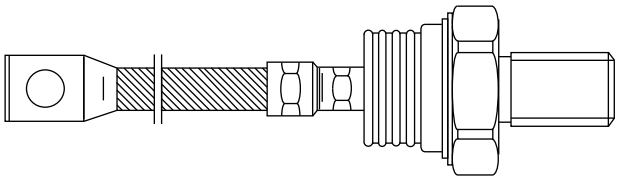
Standard Recovery Diodes, (Stud Version), 600 A



B-8

FEATURES

- Wide current range
- High voltage ratings up to 3200 V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC® types
- Compression bonded encapsulations
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	600 A
Package	B-8
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	SD600N/R		UNITS
		04 to 20	22 to 32	
$I_{F(AV)}$		600	600	A
	T_C	92	54	°C
$I_{F(RMS)}$		940	940	A
I_{FSM}	50 Hz	13 000	10 500	
	60 Hz	13 600	11 000	
I^2t	50 Hz	845	551	kA^2s
	60 Hz	772	503	
V_{RRM}	Range	400 to 2000	2200 to 3200	V
T_J		-40 to +180	-40 to +150	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM}, MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM}, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
VS-SD600N/R	04	400	500	35
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	22	2200	2300	
	28	2800	2900	
	32	3200	3300	

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FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			SD600N/R 04 to 20	SD600N/R 22 to 32	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			600		A
					92	54	°C
					570	375	A
					100		°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at T_C = 75 °C (04 to 20), T_C = 36 °C (25 to 32)			940		A
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	13 000	10 500	
		t = 8.3 ms			13 600	11 000	
		t = 10 ms	100 % V_{RRM} reapplied		10 900	8830	
		t = 8.3 ms			11 450	9250	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		845	551	kA^2s
		t = 8.3 ms			772	503	
		t = 10 ms	100 % V_{RRM} reapplied		598	390	
		t = 8.3 ms			546	356	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			8450	5510	$kA^2\sqrt{s}$
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.78	0.84	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.87	0.88	
Low level value of forward slope resistance	r_{f1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.35	0.40	mW
High level value of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.31	0.38	
Maximum forward voltage drop	V_{FM}	I_{pk} = 1500 A, $T_J = T_J$ maximum, t_p = 10 ms sinusoidal wave			1.31	1.44	V

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	SD600N/R 04 to 20	SD600N/R 22 to 32	UNITS
Maximum junction operating temperature range	T_J		-40 to 180	-40 to 150	°C
Maximum storage temperature range	T_{Stg}		-55 to 200		
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.1		K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.04		
Maximum allowed mounting torque ± 10 %		Not-lubricated threads	50		Nm
Approximate weight			454		g
Case style		See dimensions (link at the end of datasheet)	B-8		

ΔR_{thJC} CONDUCTION

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.012	0.008	$T_J = T_J$ maximum	K/W
120°	0.014	0.014		
90°	0.017	0.019		
60°	0.025	0.026		
30°	0.042	0.042		

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

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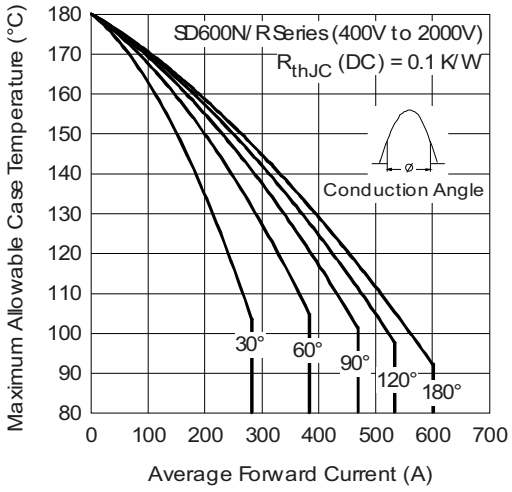


