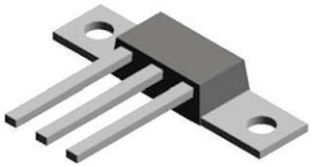
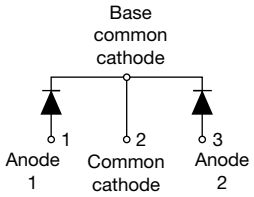
High Performance Schottky Rectifier New Generation 3, D-61 Package, 2 x 55 A

VS-115CNQ015APbF



D-61-8



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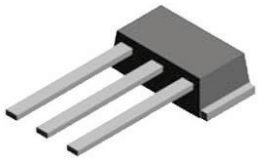
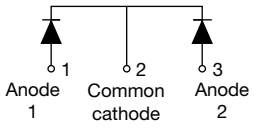
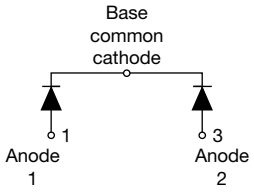


D-61-8-SM



VS-115CNQ015ASLPbF

D-61-8-SL



FEATURES

Available

RoHS* Available

- 125 °C T_J operation (V_R < 5 V)
- Center tap module
- Optimized for OR-ing applications
- Ultralow forward voltage drop
- High frequency operation
- High power discrete
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- 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 ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

PRODUCT SUMMARY	
Package	D-61-8, D-61-8-SM, D-61-8-SL
$I_{F(AV)}$	2 x 55 A
V_R	15 V
V_F at I_F	0.37 V
I_{RM} max.	1200 mA at 100 °C
T_J max.	125 °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}		15	V
I_{FSM}	t_p = 5 µs sine	5050	A
V_F	55 A_{pk}, T_J = 75 °C (per leg)	0.33	V
T_J	Range	-55 to +125	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VS-115CNQ015APbF	UNITS
Maximum DC reverse voltage	V_R	T_J = 100 °C	15	V
Maximum working peak reverse voltage	V_{RWM}	T_J = 125 °C	5	

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	per leg	$I_{F(AV)}$	50 % duty cycle at T_C = 112 °C, rectangular waveform		55	A
	per device				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	5050	A
			10 ms sine or 6 ms rect. pulse		830	
Non-repetitive avalanche energy per leg		E_{AS}	T_J = 25 °C, I_{AS} = 2 A, L = 4.5 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 = 3 x V_R typical		2	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	0.37	V
		110 A		0.46	
		55 A	T_J = 75 °C	0.33	
		110 A		0.43	
Maximum reverse leakage current per leg See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	20	mA
		T_J = 100 °C		1200	
		T_J = 100 °C	V_R = 12 V	900	
		T_J = 100 °C	V_R = 5 V	540	
Maximum junction capacitance per leg	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °C		5500	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 temperature range		T_J		-55 to +125	°C
Maximum storage temperature range		T_{Stg}		-55 to +150	
Maximum thermal resistance, junction to case per leg		R_{thJC}	DC operation See fig. 4	0.5	°C/W
Maximum thermal resistance, junction to case per package			DC operation	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	115CNQ015A	
			Case style D-61-8-SM	115CNQ015ASM	
			Case style D-61-8-SL	115CNQ015ASL	

