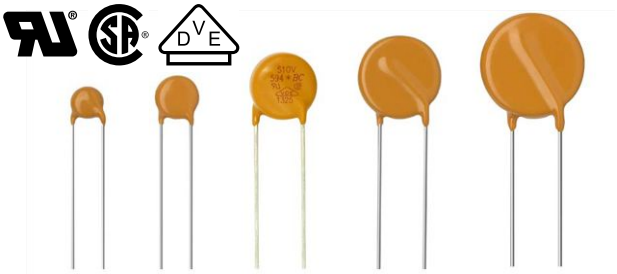
VDR Metal Oxide Varistors Standard



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Maximum continuous voltage in operating temperature range:		
RMS	14 to 680	V
DC	18 to 895	V
Maximum non-repetitive transient current I_{NRP} (8 x 20 µs)	100 to 6500	A
Detailed specification	Based on IEC 61051-1 IEC 61051-2 IEC 61051-2-2	
Storage temperature	-40 to +125	°C
Operating temperature	-40 to +85	°C

ORDERING INFORMATION

The varistors are available in a number of packaging options:

- Bulk
- On tape and reel
- On tape in ammopack

The basic ordering code for each option is given in tables titled Varistors on Tape on Reel, Varistors on Tape in Ammopack and Varistors in Bulk. To complete the catalog number and to determine the required operating parameters, see Electrical Data and Ordering Information table.

Note

- Special lead-configuration as inside or outside crimped leads on request.

FEATURES

- Low β high purity zinc oxide disc
- Halogen free insulating epoxy coating
- Zinc oxide disc, HF epoxy coated
- Straight leads and kinked leads
- Straight leads with flange (VDRS05 and VDRS07 only)
- Certified according to UL 1449 edition 3, VDE/IEC 61051-1/2 and CSA
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT HALOGEN FREE

APPLICATION

- Overvoltage and transient voltage protection

DESCRIPTION

The varistors consist of a disc of low-ß ZnO ceramic material with two tinned solid copper leads or tinned copper clad steel wire. They are coated with a layer of ochre coloured halogen free epoxy, which provides electrical, mechanical and climatic protection.

MOUNTING

The varistors are suitable for processing on automatic insertion and cutting and bending equipment.

Varistors with flanged leads provide better positioning on printed-circuit boards (PCB) and more accurate control over component height. This is important for hand mounting and automatic insertion techniques; see outlines of flanged leads drawing.

Typical soldering

235 °C, duration: 5 s (Pb-bearing)

245 °C, duration: 5 s (lead (Pb)-free)

Resistance to soldering heat

260 °C, duration: 10 s max.

MARKING

The varistors are marked with the following information:

- Maximum continuous RMS voltage
- Series number (592, 593, 594, 595 or 596)
- Safety marks on VDRS10-14-20 types
- Manufacturers logo
- Date of manufacture (YYWW)

INFLAMMABILITY

The varistors are passive non-flammable.

The encapsulation is made of flammable resistant epoxy in accordance with UL 94 V-0.

For technical questions, contact: nlr@vishay.com

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ELECTRICAL DATA AND ORDERING INFORMATION

MAXIMUM CONTINUOUS VOLTAGE		VOLTAGE [3] at 1 mA	MAXIMUM VOLTAGE at STATED CURRENT		MAXIMUM ENERGY [4] (10 x 1000 µs)	MAXIMUM NON-REP. TRANSIENT CURRENT [5] I_{NRP} (8 x 20 µs)	TYPICAL CAP. at 1 kHz	T (max.)	E	UL 1449 ED3 SPD TYPE [7]	CATALOG NUMBERS [1]
RMS [2] (V)	DC (V)	(V)	V (V)	I (A)	(J)	(A)	(pF)	(mm)	(mm)		SAP [6]
14	18	22	48	1.0	0.5	100	1300	4.1	0.7 ± 0.3	4	VDRS05A014xyE
			43	2.5	1.7	250	2800	4.1	0.7 ± 0.3	4	VDRS07B014xyE
			43	5.0	4.3	500	6000	4.4	0.9 ± 0.3	4	VDRS10D014xyE
			43	10.0	5.4	1000	15 000	4.4	0.9 ± 0.3	4	VDRS14G014xyE
			43	20.0	8.0	2000	30 000	4.6	1.1 ± 0.3	4	VDRS20M014ByE
17	22	27	60	1.0	0.7	100	1050	4.1	0.8 ± 0.3	4	VDRS05A017xyE
			53	2.5	2.0	250	2000	4.1	0.8 ± 0.3	4	VDRS07B017xyE
			53	5.0	5.3	500	4000	4.4	1.0 ± 0.3	4	VDRS10D017xyE
			53	10.0	6.9	1000	10 000	4.4	1.0 ± 0.3	4	VDRS14G017xyE
			53	20.0	10.0	2000	20 000	4.6	1.2 ± 0.3	4	VDRS20M017ByE
20	26	33	73	1.0	0.8	100	900	4.1	1.0 ± 0.3	4	VDRS05A020xyE
			65	2.5	2.5	250	1500	4.1	1.0 ± 0.3	4	VDRS07B020xyE
			65	5.0	6.5	500	3000	4.4	1.2 ± 0.3	4	VDRS10D020xyE
			65	10.0	8.8	1000	7500	4.4	1.2 ± 0.3	4	VDRS14G020xyE
			65	20.0	12.0	2000	15 000	4.8	1.4 ± 0.3	4	VDRS20M020ByE
25	31	39	86	1.0	0.9	100	500	4.2	1.2 ± 0.3	4	VDRS05A025xyE
			77	2.5	3.0	250	1350	4.2	1.2 ± 0.3	4	VDRS07B025xyE
			77	5.0	7.7	500	2600	4.6	1.4 ± 0.3	4	VDRS10D025xyE
			77	10.0	9.4	1000	6500	4.6	1.4 ± 0.3	4	VDRS14G025xyE
			77	20.0	14.0	2000	13 000	5.0	1.6 ± 0.3	4	VDRS20M025ByE
30	38	47	96	1.0	1.1	100	700	4.4	1.4 ± 0.5	4	VDRS05A030xyE
			93	2.5	3.6	250	1600	4.4	1.4 ± 0.5	4	VDRS07B030xyE
			93	5.0	9.2	500	2700	4.8	1.6 ± 0.5	4	VDRS10D030xyE
			90	10.0	12.0	1000	6000	4.8	1.6 ± 0.5	4	VDRS14G030xyE
			93	20.0	17.0	2000	12 000	5.2	1.8 ± 0.5	4	VDRS20M030ByE
35	45	56	123	1.0	1.4	100	560	4.8	1.7 ± 0.5	4	VDRS05A035xyE
			115	2.5	4.4	250	1300	4.8	1.7 ± 0.5	4	VDRS07B035xyE
			110	5.0	11.0	500	2200	5.2	1.9 ± 0.5	4	VDRS10D035xyE
			105	10.0	14.0	1000	4800	5.2	1.9 ± 0.5	4	VDRS14G035xyE
			110	20.0	20.0	2000	9600	5.6	2.1 ± 0.5	4	VDRS20M035ByE
40	56	68	145	1.0	1.6	100	460	5.1	2.1 ± 0.5	4	VDRS05A040xyE
			135	2.5	5.2	250	1000	5.1	2.1 ± 0.5	4	VDRS07B040xyE
			130	5.0	13.0	500	1800	5.5	2.3 ± 0.5	4	VDRS10D040xyE
			130	10.0	17.0	1000	3800	5.5	2.3 ± 0.5	4	VDRS14G040xyE
			135	20.0	24.0	2000	7600	5.9	2.5 ± 0.5	4	VDRS20M040ByE
50	65	82	145	5.0	2.6	400	370	4.1	0.6 ± 0.3	4	VDRS05C050xyE
			140	10.0	7.0	1200	900	4.1	0.6 ± 0.3	4	VDRS07H050xyE
			140	25.0	12.0	2500	1500	4.4	0.8 ± 0.3	4	VDRS10P050xyE
			140	50.0	21.0	4500	3100	4.4	0.8 ± 0.3	4	VDRS14T050xyE
60	85	100	165	5.0	2.9	400	290	4.1	0.7 ± 0.3	4	VDRS05C060xyE
			165	10.0	8.3	1200	700	4.1	0.7 ± 0.3	4	VDRS07H060xyE
			165	25.0	15.0	2500	1200	4.4	0.9 ± 0.3	4	VDRS10P060xyE
			165	50.0	24.0	4500	2300	4.4	0.9 ± 0.3	3	VDRS14T060xyE
			165	100.0	56.0	6500	4700	4.5	1.1 ± 0.3	2	VDRS20W060ByE
75	100	120	190	5.0	3.4	400	240	4.1	0.9 ± 0.3	4	VDRS05C075xyE
			200	10.0	10.0	1200	530	4.1	0.9 ± 0.3	4	VDRS07H075xyE
			200	25.0	18.0	2500	1000	4.4	1.1 ± 0.3	4	VDRS10P075xyE
			200	50.0	29.0	4500	1900	4.4	1.1 ± 0.3	3	VDRS14T075xyE
			200	100.0	64.0	6500	3900	4.8	1.3 ± 0.3	2	VDRS20W075ByE
95	125	150	230	5.0	4.1	400	180	4.2	1.1 ± 0.3	4	VDRS05C095xyE
			250	10.0	13.0	1200	450	4.2	1.1 ± 0.3	4	VDRS07H095xyE
			250	25.0	22.0	2500	800	4.6	1.3 ± 0.3	4	VDRS10P095xyE
			250	50.0	37.0	4500	1500	4.6	1.3 ± 0.3	3	VDRS14T095xyE
			250	100.0	88.0	6500	3000	5.2	1.5 ± 0.3	2	VDRS20W095ByE

