165	.10 - 15µF	
В	.327 x 283 x .157	.39 - 47µF	• 3 - 50 Volts
С	.413 x .287 x .169	2.7 - 100µF	±20%; ±10%; ±5% Cap tolerance     Tape & reel packaging available
D	.413 x .484 x .287	6.8 - 220µF	A - D case only
E	.413 x .484 x .484	22.0 - 330µF	Available RoHS Compliant
F	.413 x .484 x .287	6.8 - 220µF	'

#### **Tantalum Dipped • Radial • T35X Series**

# Catalog F3100



Case Size	<b>Dimensions</b> D x H (inches)	Cap Range	Characteristics
Α	.175 x .280400	.10 - 10μF	
В	.175 x .300410	.39 - 15µF	• 3 - 50 Volts
С	.196 x .330440	1.8 - 22µF	• ±20%; ±10%; ±5% Cap tolerance
D	.196 x .340450	1.2 - 33µF	Tape & reel packaging available     Six lead configurations available
E	.216 x .350460	1.5 - 47µF	• .10; .20; .25; and .125 lead
F	.236 x .390500	2.7 - 68µF	spacing available
G	.250 x .400510	3.9 - 100μF	Available RoHS Compliant
Н	.300 x .400520	5.6 - 150μF	
J	.330 x .500580	6.8 - 220µF	Note: "H" dimension is the range for
K	.350 x .530630	10.0 - 330μF	all T35X Series. For specific "H"
L	.350 x .630730	15.0 - 470µF	dimensions, refer to catalog F-3100
M	.400 x .670760	22.0 - 680µF	

# Tantalum Dipped • Radial • T363/T369 Series (CX02 & CX09) Catalog F3100



	Case Size	<b>Dimensions</b> D x H (inches)	Cap Range	Characteristics
	Α	.175 x .350	.10 - 6.8μF	• 6 - 50 Volts
	В	.250 x .450	1.5 - 68µF	• ±20%; ±10%; ±5% Cap tolerance • Tape & reel packaging available
	С	.350 x .610	6.8 - 150µF	MIL-PRF-49137 (CX02/CX12)     approved (CX12 available A & B case)
ſ	D	.400 x .740	22.0 - 330µF	See KEMET F3067 for QPL information

# **Tantalum Dipped • Radial • T368 Series**



Case Size	<b>Dimensions</b> T x W X H (inches)	Cap Range	Characteristics
С	.250 x .400 x.420	5.6 - 150µF	• 6 - 50 Volts
D	.250 x .460 x .520	18.0 - 330µF	±20%; ±10%; ±5% Cap tolerance     Tape & reel packaging available



#### Tantalum Molded • Radial • T37X Series • (CX06)

#### Catalog F3100



Case Size	<b>Dimensions</b> H x W X T (inches)	Cap Range	Characteristics
С	.225 x .185 x .075	.68 - 15µF	• 3 - 35 Volts
D	.290 x .220 x .110	2.2 - 47µF	• ±20%; ±10%; ±5% Cap tolerance • Tape & reel packaging available
E	.310 x .230 x .130	6.8 - 68µF	D - E case only • MIL-PRF-49137/6 (CX06) approved
F	.475 x .375 x .150	10.0 - 220µF	See KEMET F3067 for QPL information

#### Tantalum Dipped • Radial • T396/T398 Series

#### Catalog F3100



Case Size	Dimensions W x T x H (inches)	Cap Range	Characteristics
	TT X T X TT (mentes)		
Α	.280 x .190 x .310/.355	.10 - 10µF	
В	.280 x .190 x .320/.365	.47 - 15µF	2. 50 Volto
С	.280 x .200 x .360/.390	2.2 - 22µF	• 3 - 50 Volts • ±20%; ±10% Capacitance
D	.280 x .200 x .370/.390	3.3 - 33µF	tolerance
E	.280 x .230 x .380/.415	1.5 - 47µF	Tape & reel packaging available
F	.280 x .240 x .410/.430	3.3 - 68µF	Three lead design, fail-safe insertion
G	.280 x .250 x .420/.440	4.7 - 100μF	Available RoHS Compliant
Н	.280 x .270 x .420/.440	22.0 - 150μF	
J	.300 x .300 x .460/.480	6.8 - 220μF	
K	.340 x .340 x .500/.500	10.0 - 330μF	Note: "H" dimension is for both
L	.340 x .340 x .560/.580	15.0 - 470µF	T396/T398
M	.360 x .360 x .620/.620	22.0 - 680µF	

## **Tantalum High Reliability • GR500 Series**

## Catalog F2956

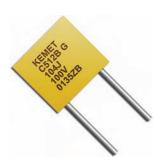
For GR500 High Reliability specific information, refer to catalog F2956. See T2XX information above for case size dimensions.

# **Ceramic Molded • High Reliability**

## Catalog F3054

Mil-PRF-123 (CKS Style) and GR900 specifications are included in the sections above. For detailed information for High Reliability products, refer to catalog F3054.

# Ceramic Molded • Radial • (CK, CKR, CC, CCR, Styles) Catalog F3101



Case Size	Dimensions H x L x W (inches)	Cap Range	Characteristics
C052/56	.190 x .190 x .090	1.0pF10µF	• 50, 100 & 200 Volts • C0G/NP0 & X7R dielectrics
C062/66	.290 x .290 x .090	360pF - 1.0μF	• ±0.1pF; ±0.25pF; ±0.5pF; ±1%; ±2%; ±5%; ±10%; ±20% Capacitance tolerances
C512	.480 x .480 x .140	2200pF - 2.2µF	Tape & reel packaging available  MIL-C-11015; MIL-PRF-39014;  MIL-PRF-20; & MIL-PRF-123 approved
C522	.480 x .480 x .240	3900pF - 3.3µF	GR900 High Reliability available     See KEMET F3067 for QPL information

#### Ceramic Molded • Axial • (CK, CKR, CC, CCR Styles) Catalog F3101



Case Size	Dimensions L x D (inches)	Cap Range	Characteristics
C114	.160 x .090	1.0pF010µF	• 50, 100 & 200 Volts • C0G/NP0 & X7R dielectrics
C124	.250 x .090	82pF047µF	• ±0.1pF; ±0.25pF; ±0.5pF; ±1%; ±2%; ±5%; ±10%; ±20%
C192	.390 x .140	150pF27μF	Capacitance tolerances available
C202	.500 x .250	820pF - 1.0μF	Tape & reel packaging available     MIL-C-11015; MIL-PRF-39014;
C222	.690 x .350	3900pF - 3.3μF	MIL-PRF-20 approved • See KEMET F3067 for QPL information

## Ceramic Conformally Coated • Radial • (Golden Max)

# Catalog F3101



Case Size	Dimensions L x H x T (inches)	Cap Range	Characteristics
C315	.150 x .210 x .100	1.0pF10μF	
C317	.150 x .230 x .100	1.0pF10μF	• 50, 100, 200, 500, 1000, 1500, 2000, 2500, 3000 Volts
C320	.200 x .260 x .125	1.0pF68μF	C0G/NP0; X7R & Z5U dielectrics
C322	.200 x .260 x .125	1.0pF68µF	• ±0.5pF; ±1%; ±2%; ±5%; ±10%; ±20% & -20/+80% Capacitance
C323	.200 x .320 x .125	1.0pF68µF	tolerances available  • Several lead configurations available
C330	.300 x .360 x .150	10pF - 2.2μF	High voltage with standard lead spacing
C333	.300 x .390 x .150	10pF - 2.2μF	available • Various lead spacings available
C340	.400 x .460 x .150	47pF - 4.7μF	Tape & reel packaging available (except no reeling C350 size)
C350	.500 x .560 x .200	100pF - 6.8µF	(choopt no recining 5000 size)

# **Ceramic Conformally Coated • Axial • (Aximax)**



Case Size	Dimensions L x D (inches)	Cap Range	Characteristics
C410	.170 x .100	1.0pF22μF	50.0.400.1/. //
C412	.170 x .120	1200pF33µF	50 & 100 Volts     COG/NP0; X7R & Z5U dielectrics
C420	.260 x .100	560pF47μF	• ±5%; ±10%; ±20% & -20/+80%
C430	.290 x .150	1800pF - 1.0μF	Capacitance tolerances available
C440	.400 x .150	5600pF - 2.2µF	Tape & reel packaging available



