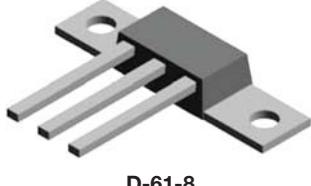
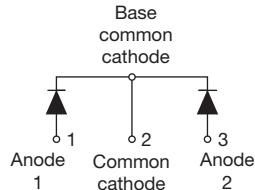


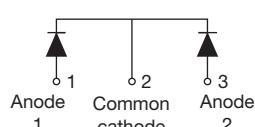
High Performance Schottky Rectifier New Generation 3 D-61 Package, 2 x 55 A

VS-111CNQ045APbF


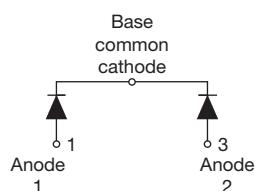
D-61-8


VS-111CNQ045ASMPbF


D-61-8-SM


VS-111CNQ045ASLPbF


D-61-8-SL


PRODUCT SUMMARY

Package	D-61
$I_{F(AV)}$	2 x 55 A
V_R	45 V
V_F at I_F	0.61
I_{RM} max.	65 mA at 125 °C
T_J max.	175 °C
Diode variation	Common cathode
E_{AS}	54 mJ

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}		45	V
I_{FSM}	$t_p = 5 \mu s$ sine	4000	A
V_F	55 A _{pk} , $T_J = 125$ °C (per leg)	0.55	V
T_J	Range	-55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-111CNQ045APbF	UNITS
Maximum DC reverse voltage	V_R	45	V
Maximum working peak reverse voltage	V_{RWM}		


FEATURES

- 175 °C T_J operation
- Center tap module
- Very low forward voltage drop
- High frequency operation
- High power discrete
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- New fully transfer-mold low profile, small footprint, high current package
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

DESCRIPTION

The center tap Schottky rectifier module has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current per leg See fig. 5	I _{F(AV)}	50 % duty cycle at T _C = 152 °C, rectangular waveform		55	A	
				110		
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I _{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	4000	A	
		10 ms sine or 6 ms rect. pulse		600		
Non-repetitive avalanche energy per leg	E _{AS}	T _J = 25 °C, I _{AS} = 8 A, L = 1.7 mH		54	mJ	
Repetitive avalanche current per leg	I _{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T _J maximum V _A = 1.5 x V _R typical		8	A	

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg See fig. 1	V _{FM} ⁽¹⁾	55 A	T _J = 25 °C	0.61	V	
		110 A		0.75		
		55 A	T _J = 125 °C	0.55		
		110 A		0.69		
Maximum reverse leakage current per leg	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	1.5	mA	
		T _J = 125 °C		65		
Maximum junction capacitance per leg	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz), 25 °C		3900	pF	
Typical series inductance per leg	L _S	Measured lead to lead 5 mm from package body		5.5	nH	
Maximum voltage rate of change	dV/dt	Rated V _R		10 000	V/µs	

Note

⁽¹⁾ Pulse width < 300 µs, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum junction and storage temperature range	T _J , T _{Stg}			- 55 to 175	°C	
Maximum thermal resistance, junction to case per leg	R _{thJC}	DC operation		0.5	°C/W	
				0.25		
Typical thermal resistance, case to heatsink (D-61-8 only)	R _{thCS}	Mounting surface, smooth and greased Device flatness < 5 mils		0.30		
Approximate weight				7.8	g	
				0.28	oz.	
Mounting torque (D-61-8 only)	minimum			40 (35)	kgf · cm (lbf · in)	
	maximum			58 (50)		
Marking device		Case style D-61-8		111CNQ045A		
		Case style D-61-8-SM		111CNQ045ASM		
		Case style D-61-8-SL		111CNQ045ASL		

