

## INTERNATIONAL RECTIFIER



## 45L, 150K-A, 150L-A, 150KS SERIES

## 150 Amp Power Silicon Rectifier Diodes

## Major Ratings and Characteristics

	150K-A/150KS	150L-A/45L	Units
$I_F(AV)$	150		A
@ Max. $T_C$	150		$^{\circ}C$
$I_{FSM}$	@ 50 Hz	3000	A
	@ 60 Hz	3143	
$I^2t$	@ 50 Hz	45 000	$A^2s$
	@ 60 Hz	41 000	
$I^2\sqrt{t}$	636 500		$A^2\sqrt{s}$
$V_{RRM}$ Range*	50 to 1200		V

\*45L available from 100 to 1200V.

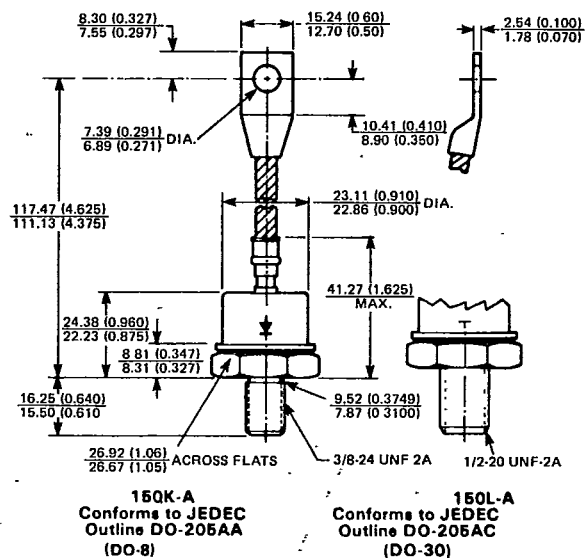
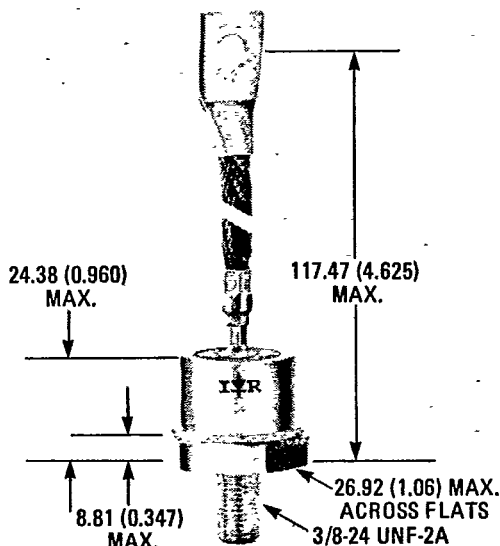
## Description

This series of high power general purpose rectifier diodes is designed for applications in power supplies, battery chargers, welders, motor controls, general industrial current rectification.

## Features

- Excellent surge capabilities.
- Stud cathode or stud anode versions.
- Case style options.
- 45L available to BS9300.
- Types up to 1200V  $V_{RRM}$ .

## CASE STYLE AND DIMENSIONS



Dimensions in Millimeters and (Inches)  
Refer to pages 225 and 226 for other outline drawings.

PART NUMBER ①			V <sub>RRM</sub> Max. repetitive peak reverse voltage (V)	V <sub>RSM</sub> Max. non-repetitive peak reverse voltage (V)	V <sub>R</sub> Max. average reverse voltage (V)	I <sub>RM</sub> Max. peak reverse current at rated V <sub>RRM</sub> (mA)
			T <sub>J</sub> = -40°C to 200°C	T <sub>J</sub> = -40°C to 200°C	T <sub>J</sub> = -40°C to 200°C	T <sub>J</sub> = 200°C
DO-30	DO-8	B-42				
45L10			100	200	100	40
45L20			200	300	200	40
45L40			400	500	400	40
45L60			600	720	600	40
45L80			800	960	800	40
45L100			1000	1200	1000	40
45L120			1200	1440	1200	40
			T <sub>J</sub> = -65°C to 200°C	T <sub>J</sub> = -65°C to 200°C	T <sub>J</sub> = -65°C to 200°C	T <sub>J</sub> = 175°C
150L5A	150K5A	150KS5	50	100	50	35
150L10A	150K10A	150KS10	100	200	100	35
150L20A	150K20A	150KS20	200	300	200	35
150L30A	150K30A	150KS30	300	400	300	35
150L40A	150K40A	150KS40	400	500	400	35
150L60A	150K60A	150KS60	600	720	600	35
150L80A	150K80A	150KS80	800	960	800	32
150L100A	150K100A	150KS100	1000	1200	1000	24
150L120A	150K120A	150KS120	1200	1440	1200	20

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, i.e., 45LR60, 150KR10A etc.

