TYPE DPMS DUAL-DIELECTRIC RADIAL CAPACITORS
High Voltage Polyester/Kraft, Epoxy Multi-dip Case, 200 to 2000 Volts DC, −55°C to +125°C

OUTSTANDING FEATURES

- **High Voltage/Low Cost** — Up to 2000 Vdc continuous operation at 125°C at lower cost than single-dielectric types.
- **Rugged Construction** — Solid impregnated capacitor cartridge combined with high-impact multi-dip case assures stable long-life characteristics.
- **Free from Impregnant Leakage** — Assured by CDE's Dykanol® Y solid impregnant which will not soften or flow even at 125°C.
- **Excellent Moisture Resistance** — Rated to withstand 75°C, 100% relative humidity for more than 48 hours.
- **Resistant to Soldering Heat** — Withstands momentary contact with hot soldering iron without damage.

RATINGS

Capacitance — 0.001 to 0.5μF
Voltage — 200 to 2000 Vdc
Tolerance — ± 10% Standard
Case Sizes — Conformal Coat, .402" x .722" to 1.062" x 1.890" max.

APPLICATIONS

DPMS capacitors are low in cost and are especially recommended for consumer and industrial applications where stable high-voltage performance or rugged construction are important. They are widely used in electronic equipment like flyback circuits in television, high-voltage filters and noise suppressors. Their low-drift environmental-electrical characteristics permit use of DPMS capacitors in a wide range of dc, ac, and pulsed dc applications.

GENERAL DESCRIPTION

Type DPMS capacitor is a radial-lead, conformal-coated version of the highly reliable CDE Type PKM molded, tubular capacitor. Where an axial-style capacitor is desired the PKM is recommended, but the lower-cost DPMS is the right choice for radial-lead applications.

The DPMS is a polyester/kraft, dual-dielectric capacitor impregnated with CDE developed thermoset polymer impregnant Dykanol Y. It is non-inductively wound and is terminated with tinned, copper-clad steel leads securely soldered to the ends of the capacitor cartridge.

The DPMS is encased in a high-impact, multi-dip epoxy coating that affords excellent protection against moisture, soldering iron contact and mechanical damage. The extra-hard coating is especially suited to high voltage use because it will not carbonize to form conductive tracks should arcing occur during application of severe overvoltage. The DPMS is rugged and will withstand considerable rough handling without damage.

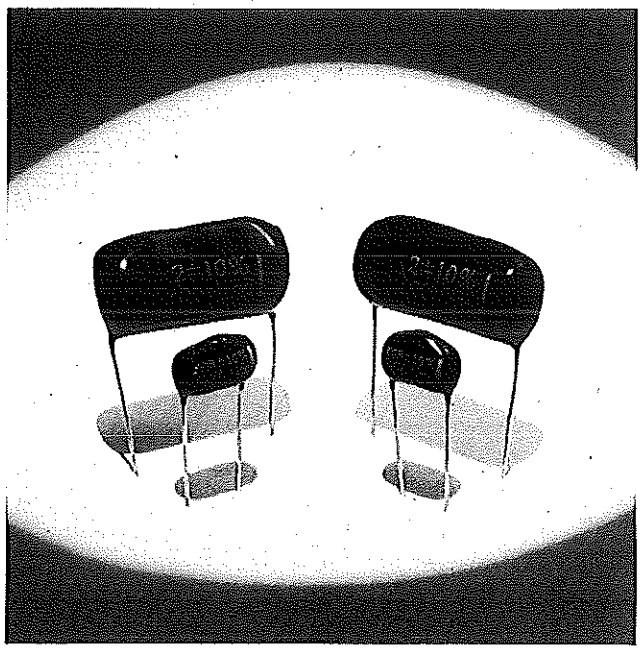
Type DPMS is designed to provide long operating life with trouble-free performance. The dual-dielectric combines the long-life, high-arcing potential characteristics of impregnated kraft paper with the excellent moisture resistance of polyester film. And the impregnant cannot leak as Dykanol Y solid impregnant will not melt, soften or flow.

Standard DPMS ratings and case sizes are shown on Pages 4, 5. The following performance sections provide test methods for the electrical and environmental characteristics of the DPMS capacitor.

