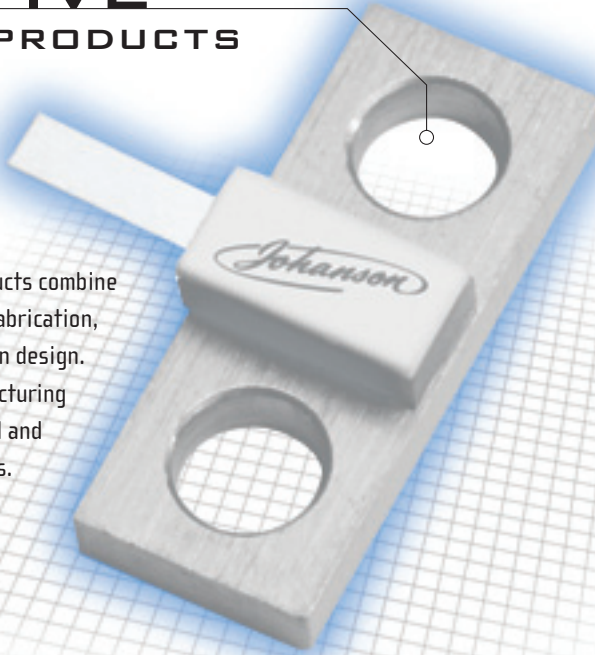


# RESISTIVE PRODUCTS

Johanson High Power Resistive Products combine over 60 years of precision metal fabrication, ceramic processing, and assembly with proven design. Johanson offers complete design to manufacturing capabilities to provide standard and custom solutions to meet your needs.



## PRODUCT TYPES

- Resistors
- Terminations

## PRODUCT STYLES

- Surface Mount
- High Power Flangeless
- High Power Flanged
- Coaxial

## PROCESS

- Thick Film (Standard)
- Thin Film

## ELEMENT

- Proprietary Thick Film
- Nitride Tantalum

## SUBSTRATE

- AlN
- BeO
- Al<sub>2</sub>O<sub>3</sub>

## POWER

- Up to 1000 W

## FREQUENCY

- DC to 12 GHz

## APPLICATIONS

- Power Amplifiers
- Circulators
- Isolators
- Power Dividers / Combiners
- Couplers

## HIGH POWER RESISTORS

PACKAGE	MATERIAL	POWER (MAX)	CAPACITANCE (PF)	MAXIMUM FREQUENCY (GHZ)	VSWR (MAX)
SMD RS SERIES	ALN	30	.3 to 2.0	3	1.25:1
	BeO	30	.3 to 2.0	3	1.25:1
FLANGELESS RL SERIES	ALN	800	.9 to 4.2	6	1.5:1
	BeO	1000	.25 to 3.5	6	1.5:1
FLANGED RF SERIES	ALN	500	.9 to 4.2	6	1.5:1
	BeO	800	.75 to 9	6	1.5:1

## HIGH POWER TERMINATIONS

PACKAGE	MATERIAL	POWER (MAX)	CAPACITANCE (PF)	MAXIMUM FREQUENCY (GHZ)	VSWR (MAX)
SMD TS SERIES	ALN	30	.3 to 2.0	3	1.25:1
	BeO	30	.3 to 2.0	3	1.25:1
FLANGELESS TL SERIES	ALN	800	.9 to 4.2	4	1.25:1
	BeO	1000	.25 to 3.5	6	1.25:1
FLANGED TF SERIES	ALN	500	.9 to 4.2	4	1.25:1
	BeO	800	.75 to 9	12	1.25:1
COAXIAL TC SERIES	ALN	500	—	12	1.35:1
	BeO	800	—	12	1.35:1

# GENERAL SPECIFICATIONS

## ELECTRICAL

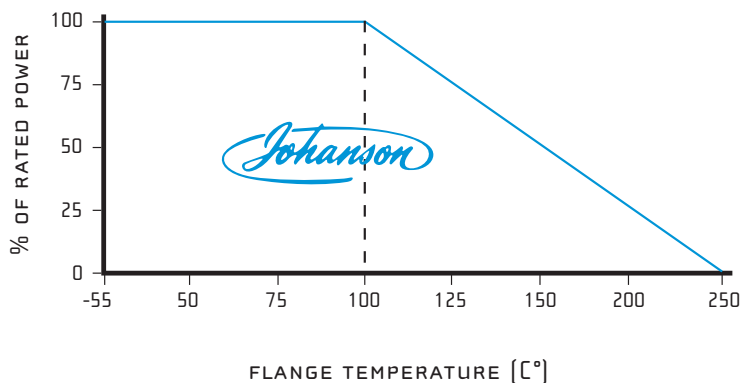
<b>Resistance</b>	25Ω, 50Ω, 75Ω, 100Ω, 150Ω, 200Ω and 250Ω are standard (custom values available)
<b>Resistance Tolerance</b>	±5% (1% and 2% Available)
<b>Power Rating</b>	100% at -55°C to +100°C, derated to 0% at 250°
<b>Temperature Coefficient</b>	±100 ppm/°C from -55°C to +150°C
<b>Operating Temperature</b>	-55°C to +100°C (Base plate)

## MECHANICAL

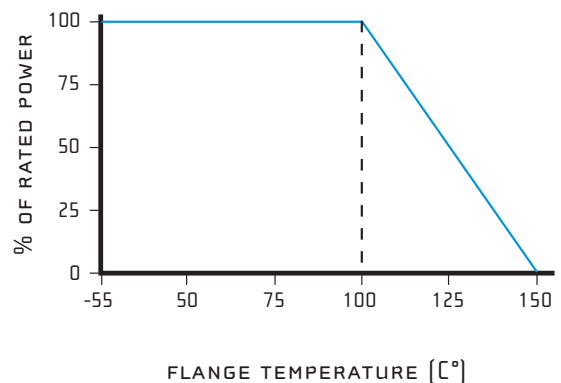
<b>Package</b>	SMD, Flangeless, Flanged, and Coaxial
<b>Substrate</b>	Aluminum Nitride (AlN), Beryllium Oxide (BeO), or Alumina (Al <sub>2</sub> O <sub>3</sub> )
<b>Process</b>	Thick Film (Standard), Thin Film (Available)
<b>Resistive Film</b>	Proprietary Thick Film (Standard) or Tantalum-Nitride
<b>Terminals</b>	99.99% Silver (Custom Terminals Available)
<b>Mounting flange</b>	Nickel plated copper (Standard), Copper Tungsten available
<b>Mechanical Tolerance</b>	± 0.01" Typical
<b>Cover</b>	Alumina (96% Al <sub>2</sub> O <sub>3v</sub> )

