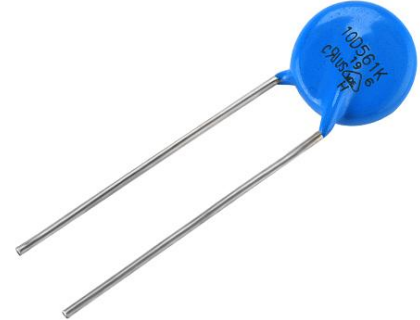


### Varistors (MOV) Data Sheet

#### Features

- Wide operating voltage (V1mA) range from 18V to 1100V
- Fast responding to transient over-voltage
- Large absorbing transient energy capability
- Low clamping ratio and no follow-on current
- Meets MSL level 1, per J-STD-020
- Operating Temperature: -40°C ~ +85°C
- Storage Temperature: -40°C ~ +125°C
- Safety certification:

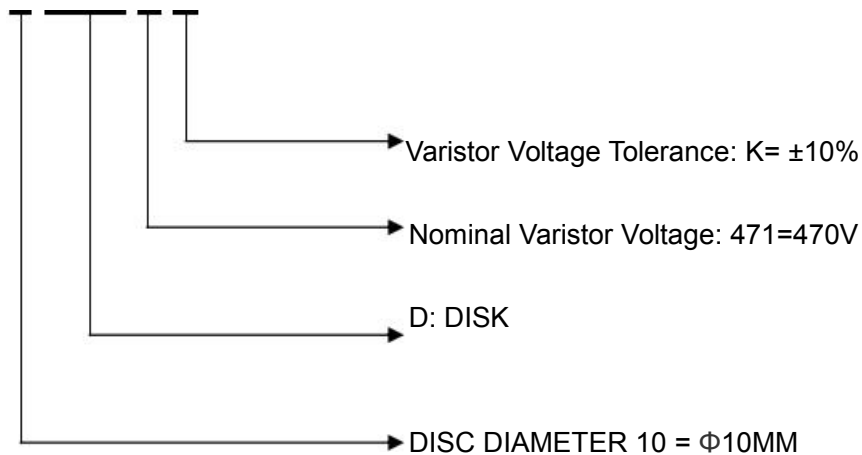


#### Applications

- MOV varistors are widely used in:
- AC power supplies
- Industrial control systems
- Home appliances
- LED drivers
- Surge protection circuits