152K-A, 154K-A, 150KS, 152L-A & 154L-A

152K-A (stud topped case), 154K-A (flag terminal) and 150KS (lug terminal) have electrical and thermal specifications same as the 150K-A, but different case styles. 152L-A (stud topped case) and 154L-A (flag terminal) have electrical and thermal specifications same as the 150L-A but different case styles. See pages 226 and 227 for case styles.

ELECTRICAL SPECIFICATIONS

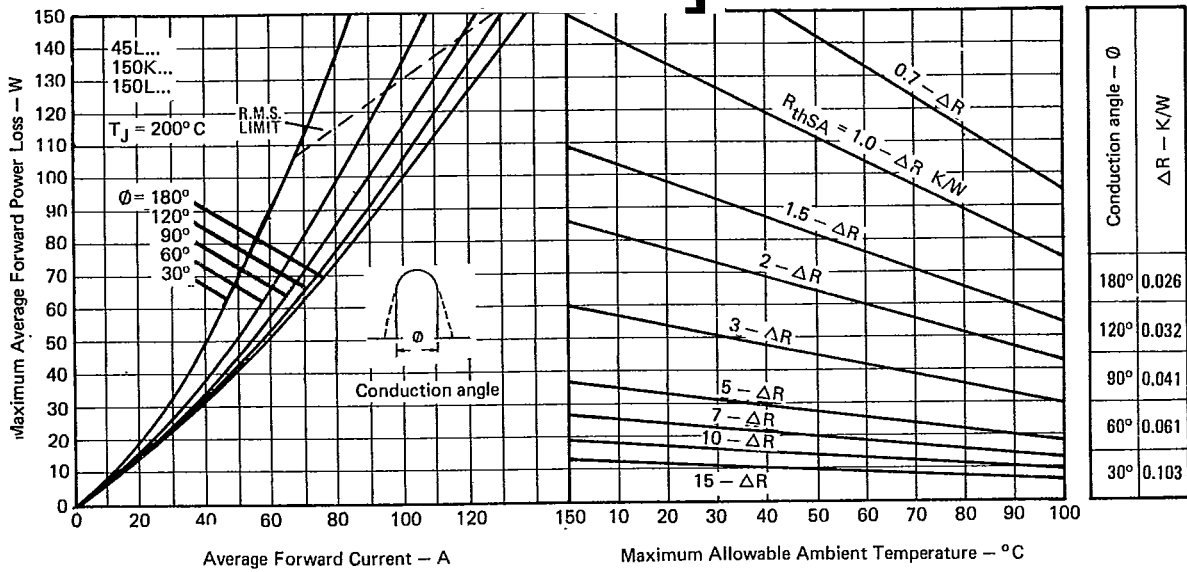
		150K-A	150KS	150L-A/45L	Units	Conditions
I <sub>F(AV)</sub>	Max. average forward current @ Max. T <sub>C</sub>		150		A	1-phase operation, 180° conduction
			150		°C	
I <sub>FSM</sub>	Max. peak one-cycle non-repetitive surge current		3000		A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with rated V <sub>RRM</sub> applied.
			3143		A	Half cycle 60 Hz sine wave or 5 ms rectangular pulse
			3568		A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse Following any rated load condition and with V <sub>RRM</sub> applied following surge = 0.
			3738		A	Half cycle 60 Hz sine wave or 5 ms rectangular pulse
I <sup>2</sup> t	Max. I <sup>2</sup> t for fusing		45 000		A <sup>2</sup> s	t = 10 ms With rated V <sub>RRM</sub> applied following surge, initial T <sub>J</sub> = T <sub>J</sub> Max.
			41 000			t = 8.3 ms
	Max. I <sup>2</sup> t for individual device fusing		63 650			t = 10 ms With V <sub>RRM</sub> = 0 following surge, initial T <sub>J</sub> = T <sub>J</sub> max.
			57 990			t = 8.3 ms
I <sup>2</sup> √t	Max. I <sup>2</sup> √t for individual device fusing		636 500		A <sup>2</sup> √s	t = 0.1 to 10 ms, V <sub>RRM</sub> = 0 following surge. ③
V <sub>FM</sub>	Max. peak forward voltage		1.33		V	T <sub>J</sub> = 25°C, I <sub>FM</sub> = π x rated I <sub>F(AV)</sub> (471 A peak)
V <sub>F(TO)</sub>	Max. value of threshold voltage		0.67		V	T <sub>J</sub> = 200°C
r <sub>F</sub>	Max. value of forward slope resistance		1.416		mΩ	