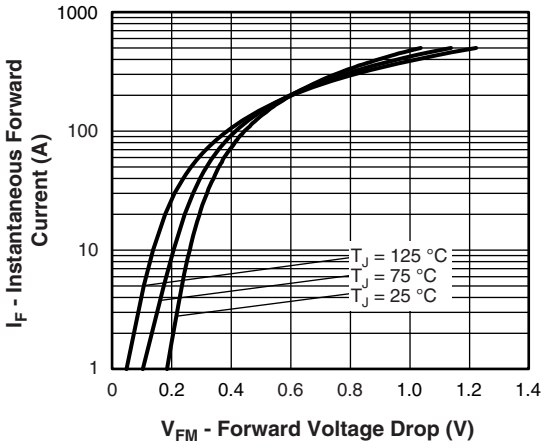


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

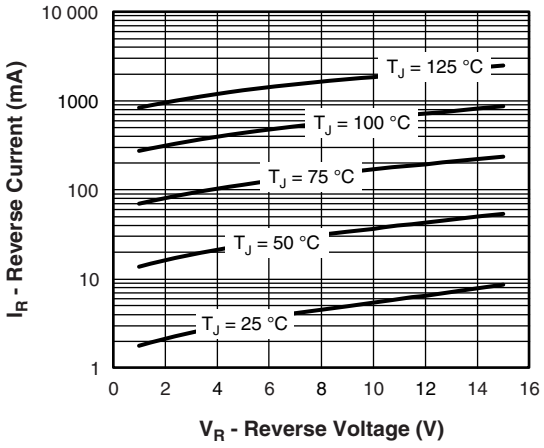


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

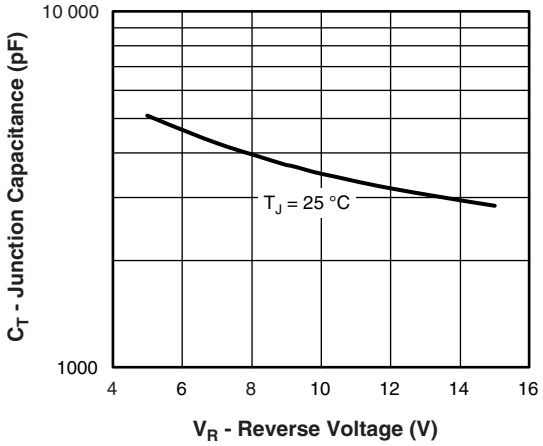


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

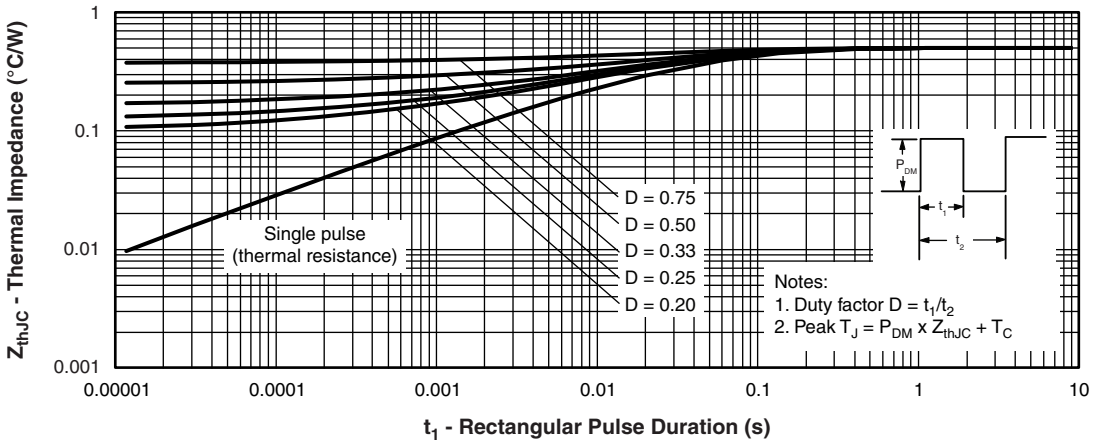


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

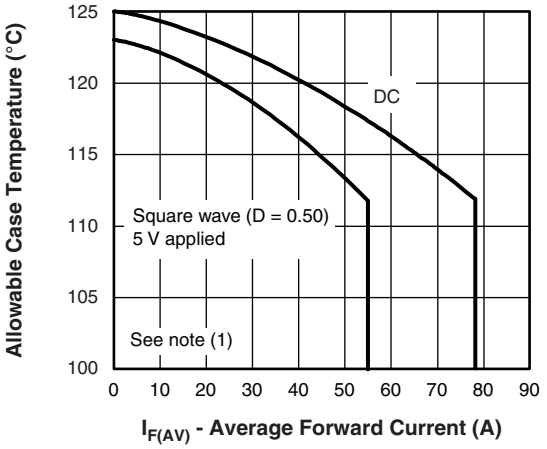


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

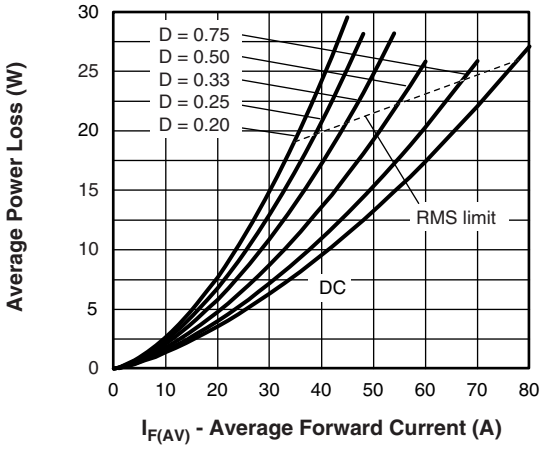


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