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ELECTRICAL DATA AND ORDERING INFORMATION

MAXIMUM CONTINUOUS VOLTAGE		VOLTAGE [3] at 1 mA	MAXIMUM VOLTAGE at STATED CURRENT		MAXIMUM ENERGY [4] (10 x 1000 µs)	MAXIMUM NON-REP. TRANSIENT CURRENT [5] I_{NRP} (8 x 20 µs)	TYPICAL CAP. at 1 kHz	T (max.)	E	UL 1449 ED3 SPD TYPE [7]	CATALOG NUMBERS [1]
RMS [2] (V)	DC (V)	(V)	V (V)	I (A)	(J)	(A)	(pF)	(mm)	(mm)		SAP [6]
130	170	205	310	5.0	5.5	400	130	4.2	1.0 ± 0.3	4	VDRS05C130xyE
			340	10.0	17.0	1200	320	4.2	1.0 ± 0.3	4	VDRS07H130xyE
			340	25.0	30.0	2500	580	4.6	1.2 ± 0.3	4	VDRS10P130xyE
			340	50.0	56.0	4500	1050	4.6	1.2 ± 0.3	3	VDRS14T130xyE
			340	100.0	114.0	6500	2100	5.3	1.4 ± 0.3	2	VDRS20W130ByE
140	180	220	350	5.0	6.3	400	120	4.4	1.0 ± 0.3	4	VDRS05C140xyE
			370	10.0	21.0	1200	290	4.4	1.0 ± 0.3	4	VDRS07H140xyE
			370	25.0	33.0	2500	540	4.8	1.2 ± 0.3	4	VDRS10P140xyE
			370	50.0	57.0	4500	950	4.8	1.2 ± 0.3	3	VDRS14T140xyE
			360	100.0	124.0	6500	1900	5.4	1.5 ± 0.3	2	VDRS20W140ByE
150	200	240	395	5.0	7.1	400	110	4.4	1.1 ± 0.3	4	VDRS05C150xyE
			400	10.0	20.0	1200	270	4.4	1.1 ± 0.3	4	VDRS07H150xyE
			400	25.0	36.0	2500	490	4.8	1.3 ± 0.3	4	VDRS10P150xyE
			400	50.0	59.0	4500	850	4.8	1.3 ± 0.3	3	VDRS14T150xyE
			395	100.0	134.0	6500	1700	5.5	1.6 ± 0.3	2	VDRS20W150ByE
175	225	275	410	5.0	7.3	400	90	4.6	1.3 ± 0.3	4	VDRS05C175xyE
			455	10.0	23.0	1200	230	4.6	1.3 ± 0.3	4	VDRS07H175xyE
			455	25.0	41.0	2500	430	5.0	1.5 ± 0.3	4	VDRS10P175xyE
			455	50.0	67.0	4500	750	5.0	1.5 ± 0.3	3	VDRS14T175xyE
			455	100.0	158.0	6500	1500	5.7	1.7 ± 0.3	2	VDRS20W175ByE
230	300	360	560	5.0	10.0	400	70	4.9	1.7 ± 0.8	4	VDRS05C230xyE
			600	10.0	30.0	1200	170	4.9	1.7 ± 0.8	4	VDRS07H230xyE
			600	25.0	54.0	2500	320	5.4	1.9 ± 0.8	4	VDRS10P230xyE
			600	50.0	88.0	4500	540	5.4	1.9 ± 0.8	3	VDRS14T230xyE
			595	100.0	208.0	6500	1100	6.2	2.2 ± 0.8	2	VDRS20W230ByE
250	320	390	600	5.0	11.0	400	60	4.9	1.9 ± 0.8	4	VDRS05C250xyE
			650	10.0	33.0	1200	160	4.9	1.9 ± 0.8	4	VDRS07H250xyE
			650	25.0	58.0	2500	300	5.4	2.1 ± 0.8	4	VDRS10P250xyE
			650	50.0	96.0	4500	480	5.4	2.1 ± 0.8	3	VDRS14T250xyE
			650	100.0	240.0	6500	960	6.4	2.3 ± 0.8	2	VDRS20W250ByE
275	350	430	695	5.0	12.0	400	55	4.9	2.0 ± 0.8	4	VDRS05C275xyE
			710	10.0	36.0	1200	140	4.9	2.0 ± 0.8	4	VDRS07H275xyE
			710	25.0	63.0	2500	270	5.4	2.2 ± 0.8	4	VDRS10P275xyE
			710	50.0	104.0	4500	440	5.4	2.2 ± 0.8	3	VDRS14T275xyE
			710	100.0	264.0	6500	900	6.6	2.5 ± 0.8	2	VDRS20W275ByE
300	385	470	750	5.0	13.0	400	50	5.3	2.2 ± 0.8	4	VDRS05C300xyE
			800	10.0	40.0	1200	130	5.3	2.2 ± 0.8	4	VDRS07H300xyE
			800	25.0	71.0	2500	240	5.9	2.4 ± 0.8	4	VDRS10P300xyE
			800	50.0	117.0	4500	400	5.9	2.4 ± 0.8	3	VDRS14T300xyE
			775	100.0	280.0	6500	810	6.9	2.7 ± 0.8	2	VDRS20W300ByE
320	420	510	800	5.0	15.0	400	45	5.5	2.4 ± 0.8	4	VDRS05C320xyE
			850	10.0	44.0	1200	120	5.5	2.4 ± 0.8	4	VDRS07H320xyE
			850	25.0	77.0	2500	220	6.2	2.6 ± 0.8	4	VDRS10P320xyE
			850	50.0	120.0	4500	370	6.2	2.6 ± 0.8	3	VDRS14T320xyE
			842	100.0	296.0	6500	750	7.1	2.9 ± 0.8	2	VDRS20W320ByE
350	460	560	940	5.0	19.5	400	42	5.8	2.7 ± 0.8	4	VDRS05C350xyE
			10.0	920	39.0	1200	110	5.8	2.7 ± 0.8	4	VDRS07H350xyE
			920	25.0	78.0	2500	200	6.6	2.9 ± 0.8	4	VDRS10P350xyE
			920	50.0	156.0	4500	325	6.6	2.9 ± 0.8	3	VDRS14T350xyE
			920	100.0	312.0	6500	660	7.4	3.2 ± 0.8	2	VDRS20W350ByE
385	505	620	1000	5.0	18.0	400	40	6.0	3.0 ± 0.8	4	VDRS05C385xyE
			1025	10.0	51.0	1200	95	6.0	3.0 ± 0.8	4	VDRS07H385xyE
			1025	25.0	67.0	2500	180	6.6	3.2 ± 0.8	4	VDRS10P385xyE
			1025	50.0	110.0	4500	280	6.6	3.2 ± 0.8	3	VDRS14T385xyE
			1025	100.0	328.0	6500	570	7.7	3.5 ± 0.8	2	VDRS20W385ByE