#### Description of Part Number

MOV-10 D 471 K



#### Delivery Time

Standard MOV	Delivery Time	
MOV-10D180K ~ MOV-10D112K	16days	

### Electrical Characteristics

Part Number	Maximum Allowable Voltage		Varistor Voltage $V_{1mA}(V)$	Maximum Clamping Voltage $V_c(V)$ AT 25A	Max Surge Current 8/20 $\mu$ s $I_{max}$ Standard	Maximum Energy (10/1000 $\mu$ s) (J) Standard	Typical Capacitance (Reference) 1KHz(pf)	Safety Certification	
	$V_{AC}(V)$	$V_{DC}(V)$						UL / CUL	VDE
MOV-10D180K	11V	14V	18V(16V~20V)	38V	500A	2.8J	5600pF	√	√
MOV-10D220K	14V	18V	22V(20V~24V)	43V	500A	4.5J	4500pF	√	√
MOV-10D270K	17V	22V	27V(24V~30V)	53V	500A	6.0J	3700pF	√	√
MOV-10D330K	20V	26V	33V(30V~36V)	65V	500A	7.4J	3000pF	√	√
MOV-10D390K	25V	31V	39V(35V~43V)	77V	500A	9.1J	2400pF	√	√
MOV-10D470K	30V	38V	47V(42V~52V)	93V	500A	10.8J	2100pF	√	√
MOV-10D560K	35V	45V	56V(50V~62V)	110V	500A	12.9J	1800pF	√	√
MOV-10D680K	40V	56V	68V(61V~75V)	135V	500A	15.4J	1500pF	√	√
MOV-10D820K	50V	65V	82V(74V~90V)	135V	2500A	16.8J	1200pF	√	√
MOV-10D101K	60V	85V	100V(90V~110V)	165V	2500A	18.2J	1000pF	√	√
MOV-10D121K	75V	100V	120V(108V~132V)	200V	2500A	21.0J	830pF	√	√
MOV-10D151K	95V	125V	150V(135V~165V)	250V	2500A	25.2J	670pF	√	√
MOV-10D181K	115V	150V	180V(162V~198V)	300V	2500A	30.8J	560pF	√	√
MOV-10D201K	130V	170V	200V(180V~220V)	340V	2500A	42.0J	500pF	√	√
MOV-10D221K	140V	180V	220V(198V~242V)	360V	2500A	46.2J	450pF	√	√
MOV-10D241K	150V	200V	240V(216V~264V)	395V	2500A	50.4J	420pF	√	√
MOV-10D271K	175V	225V	270V(243V~297V)	455V	2500A	57.4J	370pF	√	√
MOV-10D301K	190V	250V	300V(270V~330V)	505V	2500A	63.0J	330pF	√	√
MOV-10D331K	210V	275V	330V(297V~363V)	550V	2500A	68.6J	300pF	√	√
MOV-10D361K	230V	300V	360V(324V~396V)	595V	2500A	74.2J	280pF	√	√
MOV-10D391K	250V	320V	390V(351V~429V)	650V	2500A	81.2J	260pF	√	√
MOV-10D431K	275V	350V	430V(387V~473V)	710V	2500A	88.2J	230pF	√	√
MOV-10D471K	300V	385V	470V(423V~517V)	775V	2500A	96.0J	210pF	√	√
MOV-10D511K	320V	415V	510V(459V~561V)	845V	2500A	98.0J	200pF	√	√
MOV-10D561K	350V	460V	560V(504V~616V)	920V	2500A	100J	180pF	√	√
MOV-10D621K	385V	505V	620V(558V~682V)	1025V	2500A	102J	160pF	√	√
MOV-10D681K	420V	560V	680V(612V~748V)	1120V	2500A	104J	150pF	√	√
MOV-10D751K	460V	615V	750V(675V~825V)	1240V	2500A	110J	130pF	√	√
MOV-10D781K	485V	640V	780V(702V~858V)	1290V	2500A	118J	130pF	√	√
MOV-10D821K	510V	670V	820V(738V~902V)	1355V	2500A	122J	120pF	√	√
MOV-10D911K	550V	745V	910V(819V~1001V)	1500V	2500A	128J	110pF	√	√
MOV-10D102K	625V	825V	1000V(900V~1100V)	1650V	2500A	131J	100pF	√	√
MOV-10D112K	680V	895V	1100V(990V~1210V)	1815V	2500A	133J	90pF	√	√