## POWER DERATING COMPARISON

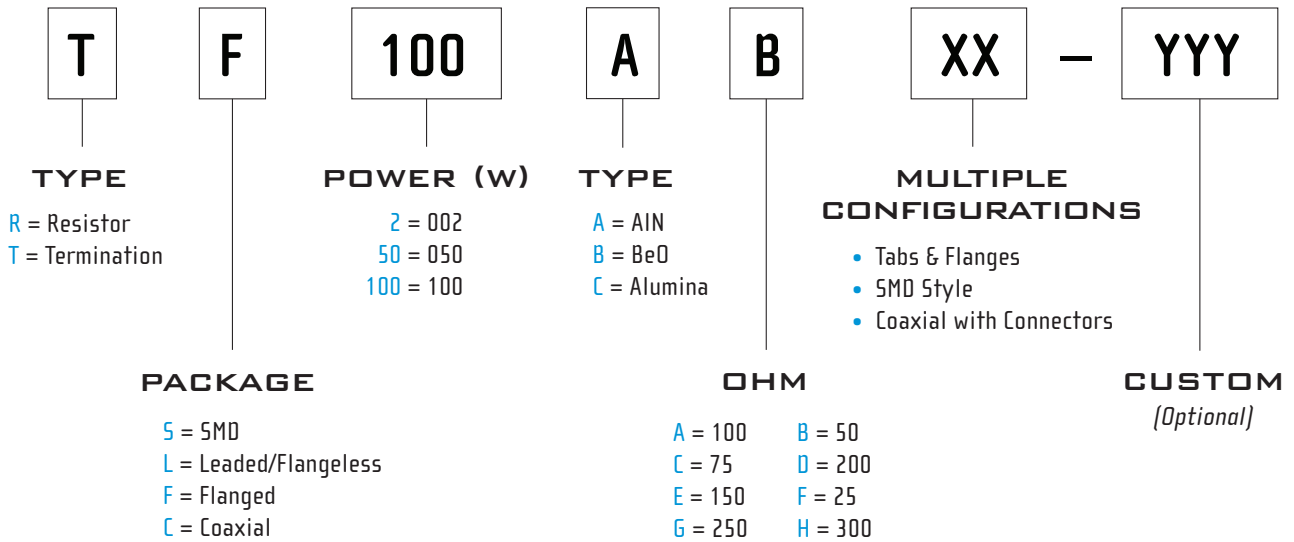
JOHANSON PRODUCTS



INDUSTRY STANDARD



# PART NUMBER

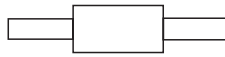


## TYPICAL CONFIGURATIONS

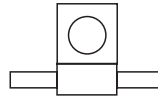
### RESISTORS



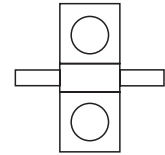
**SMD**  
RS Series



**FLANGELESS**  
RL Series



**HALF FLANGE**  
RF Series

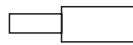


**FULL FLANGE**  
RF Series

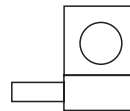
### POWER TERMINATIONS



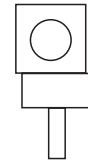
**SMD**  
TS Series



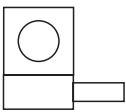
**FLANGELESS**  
TL Series



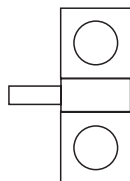
**HALF FLANGE**  
TF Series



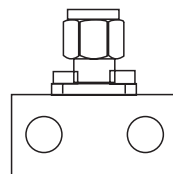
**HALF FLANGE**  
TF Series



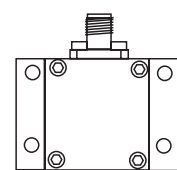
**HALF FLANGE**  
TF Series



**FULL FLANGE**  
TF Series



**COAXIAL**  
TC Series



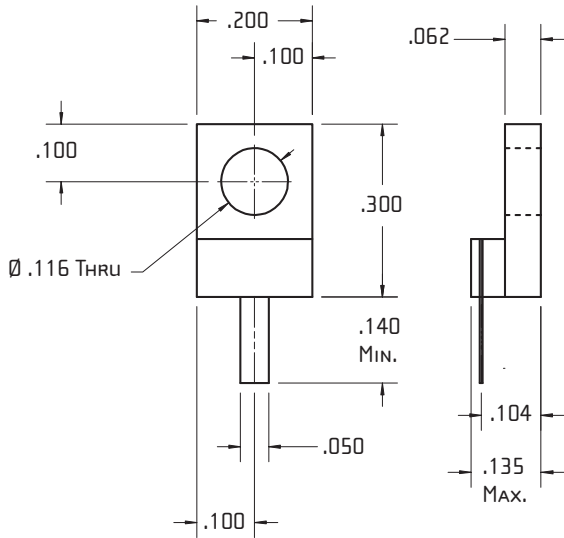
**COAXIAL**  
TC Series



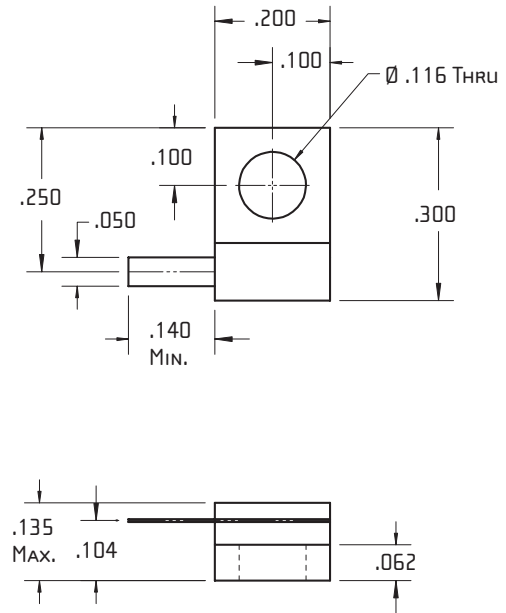


# FLANGE TERMINATION OUTLINE DRAWINGS

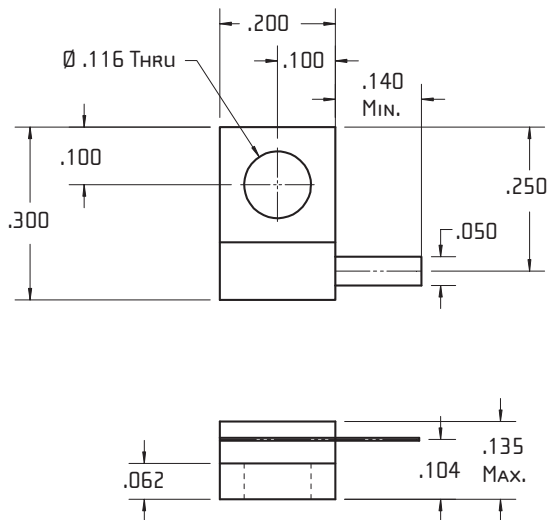
1C



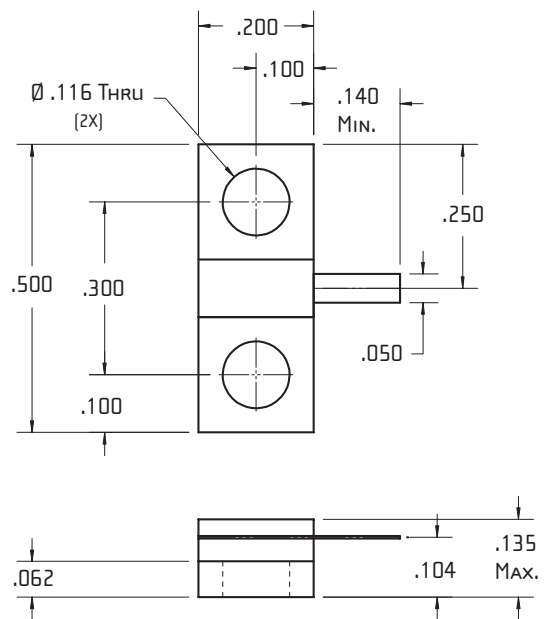
1L



1R

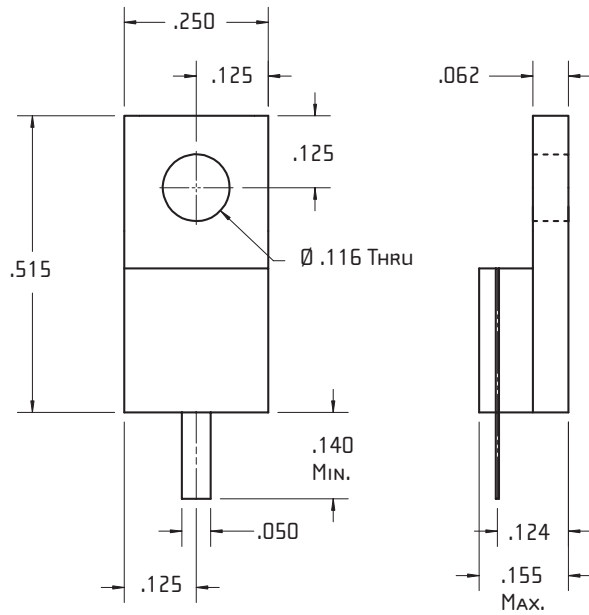


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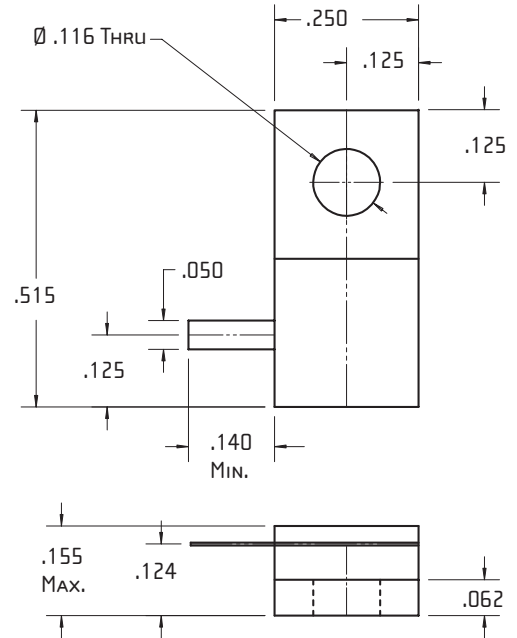