GENERAL PERFORMANCE

Operating Temperature Range

Type DPMS capacitors are designed for continuous operation over the temperature range −55°C to +125°C without derating.



Identification Marking

Capacitors are typically marked with DPMS type designation, capacitance in μF, working voltage in Vdc, capacitance tolerance (except ± 20% not marked) and CDE logo.

ELECTRICAL PERFORMANCE

A 1% AQL incoming inspection sampling plan may be utilized to inspect for electrical performance.

Capacitance and Dissipation Factor

Method of Measurement — Measurements are at or referred to a test frequency of 1000 Hz for less than 1.0 μF and 60 Hz for 1.0 μF and above at temperature of 25°C.

Capacitance Tolerance — Standard tolerance is ± 10%. Other tolerances, ± 5% and ± 20%, are available.

Dissipation Factor — The dissipation factor (DF) is no more than 1%.

Voltage Tests

Rated Voltage — Standard continuous dc working voltage ratings are 200, 400, 600, 1600 and 2000 Vdc.

DC Dielectric Strength — DPMS capacitors withstand a dc potential of 2.5 times rated voltage at 25°C for up to 5 seconds with the voltage applied and discharged through a resistance of no less than 1 ohm per volt.

AC Flash Voltage — DPMS capacitors rated 600 Vdc and higher withstand an ac potential of 1080 Vac at 25°C for up to 1 second. Capacitors rated 200 or 400 Vdc withstand an ac-rms potential of 1.77 times rated voltage at 25°C for up to 1 second.

CDE Warranty provides replacements for 1 year in case of defects. Write for details.

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Insulation Resistance

Minimum insulation resistance after 2 minutes electrification at 200 Vdc is as listed in the following table:

Test Temperature, °C	Megohms x μF Minimum	But Need Not Exceed, Megohms
25	20,000	100,000
85	300	3,000
125	20	200

ENVIRONMENTAL PERFORMANCE

DPMS capacitors are designed to have the following characteristics as verified by CDE sample tests.

Capacitance vs. Temperature

The capacitance at 1000 Hz will typically not change more than −7% at −55°C and +4% at 125°C from the 25°C value as shown in Figure 1.

Life Tests

DC Life — DPMS capacitors withstand 500 hours at +85°C and 150% of rated voltage (or at +125°C and 100% of rated voltage) with no more than one failure in each 12 units tested.

AC Life — DPMS capacitors rated 600 Vdc and higher withstand 1000 hours at 85°C and 220 Vac, 60 Hz, with flash voltage of 440 Vac, 60 Hz, applied for 1/10 second once per hour during test and with no more than one failure in each 12 units tested.

Moisture Resistance

DPMS capacitors withstand 48 hours at 95-100% relative humidity at + 75°C. The test units are dried 4 hours in circulating air before testing. The after-test requirement is minimum insulation resistance of 1/3 the initial limit.

Terminal Strength

Pull Test — Capacitors withstand a continuous, even pull of 5 pounds applied axially to the leads, perpendicularly to the body, for one minute.

Bend Test — The leads withstand bending at point of egress 90 degrees in one direction, return to the original position, then 90 degrees in the opposite direction without breaking.

ORDERING INFORMATION

Order by complete type number as shown in the Standard Ratings Table on Pages 4, 5.

EXAMPLE: DPMS2D68 .0068μF, 200 Vdc
DPMS20S5 .05 μF, 2000 Vdc

APPLICATION INFORMATION

AC Operation

DPMS capacitors may be operated on ac voltages as shown in Table 1.

The product of rms ac volts and amps should not exceed 15 VA per square inch of case surface.

VOLTS AC RMS

DCWV	60Hz	400Hz	1kHz	15kHz
200	125	105	65	35
400	200	165	110	60
600*	250	210	150	90
1600*	300	240	190	120
2000*	300	240	190	120

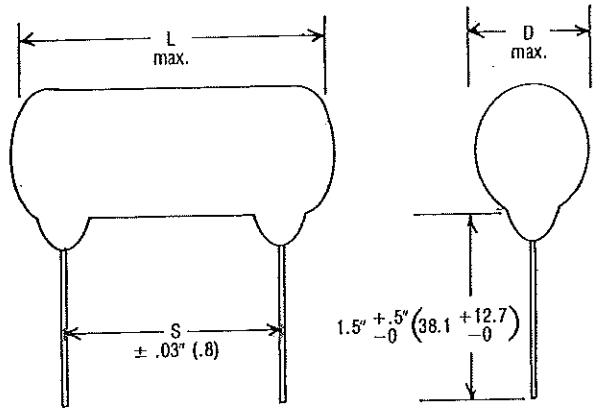
*All values below 0.1 μF.