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ELECTRICAL DATA AND ORDERING INFORMATION

MAXIMUM CONTINUOUS VOLTAGE		VOLTAGE [3] at 1 mA	MAXIMUM VOLTAGE at STATED CURRENT		MAXIMUM ENERGY [4] (10 x 1000 µs)	MAXIMUM NON-REP. TRANSIENT CURRENT [5] I_{NRP} (8 x 20 µs)	TYPICAL CAP. at 1 kHz	T (max.)	E	UL 1449 ED3 SPD TYPE [7]	CATALOG NUMBERS [1]
RMS [2] (V)	DC (V)	(V)	V (V)	I (A)	(J)	(A)	(pF)	(mm)	(mm)		SAP [6]
420	560	680	1100	5.0	20.0	400	35	6.1	3.2 ± 0.8	4	VDRS05C420xyE
			1120	10.0	56.0	1200	85	6.1	3.2 ± 0.8	4	VDRS07H420xyE
			1120	25.0	73.0	2500	165	6.6	3.4 ± 0.8	4	VDRS10P420xyE
			1120	50.0	120.0	4500	250	6.6	3.4 ± 0.8	3	VDRS14T420xyE
			1120	100.0	344.0	6500	510	8.1	3.7 ± 0.8	2	VDRS20W420ByE
460	615	750	1200	5.0	21.0	400	30	6.4	3.6 ± 0.8	4	VDRS05C460xyE
			1240	10.0	63.0	1200	75	6.4	3.6 ± 0.8	4	VDRS07H460xyE
			1240	25.0	82.0	2500	150	6.8	3.8 ± 0.8	4	VDRS10P460xyE
			1240	50.0	135.0	4500	225	6.8	3.8 ± 0.8	3	VDRS14T460xyE
			1240	100.0	360.0	6500	460	8.5	4.1 ± 0.8	2	VDRS20W460ByE
510	670	820	1355	25.0	89.0	2500	135	7.2	4.1 ± 0.8	4	VDRS10P510xyE
			1355	50.0	145.0	4500	220	7.2	4.1 ± 0.8	3	VDRS14T510xyE
			1355	100.0	376.0	6500	450	8.9	4.4 ± 0.8	2	VDRS20W510ByE
550	745	910	1500	25.0	98.0	2500	120	7.9	4.5 ± 0.8	4	VDRS10P550xyE
			1500	50.0	160.0	4500	180	7.9	4.5 ± 0.8	3	VDRS14T550xyE
			1500	100.0	408.0	6500	370	9.5	4.9 ± 0.8	2	VDRS20W550ByE
625	825	1000	1650	100.0	448.0	6500	320	10.1	5.3 ± 0.8	2	VDRS20W625ByE
680	895	1100	1815	100.0	496.0	6500	270	10.6	5.8 ± 0.8	2	VDRS20W680ByE

Notes

(1) The products are certified according to (c)UL (E332800), VDE (40002622) and CSA (219883)

(2) The sinusoidal voltage is assumed as the normal operating condition. If a non-sinusoidal voltage is present, type selection should be based on multiplying the peak voltage by a factor of 0.707.

(3) The voltage measured at 1 mA meets the requirements of IEC 61051.
The tolerance on the voltage at 1 mA is ± 10 %.

(4) High energy surges are generally of longer duration. The maximum energy for one pulse of 10 x 1000 µs is given as a reference for longer duration pulses. This pulse can be characterised by peak current (I_p) and pulse width t_2 (virtual time of half I_p value, following IEC 60060-2, section 6). If V_p is the clamping voltage corresponding to Ip, the energy absorbed in the varistor is determined by the formula:

$$E = K \times V_p \times I_p \times t_2$$

where:
a) K is dependent on the value of t_2 when the value of t_1 is between 8 µs and 10 µs; see Peak Current as a Function of Pulse Width drawing.

(5) A current wave of 8 x 20 µs is used as a standard for pulse current and clamping voltage ratings. The maximum non-repetitive transient current is given for one pulse applied during the life of the component.

(6) For composition of the SAP part number:

Replace “x” by
- B for bulk type
- T for tape and reel
- A for tape and ammopack

Replace “y” by
- S for straight leads
- F for straight leads with flange (bulk only)
- G for straight leads with flange and H_0 = 16 mm (tape and reel/ammo)
- H for straight leads with flange and H_0 = 18.25 mm (tape and reel/ammo)
- K for kinked leads (bulk only)
- L for kinked leads with H0 = 16 mm (tape and reel/ammo)
- M for kinked leads with H0 = 18.25 mm (tape and reel/ammo)

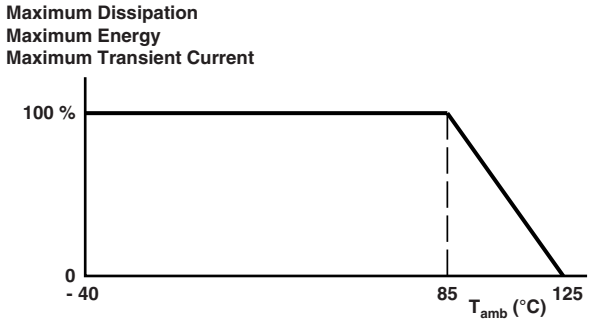
(7) All varistors are recognized under VZAC2 surge protective devices, components type 4 as specified in UL 1449 edition 3. The parts with indication type 2 or 3 SPD's, are tested and certified to be used in type 2 or 3 SPD applications. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to underwriters laboratories Inc.

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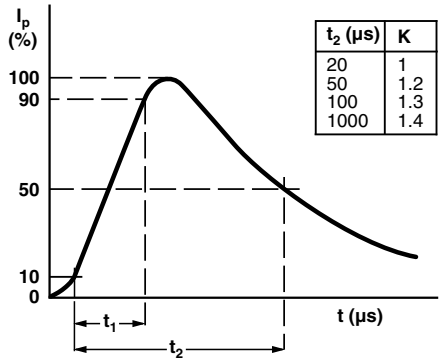
ELECTRICAL CHARACTERISTICS

ELECTRICAL DATA		
PARAMETER	**VALUE**	**UNIT**
Maximum continuous voltage:		
RMS	14 to 680	V
DC	18 to 895	V
Maximum non-repetitive transient current (I_{NRP}) (8 x 20 µs)		
VDRS05	100 or 400	A
VDRS07	250 or 1200	A
VDRS10	500 or 2500	A
VDRS14	1000 or 4500	A
VDRS20	2000 or 6500	A
Thermal resistance:		
VDRS05	≈ 80	K/W
VDRS07	≈ 70	K/W
VDRS10	≈ 60	K/W
VDRS14	≈ 50	K/W
VDRS20	≈ 40	K/W
Maximum dissipation:		
VDRS05	100	mW
VDRS07	250	mW
VDRS10	400	mW
VDRS14	600	mW
VDRS20	1000	mW
Temperature coefficient of voltage at 1 mA maximum	± 0.05	%/K
Voltage proof between interconnected leads and case	2500	V_{AC}
Storage temperature	-40 to +125	°C
Operating temperature	-40 to +85	°C

DERATING CURVE



PEAK CURRENT AS A FUNCTION OF PULSE WIDTH



COMPONENT DIMENSIONS (BULK TYPE) in millimeters AND CATALOG NUMBERS											
D MAX.		A MAX.		A_0 MAX.		L MIN.	T (1) MAX.	E (1)	d	F	CATALOG NUMBER
V ≤ 320 V	V > 320 V	V ≤ 320 V	V > 320 V	V ≤ 320 V	V > 320 V						
7.0		9.0		11.0		24.0	6.5	0.7 to 3.6	0.6 ± 0.05	5 ± 1.0	VDRS05
9.0		11.0		13.0		24.0	6.5	0.7 to 3.6	0.6 ± 0.05	5 ± 1.0	VDRS07
12.0	12.5	14.5	15.0	16.5	17.0	17.0	8.0	0.9 to 4.5	0.8 ± 0.05	7.5 ± 1.0	VDRS10
16.0	16.5	19.0		21.0	21.5	16.0	8.0	0.9 to 4.5	0.8 ± 0.05	7.5 ± 1.0	VDRS14
22.5	23.0	25.5		27.5	28.0	24.0	10.0	1.1 to 5.8	1.0 ± 0.05	10 ± 1.0	VDRS20

Note

(1) $T_{max.}$ and E values per size and voltage level can be found back in the Electrical Data table

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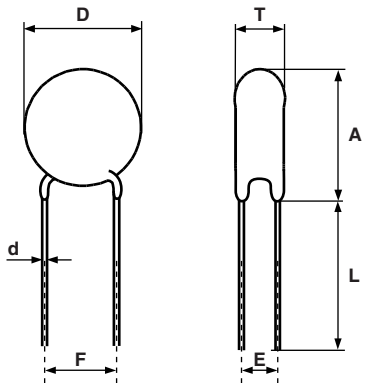
VARISTORS IN BULK					
TYPE	**VDRS05... Ø 5 mm 14 V to 460 V**	**VDRS07... Ø 7 mm 14 V to 460 V**	**VDRS10... Ø 10 mm 14 V to 550 V**	**VDRS14... Ø 14 mm 14 V to 550 V**	**VDRS20... Ø 20 mm 14 V to 680 V**
Straight leads; see outline of components with straight leads drawing (1)	BSE	BSE	BSE	BSE	BSE
Straight leads with flange; see outline of components with flanged leads drawing	BFE	BFE	-	-	-
Kinked leads; see outline of components with kinked leads drawing	BKE	BKE	BKE	BKE	BKE
Packaging quantities					
14 V to 95 V	250	250	250	100	50
130 V to 385 V	250	250	250	100	50
420 V to 460 V	250	250	200	100	50
485 V to max. V	-	250	150	100	50

Note

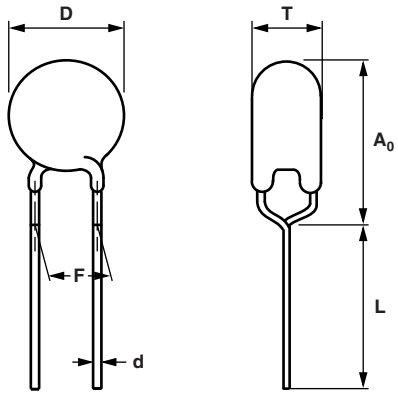
(1) Outline of the Ø 20 mm differs from the other dimensions