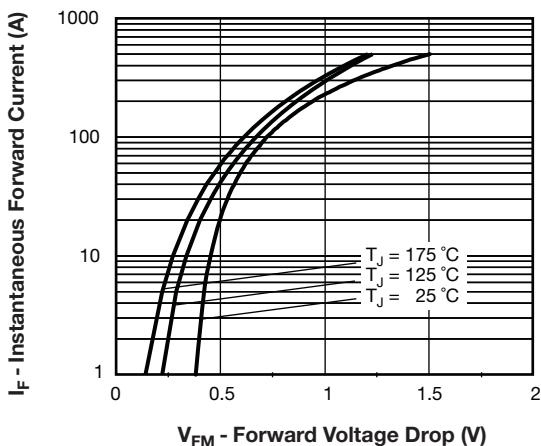


Fig. 1 - Maximum Forward Voltage Drop Characteristics
(Per Leg)

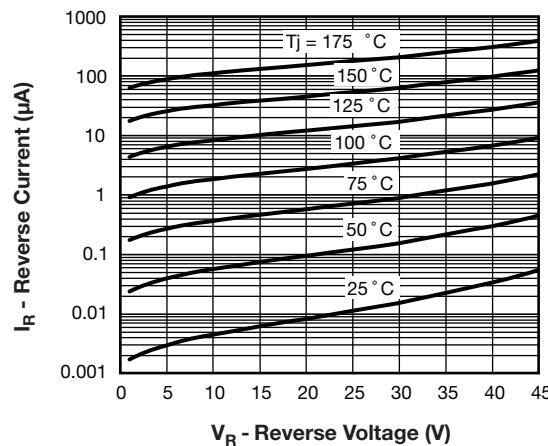


Fig. 2 - Typical Values of Reverse Current vs.
Reverse Voltage (Per Leg)

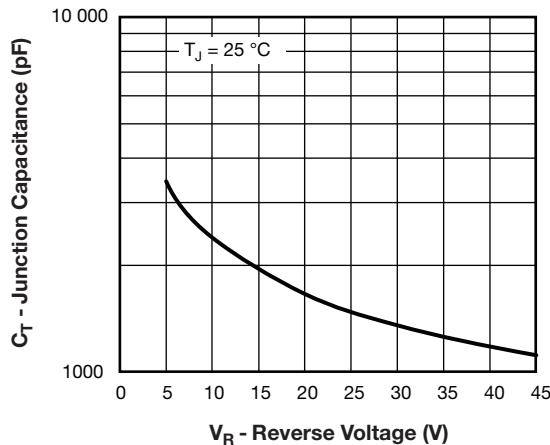


Fig. 3 - Typical Junction Capacitance vs.
Reverse Voltage (Per Leg)