TABLE 1

Pulse Operation

For pulse operation, derate VA product according to pulse width as shown in Figure 4.

CASE OUTLINE



No. 20 AWG Tinned copper-clad steel leads

S — LEAD SPACING Inches (mm)			
L Case Length	S Lead Spacing	L Case Length	S Lead Spacing
.72 (18.3)	.53 (13.5)	1.31 (33.3)	1.13 (28.6)
.75 (19.1)	.53 (13.5)	1.36 (34.6)	1.13 (28.6)
.92 (23.3)	.69 (17.5)	1.62 (41.2)	1.38 (34.9)
.93 (23.7)	.69 (17.5)	1.66 (42.2)	1.38 (34.9)
1.21 (30.8)	1.00 (25.4)	1.81 (46.0)	1.56 (39.7)
1.24 (31.6)	1.00 (25.4)	1.89 (48.0)	1.69 (42.8)

CORNELL-DUBILIER ELECTRIC CORPORATION
SUBSIDIARY OF FEDERAL PACIFIC ELECTRIC COMPANY
CDE
Printed in U.S.

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High Voltage Polyester/Kraft, Epoxy Multi-dip Case, 200 to 2000 Volts DC, −55°C to +125°C

TYPICAL CHARACTERISTICS

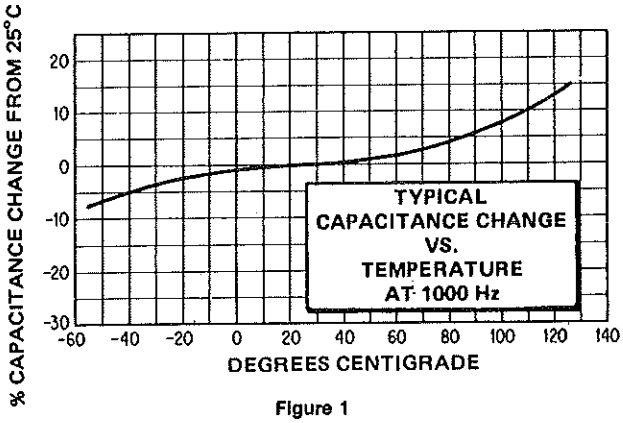

Figure 1

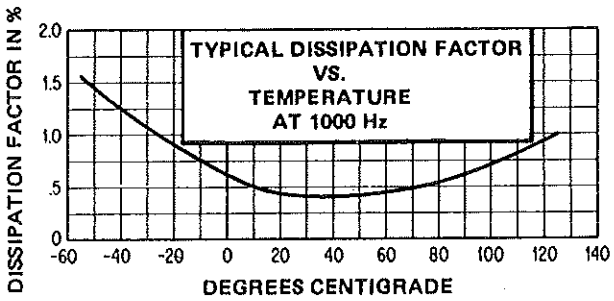

Figure 2

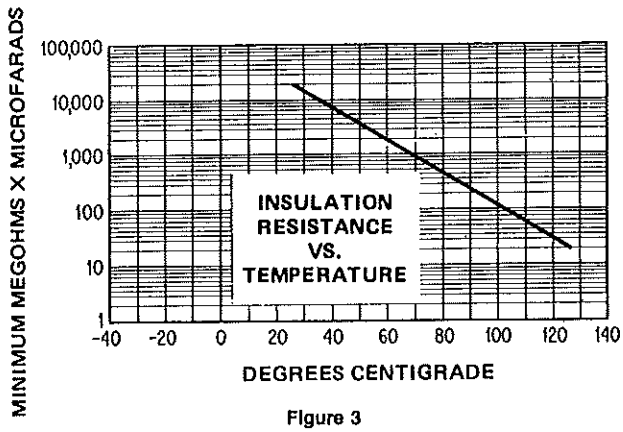

Figure 3

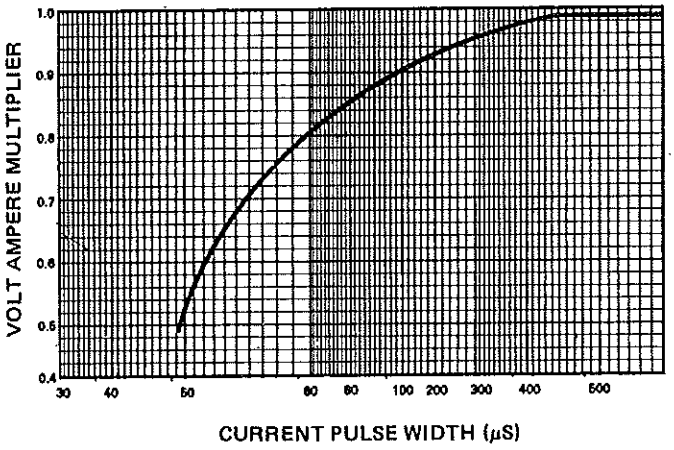

Figure 4

TYPE DPMS DUAL-DIELECTRIC RADIAL CAPACITORS
High Voltage Polyester/Kraft, Epoxy Multi-dip Case, 200 to 2000 Volts DC, −55°C to +125°C

STANDARD RATINGS

Capacitance μF	Type DPMS-	Max. D x L inches (mm)
200 Vdc		
.001	6D1 *	.40 x .72 (10.2 x 18.3)
.0012	6D12*	.40 x .72 (10.2 x 18.3)
.0015	6D15*	.40 x .72 (10.2 x 18.3)
.0018	6D18	.40 x .72 (10.2 x 18.3)
.002	6D2 *	.40 x .72 (10.2 x 18.3)
.0022	6D22*	.40 x .72 (10.2 x 18.3)