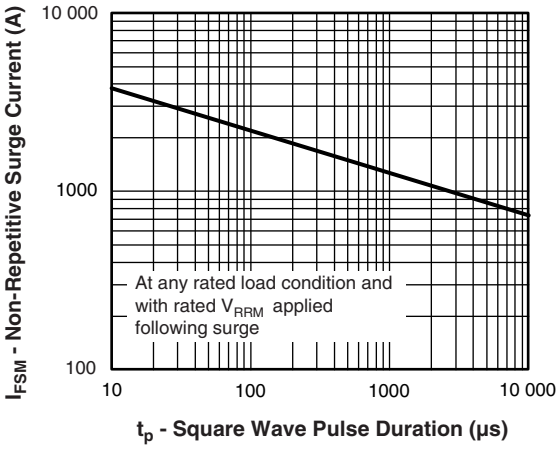


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

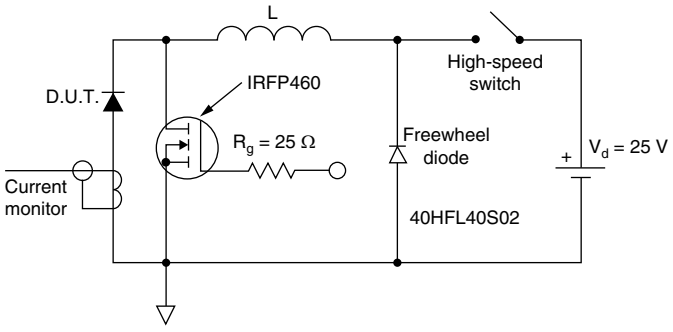


Fig. 8 - Unclamped Inductive Test Circuit

Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at ($I_{F(AV)}$/D) (see fig. 6);
Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1 - D); I_R at V_{R1} = 5 V

ORDERING INFORMATION TABLE

Device code

VS-	115	C	N	Q	015	A	PbF
1	2	3	4	5	6	7	8

1 - Vishay Semiconductors product

2 - Current rating (110 A)

3 - Circuit configuration:
C = common cathode

4 - Package:
N = D-61

5 - Schottky “Q” series

6 - Voltage rating (015 = 15 V)