# FLANGE TERMINATION OUTLINE DRAWINGS

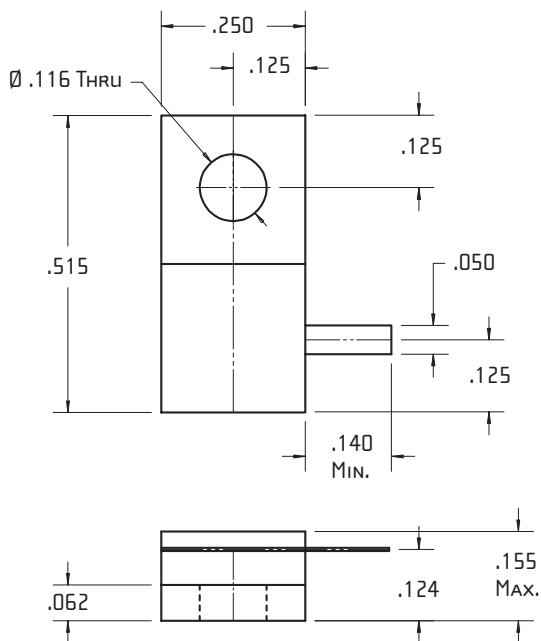
## 3C



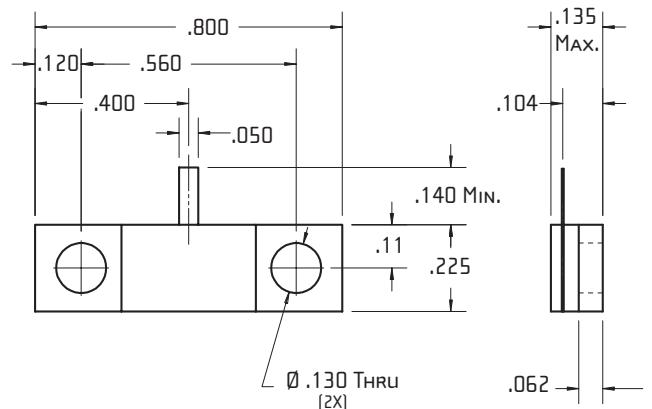
## 3L



## 3R

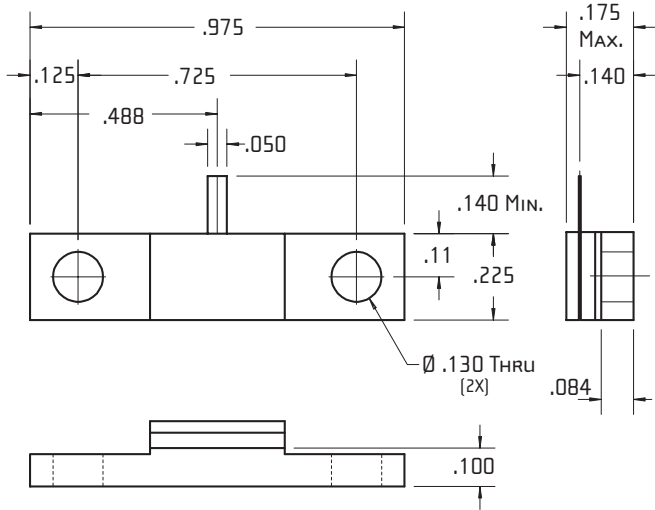


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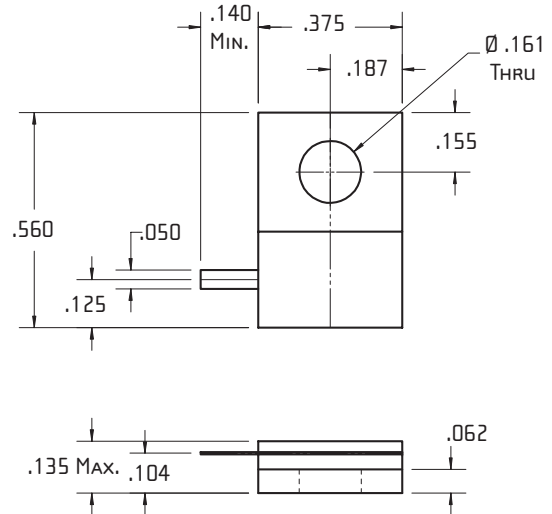


# FLANGE TERMINATION OUTLINE DRAWINGS

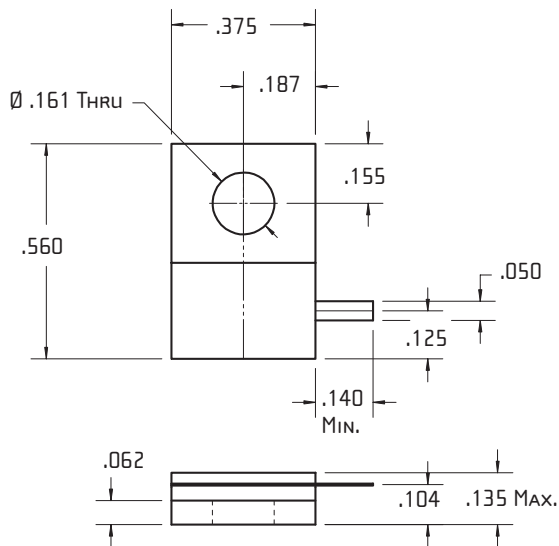
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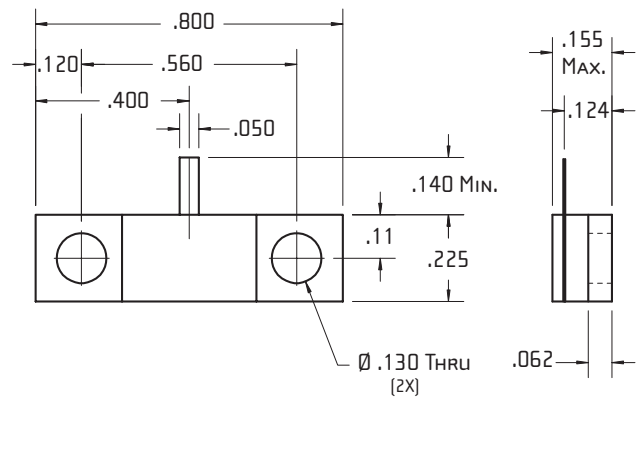
## 6L



## 6R



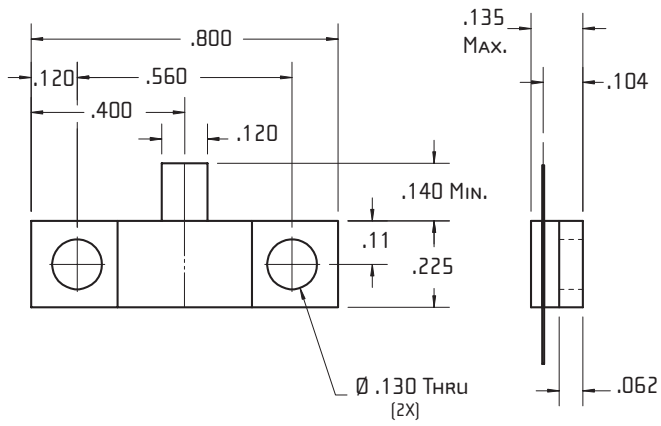
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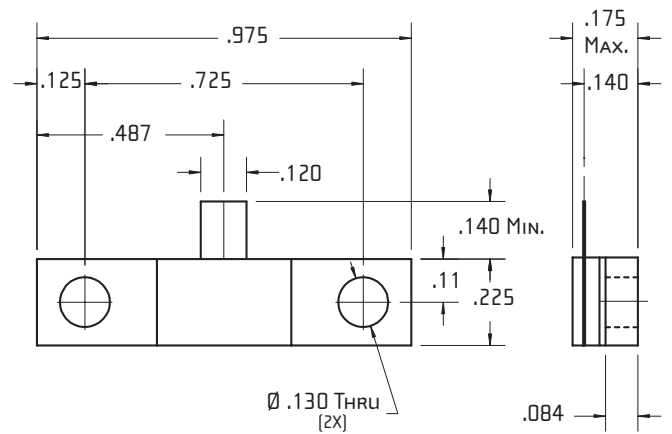