.0025	6D25*	.40 x .72 (10.2 x 18.3)
.0027	6D27*	.43 x .72 (11.0 x 18.3)
.0030	6D3 *	.43 x .72 (11.0 x 18.3)
.0033	6D33*	.43 x .72 (11.0 x 18.3)
.0039	6D39*	.43 x .72 (11.0 x 18.3)
.004	6D4 *	.46 x .75 (11.7 x 19.1)
.0047	4D47*	.40 x .72 (10.2 x 18.3)
.005	6D5 *	.46 x .75 (11.7 x 19.1)
.0056	4D56	.40 x .72 (10.2 x 18.3)
.006	6D6 *	.48 x .75 (12.1 x 19.1)
.0068	2D68	.43 x .72 (11.0 x 18.3)
.007	16D7*	.55 x 1.24 (13.9 x 31.6)
.0075	6D75*	.49 x .75 (12.5 x 19.1)
.008	6D8 *	.49 x .75 (12.5 x 19.1)
.0082	2D82	.43 x .72 (11.0 x 18.3)
.010	2S1	.43 x .72 (11.0 x 18.3)
.012	2S12	.43 x .72 (11.0 x 18.3)
.015	2S15	.45 x .72 (11.5 x 18.3)
.020	2S2 *	.41 x .92 (10.5 x 23.3)
.022	2S22*	.43 x .92 (11.0 x 23.3)
.025	6S25*	.56 x .93 (14.3 x 23.7)
.027	2S27*	.43 x .92 (11.0 x 23.3)
.030	6S3 *	.48 x 1.21 (12.1 x 30.8)
.033	2S33	.45 x .92 (11.5 x 23.3)
.036	6S36*	.51 x 1.21 (13.0 x 30.8)
.039	2S39	.46 x .92 (11.7 x 23.3)
.040	6S4 *	.53 x 1.21 (13.5 x 30.8)
.047	2S47*	.51 x .92 (13.0 x 23.3)
.050	2S5 *	.51 x .92 (13.0 x 23.3)
.056	2S56	.45 x 1.21 (11.5 x 30.8)
.060	6S6 *	.58 x 1.24 (14.8 x 31.6)
.068	2S68	.46 x 1.21 (11.7 x 30.8)
.075	6S75*	.64 x 1.36 (16.2 x 34.6)
.082	2S82	.51 x 1.21 (13.0 x 30.8)
.10	2P1 *	.53 x 1.24 (13.5 x 31.6)
.15	2P15*	.60 x 1.24 (15.3 x 31.6)
.20	2P2 *	.63 x 1.36 (15.9 x 34.6)
.22	2P22*	.65 x 1.36 (16.6 x 34.6)
.25	2P25*	.68 x 1.36 (17.3 x 34.6)
.33	2P33*	.67 x 1.66 (16.9 x 42.2)
.47	2P47*	.79 x 1.66 (20.1 x 42.2)
.50	2P5 *	.79 x 1.66 (20.1 x 42.2)