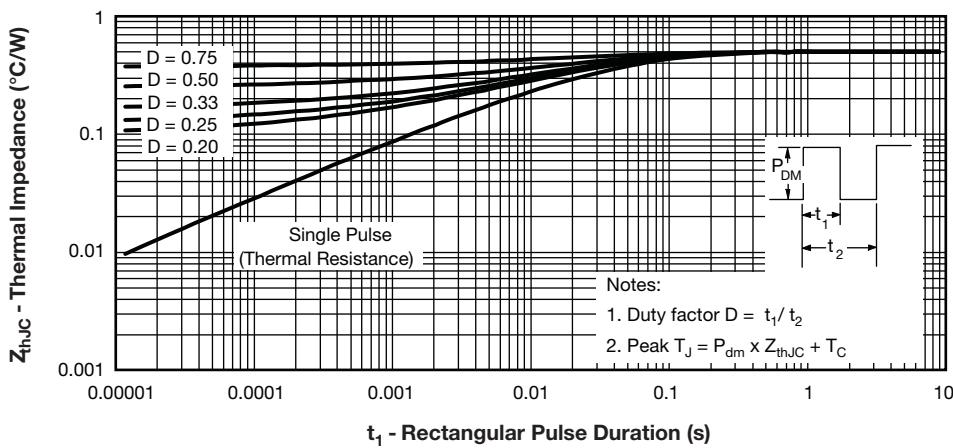


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

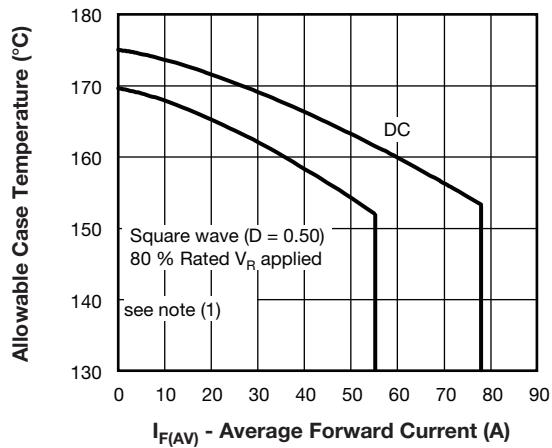


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

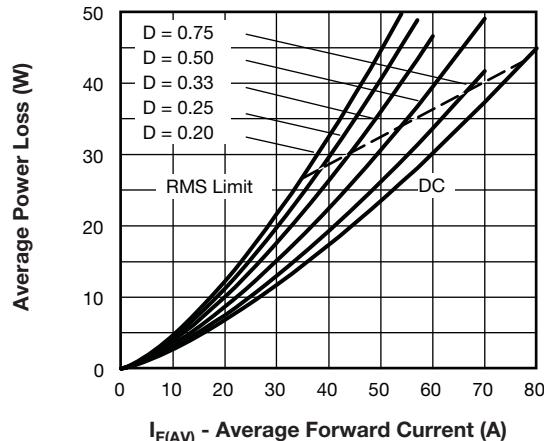


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

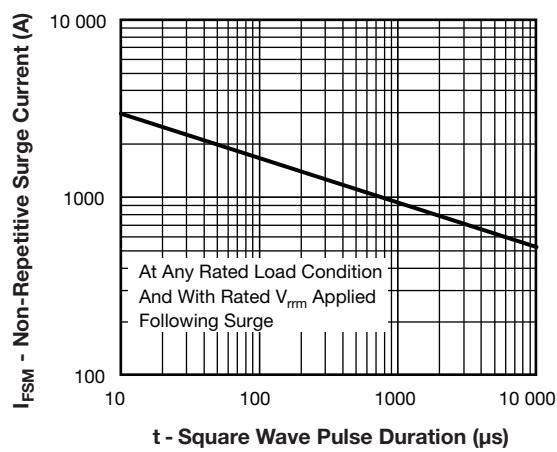


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

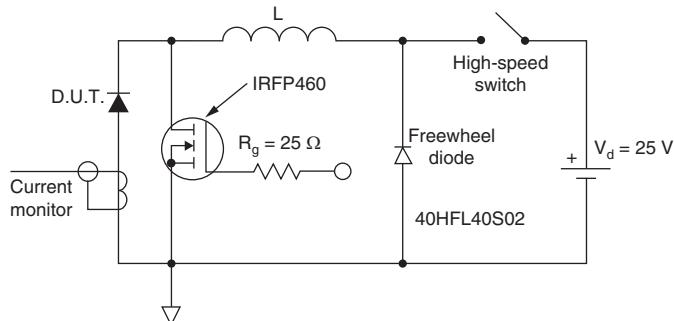


Fig. 8 - Unclamped Inductive Test Circuit

Note

(1) Formula used: $T_C = T_J - (P_d + P_{d,REV}) \times R_{th,JC}$;
 $P_d = \text{Forward power loss} = I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d,REV} = \text{Inverse power loss} = V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R