# FLANGE TERMINATION OUTLINE DRAWINGS

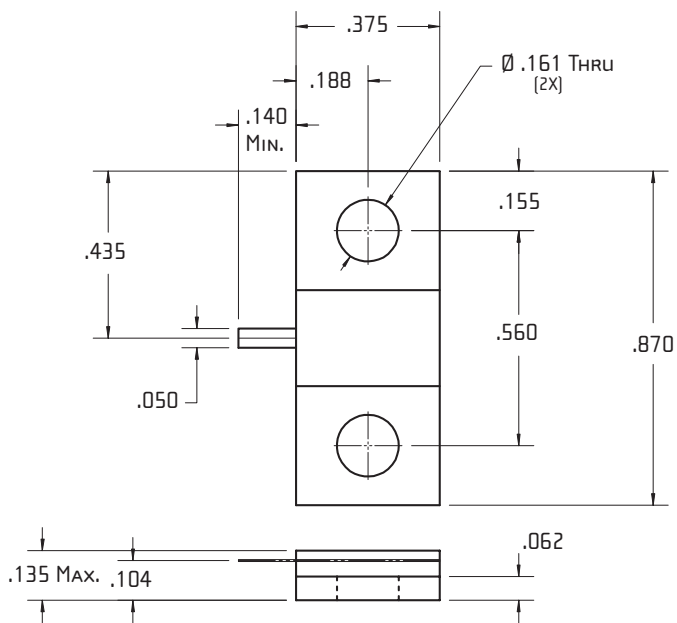
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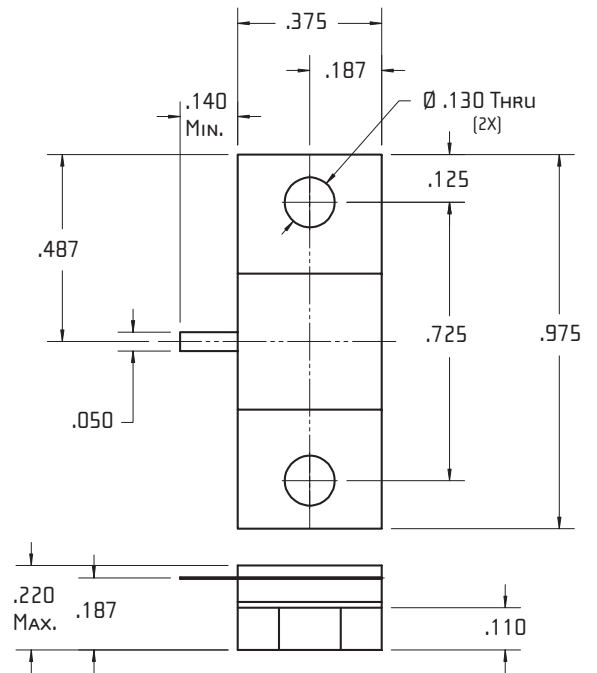
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## 11

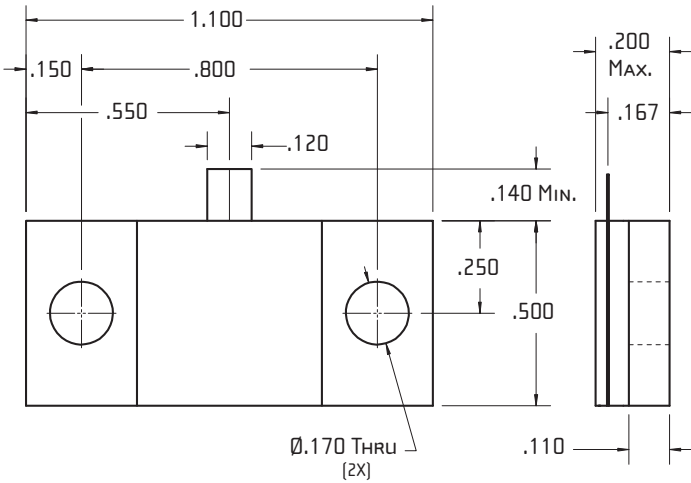


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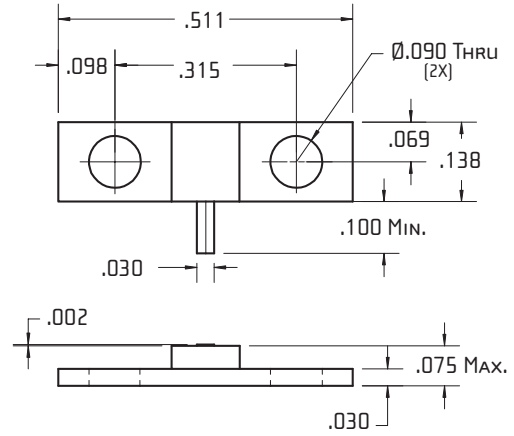