DIMENSIONS in millimeters: See Component Dimensions and Electrical Data table

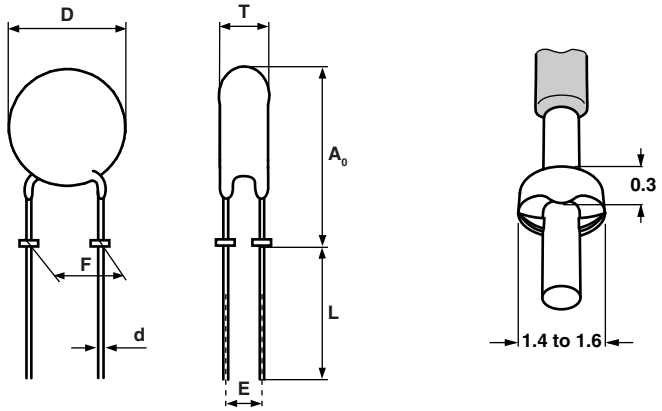
OUTLINE of Component with Straight Leads



OUTLINE of Component with Kinked Leads



OUTLINE of Component with Flanged Leads



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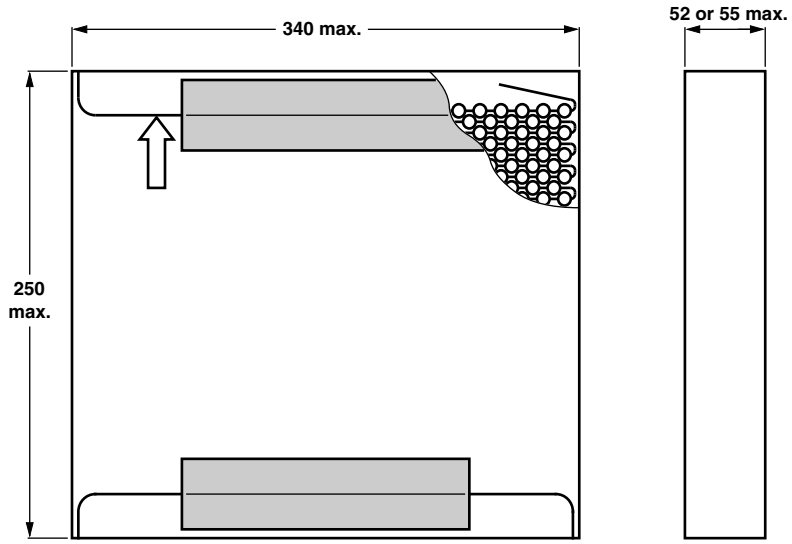
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VARISTORS ON TAPE IN AMMOPACK				
TYPE	**VDRS05... Ø 5 mm 14 V to 460 V**	**VDRS07... Ø 7 mm 14 V to 460 V**	**VDRS10... Ø 10 mm 14 V to 550 V**	**VDRS14... Ø 14 mm 14 V to 550 V**
Straight leads				
H = 18 mm	-	-	ASE	ASE
H = 20 mm	ASE	ASE	-	-
See drawing: Taped version with straight leads				
Straight leads with flange				
H_0 = 16 mm	AGE	AGE	-	-
H_0 = 18.25 mm	AHE	AHE	-	-
See drawing: Taped version with flanged leads				
Kinked leads				
H_0 = 18.25 mm	AME	AME	AME	AME
H_0 = 16 mm	ALE	ALE	ALE	ALE
See drawing: Taped version with kinked leads				
Packaging quantities				
14 V to 210 V	1500 (1)	1500 (1)	500	500
230 V to max. V	1000	1000	500	500

Note

(1) Except for 35 V and 40 V = 1000 pieces

DIMENSIONS OF AMMOPACK IN MILLIMETERS



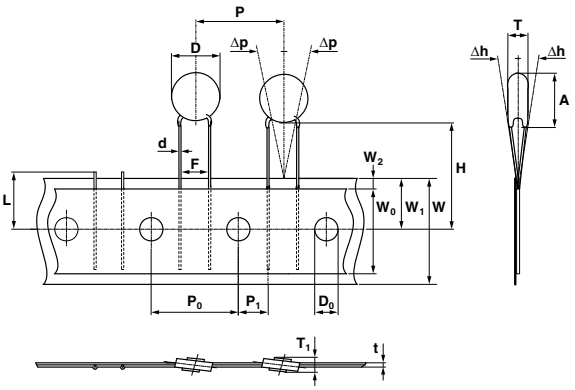
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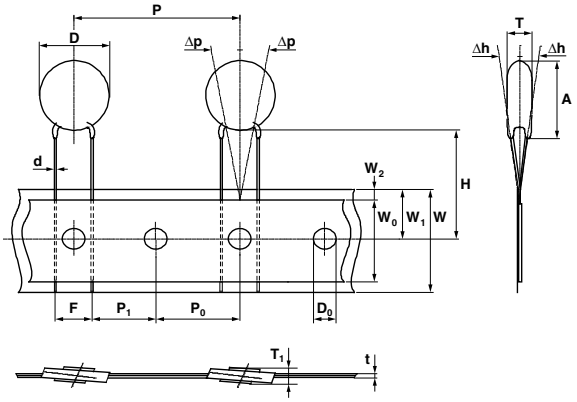
VARISTORS ON TAPE AND REEL				
TYPE	**VDRS05... Ø 5 mm 14 V to 460 V**	**VDRS07... Ø 7 mm 14 V to 460 V**	**VDRS10... Ø 10 mm 14 V to 550 V**	**VDRS14... Ø 14 mm 14 V to 550 V**
Straight leads H = 18 mm H = 20 mm See drawing: Taped version with straight leads	 - TSE	 - TSE	 TSE -	 TSE -
Straight leads with flange H_0 = 16 mm H_0 = 18.25 mm See drawing: Taped version with flanged leads	 TGE THE	 TGE THE	 - -	 - -
Kinked leads H_0 = 18.25 mm H_0 = 16 mm See drawing: Taped version with kinked leads	 TME TLE	 TME TLE	 TME TLE	 TME TLE
Packaging quantities				
14 V to 250 V	1500	1500	1000	750
275 V to 300 V	1500	1500	750	750
320 V to 350 V	1000	1000	500	500
385 V to max. V	1000	1000	500	500

PACKAGING

TAPED VERSION WITH STRAIGHT LEADS (only for VDRS05 and VDRS07)



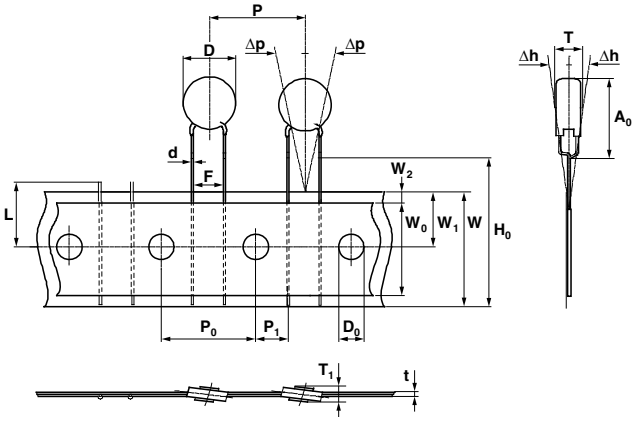
TAPED VERSION WITH STRAIGHT LEADS (only for VDRS10 and VDRS14)



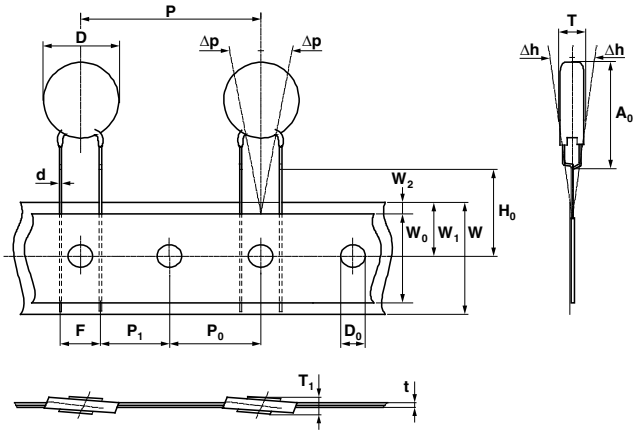
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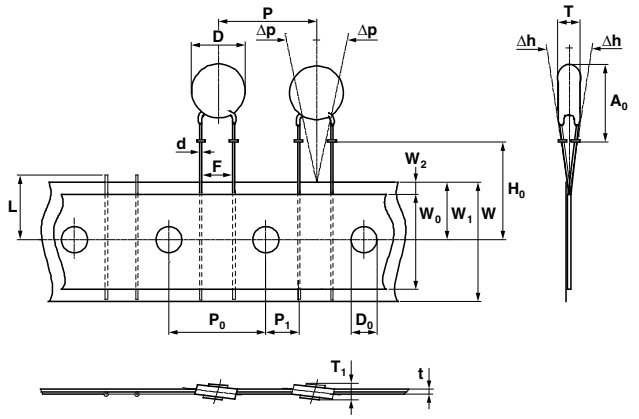
TAPED VERSION WITH KINKED LEADS
(only for VDRS05 and VDRS07)



