



## Features

- Complies with UL 1449 and IEC/EN 61643-11 standards
- UL recognized Type 4, Type 2 location SPD, passed short circuit current rating (SCCR) @ 200 kA
- High reliability protected MOV with Advanced Thermal Disconnect (TD+)
- Compact size to save installation space
- PCB mount design, compatible with reflow and wave soldering procedures

## 1220 TPMOV Surge Protective Device

### General Information

The Bourns® Model 1220 Series is a surge suppressor with thermal protection designed to open in the event of overheating due to an abnormal overvoltage or temporary overvoltage (TOV) and will interrupt any abnormal current that may be encountered, up to rated limits.

### Additional Information

Click these links for more information:



### Electrical Characteristics

Characteristic		1220-10				
		-I2-120M1	-I2-277M1	-I2-400M1	-I1-480M1	-I1-600M1
Nominal System Voltage		120 V	277 V	347 V	480 V	600 V
Compliance		UL 1449				
Category UL		Type 4, Type 2 Location				
Product Technologies		High Energy MOV Technology Advanced Thermal Disconnect (TD+)				
Connection Mode		1 Pole, L-N or L-G or N-PE				
AC System		IT, TT, TN, Single, Split Phase, Delta, Wye				
Max. Operating Voltage (MCOV)		150 V	320 V	420 V	550 V	690 V
UL 1449	Nominal Discharge Current 8/20 $\mu$ s ( $I_n$ )	10 kA				
	Max. Discharge Current ( $I_{max}$ ) 1 Impulse 8/20 $\mu$ s	25 kA			22 kA	
	Voltage Protection Rating (VPR)	$\leq 0.6$ kV	$\leq 1.0$ kV	$\leq 1.2$ kV	$\leq 1.8$ kV	$\leq 2.0$ kV
	Short Circuit Current Rating (SCCR)	200 kA <sub>rms</sub>				

### Agency Recognition

Agency	Category	Agency File No.
	UL 1449	<a href="#">E313168</a>

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\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
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## Applications

- Surge protection devices
- AC-DC distribution
- All power circuits
- Telecommunications
- Built-in surge protection of electronic equipment

## 1220 TPMOV Surge Protective Device

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### Electrical Characteristics (continued)

Characteristic		1220-20			
		-I4-120M2	-I4-277M2	-I4-400M2	-I4-480M2
Nominal System Voltage		120 V	277 V	347 V	480 V
Compliance		UL 1449			
Category UL		Type 4, Type 1 Location			
Product Technologies		High Energy MOV Technology Advanced Thermal Disconnect (TD+)			
Connection Mode		1 Pole, L-N or L-G or N-PE			
AC System		IT, TT, TN, Single, Split Phase, Delta, Wye			
Max. Operating Voltage (MCOV)		150 V	320 V	420 V	550 V
UL 1449	Nominal Discharge Current 8/20 $\mu$ s ( $I_n$ )	20 kA			
	Max. Discharge Current ( $I_{max}$ ) 1 Impulse 8/20 $\mu$ s	50 kA			
	Voltage Protection Rating (VPR)	$\leq 0.6$ kV	$\leq 1.0$ kV	$\leq 1.2$ kV	$\leq 1.8$ kV
	Short Circuit Current Rating (SCCR)	200 kA <sub>rms</sub>			

Characteristic		1220-20					
		-I4-120M3	-I4-230M3	-I4-277M3	-I4-400M3	-I4-480M3	-I3-600M3
Nominal System Voltage		120 V	230 V	277 V	347 V	480 V	600 V
Compliance		UL 1449					
Category UL		Type 4, Type 2 Location					
Product Technologies		High Energy MOV Technology Advanced Thermal Disconnect (TD+)					
Connection Mode		1 Pole, L-N or L-G or N-PE					
AC System		IT, TT, TN, Single, Split Phase, Delta, Wye					
Max. Operating Voltage (MCOV)		150 V	275 V	320 V	420 V	550 V	690 V
UL 1449	Nominal Discharge Current 8/20 $\mu$ s ( $I_n$ )	20 kA					
	Max. Discharge Current ( $I_{max}$ ) 1 Impulse 8/20 $\mu$ s	50 kA					40 kA
	Voltage Protection Rating (VPR)	$\leq 0.6$ kV	$\leq 0.8$ kV	$\leq 1.0$ kV	$\leq 1.5$ kV	$\leq 1.5$ kV	$\leq 2.0$ kV
	Short Circuit Current Rating (SCCR)	200 kA <sub>rms</sub>					