THERMAL-MECHANICAL SPECIFICATIONS

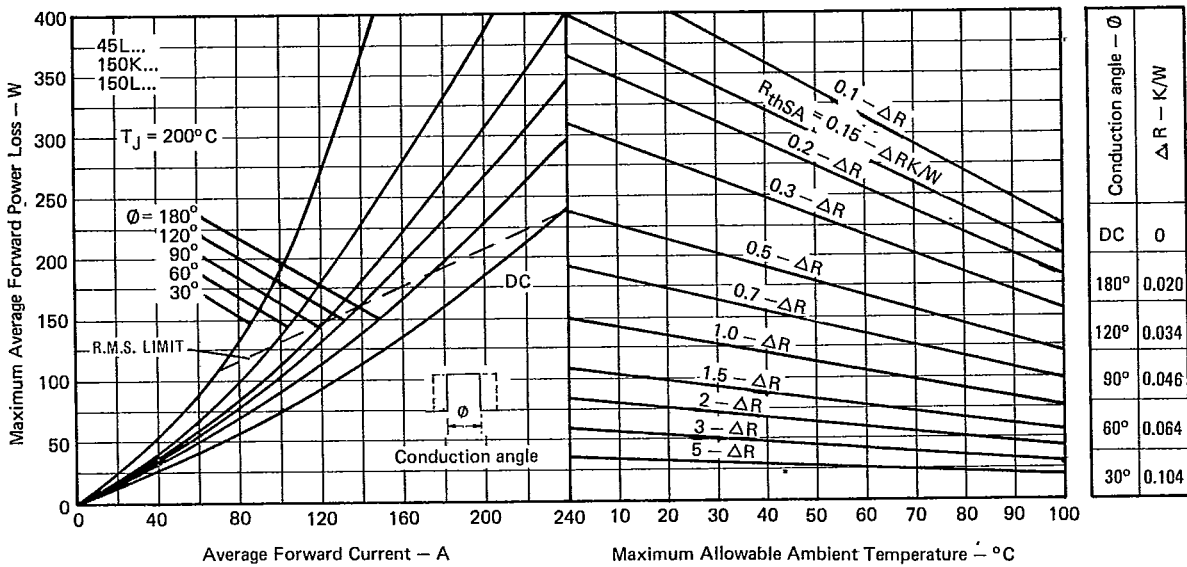
T <sub>J</sub>	Max. operating junction temperature range		-65 to 200 ②		°C	
T <sub>stg</sub>	Max. storage temperature range		-65 to 200 ②		°C	
R <sub>thJC</sub>	Max. internal thermal resistance, junction-to-case		0.25		K/W	DC operation
R <sub>thCS</sub>	Thermal resistance, case-to-sink		0.10		K/W	Mounting surface flat, smooth, and greased.
T	Mounting torque	Min.	11.3 (100)	14.1 (125)	Nm (lbf.in)	
		Max.	14.1 (125)	17.0 (150)		
wt	Approximate weight		100 (3.5)		g (oz)	
	Case style	DO-205AA (DO-8)	B-42	DO-205AC (DO-30)	JEDEC	

