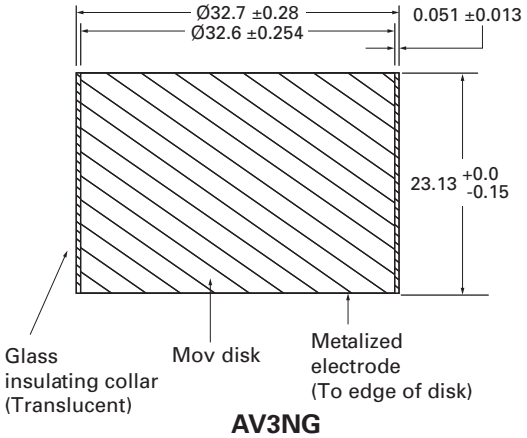
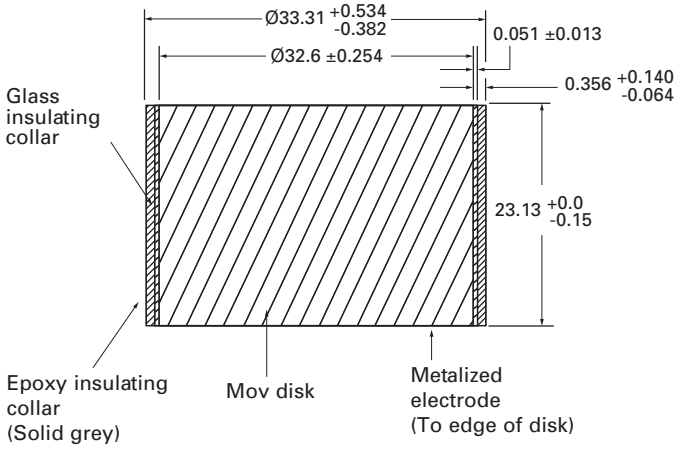
Technical specifications for 5 kA, normal-duty distribution 3 kV and 3.33 kV VariSTAR MOV disks



AV3NG



AV3NE

Surface area = 8.64 cm^2
volume = 19.19 cm^3

Powering Business Worldwide

Application

The VariSTAR™ MOV (Metal Oxide Varistor) disks described in this Technical Data sheet are for use as active elements in IEC 5 kA and ANSI Normal-Duty Distribution-Class Surge Arresters, when applied in an appropriately designed arrester.

Polymer-housed arrester designs

Use the glass collared AV3NG series VariSTAR disks, when applying disks to a polymer-housed arrester, where the dielectric strength of the material in direct contact with the disks exceeds the dielectric strength of air.

Porcelain-housed arrester designs

Option 1

Use the glass collared AV3NG series VariSTAR disk together with an Epoxy Film Tape, as described in technical data sheet TD-241, when applying disks in a porcelain-housed arrester, where the material in direct contact with the VariSTAR disks is equal to the dielectric strength of air.

Option 2

Use the epoxy collared AV3NE series VariSTAR disks, when applying disks in a porcelain-housed arrester, where the dielectric strength of the material in direct contact with the disks is equal to the dielectric strength of air.

Electrical properties for AV3NG and AV3NE series VariSTAR disks are otherwise identical.

Catalog number reference:
AV3 = Disk Size
N = Normal-Duty, 5 kA
G/E = Glass or Epoxy Collar
PA/PB = Rating Designation