Fig. 1 - Current Ratings Characteristics

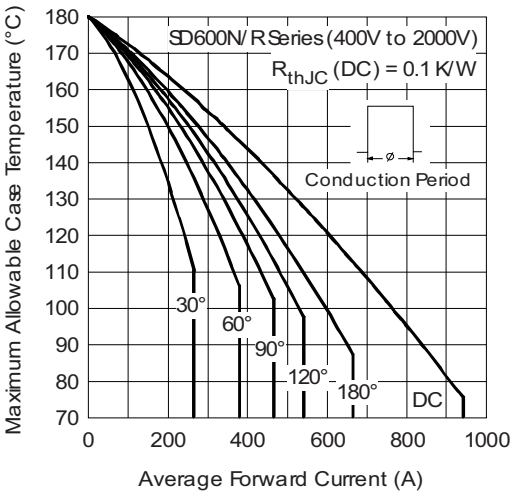


Fig. 2 - Current Ratings Characteristics

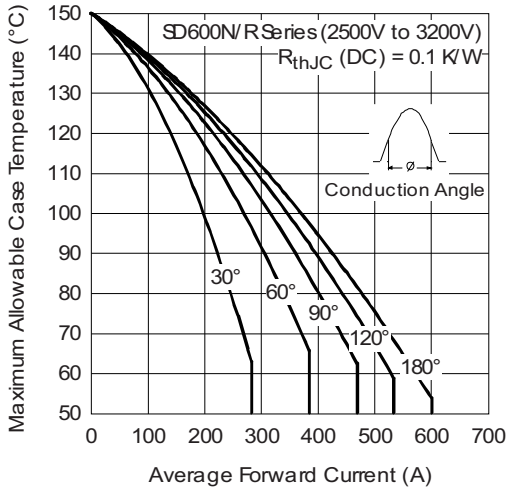


Fig. 3 - Current Ratings Characteristics

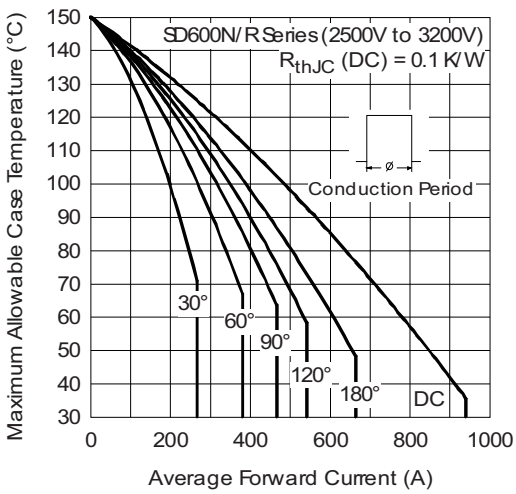


Fig. 4 - Current Ratings Characteristics

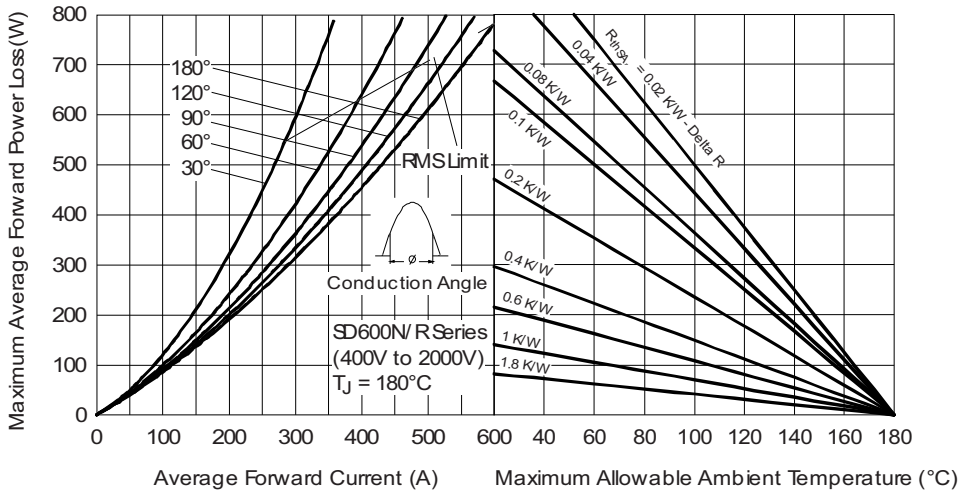


Fig. 5 - Forward Power Loss Characteristics

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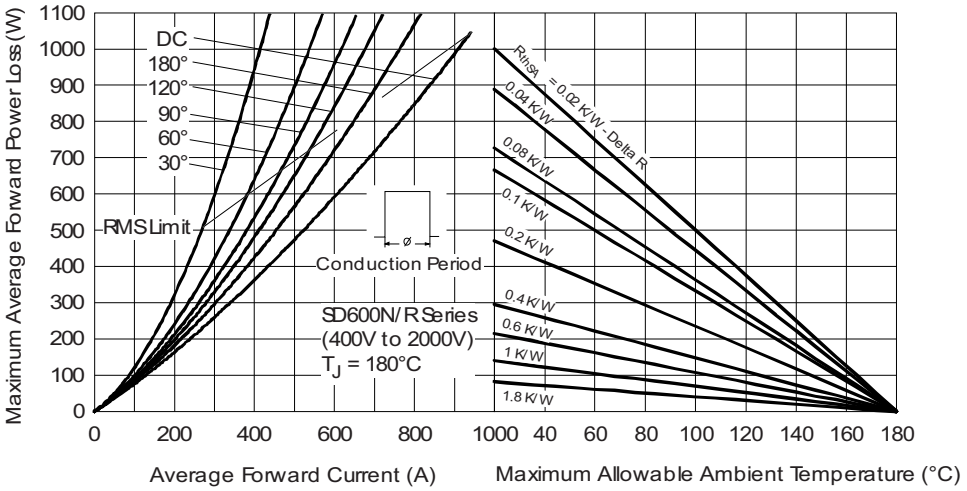