# FLANGE TERMINATION OUTLINE DRAWINGS

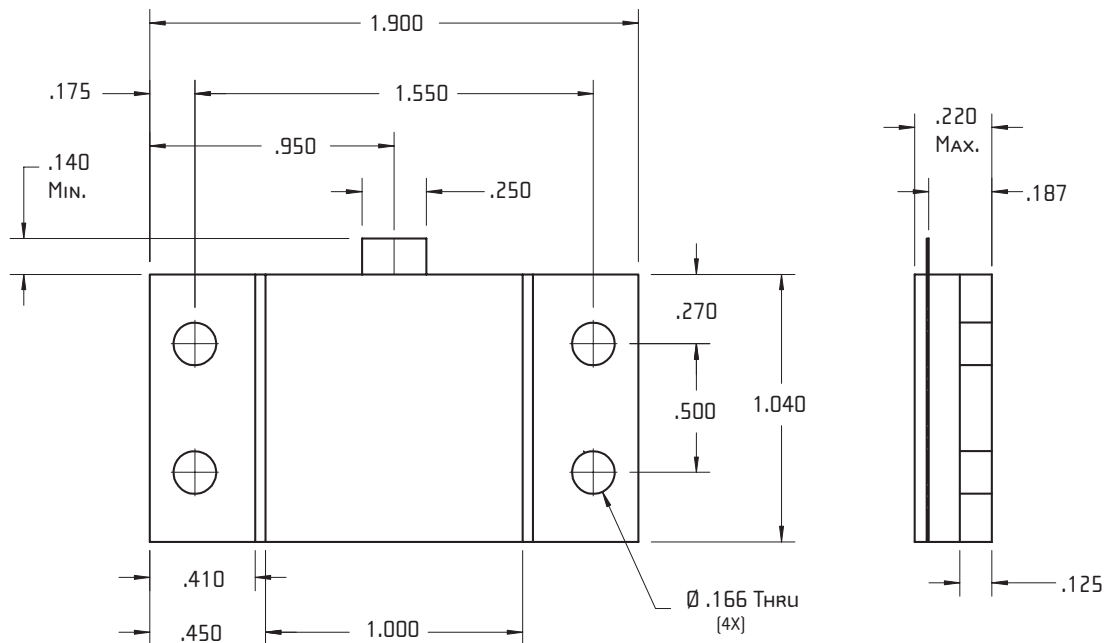
## 13



## 22



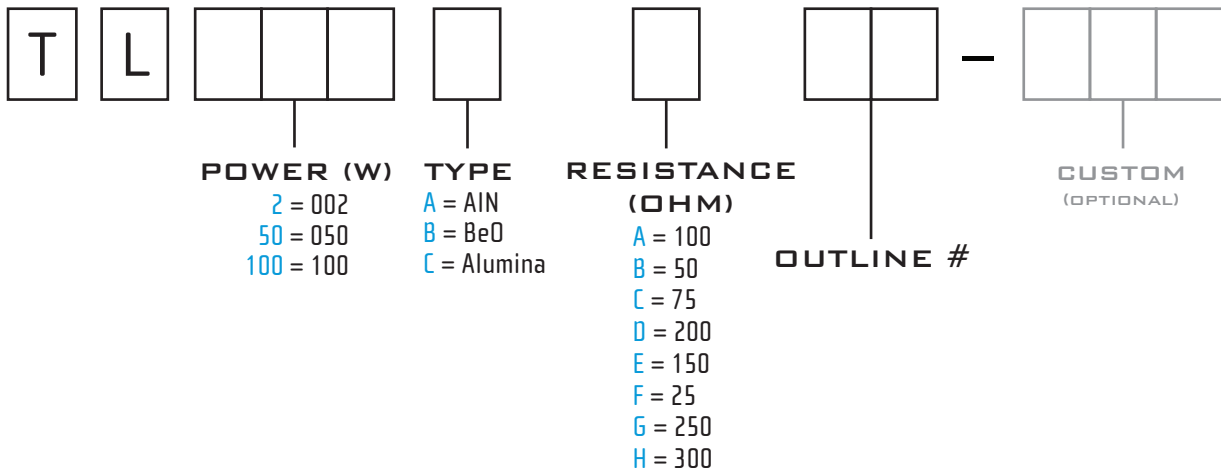
## 14



# FLANGELESS TERMINATION

ALUMINUM NITRIDE (AlN) P/N	OUTLINE	POWER (WATTS, CW)	BERYLLIUM OXIDE (BeO) P/N	OUTLINE	
TL030AA16	16	30	TL030BA16	16	
TL030AB16	16		TL030BB16	16	
TL030AA0C	0C		TL030BA0C	0C	
TL030AB0C	0C	40	TL030BB0C	0C	
TL040AA17	17		TL040BA17	17	
TL040AB17	17	100	TL040BB17	17	
TL100AA18	18		125	TL125BA18	18
TL100AB18	18			TL125BB18	18
TL125AA19	19	150	TL150BA19	19	
TL125AB19	19		TL150BB19	19	
TL150AA20	20	200	TL200BA20	20	
TL150AB20	20		TL200BB20	20	
TL200AA21	21	250	TL300BA21	21	
TL200AB21	21				
TL250AA21	21				
TL250AB21	21	300	TL300BB21	21	
TL300AA21	21				
TL300AB21	21				

## ORDERING INFORMATION

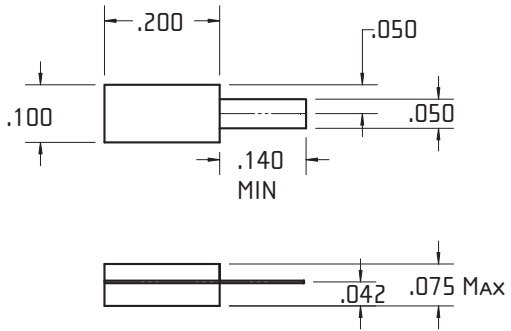


CUSTOMS AVAILABLE UPON REQUEST. (POWER, RESISTANCE, AND CONFIGURATION)  
 CONTACT SALES FOR DETAIL.

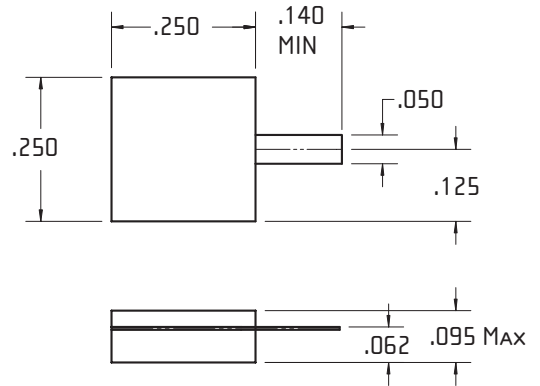


# FLANGELESS TERMINATION OUTLINE DRAWINGS

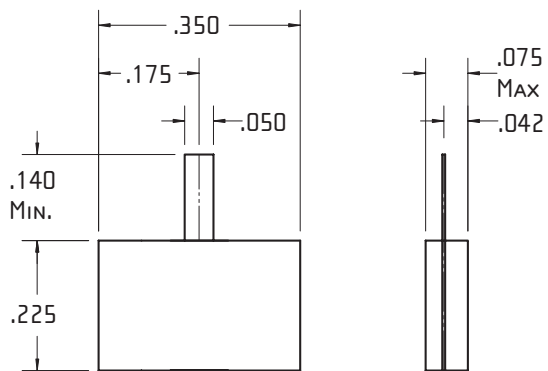
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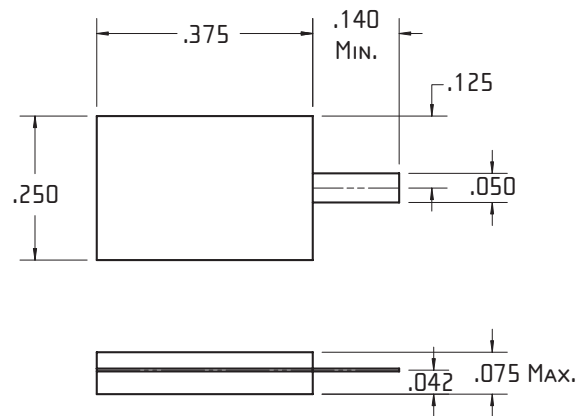
**17**



**18**

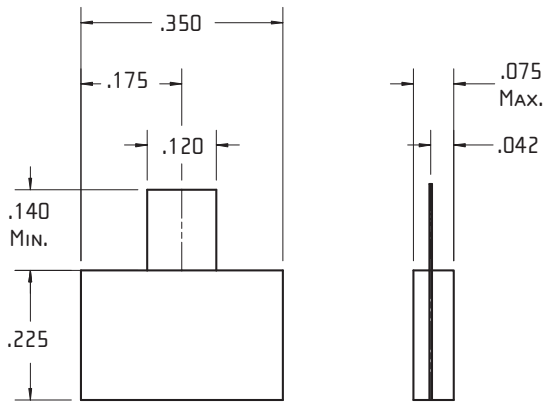


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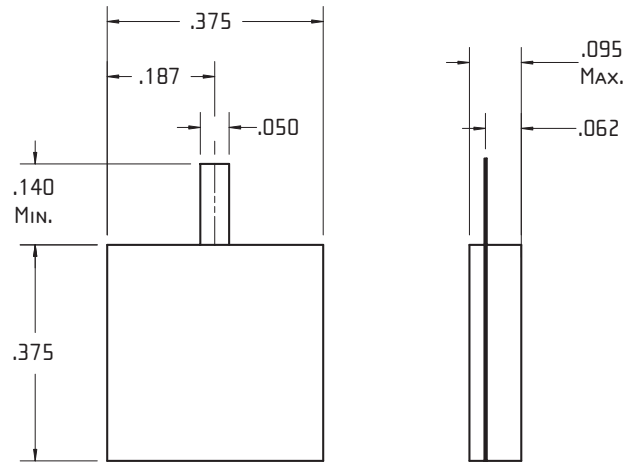


# FLANGELESS TERMINATION OUTLINE DRAWINGS

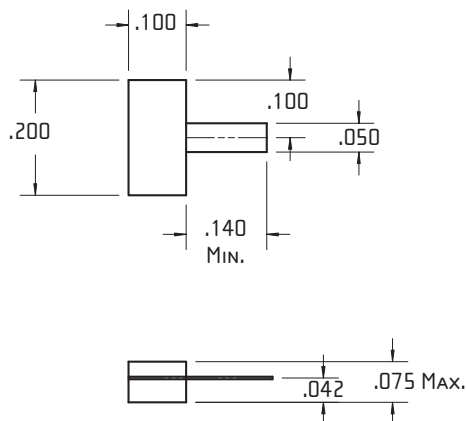
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21