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# 1220 TPMOV Surge Protective Device

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## Electrical Characteristics (continued)

Characteristic		1220-20		
		-15-120M4	-15-230M4	-15-277M4
Nominal System Voltage		120 V	230 V	277 V
Compliance		UL 1449		
Category UL		Type 4, Type 2 Location		
Product Technologies		High Energy MOV Technology Advanced Thermal Disconnect (TD+)		
Connection Mode		1 Pole, L-N or L-G or N-PE		
AC System		IT, TT, TN, Single, Split Phase, Delta, Wye		
Max. Operating Voltage (MCOV)		150 V	275 V	320 V
UL 1449	Nominal Discharge Current 8/20 $\mu$ s ( $I_n$ )	20 kA		
	Max. Discharge Current ( $I_{max}$ ) 1 Impulse 8/20 $\mu$ s	75 kA		
	Voltage Protection Rating (VPR)	$\leq 0.6$ kV	$\leq 0.8$ kV	$\leq 1.0$ kV
	Short Circuit Current Rating (SCCR)	200 kA <sub>rms</sub>		

## General Characteristics

Characteristic	1220 TPMOV
Thermal Disconnect	UL 60691
Dimensions	See Product Dimensions
Mounting	PCB
Remote Signal Indicator	Floating Contact (50 mA 12 VDC) for Fault Indication Module Type 1 and Type 2 – Open: Failure; Closed: Normal Module Type 3 and Type 4 – Open: Normal; Closed: Failure
Enclosure Material	Thermoplastic UL 94V0
Insulation Resistance	$>10$ M $\Omega$
Response Time	$\leq 25$ ns
Follow Current	None

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# 1220 TPMOV Surge Protective Device



## Environmental Characteristics

Characteristic	1220 TPMOV
Operating Temperature	Model Type 1: -40 °C to +80 °C Model Type 2/3/4: -40 °C to +85 °C
Operating Altitude	≤2000 m
Relative Humidity	5 to 95 % Non-condensing
Environmental Rating	IP20
Moisture Sensitivity Level	1
ESD Classification (HBM)	N/A

## Standards Compliance

IEC/EN 61643-11..... Class II , Type 2  
 UL1449..... Type 4, Type 2 location  
 CSA C22.2..... Type 4, Type 2 location  
 IEEE C62.41  
 RoHS..... RoHS Directive 2015/863, Mar 31, 2015 and Annex

## How to Order

**1220 - xx - lx - xxxMx**

Model Designator \_\_\_\_\_  
 1220 = Thermally Protected Metal Oxide Varistor

Nominal Discharge Current (8/20µs) I<sub>nom</sub> rate \_\_\_\_\_  
 10 = 10 kA  
 20 = 20 kA

Max. Discharge Current (8/20µs) I<sub>max</sub> rate \_\_\_\_\_  
 1 = 22 kA  
 2 = 25 kA  
 3 = 40 kA  
 4 = 50 kA  
 5 = 75 kA

Operating Voltage \_\_\_\_\_  
 120 = 120/240 V, 120/208 V  
 230 = 220/380 V, 230/400 V  
 277 = 240/415 V, 277/480 V  
 400 = 277/480 V, 347/600 V  
 480 = 347/600 V, 480 V (Delta)  
 600 = 600 V (Delta)