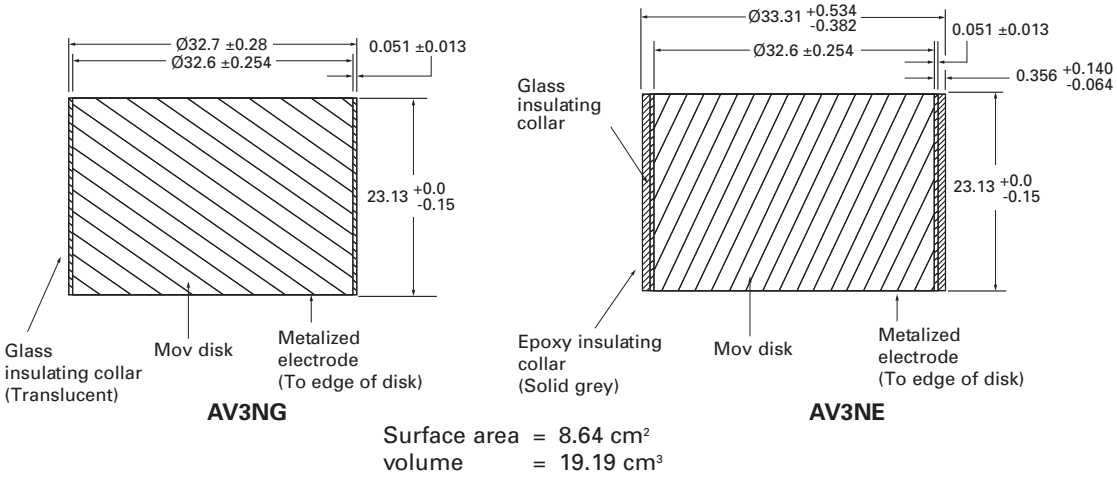


Figure 1. Dimensions AV3NG VariSTAR disk and AV3NE VariSTAR disk in mm

Table 1. Suggested usage & class ratings

Catalog number	Suggested U_r (Rating)	Suggested U_c (MCOV)	IEC LD current withstand	ANSI LCLD class	IEC High current ANSI HCSD	I_{ref}
AV3NEPA	3.00 kV	2.63 kV	150 A 2000 µs	75 A 2000 µs	65 kA	3 mA
AV3NGPA						
AV3NEPB	3.33 kV	2.84 kV	150 A 2000 µs	75 A 2000 µs	65 kA	3 mA
AV3NGPB						

Table 2. Maximum residual voltages

Catalog number	Rating (kV)	MCOV (kV rms)	0.5 µsec (ANSI) kV @ 5 kA	1.0 µsec (IEC) kV @ 5 kA	8/20 µs Wave forms					
					kV pk @ 1.5 kA	kV pk @ 3 kA	kV pk @ 5 kA	kV pk @ 10 kA	kV pk @ 20 kA	kV pk @ 40 kA
AV3NEPA	3	2.63	10.7	10.6	8.7	9.4	10.1	11.0	12.6	14.6
AV3NGPA										
AV3NEPB	3.33	2.84	11.4	11.3	9.4	10.1	10.8	11.8	13.5	15.7
AV3NGPB										

Note: Values other than V_{5kA} are typical values.

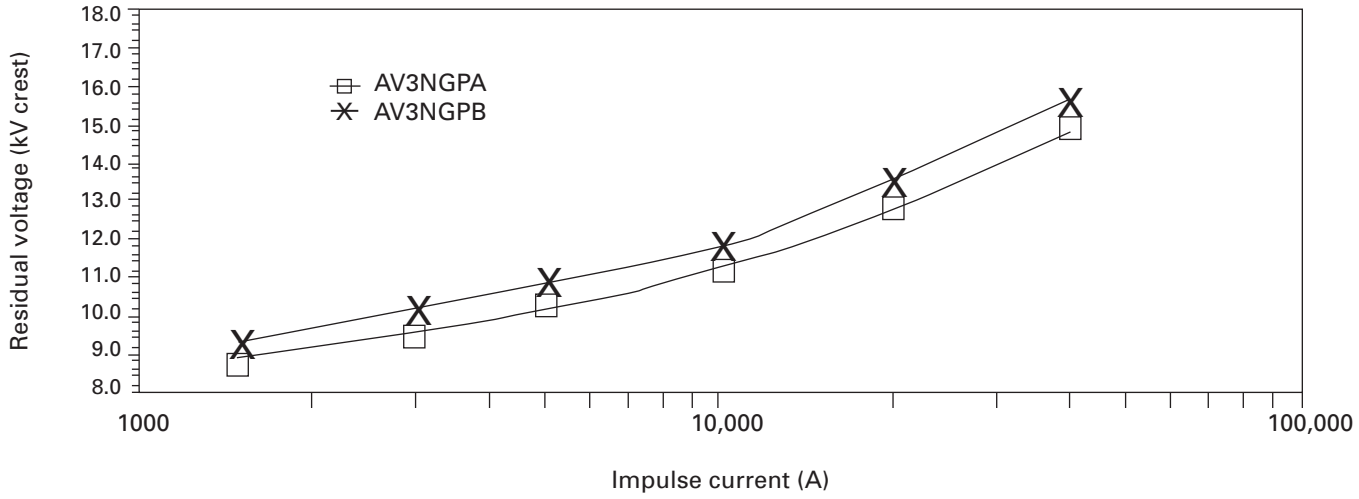


Figure 2. Maximum residual voltage vs. impulse current

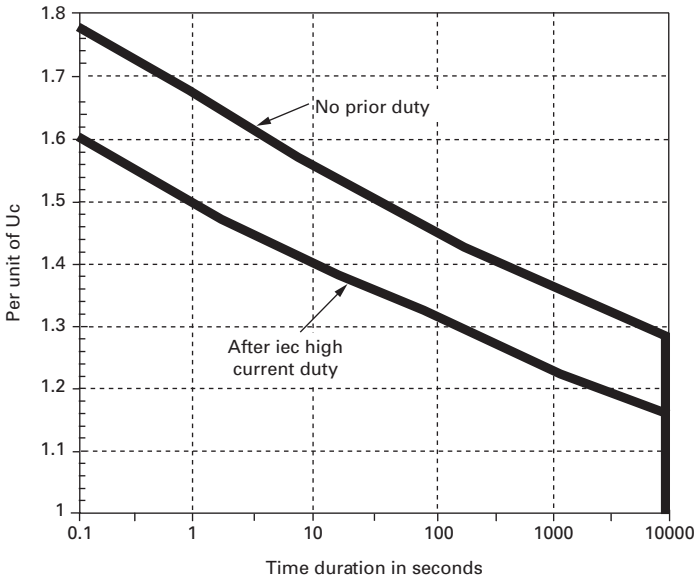


Figure 3. Temporary overvoltage capability, 60°C

Note: The TOV capability will depend on the design and thermal capability of the arrester. The above TOV curve represents a typical Eaton Cooper Power series design.