Fig. 6 - Forward Power Loss Characteristics

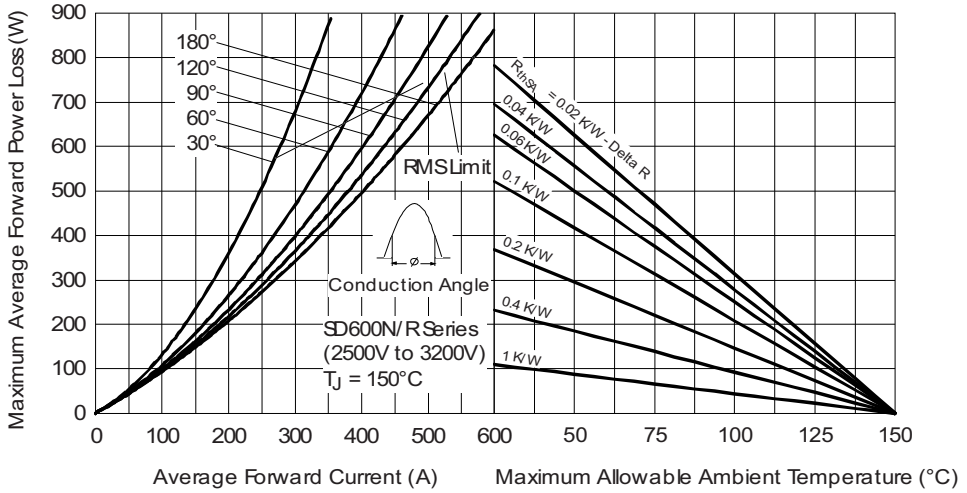


Fig. 7 - Forward Power Loss Characteristics

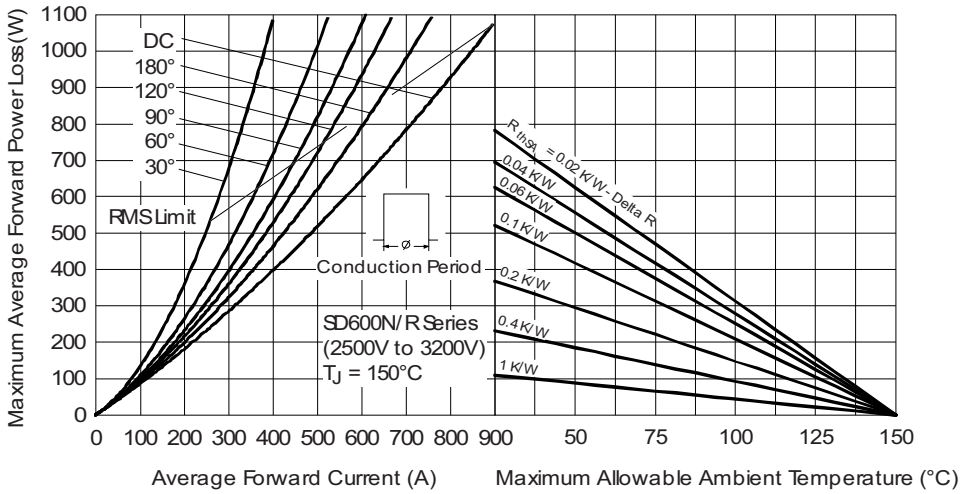


Fig. 8 - Forward Power Loss Characteristics

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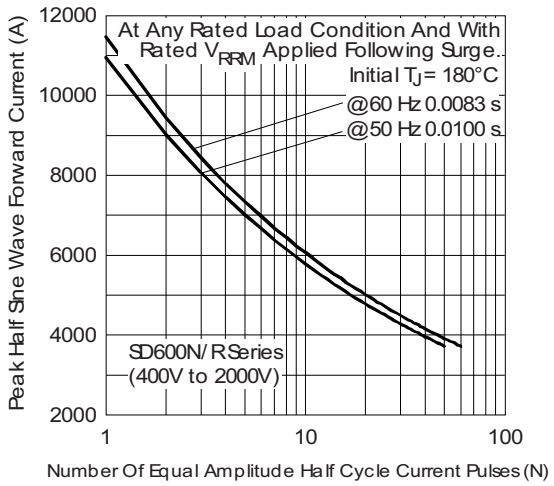