# Ceramic Conformally Coated • Radial • High Voltage Catalog F3101



Case Size	Dimensions L x H x T (inches)	Cap Range	Characteristics
C617	.250 X .220 X .200	1.0 pF082µF	
C622/3	.320 x .280 x .250	1.0pF18μF	
C627/8	.370 x .300 x .250	1.0pF22μF	F00 4000 4500 0000 0500 0 0000
C630/1	.450 x .220 x .200	10pF22μF	• 500, 1000, 1500, 2000, 2500 & 3000 Volts available
C637/8	.470 x .400 x .270	10pF56μF	High voltage with lead spacing per MIL-
C640/1	.550 x .280 x .250	47pF39μF	PRF-49467 available
C642/3	.500 x 560 x .200	100pF82µF	• ±5%; ±10%; ±20%; 0/+100% & -20/+80% Capacitance tolerances available
C647/8	.570 x .500 x .270	47pF - 1.2μF	Capacitanico tolorances avallable
C657/8	.670 x .600 x .270	150pF - 1.8µF	
C667/8	.770 x .720 x .270	270 pF - 2.7μF	

# Ceramic High Temperature/High Voltage



Style/Case Size	Voltage	Cap Range	Characteristics	
HT05 - HT16 HP05 - HP16	100 & 200	C0G – 15pF10μF X7R – 1000pF - 1.0μF	Ceramic High Temperature (+200°C)     Industrial, down hole, harsh environments     Axial/Radial     Conformal Coated (HP) available	
HV10 - HV16	500 - 4000	COG – 12pF015μF X7R – 270pF27μF	Ceramic High Voltage - Radial     High temperature (+200°C)     Industrial, down hole, harsh environments	
SCR/SRR/ SCA/SRA	50 - 200	C0G – 1.0pF12μF X7R – 100pF - 6.8μF	Ceramic Cased High Temperature (+125°C)     Axial/Radial	
ACR/ARR/ ACA/ARA	50 - 100	C0G – 1.0pF12μF X7R – 100pF - 3.3μF	Ceramic Cased High Temperature (+200°C)     Axial/Radial	
TCR/TRR/ TCA/TRA	50 - 100	C0G – 1.0pF12µF X7R – 100pF - 3.3µF	Ceramic Cased High Temperature (+260°C)     Axial/Radial	
VCR/VRR	500 - 5000	C0G – 10pF056μF X7R – 330pF - 1.2μF	High Voltage - Radial     Ceramic Cased High Temperature (+200°C)	
HV20 - HV36	500 - 10,000	C0G – 10pF33μF X7R – 150pF - 5.6μF	High Voltage ( 125°C X7R, C0G) - Radial     Ceramic Conformal Coated	
HV60 - HV66	600 - 5000	C0G – 12pF068µF X7R – 270pF47µF	High Voltage     Ceramic Conformal Coated (+125°C)     Mil-PRF-49467 Equivalent	
HS20 - HS36	500 - 10,000	C0G – 10pF18μF X7R – 220pF - 2.2μF	High Voltage - Space Quality     Ceramic Conformal Coated (+125°C)	
1515 - 6560	500 - 5000	C0G – 12pF10μF X7R – 270pF - 2.2μF	High Voltage - Ceramic Chip (+125°C)     Military Equivalent MIL-PRF-49467	
0805 - 2225	500 - 3000	C0G – 1.0pF01µF X7R – 10pF22µF	High Voltage - Commercial, RoHS Compliant     Ceramic Chip (+125°C)	
SM20 - SM36	500 - 10,000	C0G – 10pF33µF X7R – 150pF - 5.6µF	High Voltage     Leaded Ceramic Chip (+125°C)	
D30 - D120	3000 - 50,000	C0G – 1.2pF - 236pF X7R – 10pF - 7400pF X5U – 80pF - 17,300pF	High Voltage     Disc Ceramic Chip (+125°C C0G/X7R; +85°C X5U)	
2X - 6X	5000 - 20,000	COG – 1.2pF - 141pF X7R – 37pF - 4400pF X5U – 80pF - 10,400pF	High Voltage     Multiple Stacks Disc Ceramic Chip     (+125°C C0G/X7R;+85°C X5U)	

# **Surface Mount Inductors**

Catalog F3115



Application	Construction	Series	Sizes	Inductance nH	Current Rating mA	Characteristics
Filtering on	Wire Wound	L-SWS	0806	1.0 - 100	80 - 610	High Q, high inductance values     narrow tolerance achieved     with bottom surface electrodes
Signal Line	Multi-layer	L-SMS	0402 - 1206	0.047 - 33	1 - 300	High Q, low inductance values     Small case sizes
		L-PWS	0805 - 1207	1.0 - 1000	15 - 1075	<ul> <li>Available with super low DC resistance and high current ratings</li> </ul>
Noice Reduction on Power	Wire Wound	L-PWI	0805 - 1007	1.0 - 680	45 - 775	High current
Supply Line		L-PWF	0603	1.0 - 47	35 - 230	High efficiency design with bottom suface electrodes
	Multi-layer	L-PMS	0603, 0805	0.10 - 10	50 - 500	Multi-layer block structure yields higher reliability
	Wire Wound	L-DWL	0805	1.0 - 47	100 - 620	Low profile, high current
		L-DWF	0603	1.0 - 47	50 - 290	High efficiency design with bottom surface electrodes
Power Inductor for		L-DWS	0805 - 1007	1.0 - 1000	25 - 1200	Low DC resistance
Switching Regulator		L-DWI	0805 - 1210	1.0 - 100	65 - 1440	High Current
		L-DWD	3010 - 10050	0.9 - 220	220 - 9000	High Current, low profile, original magnetically shielded, shock-proof structure
	Multi-layer	L-DMI	1008, 1206	1.0 - 4.7	700 - 1300	Low profile, Low DC resistance
Radio Frequency Inductor	Multi-layer	L-RMS	0201 - 0805	1.0 - 470	40 - 300	Designed for application above 100MHz, low inductance values, excellent Q and SRF properties

#### **Ferrite Beads**

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Application	Construction	Series	Sizes	Impedance Ohms	Current Rating mA	Characteristics
EMI Suppression (Ferrite Beads)	Wire Wound	Z-PWS	0603 - 1806	8 - 100	2000 - 6000	<ul> <li>High current, several material combinations available to target specific frequency ranges</li> </ul>
		Z-PWZ	0603 - 1812	30 - 2000	400 - 4000	High current and impedance
	Multi-layer	z-sms	0201 - 0805	10 - 2500	100 - 1500	Wide range of material types and broad impedance range targeted for signal lines
		Z-PMS	0402 - 0805	33 - 390	1000 - 4000	For power lines, low DC resistance



EMI Metall	ized Pape	r (MP)			Catalog F3294
	Series	Class	Cap Range	Rated Voltage	Characteristics
O. S.	PME271E	X1	0.01 - 0.22 μF	300 VAC	Test voltage (factory test) 2150 VDC Climatic category 40/110/56/B Max. dU/dt 400-1200 V/µs Lead spacing 15.2, 20.3, 22.5, 25.4mm Approvals ENEC, EN132400, UL 1283
PACE TO THE PACE T	PME278	X1	0.001 - 0.15 μF	440 VAC	Test voltage (factory test) 2700 VDC Climatic category 40/110/56/B  Max. dU/dt 600-2000 V/µs Lead spacing 10.2, 15.2, 20.3, 22.5, 25.4mm Approvals ENEC, EN132400
PARTING BERNELL BY STATE OF THE	PME271M	X2	0.001 - 0.6 μF	275 VAC	Test voltage (factory test) 2150 VDC Climatic category 40/110/56/B Max. dU/dt 400-1200 V/µs Lead spacing 10.2, 15.2, 20.3, 22.5, 25.4mm Approvals ENEC, EN132400, UL 1283, UL 1414, CSA No.1
COLUMN PART SEA NO. E	PME264	X2	0.001 - 0.1 μF	660 VAC	Test voltage (factory test) 3000 VDC Climatic category 40/085/56/B  Max. dU/dt 600-2000 V/µs Lead spacing 15.2, 20.3, 25.4mm Approvals ENEC, EN132400, UL 1283
PM2 2074 40710368	PMZ2074	X2	C1: 150 - 220 μF C2: 0.033 - 0.1 μF	275 VAC	Double capacitor, two capacitors in series     Test voltage (factory test) 2150 VDC     Climatic category 40/110/56/B     Lead spacing 20.3mm     Approvals ENEC, EN132400
M. W. O. S.	PME295	Y1	0.47 - 4.7 μF	440 VAC (ENEC) 480 VAC (UL)	Test voltage (factory test) 4000 VAC Climatic category 40/115/56/B  Max. dU/dt 2000 V/µs Lead spacing 15.0mm Approvals ENEC, EN132400 UL 1283, UL 1414, cUL No.8, cUL No. 1
PUDITION BEAUTY B	PME271Y	Y2	0.001 - 0.1 μF	250 VAC	Test voltage (factory test) 3000 VDC     Climatic category 40/100/56/B     Max. dU/dt 400-2000 V/µs     Lead spacing 10.2, 15.2, 20.3, 25.4mm     Approvals ENEC, EN132400, UL 1283, CSA No.8
POLICE Y E	PME271Y (A-E)	Y2	0.001 - 0.15 μF	300 VAC	Test voltage (factory test) 3000 VDC Climatic category 40/115/56/B  Max. dU/dt 400-2000 V/µs Lead spacing 10.2, 15.2, 20.3, 25.4mm Approvals ENEC, EN132400, UL 1283, CSA No.8
11000	PZB300	X2 + 2×Y2	X2: 0.1 μF, 0.15 μF Y2: 0.0022 μF, 0.0033 μF, 0.0047 μF	275 VAC	Delta capacitor, classes X2 and Y2 Test voltage (factory test) X2: 2150 VDC; Y2: 3000VDC Climatic category 40/100/56/B Max. dU/dt X2: 600 V/µs; Y2: 1000 V/µs Lead spacing 20mm Approvals ENEC, EN132400, UL 1283, CSA No.8
OCOCO	PME261	Gen. Purpose	0.0082 - 1.0 μF 0.001 - 0.15 μF 0.001 - 0.1 μF	220 VAC, 400 VDC 300 VAC, 630 VDC 500 VAC, 1000VDC	Test voltage (factory test) 800 VDC/1250 VDC/2000 VDC     Climatic category 40/070/56     Max. dU/dt 220-2000 V/µs     Lead spacing 10.2, 15.2, 20.3, 25.4mm
<b>尼</b> 亚	SMP253	Y2	0.001 - 0.0047 µF	250 VAC	• SMD, size 5045 • Test voltage (factory test) 3000 VDC • Climatic category 40/100/56/B • Max. dU/dt 2000 V/µs • Approvals ENEC, EN132400, UL 1414, CSA No.1"