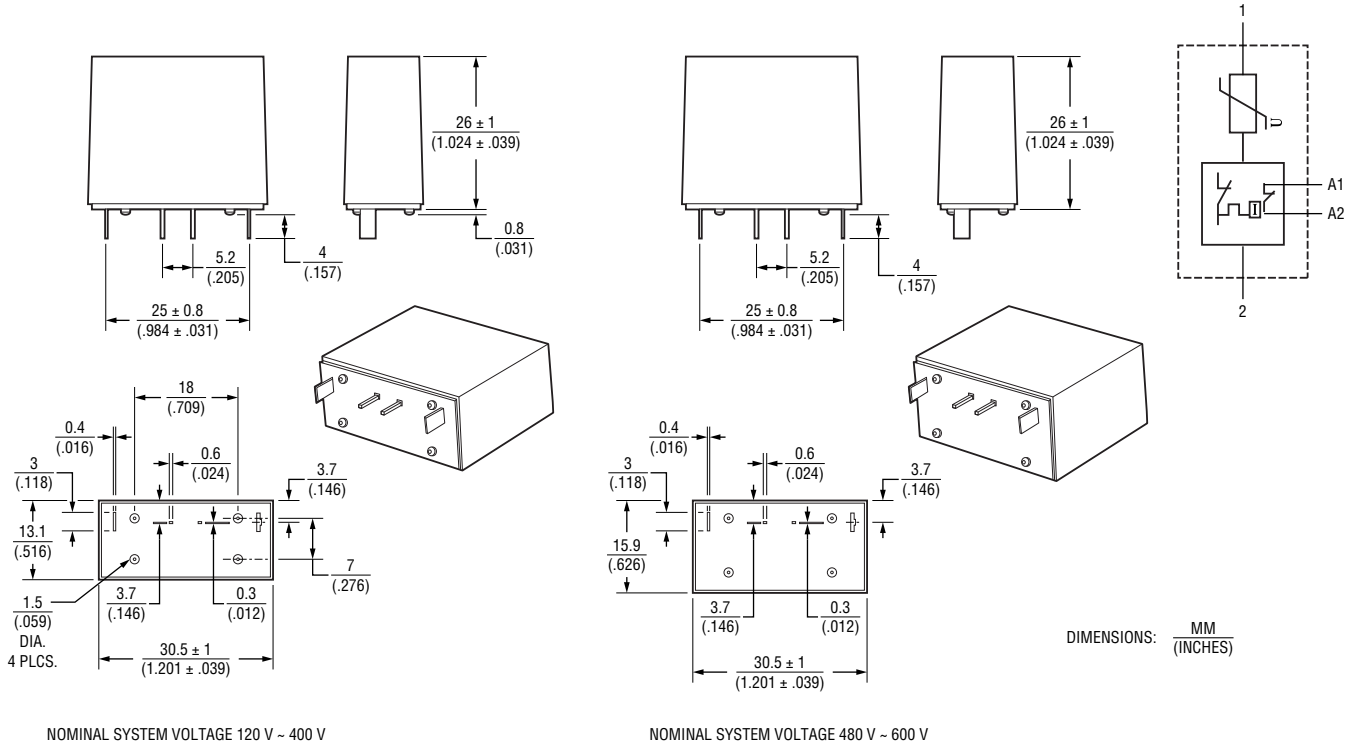
Module Type (Refer the Product Dimensions) \_\_\_\_\_  
 M1 = Module Type 1  
 M2 = Module Type 2  
 M3 = Module Type 3  
 M4 = Module Type 4

# 1220 TPMOV Surge Protective Device

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## Product Dimensions and Schematics