Fig. 9 - Maximum Non-Repetitive Surge Current

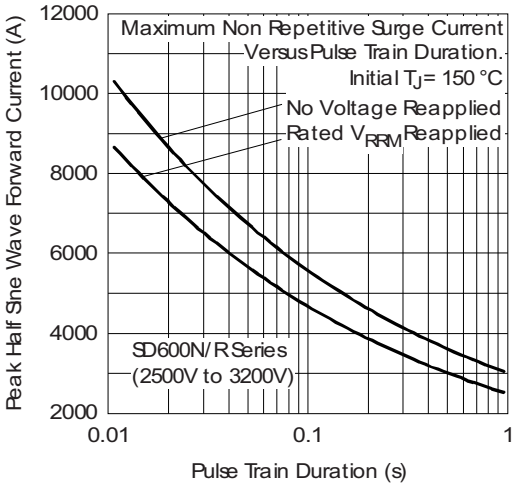


Fig. 12 - Maximum Non-Repetitive Surge Current

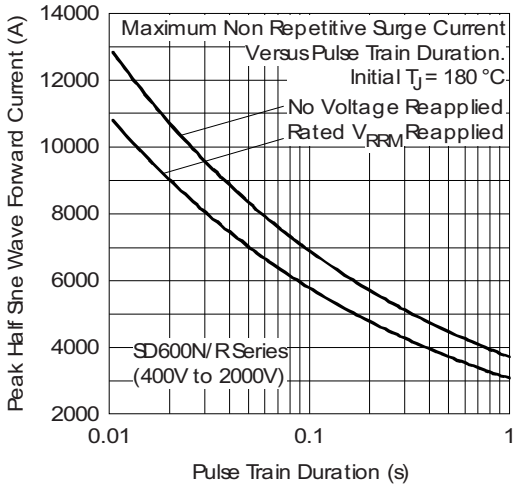


Fig. 10 - Maximum Non-Repetitive Surge Current

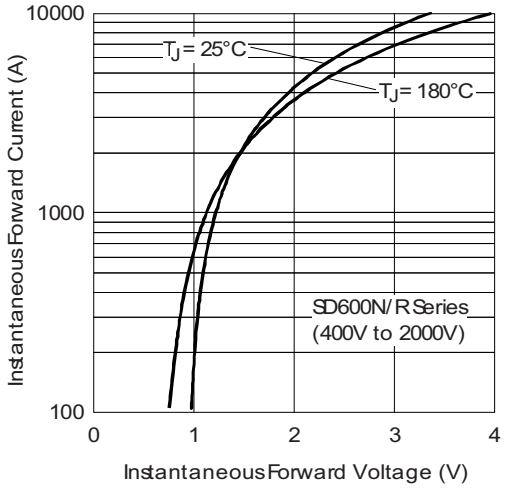


Fig. 13 - Forward Voltage Drop Characteristics