TAPED VERSION WITH KINKED LEADS
(only for VDRS05 and VDRS07)



TAPED VERSION WITH FLANGED LEADS
(only for VDRS05 and VDRS07)



TAPING DATA (based on IEC 60286-2)						
SYMBOL	**PARAMETER**		**DIMENSIONS/TOLERANCE**			
			VDRS05	**VDRS07**	**VDRS10**	**VDRS14**
A max.	Max. mounting height	V ≤ 300 V	9.0	11.0	14.5	19.0
		V > 300 V			15.0	
A_0 max.	Max. mounting height	V ≤ 300 V	11.0	13.0	16.5	21.0
		V > 300 V			17.0	21.5
D max.	Max. body diameter	V ≤ 300 V	7.0	9.0	12.0	16.0
		V > 300 V			12.5	16.5
d	Lead wire diameter		0.6 ± 0.05		0.8 ± 0.05	
F	Lead to lead distance (1)		5.0 + 0.8/- 0.2		7.5 ± 0.8	
H	Distance component to tape center (2)		20.0 + 2.0/- 0.0		18.0 + 2.0/- 0.0	
H_0	Lead wire clinch height		16.0 or 18.25 ± 0.5			
P	Pitch of components on tape		12.7 ± 1.0		25.4 ± 1.0	
T	Total thickness		See Electrical Data table			

Notes

(1) Guaranteed between component and tape

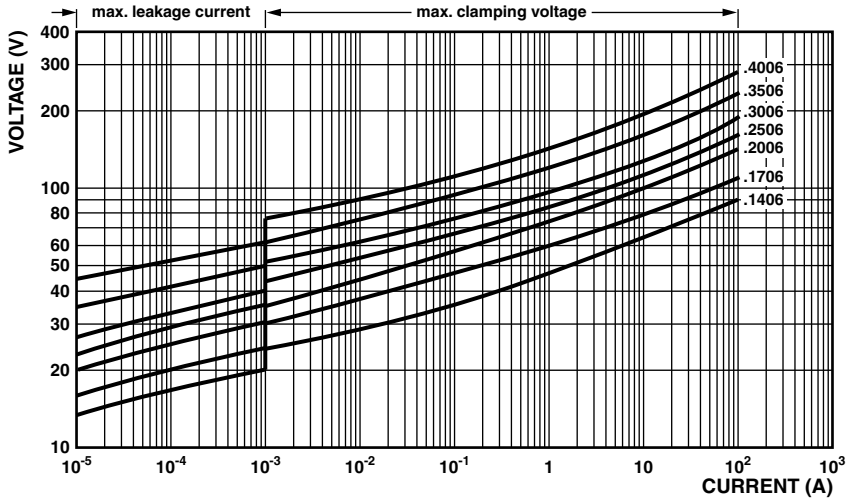
(2) For VDRS14T510xSE and VDRS14T550xSE: H = 20 mm ± 1 mm

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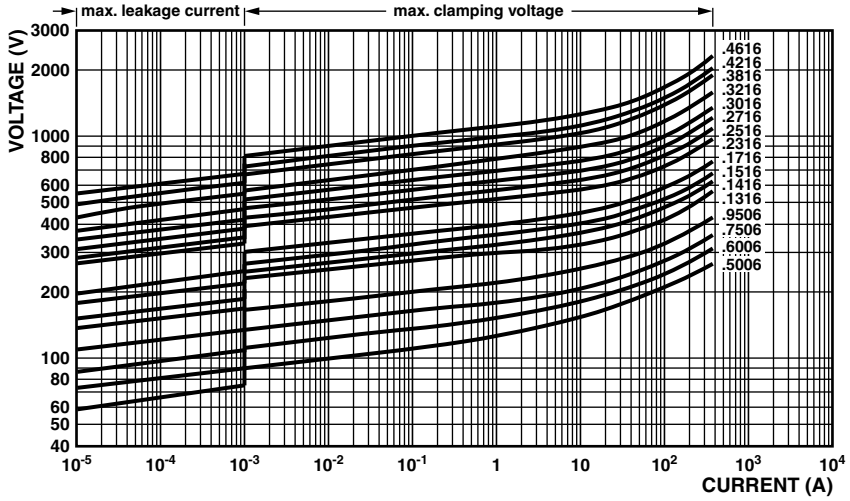
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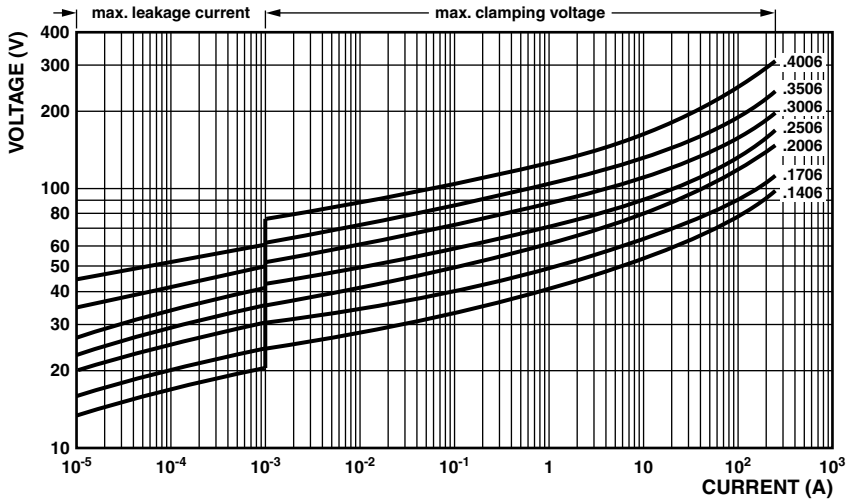
14 V_{RMS} to 40 V_{RMS}; VDRS05