# EMI Metallized Polypropylene (MKP) and Metallized Polyester (MKT) Catalog F3294

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	Series	Class	Cap Range	Rated Voltage	Characteristics
<b>國</b> 2 <b>國</b> 2	PHE841 MKP	X1	0.01 - 2.2 μF	330 VAC	<ul> <li>Test voltage (factory test) 3000 VDC</li> <li>Climatic category 40/100/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, CSA No.8, CSA No. 1</li> </ul>
CONTROL OF THE PARTY OF T	PHE844 MKP	X1	0.1 - 2.2 μF	440 VAC (ENEC) 480 VAC (UL)	<ul> <li>Test voltage (factory test) 3000 VDC</li> <li>Climatic category 40/105/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, cUL No.8, cUL No. 1</li> </ul>
<b>2</b> •	PHE845 MKP	X1	0.01-1.0 μF	760 VAC (ENEC) 600 VAC (UL)	<ul> <li>Test voltage (factory test) 4250 VDC</li> <li>Climatic category 40/105/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, cUL No.8</li> </ul>
開發	PHE820M MKT	X2	0.01 - 2.2 μF	275 VAC	<ul> <li>Test voltage (factory test) 2150 VDC</li> <li>Climatic category 40/100/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, CSA No.8, CSA No. 1</li> </ul>
SETS PRESENT STORY OF SETS PRESENT OF SETS PRE	PHE820E MKT	X2	0.01 - 2.2 μF	300 VAC	<ul> <li>Test voltage (factory test) 2150 VDC</li> <li>Climatic category 40/100/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, CSA No.8, CSA No. 1</li> </ul>
POLICIAN HE BOOK SOLICIAN SALI 230 VAC	PHE840E MKP	X2	0.01 - 10.0 μF	300 VAC	<ul> <li>Test voltage (factory test) 2200 VDC</li> <li>Climatic category 55/105/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, cUL No.8, cUL No. 1</li> </ul>
THE STATE OF	PHE840M MKP	X2	0.01 - 10.0 μF	275 VAC (ENEC) 280 VAC (UL)	<ul> <li>Test voltage (factory test) 2200 VDC</li> <li>Climatic category 55/105/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, cUL No.8, cUL No. 1</li> </ul>
E.S. Marie was	PHZ9004 MKP		3 x 1.0 μF	300 VAC	Low profile triple capacitor for X2 three-phase applications     Test voltage (factory test) 2200 VDC     Climatic category 55/105/56     Max. dU/dt 100 V/µs     Lead spacing 27.5, 37.5mm
TO THE PARTY OF TH	PHE850 MKP	Y2	0.01-1.0 μF	300 VAC (ENEC) 480 VAC (UL)	<ul> <li>Test voltage (factory test) 5000 VDC, 2500 VAC</li> <li>Climatic category 55/110/56/B</li> <li>Max. dU/dt 100 V/µs</li> <li>Lead spacing 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC, EN132400, UL 1283, UL 1414, cUL No.8, cUL No. 1</li> </ul>

# **EMI RC Units with Integrated Resistor, Metallized Paper (MP)**

			•		
	Series	Class	Cap Range	Rated Voltage	Characteristics
223-	PMR205		0.1 - 1.0 μF R: 22 - 680 Ω	125 VAC 250 VDC	Test voltage (factory test) 375 VDC Climatic category 40/085/56/B Lead spacing 15.2, 20.3, 25.4mm
<b>E</b>	PMR209	X2	0.047 - 0.47 μF R: 22 - 470 Ω	250 VAC 630 VDC	Test voltage (factory test) 1800 VDC Climatic category 40/085/56/B Lead spacing 15.2, 20.3, 25.4mm Approvals ENEC, EN132400, UL 1283
2000	PMR210	X1	0.022 - 0.1 μF R: 100 Ω	250 VAC	Test voltage (factory test) 3000 VDC, 2000 VAC Climatic category 40/085/56/B Lead spacing 15.2, 20.3, 25.4mm Approvals ENEC, EN132400, UL 1414
PATENTAL PROPERTY OF THE PATENTY OF THE PATENTAL PROPERTY OF THE PATENTY OF THE PATENTY OF THE P	PMZ2035	X1	0.1 μF R: 150 Ω	440 VAC	Test voltage (factory test) 1800 VDC Climatic category 40/085/56/B Lead spacing 25.4mm Approvals ENEC, EN132400



# Pulse Capacitors, Polypropylene Film

#### Catalog F3294











	I			
Series	Dielectrics	Rated Voltage	Cap Range	Characteristics
PHE426	Single Metallized	100 VDC/63 VAC 250 VDC/160 VAC 300 VDC/160 VAC 400 VDC/220 VAC 450 VDC/220 VAC 630 VDC/250 VAC 1000 VDC/250 VAC 1600 VDC/650 VAC 2000 VDC/700 VAC	0.001 - 0.22 μF 0.001 - 27 μF 0.033 - 18 μF 0.001 - 10 μF 0.1 - 3.9 μF 0.001 - 5.6 μF 0.0027 - 3.3 μF 0.0047 - 0.047 μF 0.001 - 0.027 μF	<ul> <li>Climatic category 55/105/56/B</li> <li>Max. dU/dt 30-1500 V/µs</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
PHE429	Single Metallized	420 VDC/220 VAC 630 VDC/275 VAC	0.1 - 0.47 μF 0.047 - 0.15 μF	Climatic category 55/110/56  Max. dU/dt 150-250 V/µs  Lead spacing 15mm
PHE450	50 Double Double Metallized Double Move (2000 VDC/375/600 VAC 2000 VDC/700 VAC 2500 VDC/700 VAC 3000 VDC/1000 VAC 3000 VDC/1000 VAC 3000 VDC/1000 VAC		330 pF - 10 µF 330 pF - 5.6 µF 330 pF - 3.3 µF 390 pF - 2.2 µF 2.7 nF - 1.0 µF 1.0 nF - 0.68 µF 1 nF - 0.33 µF 1 nF - 0.22 µF	<ul> <li>Climatic category 55/105/56/B</li> <li>Max. dU/dt 200-2500 V/µs</li> <li>Lead spacing 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
PHE448	Film/Foil	1600 VDC/650 VAC 2000 VDC/700 VAC	1.5 - 22 nF 0.1 - 3.3 nF	<ul> <li>Climatic category 55/105/56</li> <li>Max. dU/dt 15000-25000 V/µs</li> <li>Lead spacing 15mm</li> </ul>
PFR	Film/Foil	63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/220 VAC 630 VDC/250 VAC 1000 VDC/250 VAC	100 - 22000 pF 100 - 10000 pF 100 - 6800 pF 100 - 6800 pF 100 - 4700 pF 100 - 680 pF	Climatic category 55/100/56  Max. dU/dt 1000 V/µs  Lead spacing 5mm

# **Coupling/Decoupling Capacitors, Polyester Film**

# Catalog F3294



Series	Dielectrics	Rated Voltage	Cap Range	Characteristics	J
ммк	Metallized	50 VDC/30 VAC 63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/220 VAC 1000 VDC/250 VAC	0.001 - 10.0 µF 0.001 - 82 µF 0.001 - 82 µF 0.001 - 39 µF 0.001 - 18 µF 0.001 - 6.8 µF 0.001 - 4.7 µF	<ul> <li>Climatic category 55/100/56</li> <li>Max. dU/dt 2-100 V/μs</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>	