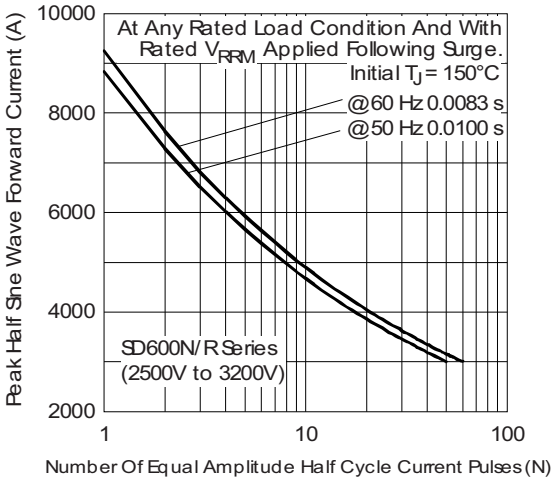


Fig. 11 - Maximum Non-Repetitive Surge Current

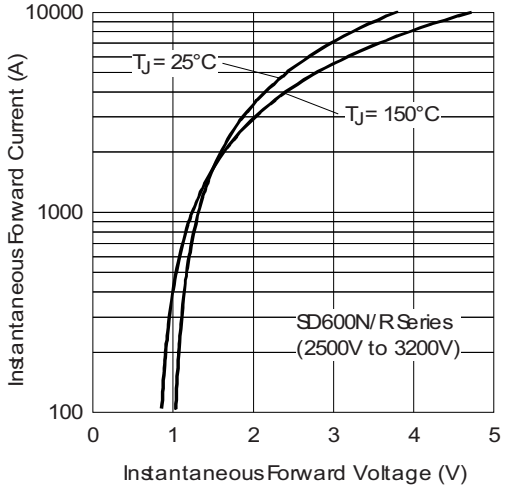


Fig. 14 - Forward Voltage Drop Characteristics

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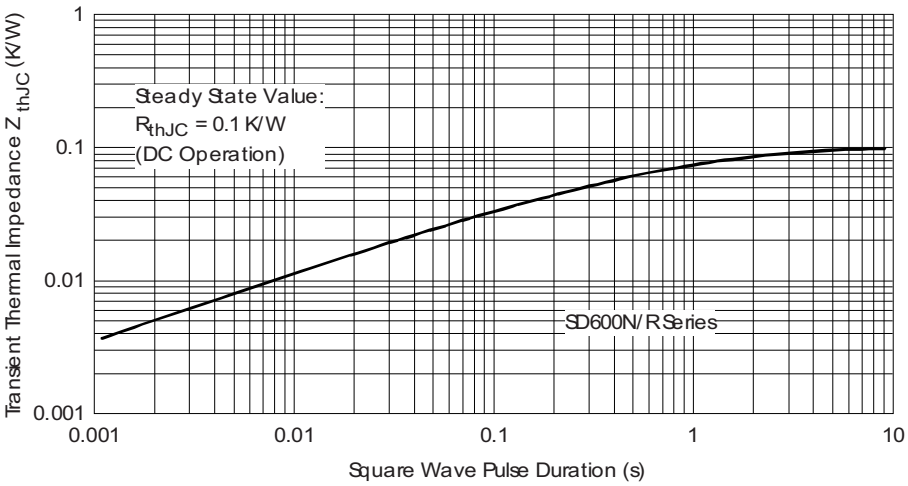