Capacitance μF	Type DPMS-	Max. D x L inches (mm)
400 Vdc		
.001	6D1 *	.40 x .72 (10.2 x 18.3)
.0012	6D12*	.40 x .72 (10.2 x 18.3)
.0015	6D15*	.40 x .72 (10.2 x 18.3)
.0018	6D18	.40 x .72 (10.2 x 18.3)
.002	6D2 *	.40 x .72 (10.2 x 18.3)
.0022	6D22*	.40 x .72 (10.2 x 18.3)
.0025	6D25*	.40 x .72 (10.2 x 18.3)
.0027	6D27*	.43 x .72 (11.0 x 18.3)
.0030	6D3 *	.43 x .72 (11.0 x 18.3)
.0033	6D33*	.43 x .72 (11.0 x 18 3)
.0039	6D39*	.43 x .72 (11.0 x 18.3)
.004	6D4 *	.46 x .75 (11.7 x 19.1)
.0047	4D47	.40 x .72 (10.2 x 18.3)
.005	6D5 *	.46 x .75 (11.7 x 19.1)
.0056	4D56	.40 x .72 (10.2 x 18.3)
.006	6D6 *	.48 x .75 (12.1 x 19.1)
.0068	4D68	.40 x .72 (10.2 x 18.3)
.007	16D7*	.55 x 1.24 (13.9 x 31.6)
.0075	6D75*	.49 x .75 (12.5 x 19.1)
.008	6D8 *	.49 x .75 (12.5 x 19.1)
.0082	4D82	.41 x .72 (10.5 x 18.3)
.010	4S1 *	.45 x .72 (11.5 x 18.3)
.012	4S12	.46 x .72 (11.7 x 18.3)
.015	4S15*	.49 x .72 (12.5 x 18.3)
.020	4S2 *	.45 x .92 (11.5 x 23.3)
.022	4S22*	.46 x .92 (11.7 x 23.3)
.025	6S25*	.56 x .93 (14.3 x 23.7)
.027	4S27	.48 x .92 (12.1 x 23.3)
.030	6S3 *	.48 x 1.21 (12.1 x 30.8)
.033	4S33*	.50 x .92 (12.8 x 23.3)
.036	6S36*	.51 x 1.21 (13.0 x 30.8)
.039	4S39	.45 x 1.21 (11.5 x 3.08)
.040	6S4 *	.53 x 1.21 (13.5 x 30.8)
.047	4S47*	.48 x 1.21 (12.1 x 30.8)
.050	4S5 *	.48 x 1.24 (12.1 x 31.6)
.056	4S56	.49 x 1.24 (12.5 x 31.6)
.060	6S6 *	.58 x 1.24 (14.8 x 31.6)
.068	4S68*	.50 x 1.24 (12.8 x 31.6)
.075	6S75*	.64 x 1.36 (16.2 x 34.6)
.082	4S82	.53 x 1.24 (13.5 x 31.6)
.10	4P1 *	.53 x 1.24 (13.5 x 31.6)
.15	4P15*	.62 x 1.36 (15.8 x 34.6)
.20	4P2 *	.66 x 1.62 (16.8 x 41.2)
.22	4P22*	.68 x 1.62 (17.3 x 41.2)
.25	4P25*	.71 x 1.62 (18.1 x 41.2)
.33	4P33	.76 x 1.62 (19.4 x 41.2)
.47	4P47*	.91 x 1.66 (23.2 x 42.2)
.50	4P5 *	.91 x 1.66 (23.2 x 42.2)

Order by complete Type Number, e.g. DPMS6D1

* Available from stock in ± 10% tolerance.