# **Stable High Temp Capacitors, Metallized PPS Film**



Series	Dielectrics	Rated Voltage	Cap Range	Characteristics
SMR	Metallized	50 VDC/30 VAC 63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC	0.001 - 22 µF 0.001 - 22 µF 0.001 - 12 µF 0.001 - 3.9 µF 0.001 - 1.8 µF	<ul> <li>Climatic category 55/150/56</li> <li>Max. dU/dt 2-40 V/μs</li> <li>Lead spacing 5, 7.5, 10, 15, 22.5, 27.5mm</li> </ul>

# **SMD Film Capacitors**

# Catalog F3306

	•				
	Series	Rated Voltage	Cap Range	Size	Characteristics
225%	ММС	50 VDC/30 VAC 63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC	1 - 15000 nF 1 - 4700 nF 1 - 3300 nF 1 - 1000 nF 1 - 470 nF	2220 - 6560 2824 - 6560 2220 - 6560 2220 - 6560 2824 - 6560	<ul> <li>Metallized Polyester (PET)</li> <li>Climatic category 55/100/56</li> <li>Max. dU/dt 5-50 V/μs</li> </ul>
232 3.82	GMC	50 VDC/30 VAC 63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/300 VAC	1 - 5600 nF 1 - 4700 nF 1 - 2200 nF 1 - 680 nF 1 - 330 nF 22 - 150 nF	2220 - 6560 2824 - 6560 2220 - 6560 2220 - 6560 2824 - 5045 4036 - 6560	<ul> <li>Metallized Polyethylene Naphthalate (PEN)</li> <li>Climatic category 55/125/56</li> <li>Max. dU/dt 5-50 V/μs</li> </ul>
ezas raps	GMW	63 VDC/40 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/220 VAC	1 - 470 nF 1 - 220 nF 1 - 68 nF 1 - 15 nF 1 - 6.8 nF	2220	Metallized Polyethylene Naphthalate (PEN)     Naked Capacitor     Climatic category 55/125/21     Max. dU/dt 20-50 V/µs
BH	GPC	63 VDC/40 VAC 100 VDC/63 VAC 160 VDC/100 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/300 VAC 1000 VDC/350 VAC	0.47 - 1000 nF 0.47 - 1000 nF 0.47 - 680 nF 0.47 - 470 nF 0.47 - 220 nF 0.47 - 150 nF 0.47 - 68 nF	2824 - 6560	<ul> <li>Double sided metallized film as electrode</li> <li>Plain Polyethylene Naphthalate (PEN) as dielectric</li> <li>Climatic category 55/125/56</li> <li>Max. dU/dt 100-2200 V/μs</li> </ul>
103 103 105 KZS	SMC	50 VDC/30 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC	1 - 3300 nF 1 - 1500 nF 1 - 470 nF 1 - 220 nF	2824 - 6560	Metallized Polyphenylene Sulphide (PPS)     Climatic category 55/125/56     Max. dU/dt 2-40 V/µs
1984	SMW	50 VDC/30 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC	1 - 560 nF 1 - 180 nF 1 - 68 nF 1 - 22 nF	2220 - 2824	Metallized Polyphenylene Sulphide (PPS)     Naked Capacitor     Climatic category 55/125/56     Max. dU/dt 8-20 V/µs
ABA# ABA#	SPC	100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/250 VAC 630 VDC/350 VAC	0.47 - 680 nF 0.47 - 330 nF 0.47 - 150 nF 0.47 - 100 nF	2824 - 6560	Double sided metallized film as electrode     Plain Polyphenylene Sulphide (PPS) as dielectric     Climatic category 55/125/56     Max. dU/dt 150-2000 V/µs
RI	SMP253	250 VAC	1 - 4.7 nF	5045	EMI Capacitor, Class Y2     Metallized paper (MP)     Climatic category 40/100/56/B     Max. dU/dt 2000 V/µs

# **Dual-In-Line Film Capacitors**

Series	Rated Voltage	Cap Range	Туре	Characteristics
MDC	50 VDC/30 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/220 VAC	0.033 - 15 μF 0.033 - 10 μF 0.033 - 1.5 μF 0.033 - 0.47 μF 0.033 - 0.18 μF	SMD	Metallized Polyester (PET)     Climatic category 55/125/56     Lead spacing 10mm, 15mm
MDK	50 VDC/30 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/220 VAC	0.033 - 15 μF 0.033 - 10 μF 0.033 - 1.5 μF 0.033 - 0.47 μF 0.033 - 0.18 μF	Through-hole	Metallized Polyester (PET)     Climatic category 55/125/56     Lead spacing 10mm, 15mm
MDS	50 VDC/30 VAC 100 VDC/63 VAC 250 VDC/160 VAC 400 VDC/200 VAC 630 VDC/220 VAC	0.033 - 6.8 μF 0.033 - 5.6 μF 0.033 - 0.68 μF 0.033 - 0.33 μF 0.033 - 0.10 μF	SMD, low profile	Metallized Polyester (PET)     Climatic category 55/125/56     Lead spacing 10mm, 15mm





# **DC Film - Polyester Capacitors, Axial Style**

#### Catalog F3301

Series	Dielectric/ Electrodes	Rated Voltage	Cap Range	Characteristics
A50	Polyester Met- allized film	50VDC/30VAC 63VDC/40VAC 100VDC/63VAC 250VDC/160VAC 400VDC/200VAC 630VDC/220VAC 1000VDC/250VAC	0.47 - 10.0μF 0.33 - 10.0μF 0.10 - 10.0μF 0.047 - 10.0μF 0.010 - 3.3μF 1000pF - 1.0μF 1000pF - 0.47μF	<ul> <li>D.C. multipurpose applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 1.0 to 50 V/µs</li> <li>Length (L) L = 11 to 33mm</li> </ul>

#### DC Film - Polyester Capacitors, Radial Style

#### Catalog F3301



Series	Dielectric/ Electrodes	Rated Voltage	Cap Range	Characteristics
R82	Polyester Met- allized film	50VDC/30VAC 63VDC/40VAC 100VDC/63VAC 250VDC/140VAC (R.S.) 250VDC/160VAC 400VDC/160VAC (R.S.) 400VDC/200VAC	2.2 - 4.7µF 0.10 - 1.5µF 1000pF - 1.0µF 0.022 - 0.22µF 6800pF - 0.15µF 6800pF - 0.068µF 1000pF - 0.047µF	<ul> <li>D.C. multipurpose applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 25 to 400V/μs</li> <li>Pitch (p) p = 5 mm</li> </ul>
RSB	Polyester Met- allized film	50VDC/30VAC 63VDC/40VAC 100VDC/63VAC 250VDC/160VAC 400VDC/200VAC 500VDC/220VAC 630VDC/220VAC	2.2µF 0.10 - 1.5µF 4700pF - 0.47µF 1000pF - 0.15µF 1000pF - 0.047µF 1000pF - 0.015µF 1000pF - 0.010µF	<ul> <li>High performances, High temperature,</li> <li>D.C. and pulse applications</li> <li>Climatic category (IEC 60068-1) 55/125/56</li> <li>Pulse rise time (dv/dt) 200 to 800V/µs</li> <li>Pitch (p) p = 5 mm</li> </ul>
R66	Polyester Met- allized film	50VDC/30VAC 63VDC/40VAC 100VDC/63VAC 250VDC/160VAC 400VDC/200VAC 630VDC/220VAC	0.68 - 4.7µF 0.33 - 3.3µF 0.068 - 1.5µF 0.022 - 0.33µF 6800pF - 0.15µF 1000pF - 0.047µF	<ul> <li>D.C. multipurpose applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 40 to 300V/μs</li> <li>Pitch (p) p = 7.5 mm</li> </ul>
R60	Polyester Met- allized film	50VDC/30VAC 63VDC/40VAC 100VDC/63VAC 160VDC/90VAC 250VDC/160VAC 400VDC/200VAC 630VDC/220VAC 1000VDC/250VAC	1.5 - 5.6µF 0.68 - 220µF 0.33 - 150µF 0.33 - 150µF 0.10 - 68µF 0.015 - 33µF 4700pF - 10µF 1000pF - 4.7µF	• D.C. multipurpose applications • Climatic category (IEC 60068-1) 55/105/56 • Pulse rise time (dv/dt) 0.8 to 200V/µs • Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm
JSP	Polyester Met- allized film	63VDC/40VAC 100VDC/63VAC 160VDC/90VAC 250VDC/160VAC	4.7 - 470μF 3.3 - 220μF 2.2 - 100μF 1.0 - 56μF	D.C. multipurpose applications Climatic category (IEC 60068-1) 55/105/56 Pulse rise time (dv/dt) 15 to 40V/µs Pitch (p) p = 22.5, 27.5, 37.5mm
JSN	Polyester Met- allized film	100VDC/63VAC 160VDC/90VAC 250VDC/160VAC	10 - 68μF 10 - 33μF 10 - 15μF	DC/DC and AC/DC converters applications Climatic category (IEC 60068-1) 55/125/56 Pulse rise time (dv/dt) 27 to 40V/µs Size from 60.80 to 60.160 (naked components)