### Electrical Characteristics

Part Number	Maximum Allowable Voltage		Varistor Voltage $V_{1mA}(V)$	Maximum Clamping Voltage $V_c(V)$ AT 25A	Max Surge Current 8/20 $\mu$ s $I_{max}$ High Surge	Maximum Energy (10/1000 $\mu$ s) (J) High Surge	Typical Capacitance (Reference) 1KHz(pF)	Safety Certification	
	$V_{AC}(V)$	$V_{DC}(V)$						UL / CUL	VDE
MOV-10D180KJ	11V	14V	18V(16V~20V)	38V	1000A	3.0J	5600pF	-	-
MOV-10D220KJ	14V	18V	22V(20V~24V)	43V	1000A	5.0J	4500pF	-	-
MOV-10D270KJ	17V	22V	27V(24V~30V)	53V	1000A	6.0J	3700pF	-	-
MOV-10D330KJ	20V	26V	33V(30V~36V)	65V	1000A	7.0J	3000pF	-	-
MOV-10D390KJ	25V	31V	39V(35V~43V)	77V	1000A	9.0J	2400pF	-	-
MOV-10D470KJ	30V	38V	47V(42V~52V)	93V	1000A	11.0J	2100pF	-	-
MOV-10D560KJ	35V	45V	56V(50V~62V)	110V	1000A	13.0J	1800pF	-	-
MOV-10D680KJ	40V	56V	68V(61V~75V)	135V	1000A	15.0J	1500pF	-	-
MOV-10D820KJ	50V	65V	82V(74V~90V)	135V	3500A	17.0J	1200pF	-	-
MOV-10D101KJ	60V	85V	100V(90V~110V)	165V	3500A	18.0J	1000pF	-	-
MOV-10D121KJ	75V	100V	120V(108V~132V)	200V	3500A	21.0J	830pF	-	-
MOV-10D151KJ	95V	125V	150V(135V~165V)	250V	3500A	25.0J	670pF	-	-
MOV-10D181KJ	115V	150V	180V(162V~198V)	300V	3500A	30.0J	560pF	-	-
MOV-10D201KJ	130V	170V	200V(180V~220V)	340V	3500A	35.0J	500pF	-	-
MOV-10D221KJ	140V	180V	220V(198V~242V)	360V	3500A	39.0J	450pF	-	-
MOV-10D241KJ	150V	200V	240V(216V~264V)	395V	3500A	42.0J	420pF	-	-
MOV-10D271KJ	175V	225V	270V(243V~297V)	455V	3500A	49.0J	370pF	-	-
MOV-10D301KJ	190V	250V	300V(270V~330V)	505V	3500A	54.0J	330pF	-	-
MOV-10D331KJ	210V	275V	330V(297V~363V)	550V	3500A	58.0J	300pF	-	-
MOV-10D361KJ	230V	300V	360V(324V~396V)	595V	3500A	65.0J	280pF	-	-
MOV-10D391KJ	250V	320V	390V(351V~429V)	650V	3500A	70.0J	260pF	-	-
MOV-10D431KJ	275V	350V	430V(387V~473V)	710V	3500A	80.0J	230pF	-	-
MOV-10D471KJ	300V	385V	470V(423V~517V)	775V	3500A	85.0J	210pF	√	-
MOV-10D511KJ	320V	415V	510V(459V~561V)	845V	3500A	90.0J	200pF	√	-
MOV-10D561KJ	350V	460V	560V(504V~616V)	920V	3500A	92.0J	180pF	√	-
MOV-10D621KJ	385V	505V	620V(558V~682V)	1025V	3500A	95.0J	160pF	√	-
MOV-10D681KJ	420V	560V	680V(612V~748V)	1120V	3500A	98.0J	150pF	√	-
MOV-10D751KJ	460V	615V	750V(675V~825V)	1240V	3500A	100.0J	130pF	-	-
MOV-10D781KJ	485V	640V	780V(702V~858V)	1290V	3500A	105.0J	130pF	-	-
MOV-10D821KJ	510V	670V	820V(738V~902V)	1355V	3500A	110.0J	120pF	-	-
MOV-10D911KJ	550V	745V	910V(819V~1001V)	1500V	3500A	130.0J	110pF	-	-
MOV-10D102KJ	625V	825V	1000V(900V~1100V)	1650V	3500A	140.0J	100pF	-	-
MOV-10D112KJ	680V	895V	1100V(990V~1210V)	1815V	3500A	155.0J	90pF	-	-