Table 3. Guaranteed characteristics based on 100% testing

Catalog number	Min. $V_{1mA/cm2}$ (kV DC)	Max. V_{5kA} (kV)
AV3NEPA	5.00	10.1
AV3NGPA		
AV3NEPB	5.41	10.8
AV3NGPB		

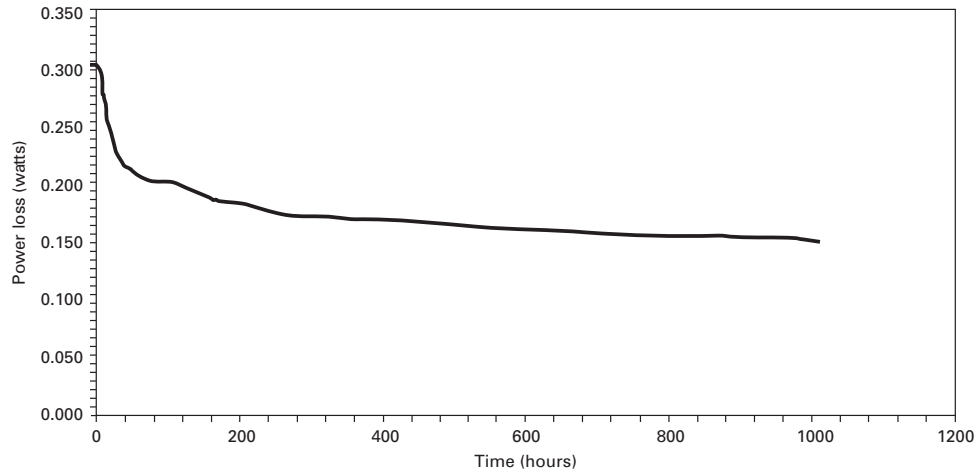
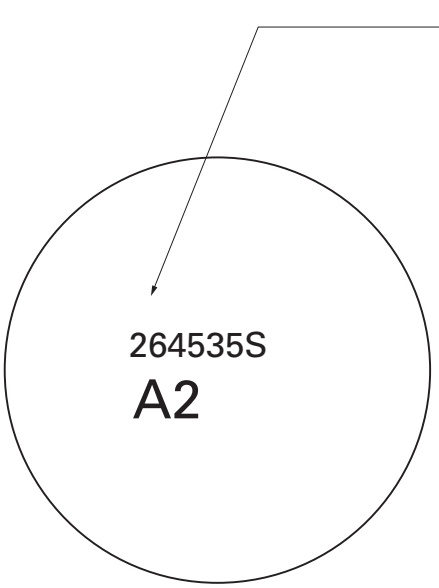


Figure 4. Aging curve AV3NG and AV3NE VariSTAR disks

Aging factors based on the IEC and ANSI 1000 hour power loss tests are guaranteed to be less than or equal to 1. The 1000 hour test is performed at 115°C, which is equivalent to 110 years with the operating temperature at 40°C and operating voltages less than or equal to COV. See Figure 4.

Factory routine tests performed on each disk

- Physical Inspection
- Residual Voltage Measurement (referenced to 5 kA, 8/20 µs)
- V1mA/cm^2 (DC voltage at 8.6 mA)
- Power Loss @ 0.551 of V1mA/cm^2 Voltage



Top Line:
- Digit 1 . . . . . Factory No. (May be numeral or letter designation)
- Digit 2 . . . . . Last Digit of Year of Manufacture
- Digits 3, 4, 5, 6 . . . Factory Lot Number
- Digit 7 . . . . . Factory Use Only

Second Line:
- Digit 1 . . . . . Rating Code (See Table 4 below)
- Digit 2 . . . . . Factory Use Only

Figure 5. Disk identification system

Table 4. Disk category

Rating code	Catalog number	Min. V1mA/cm^2 (kV DC)	Max. V5 kA (kV)	Power loss test		Min. Vref @ I_{ref} of 3 mA (kV)
				Test voltage kV rms	Watts @ 20° C	
A	AV3NEPA AV3NGPA	5.00	10.1	2.76	0.163	3.48
B	AV3NEPB AV3NGPB	5.41	10.8	2.98	0.173	3.76

Storage and handling

The VariSTAR MOV disks are packaged on wooden pallets and secured for ocean container shipment. The pallet/boxes shall be stored indoors until the purchaser's acceptance test. Once opened, the disks shall be stored in a dry and clean environment to avoid moisture or other contaminants to collect on the disk surface. The MOV disk should not be handled with bare hands. A latex or other nonfibrous glove should be used to prevent contaminants from compromising the collar of the disk.

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