(R.S.) = Reduced Sizes

#### **SMD Film Capacitors**

Series	Dielectric/ Electrodes	Rated Voltage	Size Code EIA	Cap Range	Characteristics
LDE*	PolyEthylene Naphtalate Metallized film	50VDC/40VAC 63VDC/40VAC 100VDC/63VAC 250VDC/120VAC 400VDC/160VAC** 630VDC/200VAC 1000VDC/250VAC	12.06 - 60.54 12.06 - 60.54 12.06 - 60.54 12.06 - 60.54 22.20 - 60.54 22.20 - 60.54 22.20 - 60.54	1000pF - 4.7µF 1000pF - 4.7µF 1000pF - 4.7µF 1000pF - 1.5µF 0.015µF - 0.47µF 1000 pF - 0.27µF 1000 pF - 0.1µF	<ul> <li>D.C. multipurpose applications</li> <li>Climatic category (IEC 60068-1) 55/125/56</li> <li>Pulse rise time (dv/dt) 100V/μs (Vr ≤ 630VDC)</li> <li>Pulse rise time (dv/dt) 300V/μs (Vr = 1000VDC)</li> </ul>
LDB	PolyPhenylene Sulfide Metallized film	16VDC 50VDC	12.06 - 12.10 12.06 - 18.12	0.012μF - 0.1μF 3300pF - 0.1μF	D.C. multipurpose applications Special tolerances 2% to 5% Climatic category (IEC 60068-1) 55/125/56

<sup>\*</sup> for Rated Voltage  $\geq$  250VDC available special version ITU & Telcordia compliant. \*\* 400VDC/230VAC for 30 minutes (occasionally).

## DC Film - Polypropylene Capacitors, Axial Style

#### Catalog F3301

Series Dielectric/ Electrodes		Rated Voltage	Cap Range	Characteristics
A70	A70 Polypropylene 250VDC/200VAC 0.01 Metallized film 400VDC/220VAC 680		0.022µF - 4.7µF 0.010µF - 3.3µF 6800pF - 1.5µF 1000pF - 0.68µF	Multipurpose applications     Climatic category (IEC 60068-1) 55/105/56     Pulse rise time (dv/dt) 1 to 30 V/μs     Length (L) L = 11 to 33mm
A72	A72 Polypropylene Film-foil 1500VDC/450VAC 4700pF - 0.010, 250VDC/125VAC 2200pF - 0.015, 400VDC/160VAC 47pF - 0.010µi 1000VDC/300VAC 0.015µF - 0.33µi 1000VDC/450VAC 3300pF - 0.10µi 1500VDC/450VAC 2200pF - 0.068µi 1500VDC/450VAC 200PF - 0.000VDC/450VAC 200PF - 0.		4700pF - 0.010µF 2200pF - 0.015µF 47pF - 0.010µF 0.015µF - 0.33µF 3300pF - 0.10µF 2200pF - 0.068µF 1000pF - 0.047µF	<ul> <li>High current applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 1800 to 27000V/μs</li> <li>Length (L) L = 11 to 33mm</li> </ul>

# DC Film - Polypropylene Capacitors, Radial Style

#### Catalog F3301



Series	Dielectric/Elec- trodes	Rated Voltage	Cap Range	Characteristics
R71	Polypropylene Metallized film	420VDC/220VAC 520VDC/250VAC 630VDC/275VAC 1000VDC/275VAC	0.010μF - 22μF 0.010μF - 22μF 0.010μF - 15μF 0.22μF - 10μF	P.F.C. (Power Factor Correction) application Climatic category (IEC 60068-1) 40/110/56 Pulse rise time (dv/dt) 60 to 400V/µs Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm
R73	Polypropylene Film-foil	100VDC/63VAC 160VDC/90VAC 250VDC/125VAC 400VDC/160VAC 630VDC/300VAC 1000VDC/400VAC 1250VDC/450VAC 1600VDC/450VAC 2000VDC/500VAC	0.047µF - 0.15µF 0.033µF - 0.10µF 0.015µF - 0.047µF 0.010µF - 0.047µF 0.010µF - 2.2µF 3300pF - 1.5µF 2200pF - 0.82µF 1000pF - 0.56µF 100pF - 0.22µF	• High current applications • Climatic category (IEC 60068-1) 55/105/56 • Pulse rise time (dv/dt) 2400 to 54000V/µs • Pitch (p) p = 15, 22.5, 27.5, 37.5mm
R74	Polypropylene Metallized film	250VAC/630VDC 400VAC/1300VDC 500VAC/1600VDC 600VAC/2000VDC (Min.) 700VAC/2000VDC 900VAC/2200VDC	0.010µF - 0.15µF 2200pF - 3.3µF 1000pF - 2.2µF 470pF - 0.018µF 470pF - 1.0µF 1000pF - 0.47µF	A.C. applications     Climatic category (IEC 60068-1) 55/105/56     Pulse rise time (dv/dt) 180 to 10000V/µs     Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm
R74 @ 125°C	Polypropylene Metallized film	500VAC/1600VDC 700VAC/2000VDC	1000pF - 0.10µF 680pF - 0.068µF	• A.C. applications • Climatic category (IEC 60068-1) 55/125/56 • Pulse rise time (dv/dt) 1200 to 9500V/µs • Pitch (p) p = 10, 15, 22.5mm
R75 H.P.	Polypropylene Metallized film	160VDC/70VAC (R.S.) 160VDC/90VAC 250VDC/140VAC (R.S.) 250VDC/160VAC 400VDC/200VAC (R.S.) 400VDC/220VAC 630VDC/220VAC (R.S.) 630VDC/250VAC 1000VDC/250VAC 1000VDC/400VAC 1250VDC/600VAC 1600VDC/650VAC 2000VDC/700VAC	0.10µF - 0.33µF 0.068µF - 33.0µF 0.068µF - 33.0µF 0.027µF - 33.0µF 0.027µF - 0.068µF 0.010µF - 15.0µF 0.010µF - 8.2µF 1000pF - 8.2µF 220 pF - 8200µF 8200pF - 2.2µF 3900pF - 1.5µF 1000pF - 1.0µF	<ul> <li>D.C. and Pulse applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 35 to 9500V/µs</li> <li>Pitch (p) p = 7.5, 10, 15, 22.5, 27.5 37.5mm</li> </ul>
R76	Double sided metallized Polypropylene film	250VDC/180VAC 400VDC/250VAC 630VDC/250VAC 630VDC/400VAC 1000VDC/400VAC 1000VDC/600VAC 1600VDC/650VAC 2000VDC/700VAC	6800pF - 15.0μF 2700pF - 8.2μF 680pF - 0.012μF 3900pF - 5.6μF 220pF - 3300pF 470pF - 2.2μF 3300pF - 1.2μF 100pF - 0.68μF	<ul> <li>D.C. and Pulse applications</li> <li>Climatic category (IEC 60068-1) 55/105/56</li> <li>Pulse rise time (dv/dt) 100 to 9500V/µs</li> <li>Pitch (p) p = 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> </ul>
R77	Double sided metallized Polypropylene film	250VAC/630VDC 300VAC/800VDC 400VAC/1000VDC 500VAC/1300VDC 700VAC/1600VDC 900VAC/2000VDC	0.027µF - 0.10µF 0.010µF - 0.10µF 5600pF - 0.10µF 1000pF - 0.10µF 1000pF - 0.027µF 1000pF - 0.018µF	• A.C. applications • Climatic category (IEC 60068-1) 55/105/56 • Pulse rise time (dv/dt) 900V/µs to 9500V/µs • Pitch (p) p = 15mm, 22.5mm, 27.5mm
R79	Polypropylene Metallized film	160VDC/70VAC 250VDC/160VAC 400VDC/200VAC 630VDC/220VAC	0.039μF - 0.22μF 0.012μF - 0.15μF 3900pF - 0.047μF 1000pF - 0.018μF	Multipurpose applications     Climatic category (IEC 60068-1) 55/105/56     Pulse rise time (dv/dt) 100V/μs to 600V/μs     Pitch (p) p = 5mm
				50 140 1 11 11

(Min.) = New Miniature version

(R.S.) = Reduced Sizes

**JSP** 

Polypropylene

Metallized film

• D.C. and A.C. pulse applications
• Climatic category (IEC 60068-1) 55/105/56
• Pulse rise time (dv/dt) 40V/µs to 250V/µs
• Pitch (p) p = 22.5mm, 27.5mm, 37.5mm