### Dimension(mm)

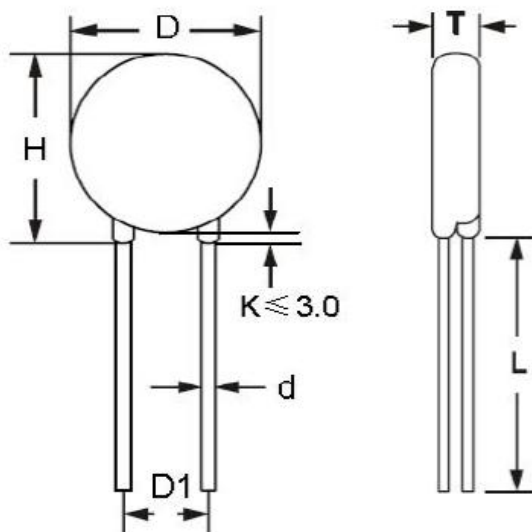


TABLE1

TABLE2

Symbol	Dimensions	Part number	T( $\pm 1.0$ mm)	Part number	T( $\pm 1.0$ mm)
H(Max)	16.5mm	MOV-10D180K	2.5mm	MOV-10D301K	3.4mm
L(Min)	22.0mm	MOV-10D220K	2.6mm	MOV-10D331K	3.7mm
D(Max)	12.5mm	MOV-10D270K	2.7mm	MOV-10D361K	3.9mm
D1( $\pm 0.8$ )	7.5mm	MOV-10D330K	2.9mm	MOV-10D391K	4.4mm
T	TABLE2	MOV-10D390K	3.2mm	MOV-10D431K	4.4mm
d( $\pm 0.05$ )	0.8mm	MOV-10D470K	3.3mm	MOV-10D471K	4.6mm
		MOV-10D560K	3.4mm	MOV-10D511K	4.7mm
		MOV-10D680K	3.5mm	MOV-10D561K	4.9mm
		MOV-10D820K	2.6mm	MOV-10D621K	5.2mm
		MOV-10D101K	2.8mm	MOV-10D681K	5.5mm
		MOV-10D121K	3.0mm	MOV-10D751K	5.9mm
		MOV-10D151K	3.3mm	MOV-10D781K	6.0mm
		MOV-10D181K	2.7mm	MOV-10D821K	6.2mm
		MOV-10D201K	2.9mm	MOV-10D911K	6.7mm
		MOV-10D221K	3.0mm	MOV-10D102K	7.2mm
		MOV-10D241K	3.1mm	MOV-10D112K	7.8mm
		MOV-10D271K	3.3mm	-	-

### Packing Information

Part Number	Quantity	Packaging Option	Packaging Specification
MOV-10DxxxK / KJ	500PCS	Plastic bag	Bulk Pack

# Packaging Options

## 1: Bulk Packaging

Loose packaging in bags and cartons. Suitable for manual assembly and small to medium production volumes.



## 2: Ammo Packaging(Tape in Box)

Taped packaging in folded (zigzag) form. Designed for automatic insertion (AI) machines and efficient handling.



## 3: Reel Packaging(Tape & Reel)

Continuous tape packed on reels. Ideal for high-speed automated production and large-scale manufacturing.



Packaging type can be selected based on customer requirements. Custom packaging options are available upon request.

ShenZhen HuaXingAn Electronics Co., Ltd.

[www.huaandz.com](http://www.huaandz.com)

[sales@huaandz.com](mailto:sales@huaandz.com)