### M1 – Module Type 1



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

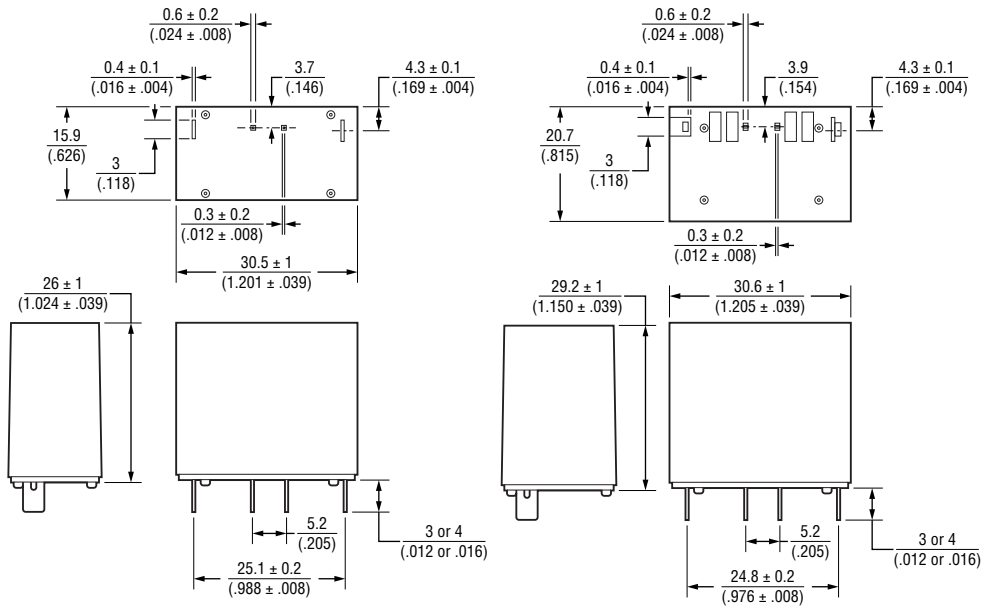
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# 1220 TPMOV Surge Protective Device

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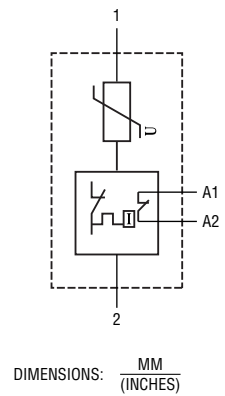
## Product Dimensions and Schematics (continued)

### M2 – Module Type 2



NOMINAL SYSTEM VOLTAGE 120 V

NOMINAL SYSTEM VOLTAGE 277 V - 480 V



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

Specifications are subject to change without notice.

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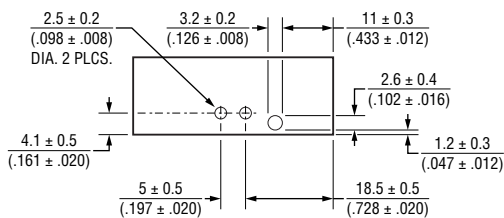
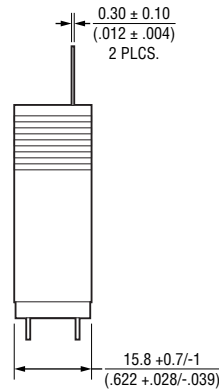
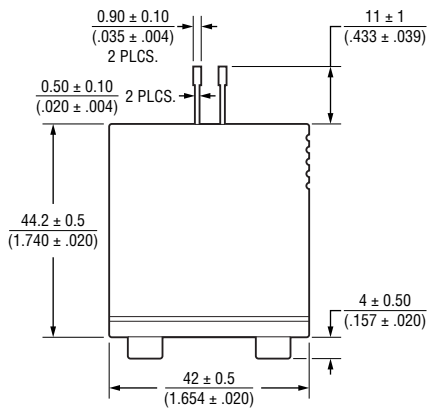
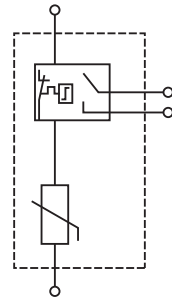
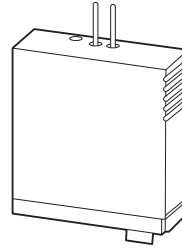
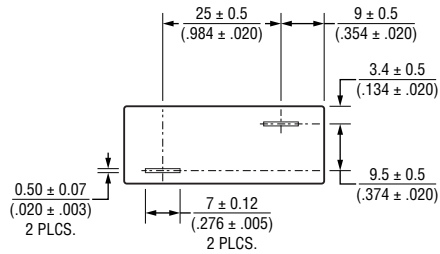
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# 1220 TPMOV Surge Protective Device

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## Product Dimensions and Schematics (continued)