250VDC/160VAC

400VDC/200VAC

630VDC/220VAC

2.2μF - 56μF 1.5μF - 33μF 1.0μF - 22μF



# **DC Film - Interference Suppression**

#### Catalog F3301



Series	Dielectric/Elec- trodes/Class	Rated Voltage	Cap Range	Characteristics
R46	Polypropylene Metallized film X2 Class	275VAC/560VDC @ 110°C 275VAC/560VDC @ 110°C (Min.) 300VAC/630VDC @ 110°C 275VAC/560VDC @ 125°C 275VAC/560VAC @ 110°C R46(S)	0.010 - 10µF 0.033 - 10µF 0.010 - 10µF 0.010 - 1.0µF 0.010 - 10µF	• Interference suppression and across-the-line applications • Climatic category (IEC 60068-1) 40/110(125)/56 • Pulse rise time (dv/dt) 100 to 500 V/µs • Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm • Approvals ENEC IEC 60384-14, GB/T 14472* cULus (UL 1414, CSA C22.2 N°1-N°8, UL 1283)
R47	Polypropylene Metallized film X1 Class	440VAC/1000VDC	4700pF - 2.2μF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110/56</li> <li>Pulse rise time (dv/dt) 150 to 750 V/µs</li> <li>Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC IEC 60384-14, cULus (UL 1283, UL 1414)</li> </ul>
R47	Polypropylene Metallized film X2 Class	440VAC/1000VDC @ 110°C 520VAC/1000VDC @ 85°C	4700pF - 2.2μF 4700pF - 2.2μF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110(85)/56</li> <li>Pulse rise time (dv/dt) 150 to 750 V/µs</li> <li>Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC IEC 60384-14, cULus (UL 1283, UL 1414)</li> </ul>
R49	Polypropylene Metallized film X1 Class	310VAC/800VDC 330VAC/800VDC	0.010 - 2.2μF 0.047 - 6.8μF	Interference suppression and across-the-line applications Climatic category (IEC 60068-1) 40/110/56 Pulse rise time (dv/dt) 100 to 600 V/µs Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm Approvals ENEC IEC 60384-14, cULus (UL 1414, CSA C22.2 N°1-N°8, UL 1283)
R41	Polypropylene Metallized film Y2/X1 Class	300VAC/1000VDC	1000pF - 1.0μF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110/56</li> <li>Pulse rise time (dv/dt) 300 to 800 V/µs</li> <li>Pitch (p) p = 7.5, 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC IEC 60384-14, GB/T 14472 cULus (UL 1414, CSA C22.2 N°1-N°8, UL 1283)</li> </ul>

# DC Film - Interference Suppression - Capacitors with Discharge Resistor Catalog F3301



Series	Dielectric/Elec- trodes/Class	Rated Voltage	Cap Range	Characteristics	
R46+R	Polypropylene Metallized film X2 Class	275VAC/560 VDC 300VAC/630 VDC	0.22 - 10µF 0.22 - 10µF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110/56</li> <li>Pulse rise time (dv/dt) 100 to 200 V/µs</li> <li>Pitch (p) p = 22.5, 27.5, 37.5mm</li> <li>Discharge resistor 470kW to 10MW</li> <li>Approvals ENEC IEC 60384-14, cULus (UL 1283, CSA-C22.2 N°8</li> </ul>	
R49+R	Polypropylene Metallized film X1 Class	330VAC/800VDC	0.33µF/6.8µF	Interference suppression and across-the-line applications Climatic category (IEC 60068-1) 40/110/56 Pulse rise time (dv/dt) 100 V/µs to 200 V/µs Pitch (p) p = 27.5mm, 37.5mm Discharge resistor 470kW to 10MW Approvals ENEC IEC 60384-14, cULus (UL 1283, CSA-C22.2 N°8)	

#### **DC Film - RC Single Unit**

Catalog F3301

Series	Dielectric/Elec- trodes	Rated Voltage	Cap Range	Characteristics
1.43	Polypropylene Metallized film	250 VDC/ 160VAC 400 VDC/ 200 VAC 630 VDC/ 220 VAC 275 VAC/560VDC Class X2	0.25 - 1.0μF 0.022 - 0.5μF	RC Spark Suppression     Climatic category (IEC 60068-1) 55/105/56     Climatic category (IEC 60068-1) 40/100/56 (275VAC)     Pitch (p) p = 15mm, 22.5mm, 27.5mm     Resistor value: 10W to 1kW     Approvals ENEC IEC 60384-14, UL 1414 (only for 275 VAC)

#### **DC Film - Module**



ı	Series	Components	Rated Voltage	Cap Range	Characteristics
	F5A	Polyester Metallized film Capacitor with integrated ceramic Varistor	5VDC to 63VDC (p=5mm) 5VDC to 63VDC (p=10mm)	0.1 - 2.2μF 0.1 - 1.5μF	D.C motors suppression mainly in automotive applications     Climatic category (IEC 60068-1) 55/125/56     Varistor voltage range 8VDC to 82VDC     Pitch (p) p = 5mm, 10mm
	F5B	Polyester Metallized film Capacitor with integrated bidirectional suppressor diode	5VDC to 63VDC (p=5mm) 5VDC to 50VDC (p=5mm) 5VDC to 63VDC (p=10mm)	0.1 - 1.2μF 1.5 - 2.2μF 0.1 - 1.5μF	D.C motors suppression mainly in automotive applications for very high performance peak reduction Climatic category (IEC 60068-1) 55/125/56 Diode Breakdown voltage range 10VDC to 78VDC Pitch (p) p = 5mm, 10mm

# **DC Film - Capacitors for Capacitive Power Supply**





Series	Dielectric/ Electrodes/ Class	Rated Voltage	Cap Range	Characteristics
R46(S)	Polypropylene Metallized film X2 Class	275VAC/560 VDC	0.010 - 10μF	Interference suppression applications designed for severe ambient condition Climatic category (IEC 60068-1) 40/110/56 Pulse rise time (dv/dt) 100 to 400 V/µs Pitch (p) p = 15, 22.5, 27.5, 37.5mm Approvals ENEC IEC 60384-14, GB/T 14472 CULus (UL 1414, CSA C22.2 N°1-N°8, UL 1283)
R47	Polypropylene Metallized film X1 Class	440VAC/1000VDC	4700pF - 2.2μF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110/56</li> <li>Pulse rise time (dv/dt) 150 to 750 V/µs</li> <li>Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC IEC 60384-14, cULus (UL 1283, UL 1414)</li> </ul>
R47	Polypropylene Metallized film X2 Class	440VAC/1000VDC @ 110°C 520VAC/1000VDC @ 85°C	4700pF - 2.2μF 4700pF - 2.2μF	<ul> <li>Interference suppression and across-the-line applications</li> <li>Climatic category (IEC 60068-1) 40/110(85)/56</li> <li>Pulse rise time (dv/dt) 150 to 750 V/µs</li> <li>Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm</li> <li>Approvals ENEC IEC 60384-14, cULus (UL 1283, UL 1414)</li> </ul>
R752	Polypropylene Metallized film	230VAC/400VDC	0.033 - 6.8µF	Specifically designed for AC application in serial with the main Climatic category (IEC 60068-1) 55/105/56 Pulse rise time (dv/dt) 70 to 1000V/µs Pitch (p) p = 10, 15, 22.5, 27.5, 37.5mm
R75L	Polypropylene Metallized film	250VAC/560VDC	0.010 - 10μF	Specifically designed for AC application in serial with the main Climatic category (IEC 60068-1) 55/105/56 Pulse rise time (dv/dt) 90 to 1500V/µs Pitch (p) p = 10, 15, 22.5, 27.5 37.5mm
R603	Polyester Metallized film	300VAC/560VDC	0.15 - 6.8μF	Specifically designed for AC application in serial with the main     Climatic category (IEC 60068-1) 55/105/56     Pulse rise time (dv/dt) 100 to 200V/µs     Pitch (p) p = 22.5, 27.5 37.5mm