Varistors MOV Datasheet

Specifications subject to change without notice



### MOV Varistor Selection Guide for AC Power Applications

#### 1: Voltage Selection Principle

AC peak voltage calculation:  $V_{peak} = \sqrt{2} \times V_{RMS}$

Recommended design margin:  $MCOV \geq 1.25 \times V_{RMS}$

#### 2: Key Electrical Relationships

Varistor Voltage ( $V_{1mA}$ ):  $\approx (1.6 - 1.8) \times V_{RMS}$

Clamping Voltage ( $V_c$ ):  $\approx 2.5 \times V_{1mA}$

#### 3: Quick Selection Guide

AC System Voltage Typical Application Recommended MOV Model

110VAC Power supply / Consumer electronics MOV-10D241K

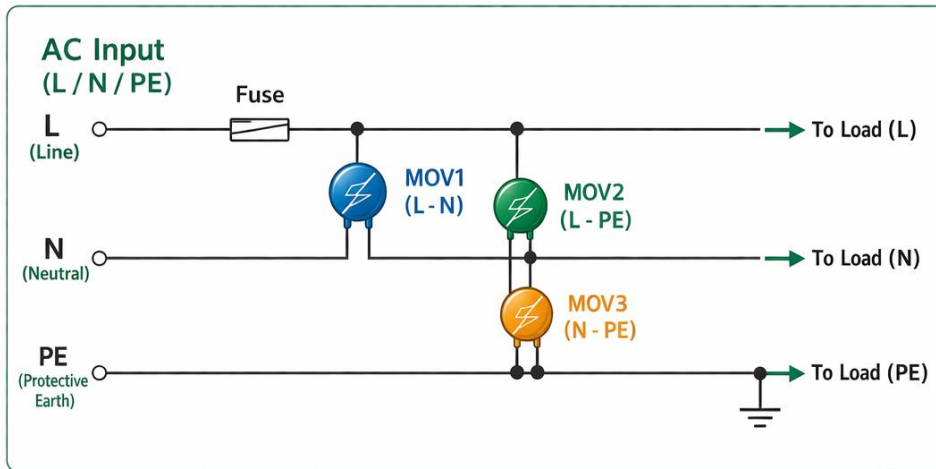
220VAC Industrial equipment / Home appliances MOV-10D471K

277VAC Lighting / Industrial systems MOV-10D561K

#### 3: 10D Series Recommended Models Quick

AC System Voltage Recommended Models (10D Series)

## MOV Surge Protection Circuit



#### Connection Explanation



**MOV1 (L - N)**  
Connected between Line and Neutral



**MOV2 (L - PE)**  
Connected between Line and Protective Earth



**MOV3 (N - PE)**  
Connected between Neutral and Protective Earth



**Note:**  
MOVs are connected in parallel (shunt) across L-N, L-PE, and N-PE, not in series with the power line.

#### Quick Selection Guide



AC System Voltage	Recommended Models (10D Series)
110VAC	10D221K, 10D241K, 10D271K
120VAC	10D241K, 10D271K, 10D301K
220VAC	10D431K, 10D471K, 10D511K
230VAC	10D471K, 10D511K, 10D561K
240VAC	10D511K, 10D561K, 10D621K
277VAC	10D561K, 10D621K, 10D681K
380VAC	10D681K, 10D751K, 10D781K
400VAC	10D751K, 10D781K, 10D821K

#### Note:

The above models are recommended based on typical AC system voltage conditions. Final selection should consider surge environment, safety margin, and specific application requirements.

## HuaXingAn

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**Note:** The above models are recommended based on typical AC system voltage conditions.

Final selection should consider surge environment, safety margin, and specific application requirements.

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sales@huaandz.com

Varistors MOV Datasheet

Specifications subject to change without notice

### Notice for Use

To ensure safe and reliable operation of MOV varistors, please follow the guidelines below:

#### 1: Overcurrent Protection

When excessive current or voltage occurs, the varistor may overheat, smoke, or fail. It is recommended to install a fuse or circuit breaker in series with the power line.

Recommended fuse rating (for reference):

05D: 1–2A

07D: 2–3A

10D: 3–5A

14D: 3–10A

20D: 5–15A

#### 2: Electrical Limits

Do not exceed the specified maximum voltage, current, or energy ratings of the varistor.

#### 3: Thermal Consideration

MOV varistors can only dissipate limited heat energy.

They are not suitable for applications with frequent high-energy surges or continuous overload conditions.

#### 4: Installation Safety

Do not place flammable materials near the varistor.

Ensure proper spacing and ventilation in circuit design.

#### 5: Soldering

Avoid excessive heat during soldering to prevent damage to the coating and internal structure.

#### 6: Application Responsibility

Customers are responsible for verifying the suitability of the product for their specific applications.

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All MOV varistors are compliant with RoHS and REACH requirements.

Products are designed and tested in accordance with IEC 61051 standards.

UL recognized types are available upon request.