### M3 – Module Type 3



DIMENSIONS:  $\frac{\text{MM}}{\text{INCHES}}$

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

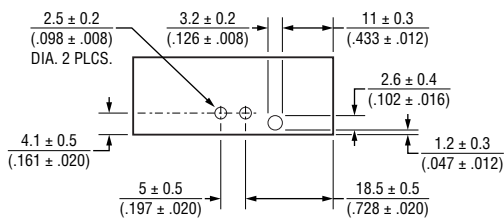
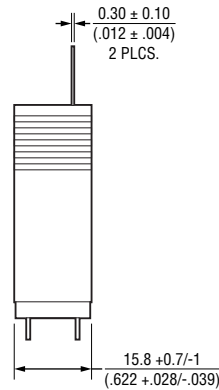
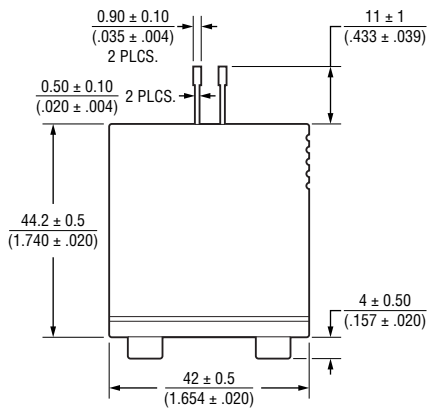
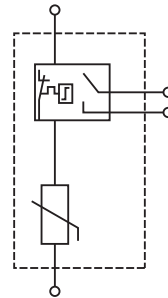
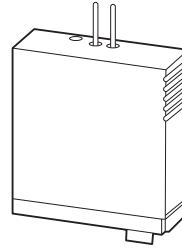
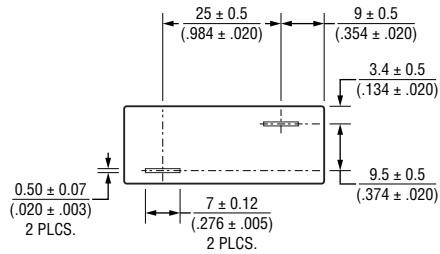
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# 1220 TPMOV Surge Protective Device

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## Product Dimensions and Schematics (continued)

### M4 – Module Type 4



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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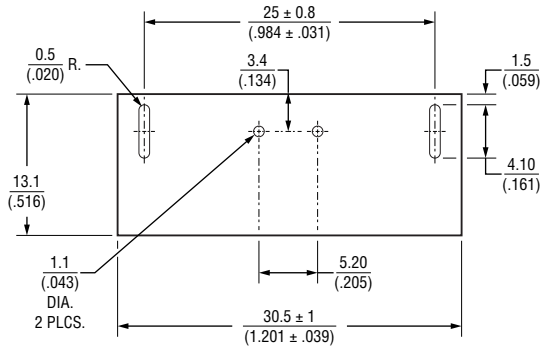