7 - Package style:
- A = D-61-8
- ASM = D-61-8-SM
- ASL = D-61-8-SL

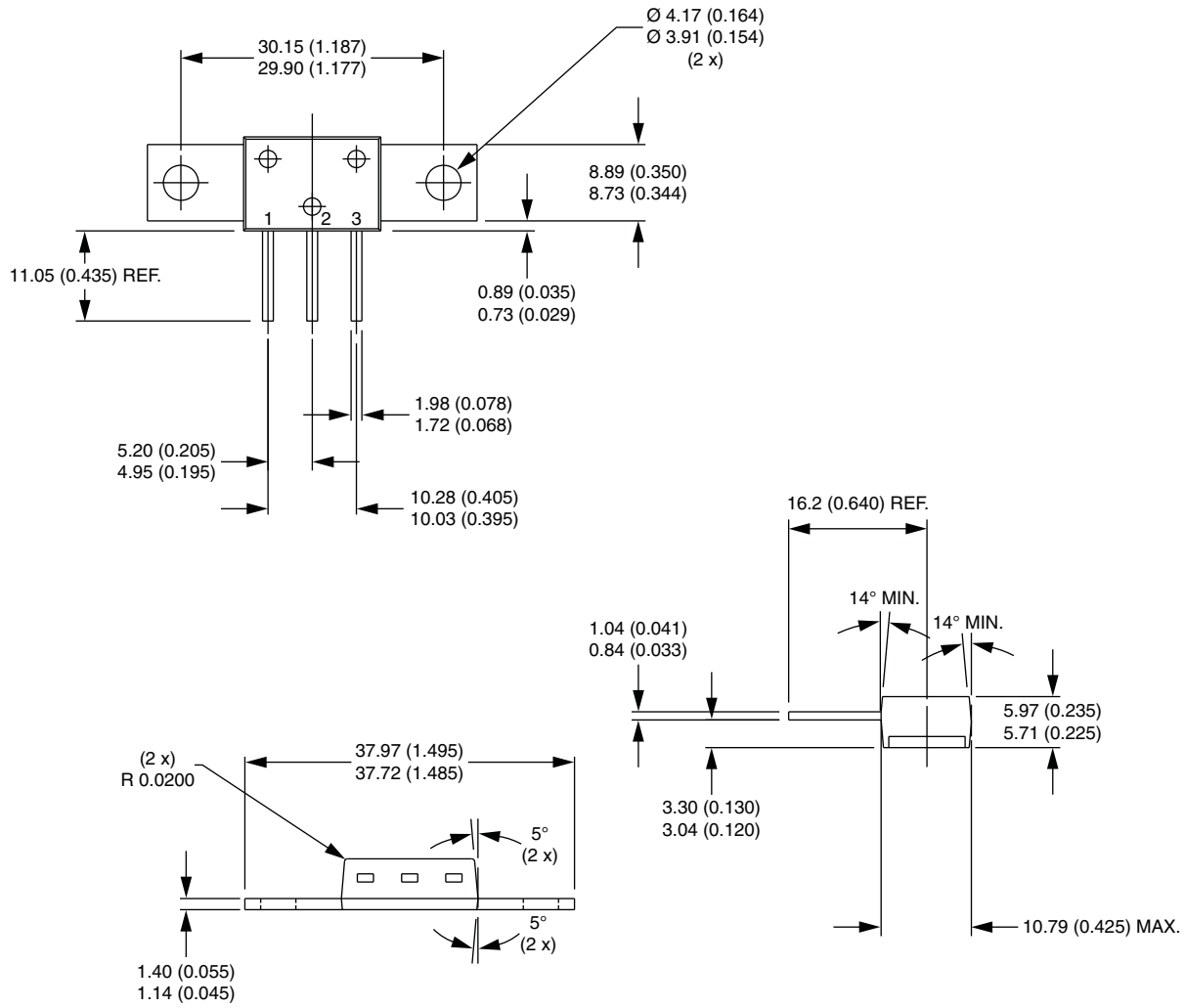
8 -
-

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

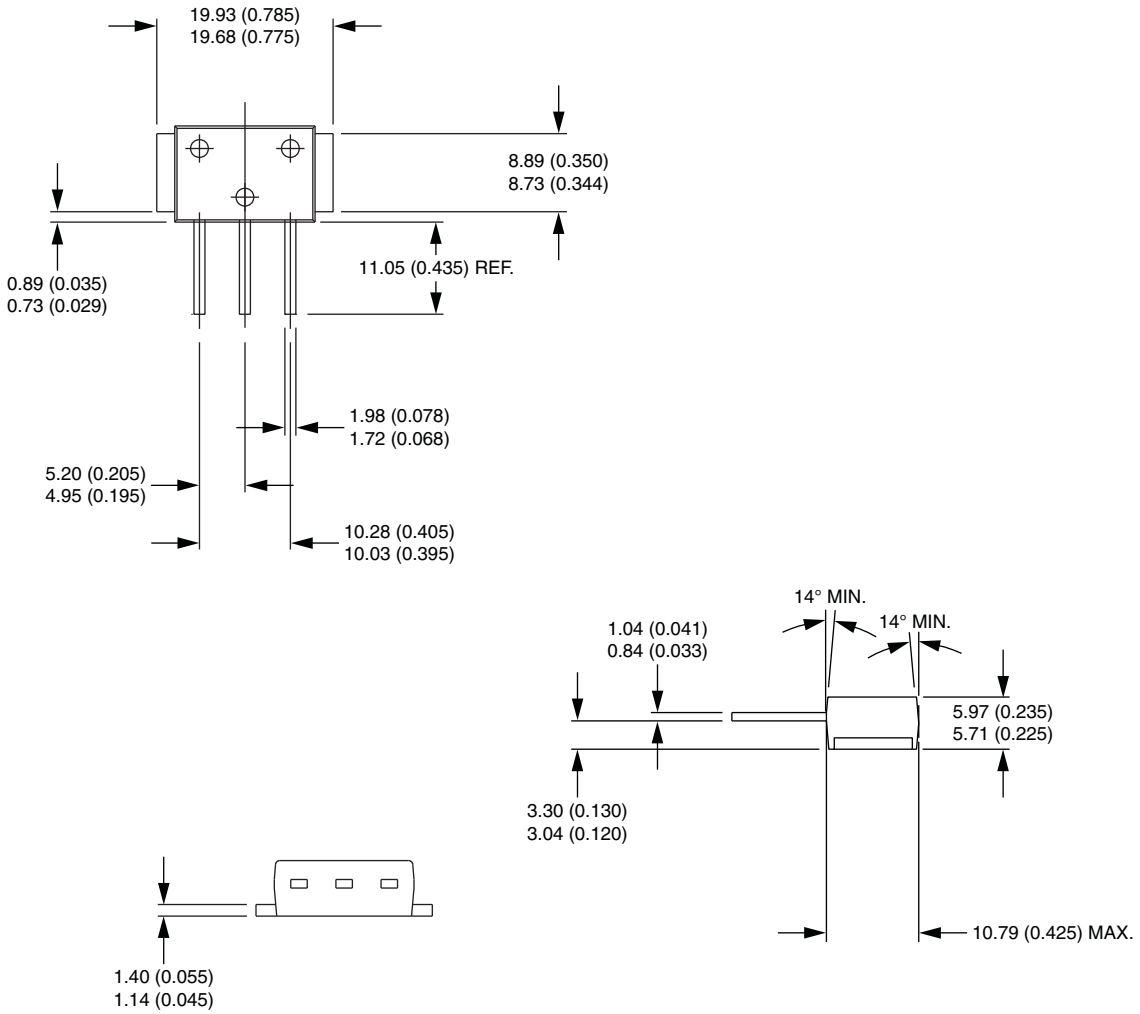
LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95354
Part marking information	www.vishay.com/doc?95356