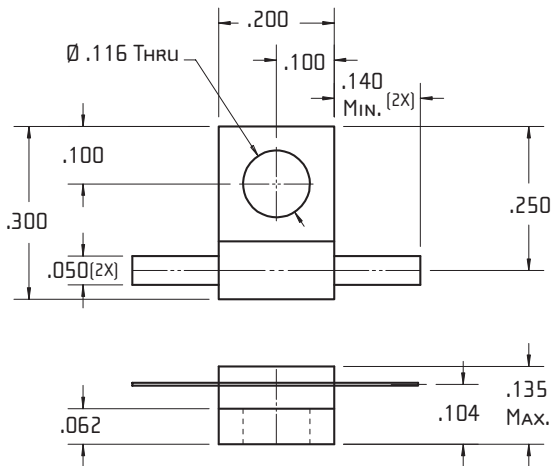
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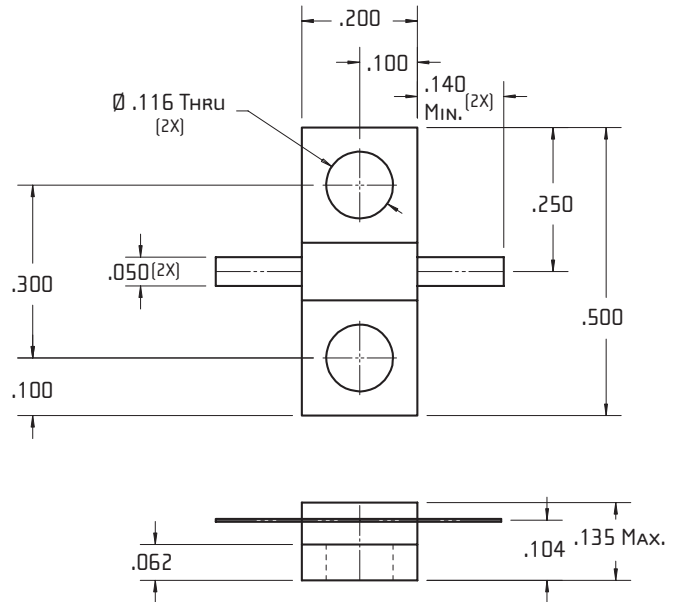


# FLANGE RESISTOR OUTLINE DRAWINGS

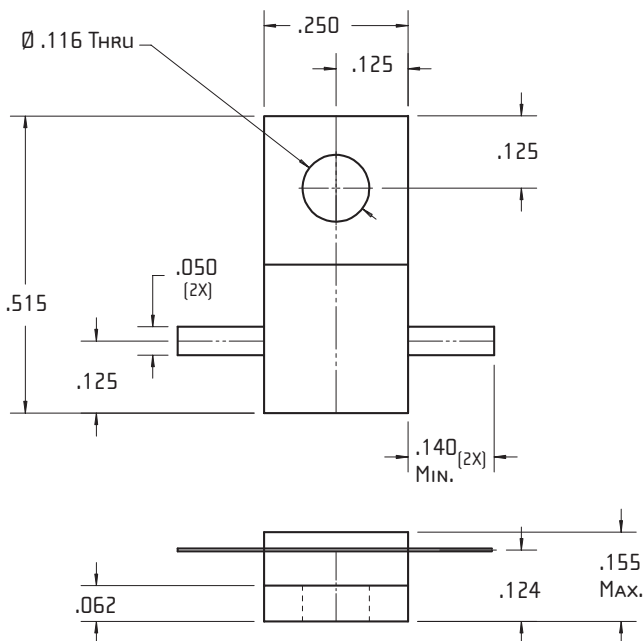
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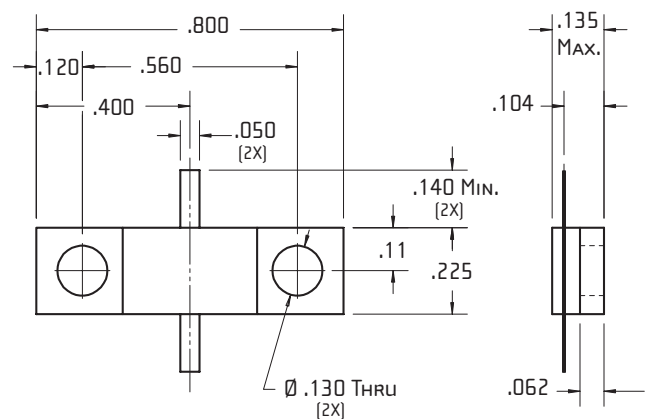
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**03**

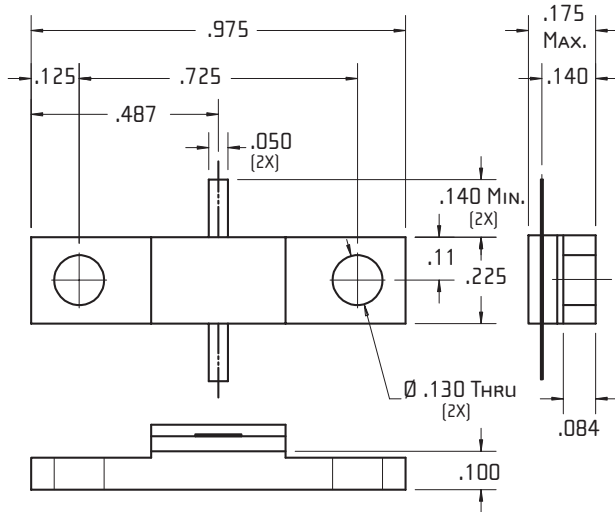


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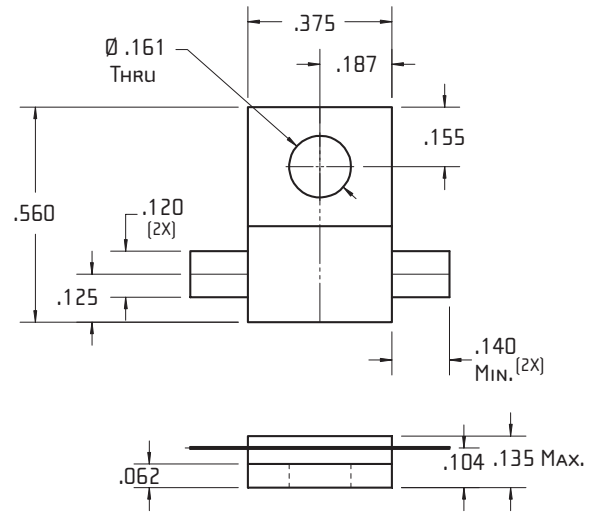