# 1220 TPMOV Surge Protective Device

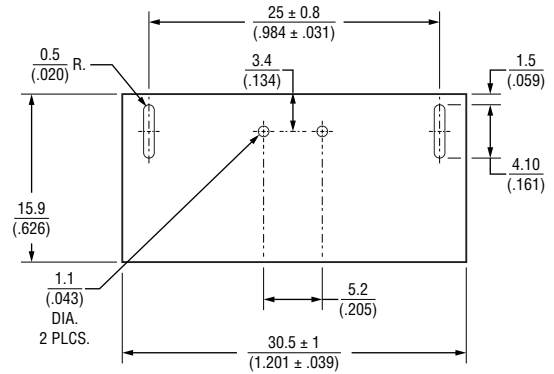


## PCB Layout Dimensions

### M1 – Module Type 1



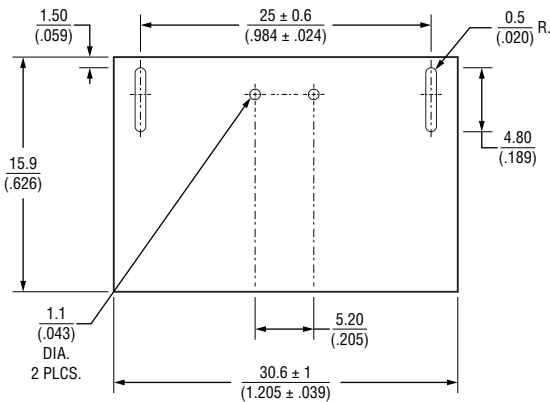
NOMINAL SYSTEM VOLTAGE 120 V ~ 400 V



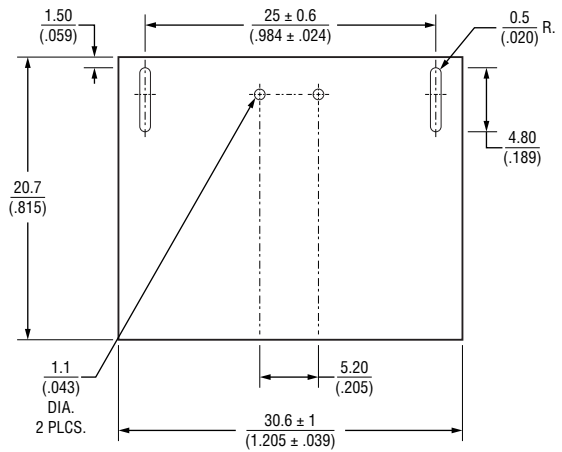
NOMINAL SYSTEM VOLTAGE 480 V ~ 600 V

TOLERANCE:  $\pm 0.5$  (.020)

### M2 – Module Type 2



NOMINAL SYSTEM VOLTAGE 120 V



NOMINAL SYSTEM VOLTAGE 277 V ~ 480 V

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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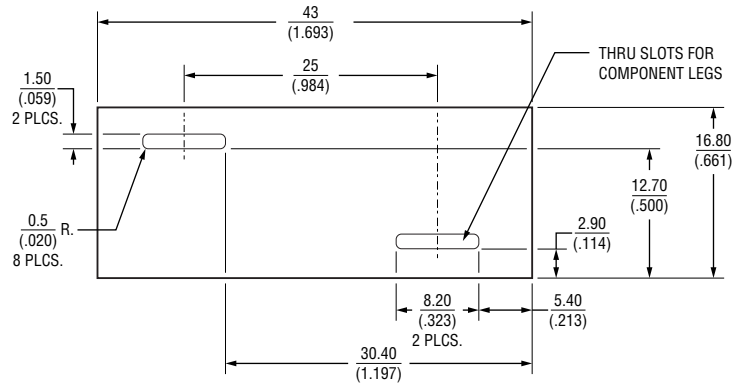
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## PCB Layout Dimensions (continued)

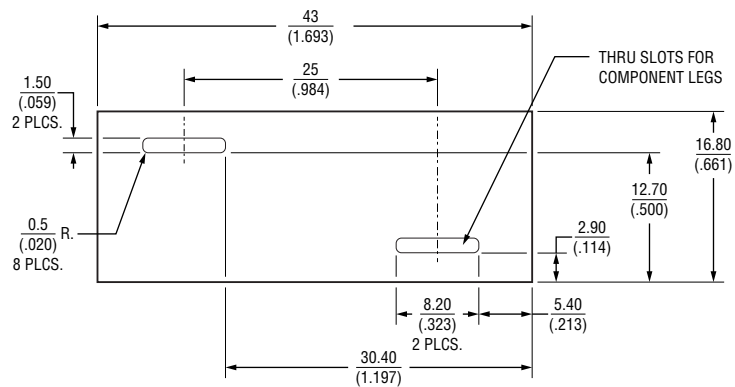
### M3 – Module Type 3



DIMENSIONS:  $\frac{\text{MM}}{\text{INCHES}}$

TOLERANCE:  $\pm 0.1 (.004)$

### M4 – Module Type 4



DIMENSIONS:  $\frac{\text{MM}}{\text{INCHES}}$

TOLERANCE:  $\pm 0.1 (.004)$

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