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

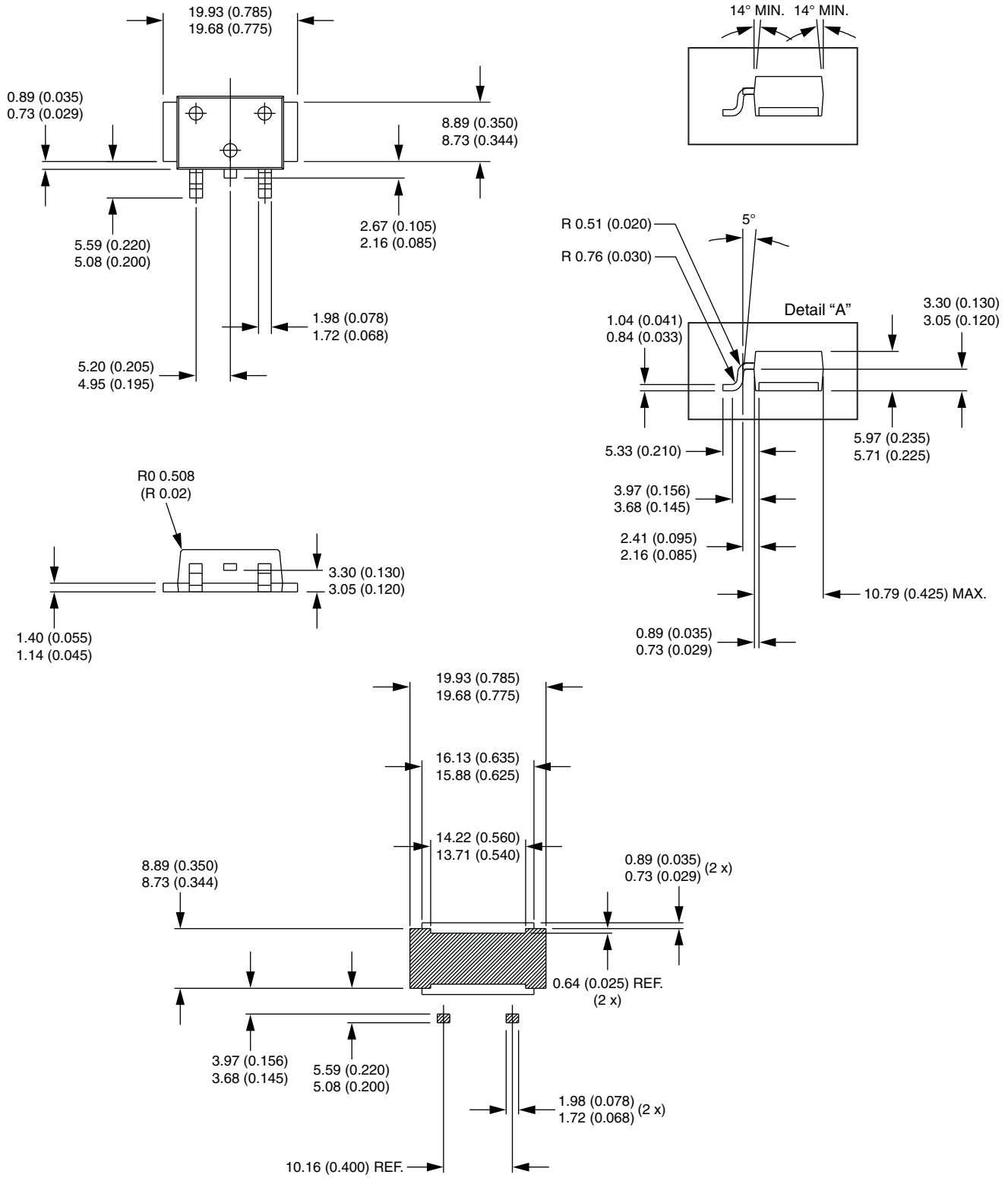
DIMENSIONS - D-61-8 in millimeters (inches)



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



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



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