50 V_{RMS} to 460 V_{RMS}; VDRS05



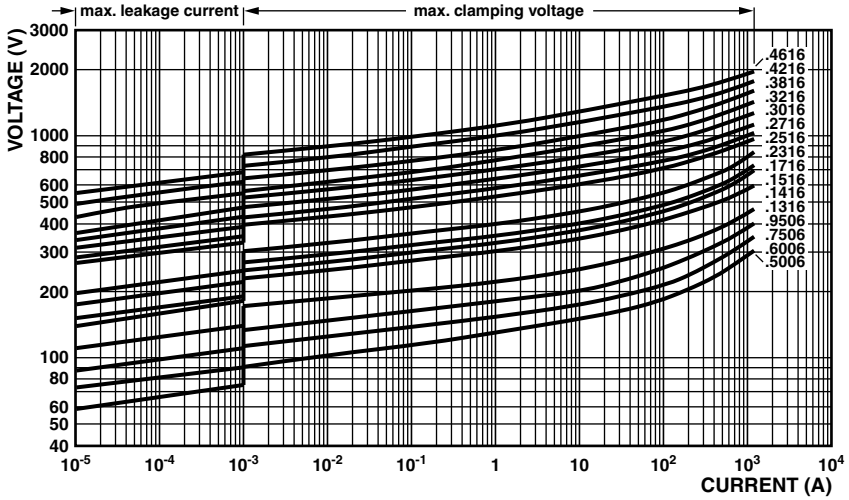
14 V_{RMS} to 40 V_{RMS}; VDRS07



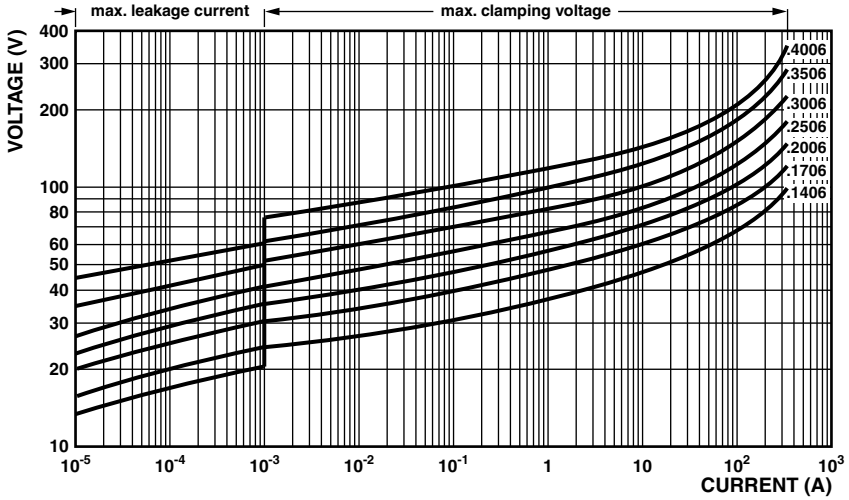
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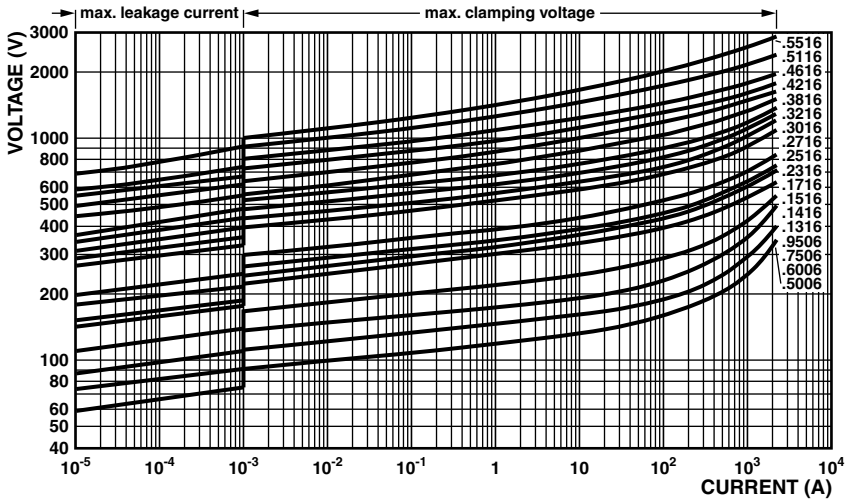
50 V_{RMS} to 460 V_{RMS}; VDRS07



14 V_{RMS} to 40 V_{RMS}; VDRS10



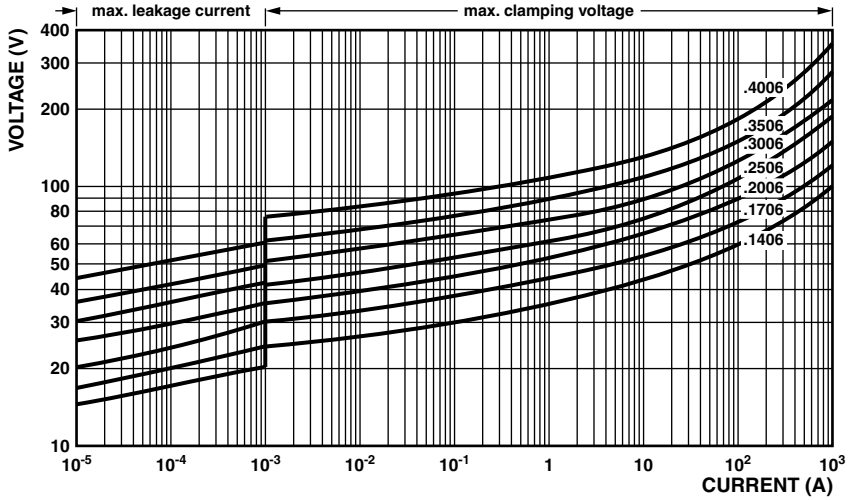
50 V_{RMS} to 550 V_{RMS}; VDRS10



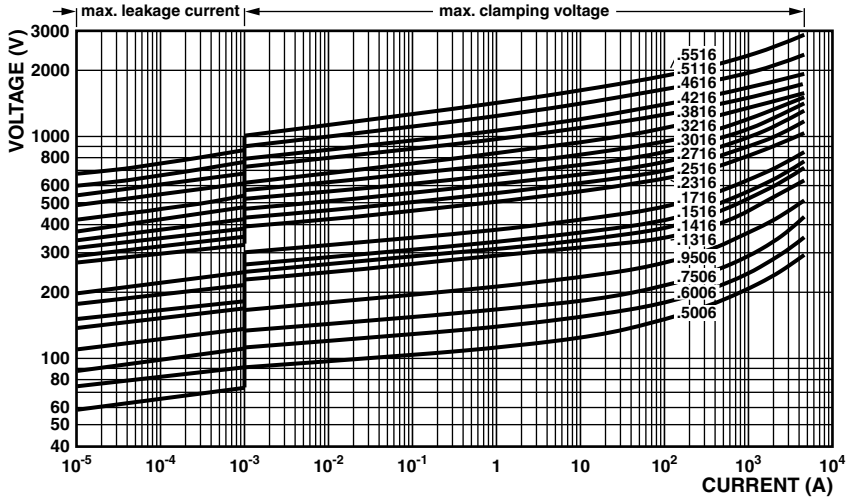
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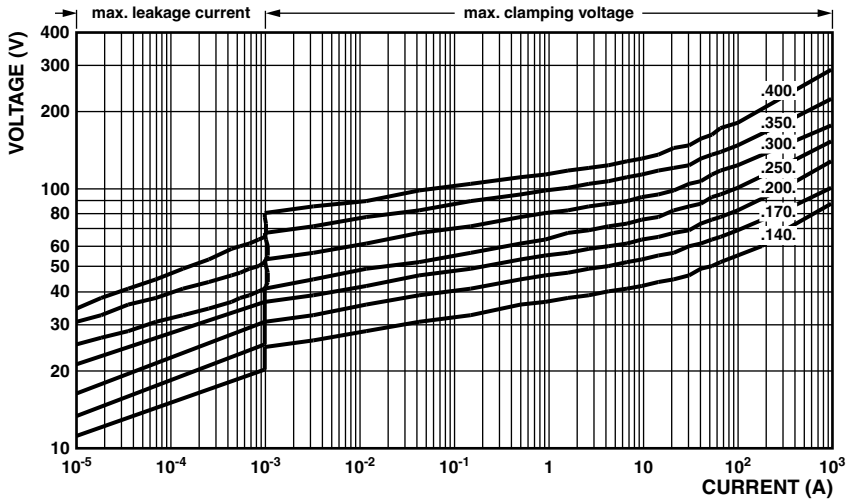
14 V_{RMS} to 40 V_{RMS}; VDRS14



50 V_{RMS} to 550 V_{RMS}; VDRS14



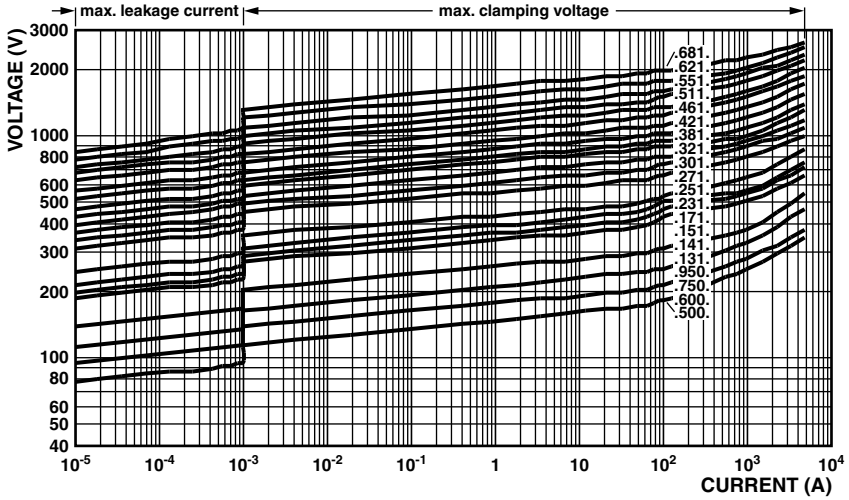
14 V_{RMS} to 40 V_{RMS}; VDRS20



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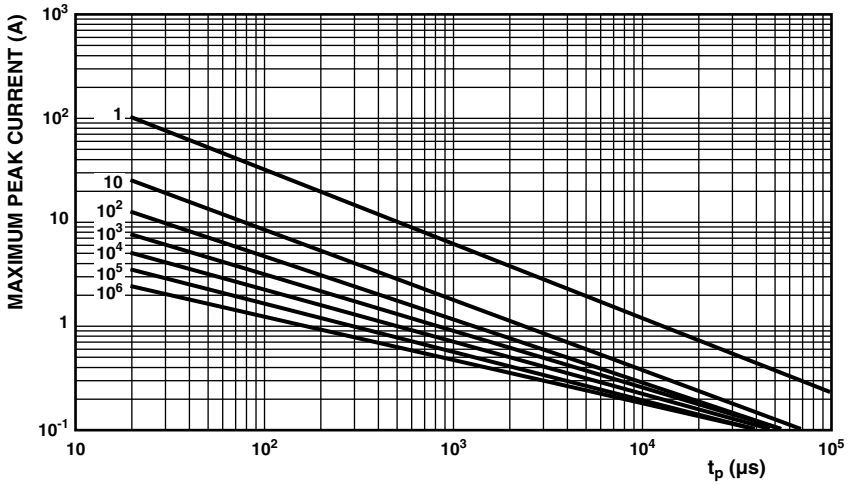
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50 V_{RMS} to 680 V_{RMS}; VDRS20