② for 45L series -40 to 200 °C

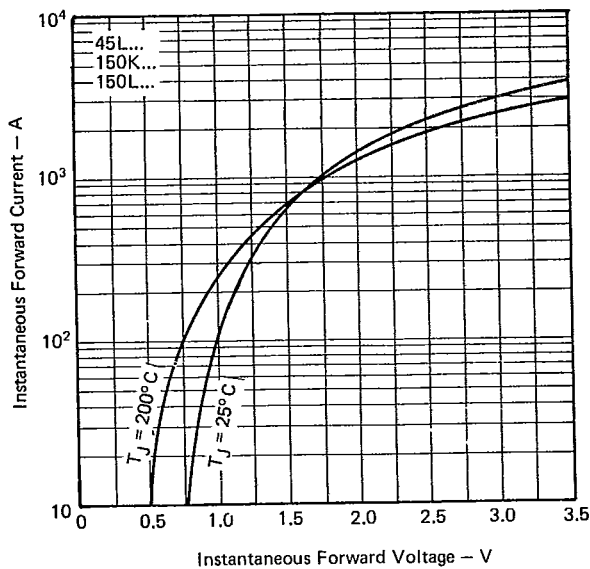
③ I<sup>2</sup>t for time t<sub>x</sub> = I<sup>2</sup>√t · √t<sub>x</sub>



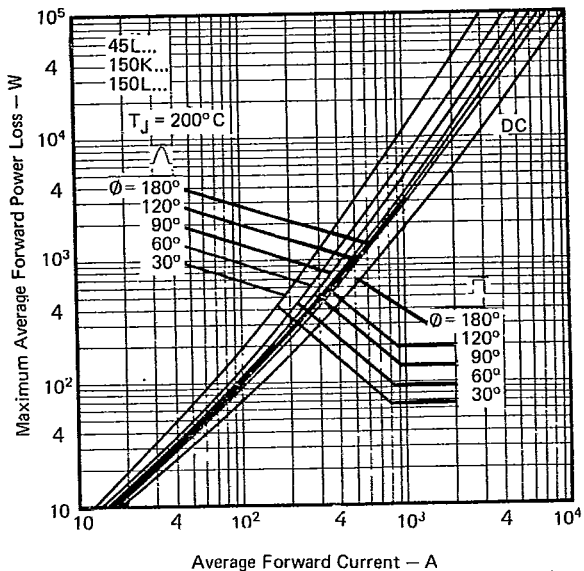
**Fig. 1 - Current Rating Nomogram (Sinusoidal Waveforms)**