ORDERING INFORMATION TABLE

Device code	VS-	111	C	N	Q	045	A	PbF
	1	2	3	4	5	6	7	8

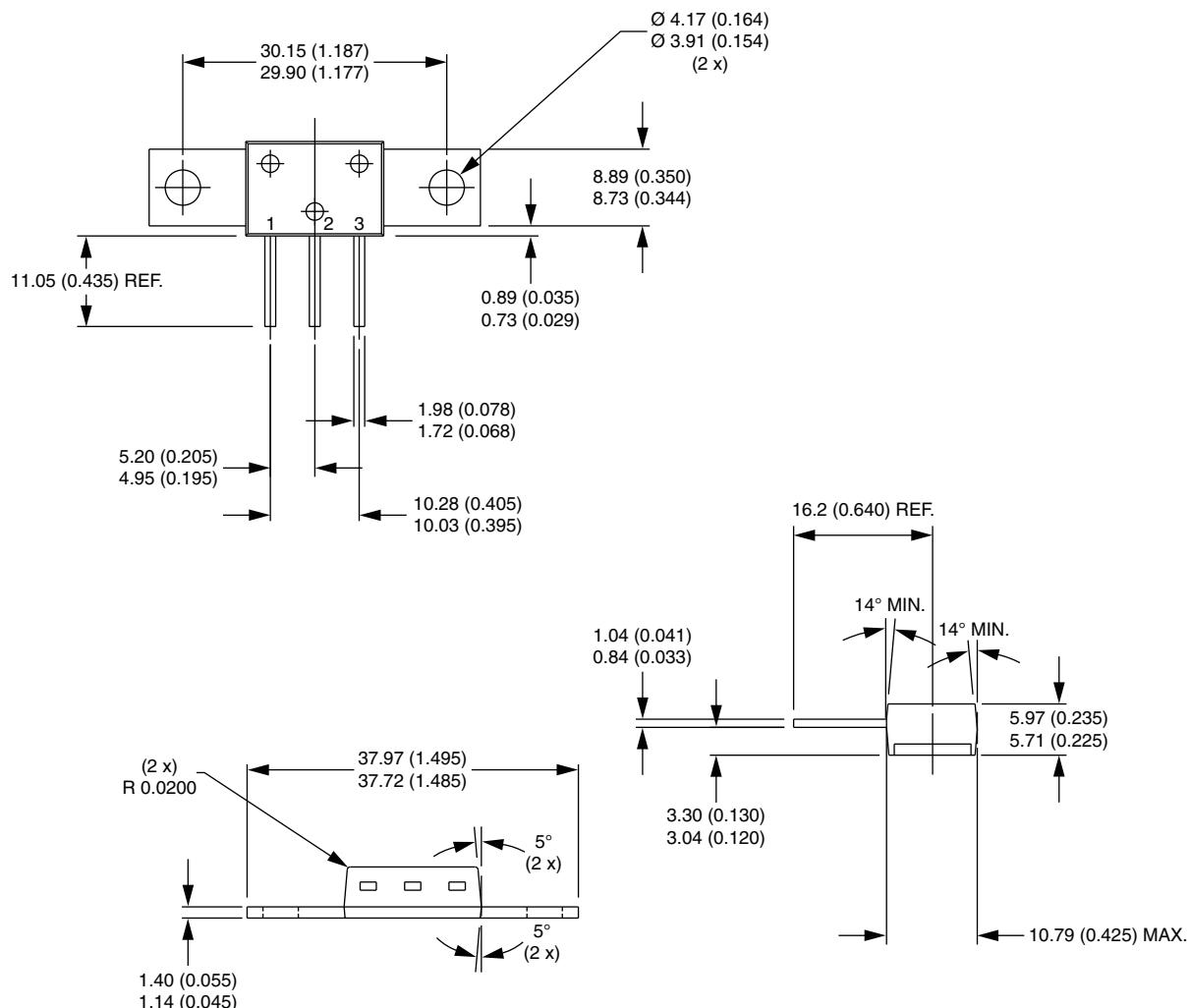
- 1** - Vishay Semiconductors product
- 2** - Current rating (111 = 110 A)
- 3** - Circuit configuration:
C = Common cathode
- 4** - Package:
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage ratings (045 = 45 V)
- 7** - Package style:
 - A = D-61-8
 - ASM = D-61-8-SM
 - ASL = D-61-8-SL
- 8** - • None = Standard production
• PbF = Lead (Pb)-free