(Min.) = New Miniature version

(S) = Special application

# Capacitors for A.C. Motor Run Applications, Metallized Polypropylene Catalog F3307

Series	Capacitor Type	Rated Voltage	Cap Range	Characteristics
C27	Cylindrical plastic case	420VAC cl.A / 470VAC cl.B 420VAC cl.B / 470VAC cl.C 275VAC cl.B / 425VAC cl.D	1 - 70μF 1 - 100μF 1 - 120μF	Climatic category (IEC60068-1) -25/85/21 or -25/100/21 Class of Safety Protection: P0 Diameter (D) D = 25 to 60mm Height (H) H = 55 to 120mm Triminals: Faston - Unipolar Wires - Bipolar Cable Mechanical connection: With/Without Bolt - Quick Fitting
C28	Cylindrical plastic case	420VAC cl.A / 470VAC cl.B	2 - 11µF	Climatic category (IEC 60068-1) -25/85/21 Class of Safety Protection: P2 Diameter (D) D = 25 to 35mm Height (H) H = 55 to 74mm Terminals: Faston - Unipolar Wires - Bipolar Cable Mechanical connection: With/Without Bolt - Quick Fitting
C87	Cylindrical aluminium case	420VAC cl.A / 470VAC cl.B 420VAC cl.B / 470VAC cl.C 280VAC cl.B	1 - 80μF 1 - 120μF 1 - 130μF	Climatic category (IEC60068-1) -25/85/21 or -25/100/21 Class of Safety Protection: P2 Diameter (D) D = 25 to 60mm Height (H) H = 48 to 133mm Terminals: Faston - Bipolar Cable Mechanical connection: With/Without Bolt
C24	Box plastic case	460VAC C24.6 275VAC C24.K 350VAC C24.B 650VAC C24.7 230VAC C24.2 400VAC C24.4 (valid 2009)	0.2 - 9.0µF 0.47 - 20.0µF 0.4 - 15.0µF 0.1 - 3.0µF 0.68 - 30.0µF 0.33 - 10.0µF	• Climatic category (IEC60068-1) -40/85(100)/21 • Class of Safety Protection: P0 • Pitch (p) p = 22.5, 27.5, 37.5mm • Pulse rise time (dv/dt) 30 to 50V/µs



<sup>\*</sup> no GB/T 14472 approval for R46 @ 125°C



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Series	Capacitor type	Rated Voltage	Cap Range	Characteristics
C4C	Axial	850VDC/450VAC 1200VDC/500VAC 2000VDC/630VAC 3000VDC/750VAC	0.1 - 2.5μF 0.047 - 1.5μF 0.022 - 0.68μF 6800pF - 0.22μF	• Snubber applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 200 to 2100V/µs • Length (L) L = 33 to 58mm
C4G	Axial	250VDC/160VAC 400VDC/250VAC 600VDC/330VAC 700VDC/400VAC 850VDC/450VAC	1 - 40µF 0.47 - 20µF 0.47 - 10µF 0.47 - 6.8µF 0.15 - 4.0µF	<ul> <li>Switching applications</li> <li>Climatic category (IEC 60068-1) 40/85/56</li> <li>Pulse rise time (dv/dt) 15 to 210V/μs</li> <li>Length (L) L = 20.5 to 58mm</li> </ul>
C4H	Axial flat	850VDC/450VAC 1200VDC/500VAC 2000VDC/630VAC 3000VDC/750VAC	0.1 - 1.0µF 0.047 - 0.68µF 0.022 - 0.33µF 6800pF - 0.1µF	<ul> <li>Snubber applications</li> <li>Climatic category (IEC 60068-1) 40/85/56</li> <li>Pulse rise time (dv/dt) 190 to 2100V/µs</li> <li>Length (L) L = 33 to 58mm</li> </ul>
C4M	Axial flat	250VDC/160VAC 400VDC/250VAC 600VDC/330VAC 700VDC/400VAC	1 - 20μF 0.47 - 6.8μF 0.47 - 4.7μF 0.47 - 3.0μF	• Switching applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 15 to 80V/µs • Length (L) L = 20.5 to 58mm
C4AS	Вох	850VDC/500VAC 1000VDC/600VAC 1200VDC/630VAC 2000VDC/700VAC 3000VDC/750VAC	0.15 - 5.0µF 0.15 - 4.7µF 0.1 - 3.5µF 0.033 - 1.5µF 0.022 - 0.82µF	• Snubber applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 469 to 3360V/µs • Pitch (p) p = 27.5, 37.5, 52.5mm • Terminals Tinned copper 2 or 4 wires
C4AT	Вох	250VDC/160VAC 400VDC/250VAC 450VDC/275VAC 600VDC/350VAC 700VDC/400VAC 850VDC/450VAC	1.0 - 60µF 1.0 - 40µF 1.0 - 33µF 0.68 - 20µF 0.47 - 15µF 0.22 - 10µF	<ul> <li>Switching applications</li> <li>Climatic category (IEC 60068-1) 40/85/56</li> <li>Pulse rise time (dv/dt) 15 to 148V/µs</li> <li>Pitch (p) p = 27.5, 37.5, 52.5mm</li> <li>Terminals Tinned copper 2 or 4 wires</li> </ul>
C4AE	Вох	450VDC 700VDC 900VDC 1100VDC	30 - 100μF 15 - 55μF 12 - 40μF 8.0 - 25μF	DC-Link applications     Climatic category (IEC 60068-1) 40/85/56     Pulse rise time (dv/dt) 10 to 21V/µs     Pitch (p) p = 37.5, 52.5mm     Terminals Tinned copper 2 or 4 wires
C4AF	Вох	250VAC 300VAC 350VAC 400VAC 450VAC	2.5 - 75µF 2.0 - 55µF 1.2 - 35µF 0.82 - 25µF 0.5 - 14µF	AC Filter applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 12 to 62V/µs Pitch (p) p = 27.5, 37.5, 52.5mm Terminals Tinned copper 2 or 4 wires
C4BS	IGBT box	850VDC/550VAC 1000VDC/600VAC 1200VDC/630VAC 2000VDC/700VAC 3000VDC/750VAC	0.47 - 5.0µF 0.47 - 4.0µF 0.33 - 3.3µF 0.10 - 1.5µF 0.047 - 0.82µF	• Snubber-IGBT applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 469 to 3361V/µs • Box Length (L) L = 32 to 57.5mm • Terminals Tinned brass lugs
C4BT	IGBT box	250VDC/160VAC 400VDC/250VAC 600VDC/330VAC 700VDC/400VAC 850VDC/450VAC	4.7 - 60μF 3.3 - 40μF 2.5 - 20μF 1.5 - 15μF 1.0 - 10μF	Switching-IGBT applications Climatic category (IEC 60068-1) 40/85/56 Pulse rise time (dv/dt) 27 to 148V/µs Box Length (L) L = 32 to 57.5mm Terminals Tinned brass lugs
C4DC	Flat cylindi- cal plastic case (Low induct- ance)	850VDC/500VAC 1000VDC/600VAC 1400VDC/700VAC	1.5 - 6.0μF 1.0 - 4.0μF 0.5 - 4.0μF	• Snubber-GTO applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 380 to 1000V/µs • Diameter (D) D = 60 to 90mm • Height (H) H = 51 to 64mm • Hole M8 threaded (M6 on request)
C4DR	Flat cylindi- cal plastic case (Low induct- ance)	400VDC/160VAC 600VDC/220VAC 700VDC/250VAC 850VDC/330VAC 1200VDC/440VAC 1500VDC/500VAC	25 - 220µF 12 - 100µF 7.5 - 70µF 4.0 - 60µF 2.5 - 25µF 1.0 - 15µF	• Clamper-GTO applications • Climatic category (IEC 60068-1) 40/85/56 • Pulse rise time (dv/dt) 12 to 400V/µs • Diameter (D) D = 60 to 90mm • Height (H) H = 51 to 99mm • Hole M8 threaded (M6 on request)
C4DE	Flat cylindi- cal plastic case (Low induct- ance)	400VDC 600VDC 800VDC 1000VDC	175 - 380μF 100 - 220μF 68 - 140μF 47 - 100μF	DC-Link applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 15 to 37V/µs Diameter (D) D = 84mm Height (H) H = 40, 51, 64mm Terminals: M6 or M8 threaded bolt (also available with threaded female connections)