**Fig. 2 - Current Rating Nomogram (Rectangular Waveforms)**



**Fig. 3 - Maximum Forward Voltage Vs. Forward Current**



**Fig. 4 - Maximum High Level Forward Power Loss Vs. Average Forward Current**

45L, 150K, 150L, 150KS Series

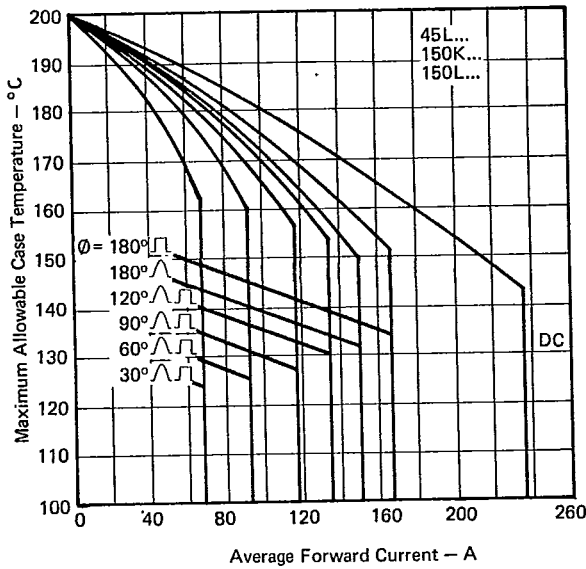


Fig. 5 – Average Forward Current Vs. Maximum Allowable Case Temperature

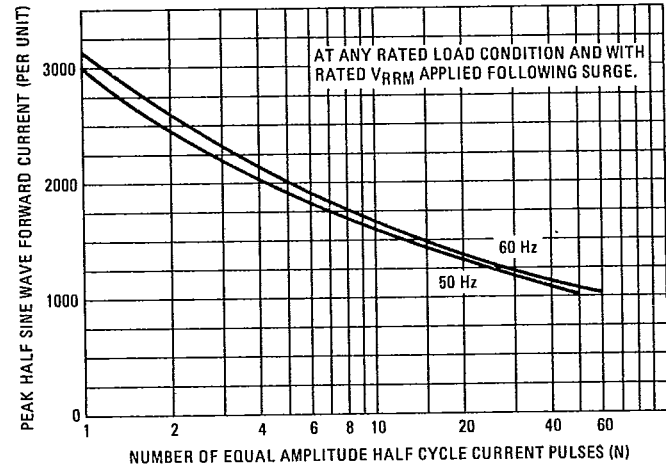


Fig. 6 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses

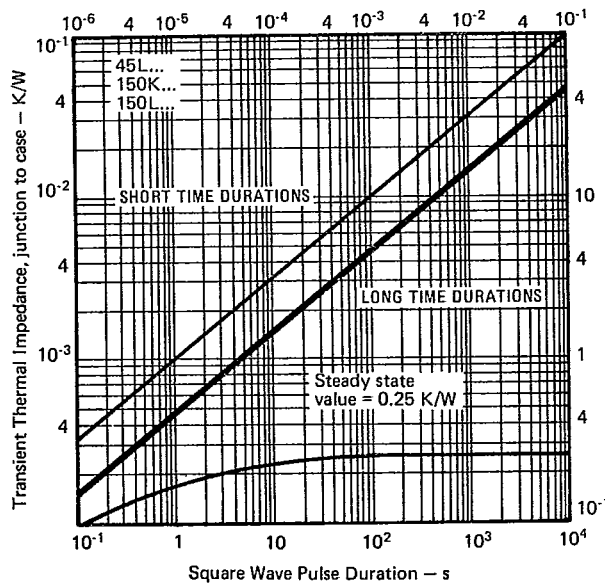
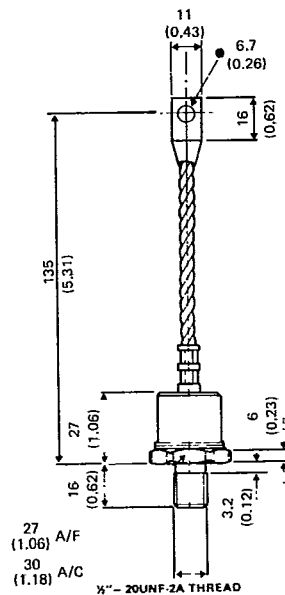


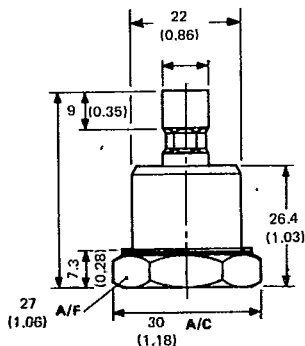
Fig. 7 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

45L...



Similar to JEDEC : DO-30  
 IEC191 : A9UB1  
 BS3934 : SO-29C  
 DIN41887 : 105 B2

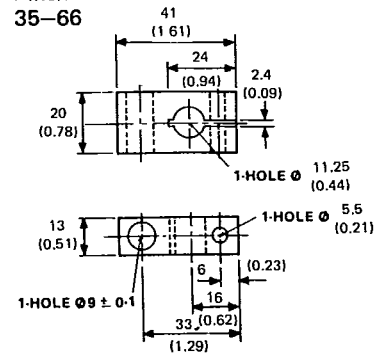
45LF... Same as 47LF...  
 but with flexible  
 lead same as 45L....



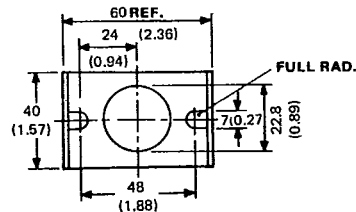
**NOTES**

1. 45LF... supplied with spring clamp K41-0233
2. 47LF... supplied with pinch bolt 35-66 and spring clamp K41-0233