Standard pack quantity: A = 10 pieces; ASM/ASL = 20 pieces

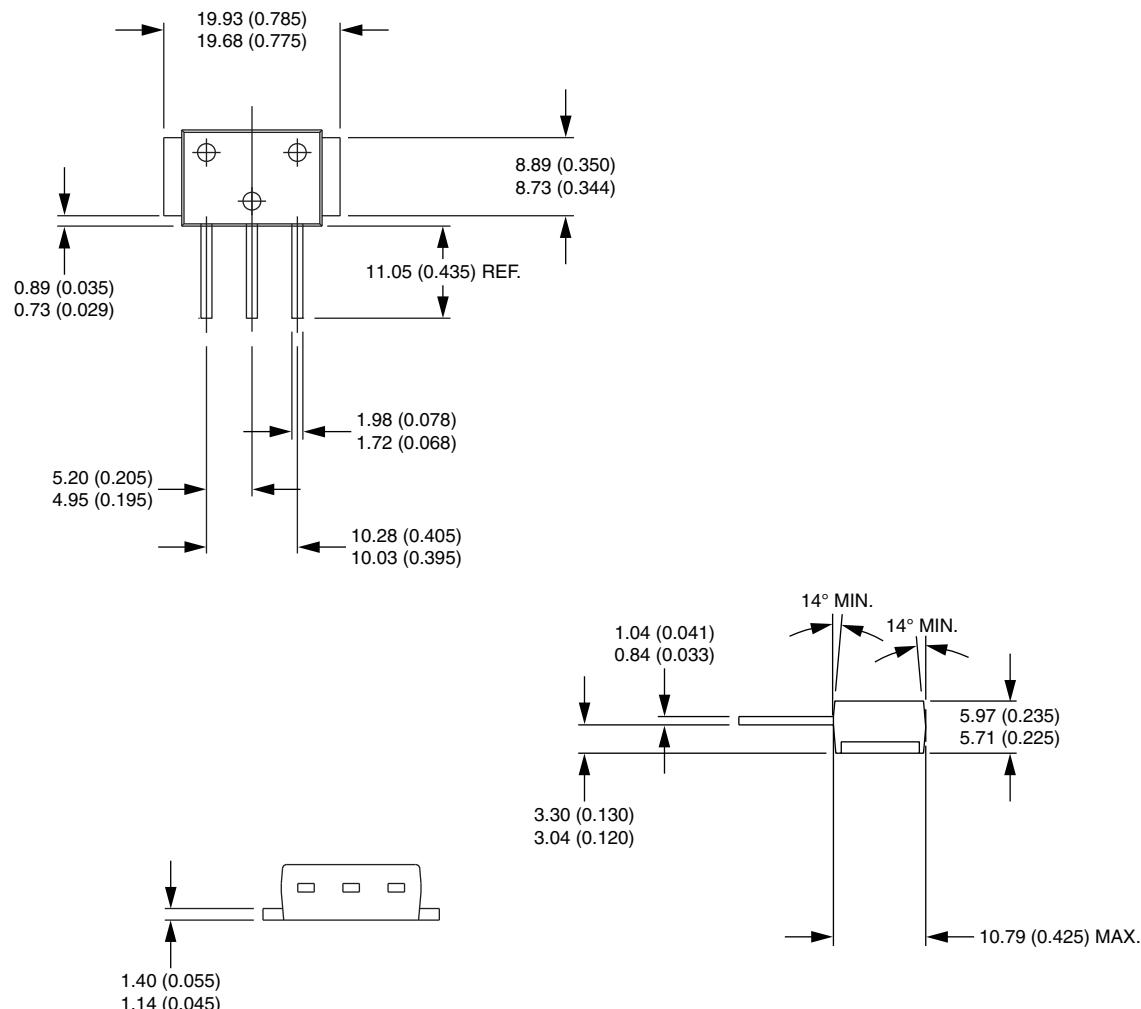
LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95354
Part marking information	www.vishay.com/doc?95356