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Series	Capacitor type	Rated Voltage	Cap Range	Characteristics	
C44A	Aluminium case	400VDC/250VAC 600VDC/330VAC 700VDC/400VAC 850VDC/450VAC 1200VDC/500VAC 1500VDC/630VAC	15 - 330μF 10 - 100μF 5 - 100μF 3 - 60μF 1.0 - 22μF 1.0 - 15μF	General Purpose applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 10 to 400V/µs Diameter (D) D = 45 to 85mm Height (H) H = 80 to 200mm Terminals Tinned brass fastons or screws	
C44B	Aluminium case 1200VDC/500VAC 0.10 - 1.5μF 0.047 - 0.68μF 0.10 - 4.0μF		0.047 - 0.68µF	Snubber applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 500 to 750V/µs Diameter (D) D = 25 to 65mm Height (H) H = 60 to 200mm Terminals Tinned brass fastons or screws	
C44E	Aluminium case	400VDC/250VAC 600VDC/380VAC 750VDC/440VAC 1200VDC/550VAC	150 - 400µF 100 - 200µF 100 - 120µF 50 - 60µF	<ul> <li>AC Filter applications</li> <li>Climatic category (IEC 60068-1) 25/70/21</li> <li>Pulse rise time (dv/dt) 10 to 30V/μs</li> <li>Diameter (D) D = 76 to 85mm</li> <li>Height (H) H = 137 to 270mm</li> <li>Terminals Tinned brass fastons or screws</li> </ul>	
С44Н	Aluminium case	400VDC/250VAC 600VDC/330VAC 700VDC/400VAC	15 - 120μF 15 - 56μF 30 - 55μF	UPS Filtering applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 15 to 30V/µs Diameter (D) D = 45 to 75mm Height (H) H = 61 to 150mm Terminals: Tinned double Faston 6.3 mm	
C44P- C20A	400VDC/250VAC 200 - 600μF 500VDC/330VAC 100 - 600μF 750VDC/440VAC 100 - 300μF 750VDC/550VAC 22 - 150μF 900VDC/640VAC 15 - 150μF 1100VDC/780VAC 10 - 100μF		100 - 600µF 100 - 300µF 22 - 150µF 15 - 150µF	AC Filter applications Climatic category (IEC 60068-1) 25/70/56 Pulse rise time (dv/dt) 15 to 30V/µs Diameter (D) D = 65 to 116mm Height (H) H = 115 to 280mm Terminations Plastic Insulator with screw terminals M10 Safety device	
C44U	700VDC 120 - 550μF  Aluminium 900VDC 75 - 600μF 1100VDC 50 - 500μF 1300VDC 50 - 550μF		75 - 600μF 50 - 500μF	DC-Link applications Climatic category (IEC 60068-1) 40/85/21 Pulse rise time (dv/dt) 6 to 31V/µs Diameter (D) D = 76, 85mm Height (H) H = 55 to 140mm Terminals Tinned brass screws	
C93	Aluminium case	400VDC/320VAC 600VDC/415VAC	50 - 100μF 10 - 100μF	P.F.C. and Filter applications Pulse rise time (dv/dt) 30V/µs Diameter (D) D = 40 to 75mm Height (H) H = 78 to 150mm Terminals Tinned brass fastons or screws Safety device - Approval IMQ, UL	
С9Т	Aluminium case	415VAC 450VAC 525VAC 690VAC	3x30.8µF - 3x184.8µF 3x26.2µF - 3x157µF 3x19.2µF - 3x115µF 3x27.9µF - 3x66.8µF	P.F.C. & AC Filter applications - Three phase execution Pulse rise time (dv/dt) 30V/µs Diameter (D) D = 60 to 116mm Height (H) H = 150 to 280mm Terminals Tinned brass fastons or screws Safety device - Approval UL	

# Capacitors for A.C. Lighting Applications, Metallized Polypropylene Catalog F3308

Series	Capacitor type	Rated Voltage	Cap Range	Characteristics
СЗВ	Cylindrical plastic case	250 VAC	2µF - 50µF	Lighting applications Temperature Range -25/+85°C Diameter (D) D = 25mm to 50mm Height (H) H = 48mm to 133mm Terminals: Unipolar Wires - Push in Connector Mechanical connection: With/Without Bolt - Quick Fitting Type of Capacitor (ENEC03): Type A
C95	Cylindrical aluminium case	250VAC 450VAC	2.0µF - 60µF 2.5µF - 6.8µF	Lighting applications Temperature Range -25/+85°C and -25/+100°C Diameter (D) D = 25mm to 50mm Height (H) H = 55mm to 120mm Terminals: Faston 2,8mm - Push in Connector Mechanical connection: With/Without Bolt - Quick Fitting Type of Capacitor (ENEC03): Type B

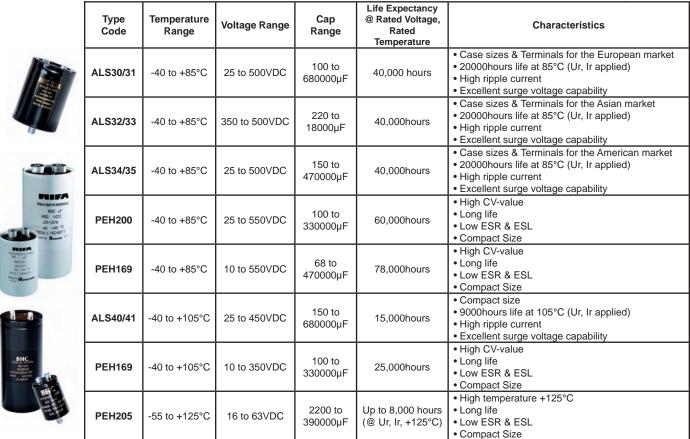


#### **Axial Electrolytic Capacitors**

#### Catalog F3304

	Type code	Rated Temperature	Voltage range	Cap range	Applications	Characteristics
	PEG226	150°C	25 - 63VDC	250 - 4700μF	Automotive	Extremely high ripple current     Up to 28A-ripple     (RMS, Continuous load)     High vibration resistance
	PEG225	150°C	25 - 63VDC	470 - 6300μF	Automotive	Extremely high ripple current     Up to 28A-ripple     (RMS, Continuous load)     High vibration resistance     High CV
	PEG220	150°C	25 - 63VDC	250 - 4700μF	Automotive	Very high ripple current  Up to 21A-ripple (RMS, Continuous load)  High vibration resistance
	PEG124	105°C 125°C	200 - 450VDC 10 - 100VDC	1 - 150μF 4.7 - 4700μF	Electronic Ballast Industrial Automotive Telecom	Long life > 30 years at 50°C     Low ESR     Low ESL
One of	PEG126	150°C	25 - 63VDC	250 - 4000μF	Automotive	Low ESR     High ripple current     Intermittent specification     Resistance to vibrations     150°C, 2000h (Ø20)
	PEH126	150°C	25 - 63VDC	250 - 1500μF	Automotive	Low ESR     High ripple current     Intermittent specification     Resistance to vibrations 150°C, 1500h

#### **Screw Terminal Electrolytic Capacitors**



# **Snap-in Electrolytic Capacitors**

# Catalog F3304









Type Code	Temperature Range	Voltage Range	Cap Range	Life Expectancy @ Rated Voltage, Rated Temperature	Characteristics
ALC10	-40 to +85°C	40 to 450VDC	56 to 82000μF	29,000 hours	Compact size     18000hours life at 85°C (Ur, Ir applied)     High ripple current     Excellent surge voltage capability
ALC12	-40 to +85°C	200 to 450VDC	150 to 8200µF	9,000hours	Compact size     2000hours life at 85°C (Ur, Ir applied)     Excellent surge voltage capability
PEH506	-40 to +85°C	35 to 450VDC	68 to 27000μF	6,000hours	Long life grade     PCB mounting     Low ESR & ESL     High ripple current
ALC40	-40 to +105°C	25 to 450VDC	47 to 120000μF	14,000hours	Compact size     9000hours life at 105°C (Ur, Ir applied)     High ripple current     Excellent surge voltage capability
ALC42	-40 to +105°C	200 to 450VDC	120 to 6800µF	11,000hours	Compact size 2000hours life at 105°C (Ur, Ir applied) Excellent surge voltage capability
PEH532	-40 to +105°C	35 to 450VDC	68 to 27000μF	2,000hours	Long life grade     PCB mounting     Low ESR & ESL     High ripple current
PEH534	-40 to +105°C	35 to 450VDC	150 to 22000μF	4,000hours	Long life grade     PCB mounting     Low ESR & ESL     High ripple current
PEH536	-40 to +105°C	35 to 450VDC	47 to 18000μF	6,000hours	Long life grade PCB mounting Low ESR & ESL High ripple current
PEH526/626	-40 to +125°C	25 to 80VDC	820 to 6800µF	4,000hours	125°C temperature rating     High vibration specification     Low ESR     High ripple current capability

# **Other Electrolytic Capacitors**







Type Code	Temperature Range	Voltage Range	Cap Range	Life Expectancy @ Rated Voltage, Rated Temperature	Characteristics
ALN20S	-40 to +85°C	50 to 100VDC	10000µF	29,000 hours	4 Pin Solder Tag     Long life     Slit foil Technolgy
ALC10S	-40 to +85°C	50 to 100VDC	10000μF	29,000 hours	2 Pin Solder Tag     Long life     Slit foil Technolgy
ALP/T 20	-40 to +85°C	40 to 450VDC	22 to 150000µF	26,000hours	Solder Tag & DIN standard solder pin     Long Life
ALP/T 22	-40 to +85°C	40 to 450VDC	22 to 150000µF	26,000hours	Solder Tag & DIN standard solder pin     Long Life
MS/MD	-20 to +60°C MS type, -20% +70°C MD types	120 to 260VAC	25 to 750μF		AC Motor Start Capacitors     6.3mm double amp tags     (quick connect type)     VDE approved to EN60252-2



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