Pinch Bolt  
 35-66

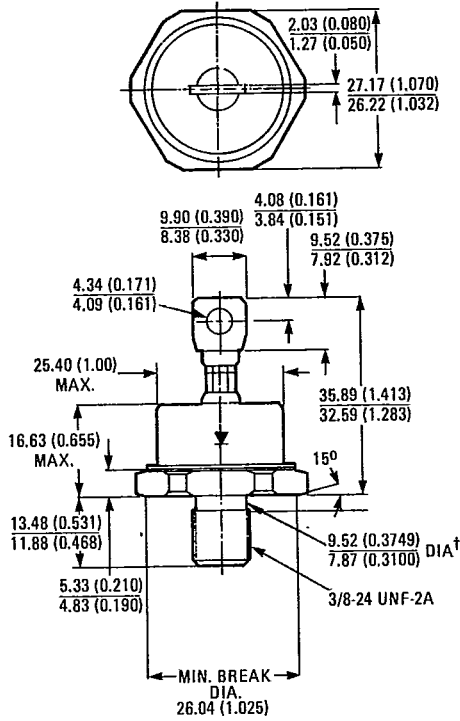


Spring Clamp  
 K41-0233

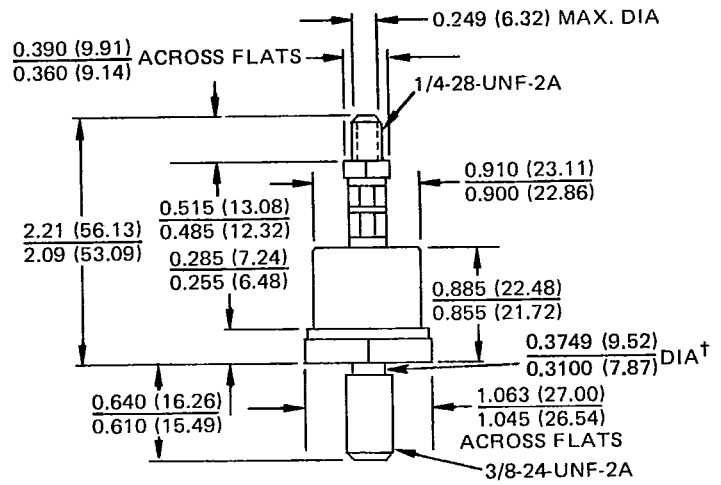


All dimensions in millimetres (inches)

**45L, 150K, 150L, 150KS Series**



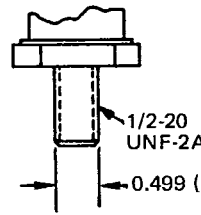
**150KS Series**  
IR Case Style B-42  
Dimensions in Millimeters and (Inches)



**152K-A Series**  
IR Case Style B-28

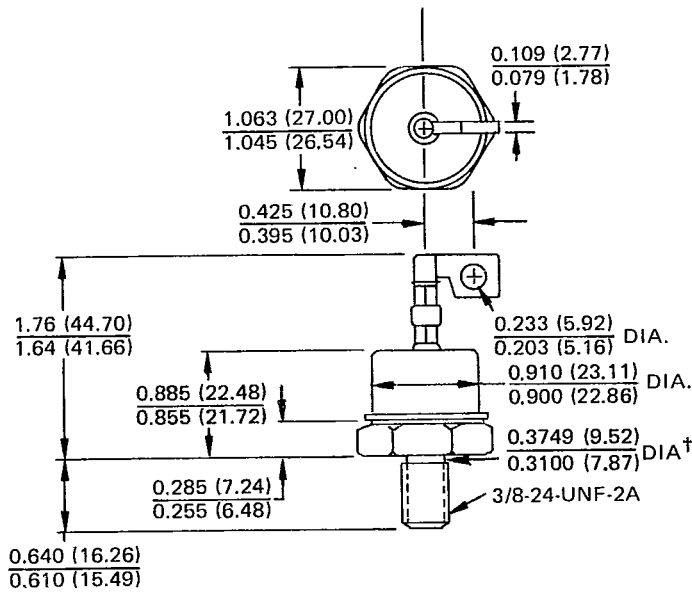
Otherwise Same as B-28

Torque Limits or threaded top stud (non-lubricated threads):  
min. 2.3 (20) N•m (lbf-in.)  
min. 2.8 (25) N•m (lbf-in.)



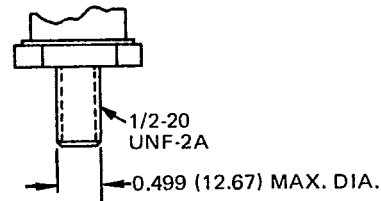
**152L-A Series\***  
IR Case Style B-29

All Dimensions in Inches and (Millimeters)



**154K-A Series**  
IR Case Style B-30

Otherwise Same as B-30



**154L-A Series**  
IR Case Style B-31

All Dimensions in Inches and (Millimeters)

† Complete threads to within 2½ threads of base.