D-61-8, D-61-8-SM, D-61-8-SL

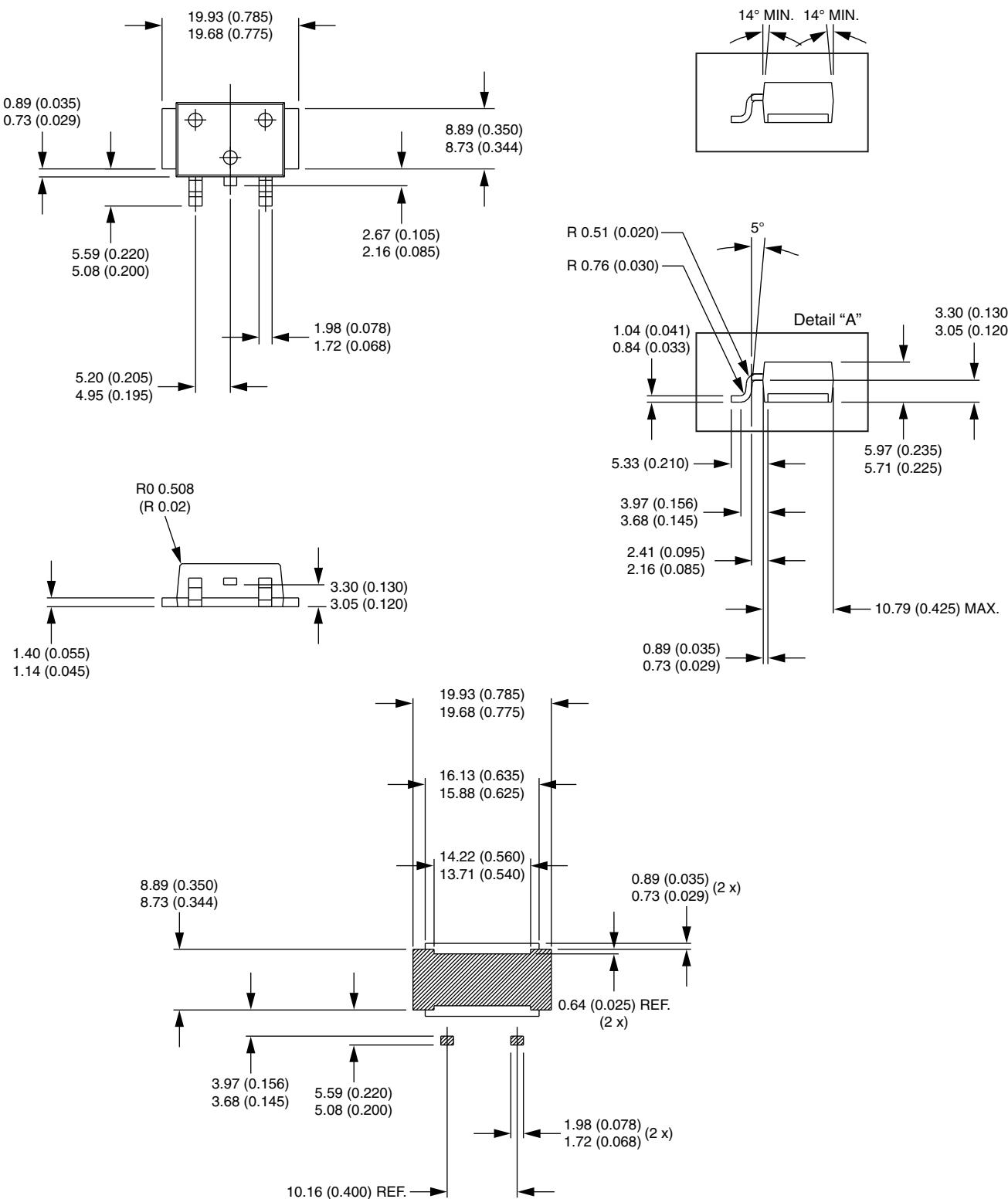
DIMENSIONS - D-61-8 in millimeters (inches)



DIMENSIONS - D-61-8-SM in millimeters (inches)



DIMENSIONS - D-61-8-SL in millimeters (inches)



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