For lead spacing see Page 2.

TYPE DPMS DUAL-DIELECTRIC RADIAL CAPACITORS
High Voltage Polyester/Kraft, Epoxy Multi-dip Case, 200 to 2000 Volts DC, −55°C to +125°C

STANDARD RATINGS (Continued)

Capacitance μF	Type DPMS-	Max. D x L inches (mm)
600 Vdc		
.001	6D1 *	.40 x .72 (10.2 x 18.3)
.0012	6D12*	.40 x .72 (10.2 x 18.3)
.0015	6D15*	.40 x .72 (10.2 x 18.3)
.0018	6D18	.40 x .72 (10.2 x 18.3)
.002	6D2 *	.40 x .72 (10.2 x 18.3)
.0022	6D22*	.40 x .72 (10.2 x 18.3)
.0025	6D25*	.40 x .72 (10.2 x 18.3)
.0027	6D27*	.43 x .72 (11.0 x 18.3)
.0030	6D3 *	.43 x .72 (11.0 x 18.3)
.0033	6D33*	.43 x .72 (11.0 x 18.3)
.0039	6D39*	.43 x .72 (11.0 x 18.3)
.004	6D4 *	.46 x .75 (11.7 x 19.1)
.0047	6D47*	.46 x .75 (11.7 x 19.1)
.005	6D5 *	.46 x .75 (11.7 x 19.1)
.0056	6D56*	.48 x .75 (12.1 x 19.1)
.006	6D6 *	.48 x .75 (12.1 x 19.1)
.0068	6D68*	.49 x .75 (12.5 x 19.1)
.007	16D7*	.55 x 1.24 (13.9 x 31.6)
.0075	6D75*	.49 x .75 (12.5 x 19.1)
.008	6D8 *	.49 x .75 (12.5 x 19.1)
.0082	6D82*	.43 x .93 (11.0 x 23.7)
.010	6S1 *	.45 x .93 (11.5 x 23.7)
.012	6S12*	.46 x .93 (11.7 x 23.7)
.015	6S15*	.48 x .93 (12.1 x 23.7)
.020	6S2 *	.51 x .93 (12.9 x 23.7)
.022	6S22*	.53 x .93 (13.5 x 23.7)
.025	6S25*	.56 x .93 (14.3 x 23.7)
.027	6S27*	.48 x 1.21 (12.1 x 30.8)
.030	6S3 *	.48 x 1.21 (12.1 x 30.8)
.033	6S33*	.49 x 1.21 (12.5 x 30.8)
.036	6S36*	.51 x 1.21 (13.0 x 30.8)
.039	6S39*	.53 x 1.21 (13.5 x 30.8)
.040	6S4 *	.53 x 1.21 (13.5 x 30.8)
.047	6S47*	.55 x 1.21 (14.0 x 30.8)
.050	6S5 *	.55 x 1.21 (14.0 x 30.8)
.056	6S56*	.58 x 1.24 (14.8 x 31.6)
.060	6S6 *	.58 x 1.24 (14.8 x 31.6)
.068	6S68*	.60 x 1.36 (15.3 x 34.6)
.075	6S75*	.64 x 1.36 (16.2 x 34.6)
.082	6S82*	.65 x 1.36 (16.6 x 34.6)
.10	6P1 *	.70 x 1.36 (17.8 x 34.6)
.15	6P15*	.71 x 1.62 (18.1 x 41.2)
.20	6P2 *	.79 x 1.62 (20.1 x 41.2)
.22	6P22*	.81 x 1.62 (20.6 x 41.2)
.25	6P25*	.89 x 1.62 (22.7 x 41.2)
.33	6P33*	.95 x 1.62 (24.2 x 41.2)
.47	6P47*	1.06 x 1.89 (27.0 x 48.0)
1600 Vdc		
.001	16D1 *	.41 x .93 (10.5 x 23.7)
.0012	16D12	.42 x .93 (10.7 x 23.7)
.0015	16D15*	.44 x .93 (11.1 x 23.7)
.0018	16D18*	.46 x .93 (11.7 x 23.7)
.002	16D2 *	.47 x .93 (11.9 x 23.7)