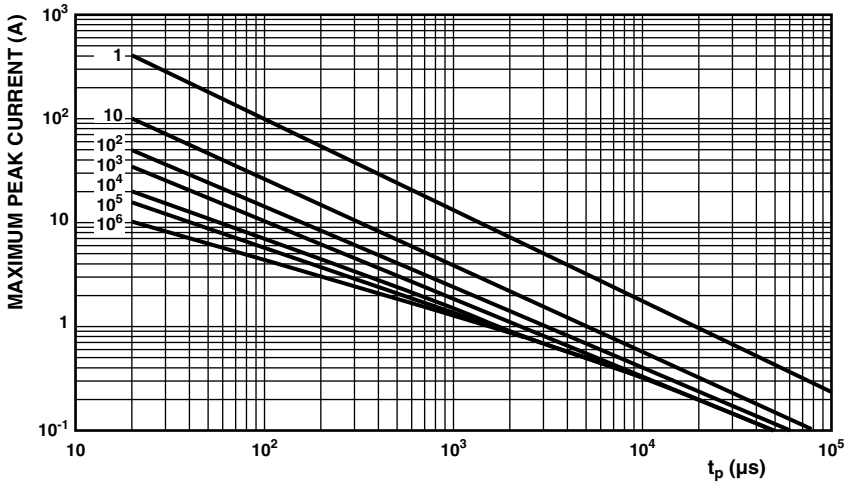


MAXIMUM APPLICABLE TRANSIENT CURRENT AS A FUNCTION OF PULSE DURATION

14 V_{RMS} to 40 V_{RMS}; VDRS05



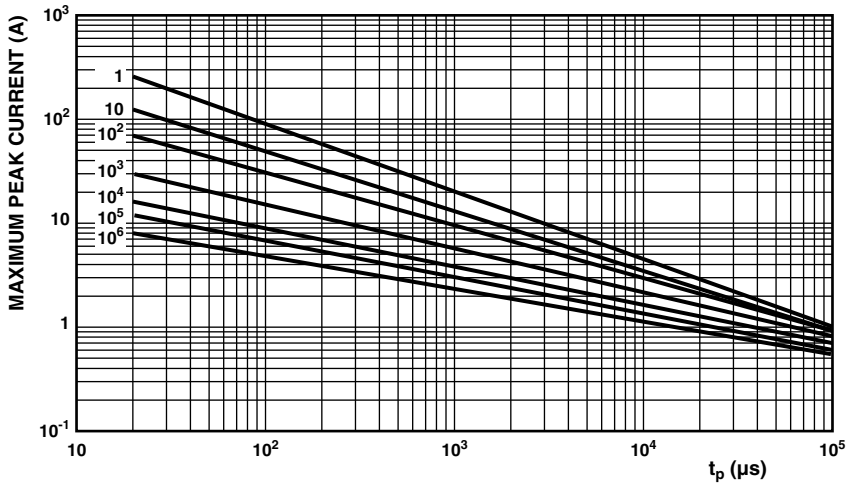
50 V_{RMS} to 460 V_{RMS}; VDRS05



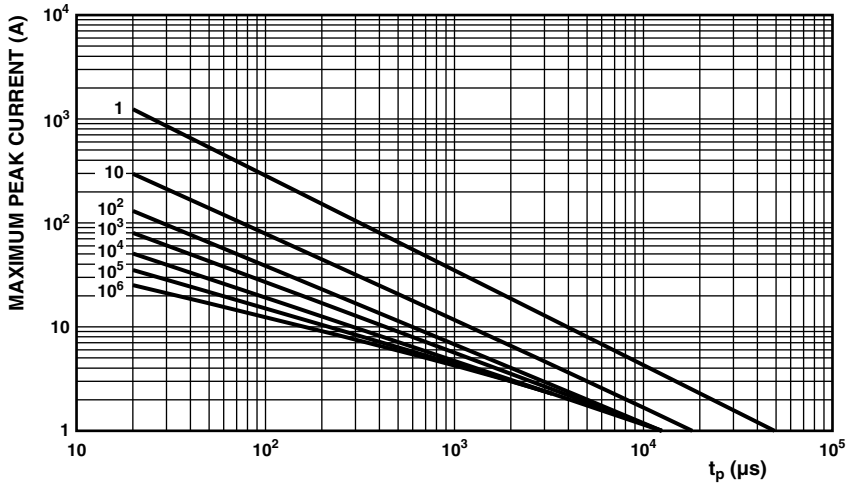
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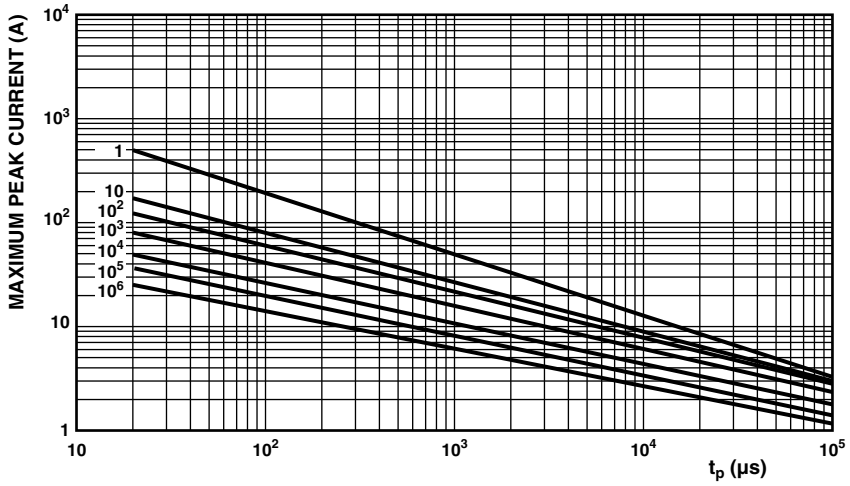
14 V_{RMS} to 40 V_{RMS}; VDRS07