Fig. 15 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code

VS-	SD	60	0	N	32	P	C
1	2	3	4	5	6	7	8

1 - Vishay Semiconductors product
2 - Diode
3 - Essential part number
4 - 0 = standard recovery
5 - • N = stud normal polarity (cathode to stud)
• R = stud reverse polarity (anode to stud)
6 - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
7 - P = stud base B-8 3/4" 16UNF-2A
8 - C = ceramic cap

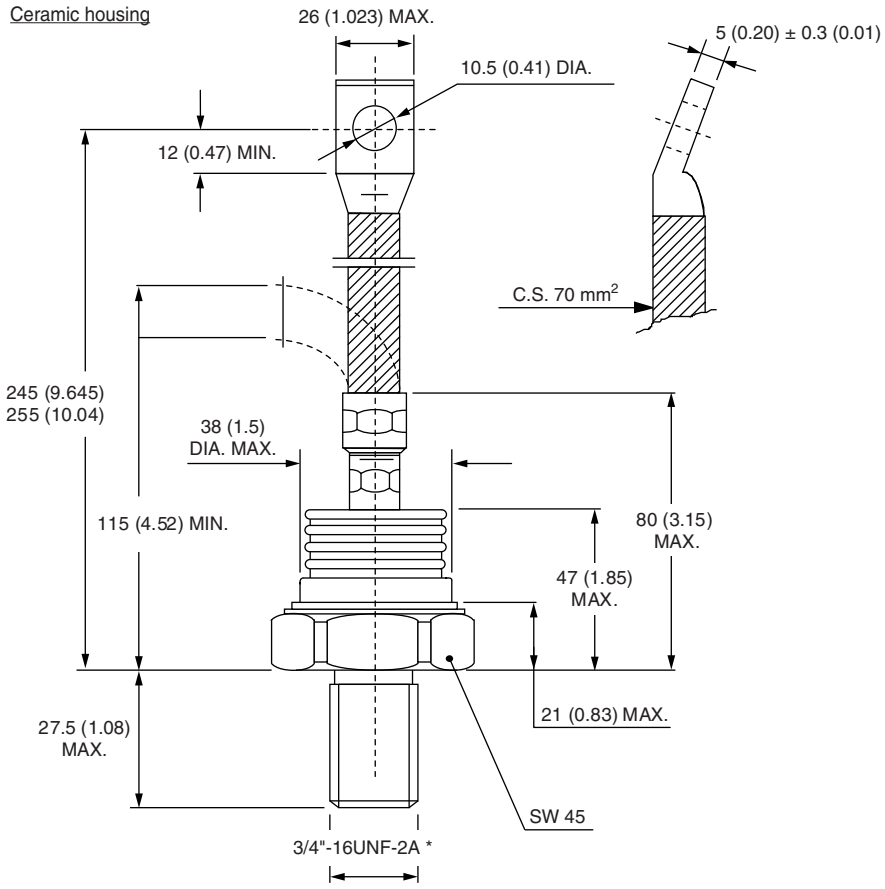
For metric device M24 x 1.5 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95303

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B-8

DIMENSIONS in millimeters (inches)



*For metric device: M24 x 1.5 - length 21 (0.83) MAX.
contact factory

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