Capacitance μF	Type DPMS-	Max. D x L inches (mm)
1600 Vdc (Continued)		
.0022	16D22*	.48 x .93 (12.2 x 23.7)
.0027	16D27	.54 x .93 (13.8 x 23.7)
.0030	16D3 *	.54 x .93 (13.8 x 23.7)
.0033	16D33*	.54 x .93 (13.8 x 23.7)
.0039	16D39	.58 x .93 (14.7 x 23.7)
.004	16D4 *	.58 x .93 (14.8 x 23.7)
.0047	16D47*	.60 x .93 (15.3 x 23.7)
.005	16D5 *	.63 x .93 (15.9 x 23.7)
.0056	16D56	.52 x 1.24 (13.3 x 31.6)
.006	16D6 *	.52 x 1.24 (13.3 x 31.6)
.0068	16D68*	.55 x 1.24 (13.9 x 31.6)
.007	16D7 *	.55 x 1.24 (13.9 x 31.6)
.0075	16D75*	.56 x 1.24 (14.2 x 31.6)
.008	16D8 *	.57 x 1.24 (14.5 x 31.6)
.0082	16D82	.57 x 1.24 (14.5 x 31.6)
.010	16S1 *	.59 x 1.24 (14.9 x 31.6)
.012	16S12	.64 x 1.24 (16.2 x 31.6)
.015	16S15*	.62 x 1.36 (15.8 x 34.6)
.020	16S2 *	.63 x 1.66 (16.1 x 42.2)
.022	16S22*	.65 x 1.66 (16.5 x 42.2)
.025	20S25*	.66 x 1.81 (16.7 x 46.0)
.027	16S27	.72 x 1.66 (18.3 x 42.2)
.030	16S3 *	.73 x 1.66 (18.5 x 42.2)
.033	16S33*	.76 x 1.66 (19.2 x 42.2)
.036	20S36*	.76 x 1.81 (19.4 x 46.0)
.039	16S39	.80 x 1.66 (20.3 x 42.2)
.040	16S4 *	.80 x 1.66 (20.3 x 42.2)
.047	16S47*	.85 x 1.66 (21.5 x 42.2)
.050	16S5 *	.88 x 1.66 (22.3 x 42.2)
2000 Vdc		
.001	20D1 *	.42 x .93 (10.7 x 23.7)
.0012	20D12	.45 x .93 (11.4 x 23.7)
.0015	20D15*	.46 x .93 (11.7 x 23.7)
.0018	20D18	.50 x .93 (12.8 x 23.7)
.0022	20D22*	.50 x .93 (12.8 x 23.7)
.0027	20D27*	.48 x 1.25 (12.1 x 31.8)
.0033	20D33	.52 x 1.24 (13.1 x 31.6)
.0039	20D39*	.53 x 1.24 (13.4 x 31.6)
.0047	20D47*	.56 x 1.25 (14.2 x 31.8)
.0056	20D56	.62 x 1.25 (15.8 x 31.8)
.0068	20D68	.69 x 1.25 (17.6 x 31.8)
.0082	20D82*	.58 x 1.31 (14.8 x 33.3)
.010	20S1	.64 x 1.31 (16.2 x 33.3)
.012	20S12*	.66 x 1.31 (16.8 x 33.3)
.015	20S15	.59 x 1.81 (14.9 x 46.0)
.022	20S22*	.65 x 1.81 (16.5 x 46.0)
.025	20S25*	.66 x 1.81 (16.7 x 46.0)
.027	20S27*	.69 x 1.81 (17.5 x 46.0)
.033	20S33	.75 x 1.81 (19.1 x 46.0)
.036	20S36*	.76 x 1.81 (19.4 x 46.0)
.039	20S39	.80 x 1.81 (20.3 x 46.0)
.047	20S47*	.85 x 1.81 (21.5 x 46.0)
.050	20S5 *	.86 x 1.81 (21.9 x 46.0)

Order by complete Type Number, e.g. DPMS6D1

* Available from stock in ± 10% tolerance.

For lead spacing see Page 2.