50 V_{RMS} to 460 V_{RMS}; VDRS07



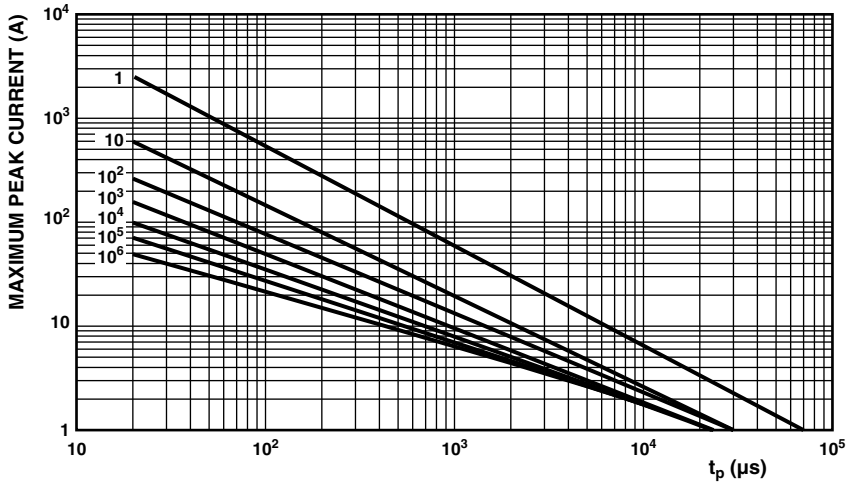
14 V_{RMS} to 40 V_{RMS}; VDRS10



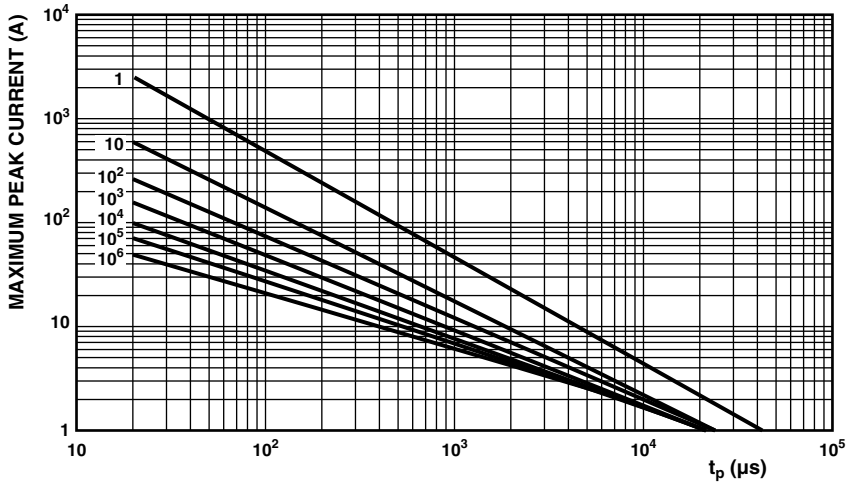
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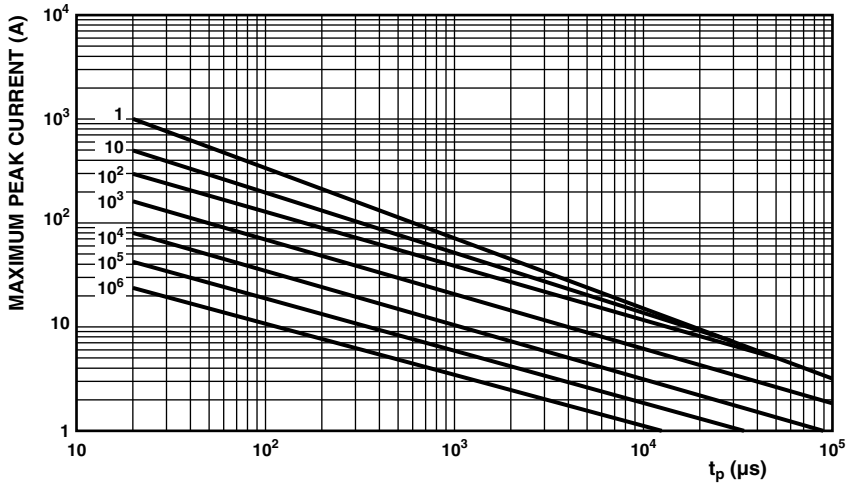
50 V_{RMS} to 320 V_{RMS}; VDRS10



385 V_{RMS} to 550 V_{RMS}; VDRS10

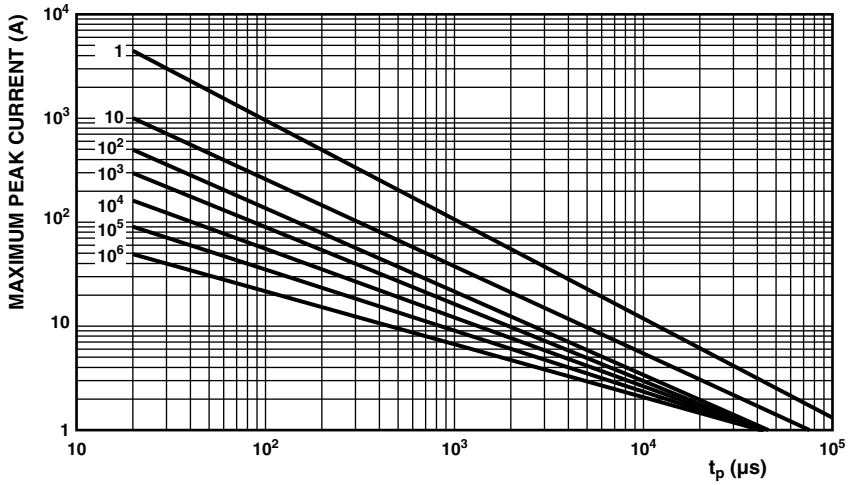


14 V_{RMS} to 40 V_{RMS}; VDRS14

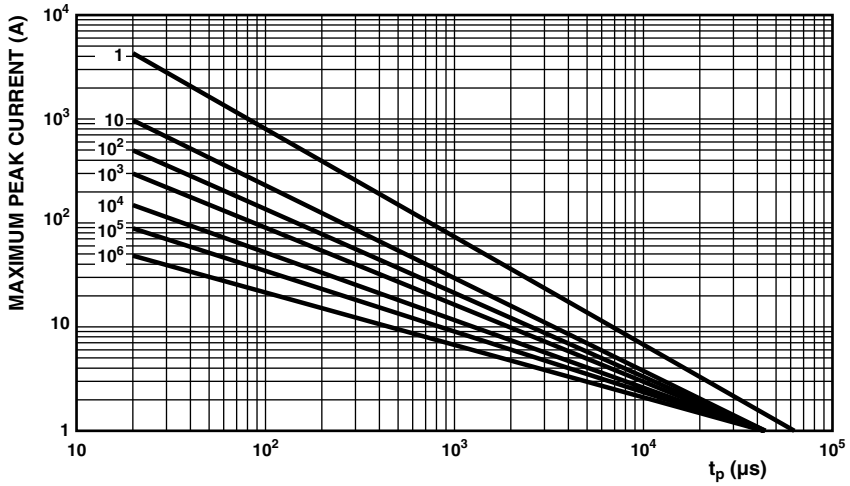


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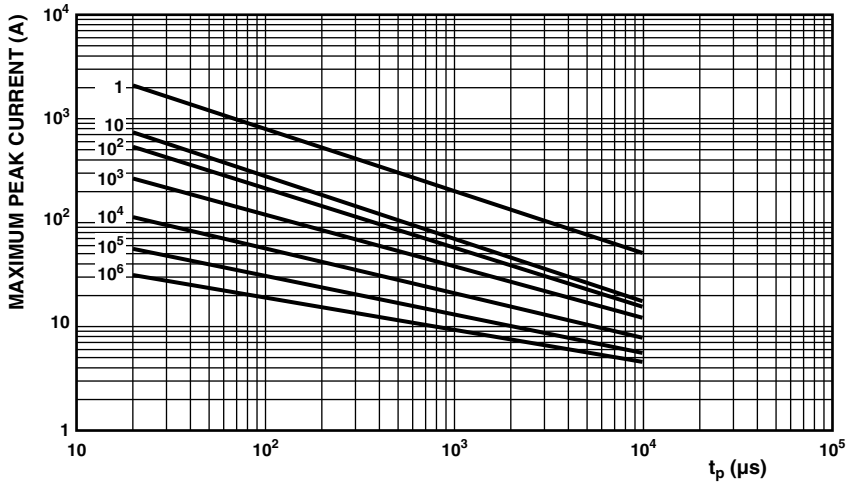
50 V_{RMS} to 320 V_{RMS}; VDRS14



385 V_{RMS} to 550 V_{RMS}; VDRS14

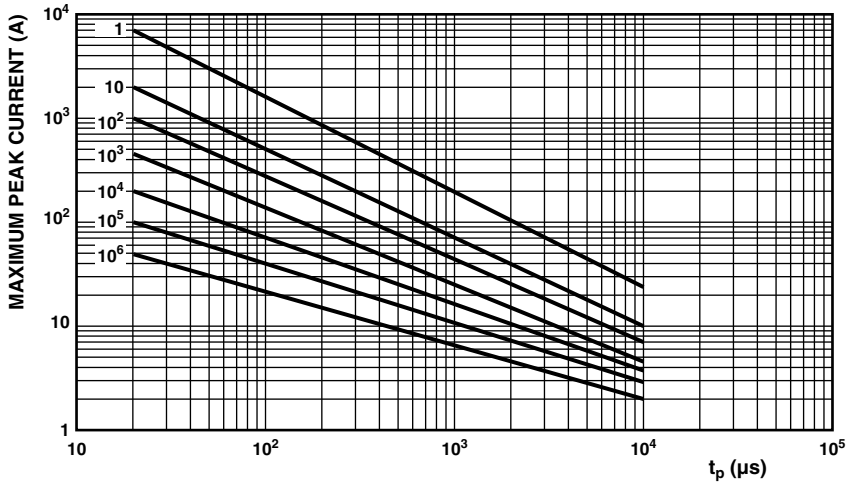


14 V_{RMS} to 40 V_{RMS}; VDRS20

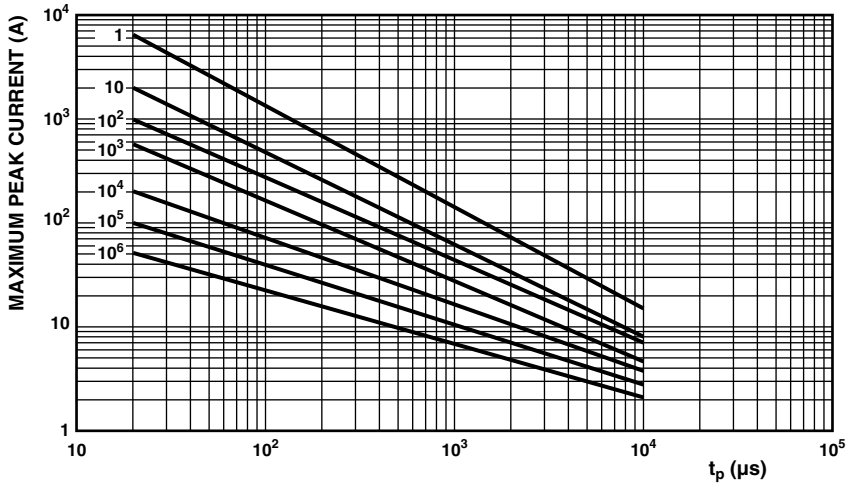


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60 V_{RMS} to 300 V_{RMS}; VDRS20



320 V_{RMS} to 680 V_{RMS}; VDRS20



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Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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