# FLANGE RESISTOR OUTLINE DRAWINGS

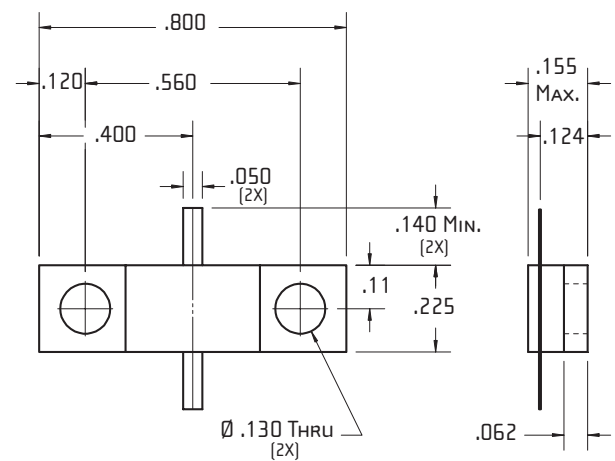
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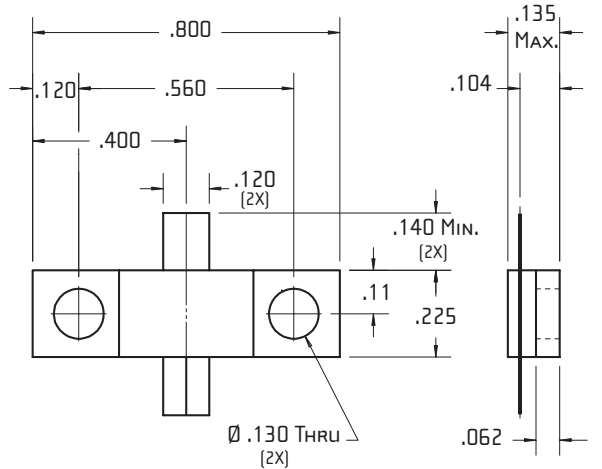
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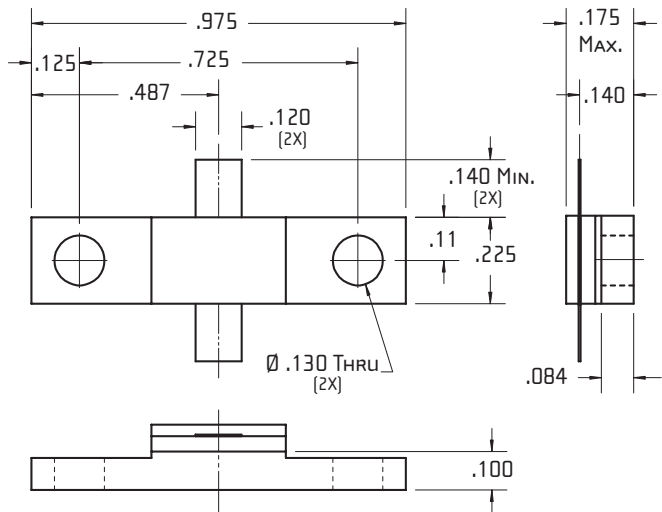
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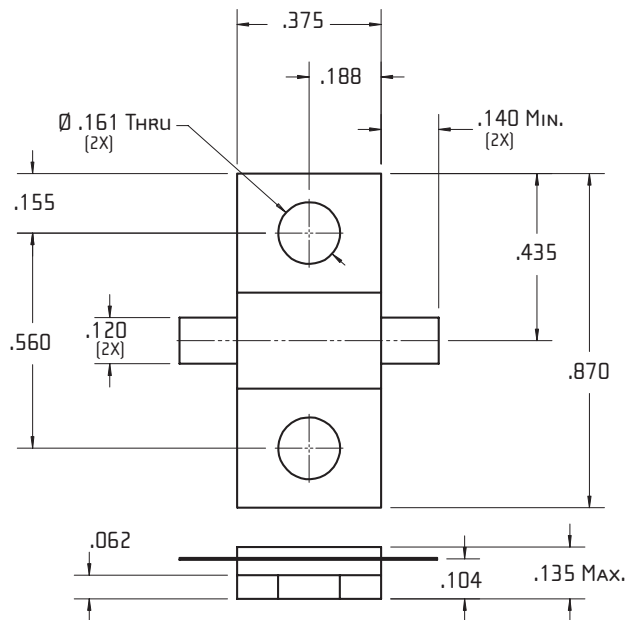


# FLANGE RESISTOR OUTLINE DRAWINGS

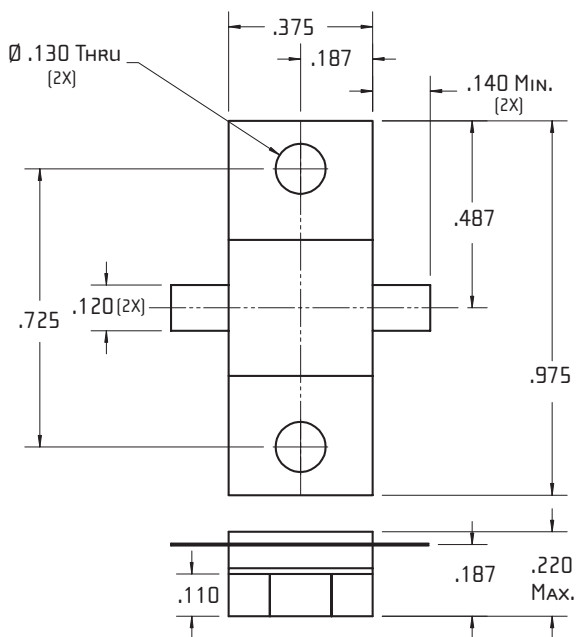
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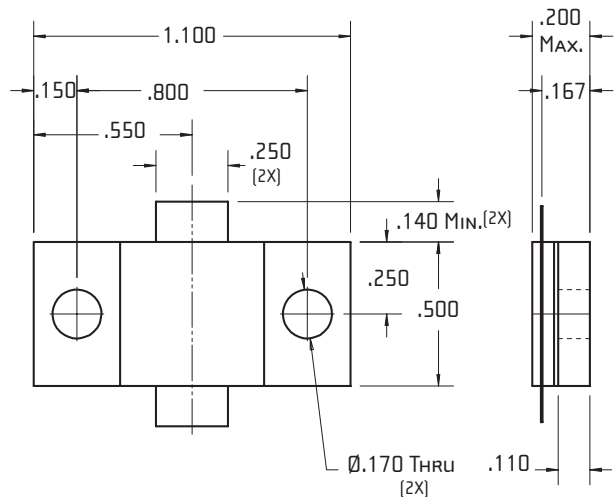
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## 12

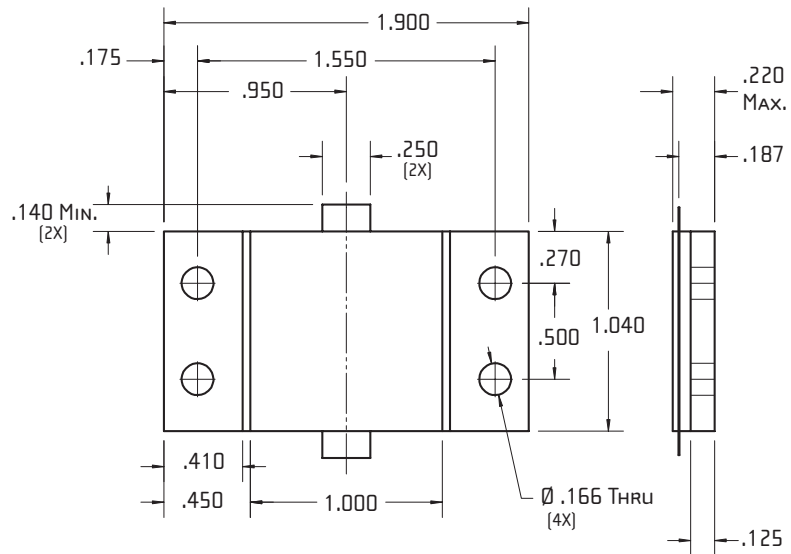


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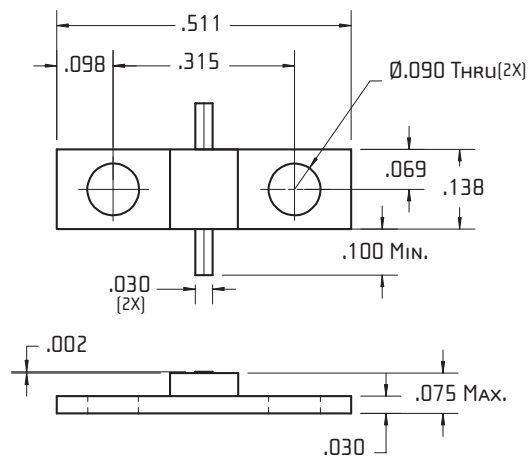


# FLANGE RESISTOR OUTLINE DRAWINGS

## 14



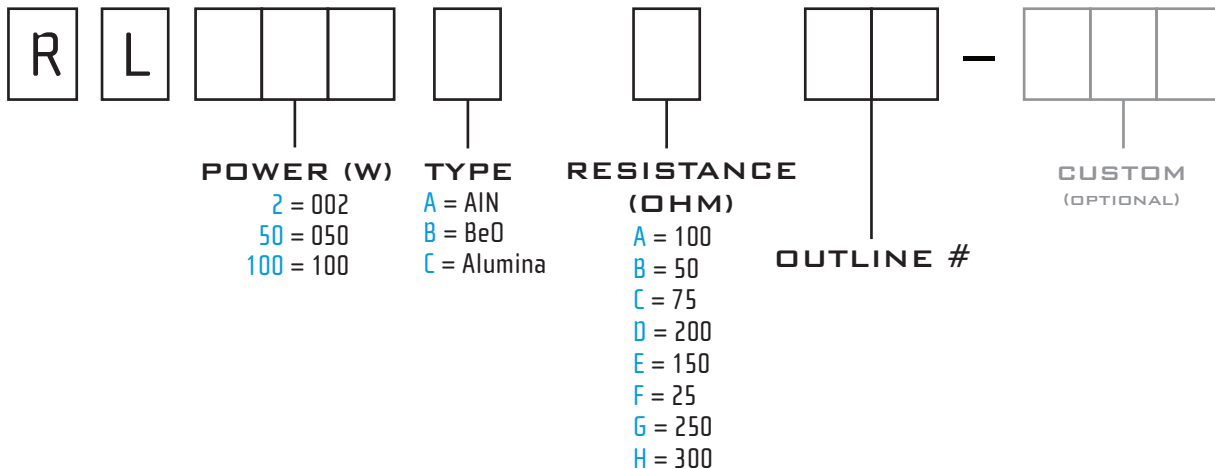
## 22



# FLANGELESS RESISTOR

ALUMINUM NITRIDE (AlN) P/N	OUTLINE	POWER (WATTS, CW)	BERYLLIUM OXIDE (BeO) P/N	OUTLINE
RL030AA16	16	30	RL030BA16	16
RL030AB16	16		RL030BB16	16
RL040AA17	17	40	RL040BA17	17
RL040AB17	17		RL040BB17	17
RL100AA18	18	100		
RL100AB18	18			
RL125AA19	19	125	RL125BA18	18
RL125AB19	19		RL125BB18	18
RL150AA20	20	150	RL150BA19	19
RL150AB20	20		RL150BB19	19
RL200AA21	21	200	RL200BA20	20
RL200AB21	21		RL200BB20	20
RL250AA21	21	250		
RL250AB21	21			
RL300AA21	21	300	RL300BA21	21
RL300AB21	21		RL300BB21	21

## ORDERING INFORMATION

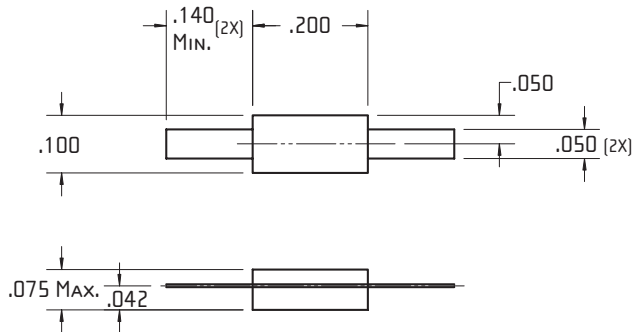


CUSTOMS AVAILABLE UPON REQUEST. (POWER, RESISTANCE, AND CONFIGURATION)  
CONTACT SALES FOR DETAIL.

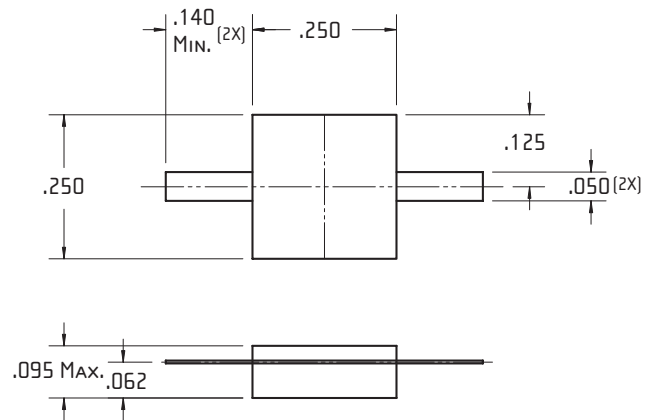


# FLANGELESS RESISTOR OUTLINE DRAWINGS

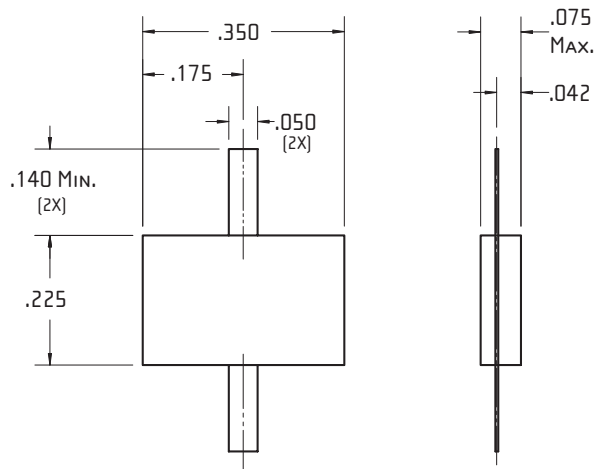
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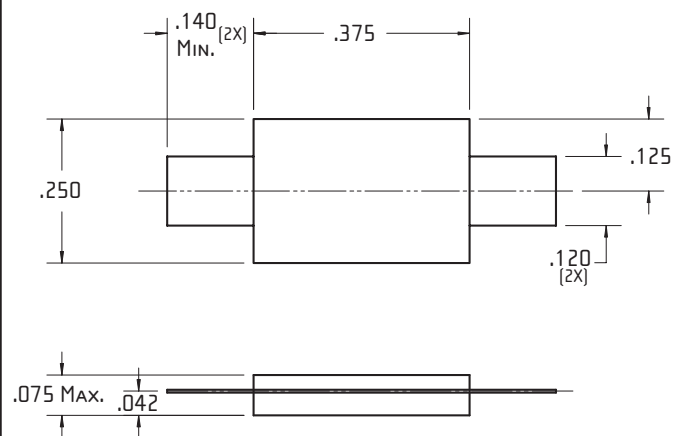
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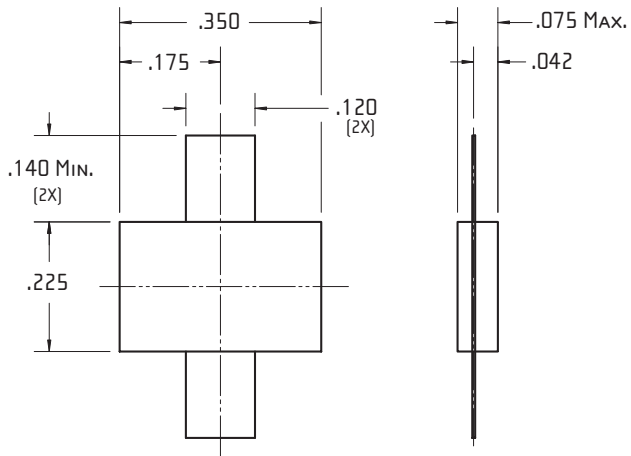


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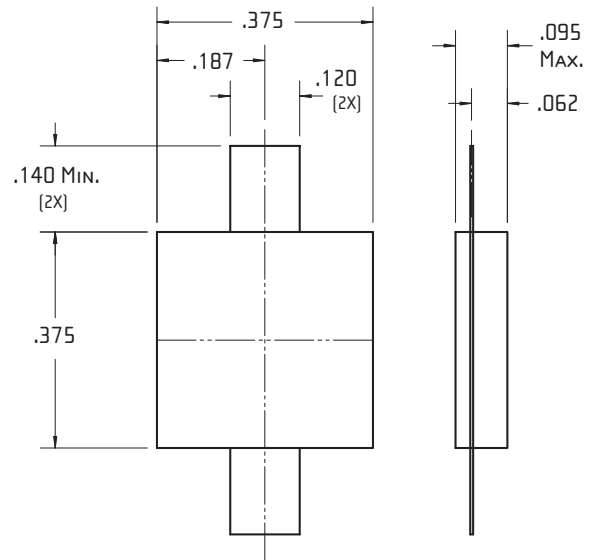


# FLANGELESS RESISTOR OUTLINE DRAWINGS

20



21



23

