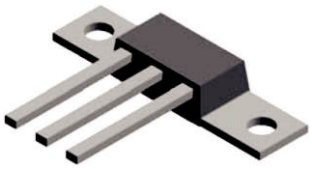
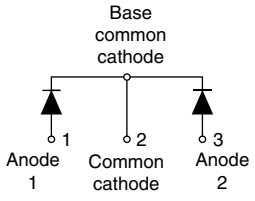
Schottky Rectifier
New Generation 3 D-61 Package, 2 x 55 A

VS-115CNQ015APbF



D-61-8



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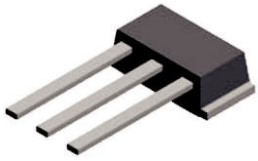
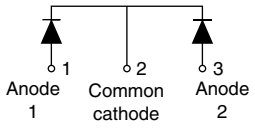
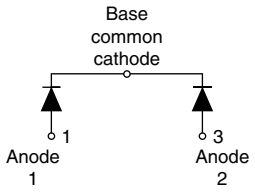


D-61-8-SM



VS-115CNQ015ASLPbF

D-61-8-SL



FEATURES

- 125 °C T_J operation (V_R < 5 V)
- Center tap module
- Optimized for OR-ing applications
- Ultralow forward voltage drop
- High frequency operation
- 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
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level

Available
RoHS* COMPLIANT

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	
$I_{F(AV)}$	2 x 55 A
V_R at T_J = 100 °C	15 V

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 Apk, 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	

* Pb containing terminations are not RoHS compliant, exemptions may apply

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}	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	115CNQ015A	
			Case style D-61-8-SM	115CNQ015ASM	
			Case style D-61-8-SL	115CNQ015ASL	

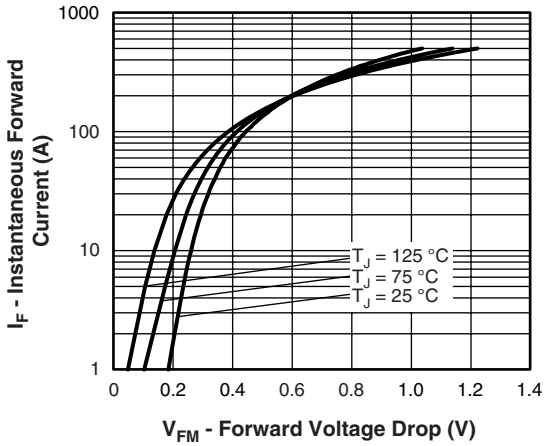


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

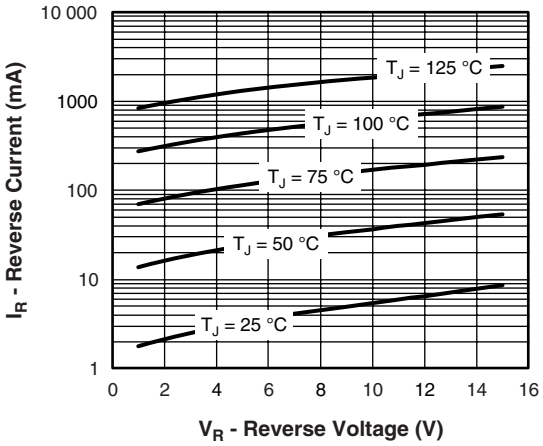


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

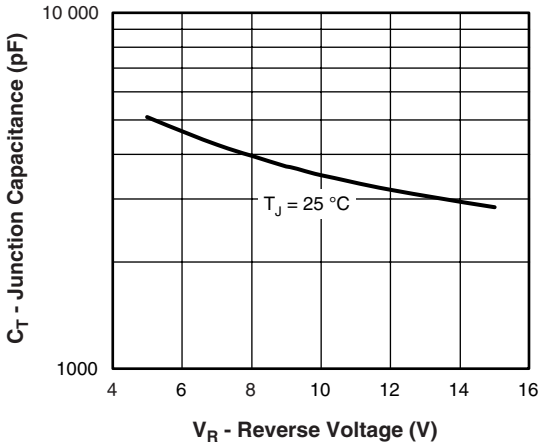


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

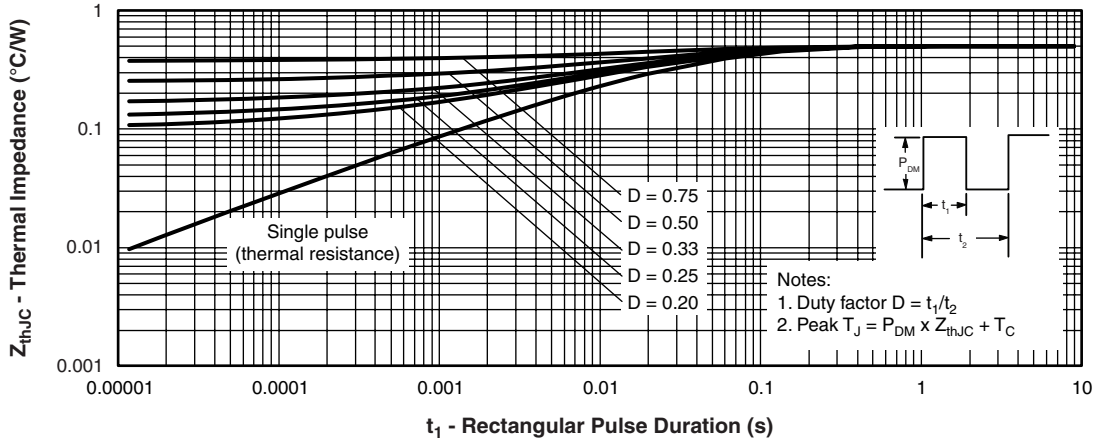


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

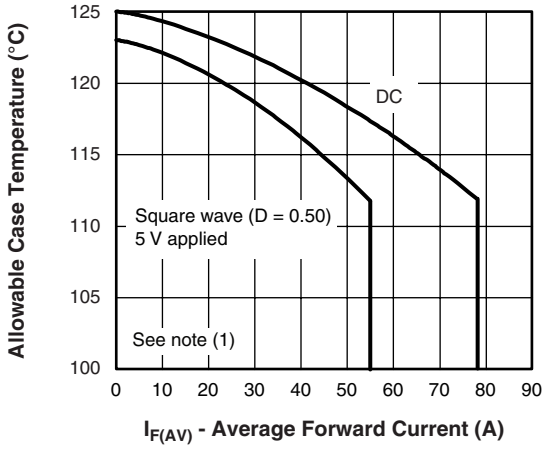


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

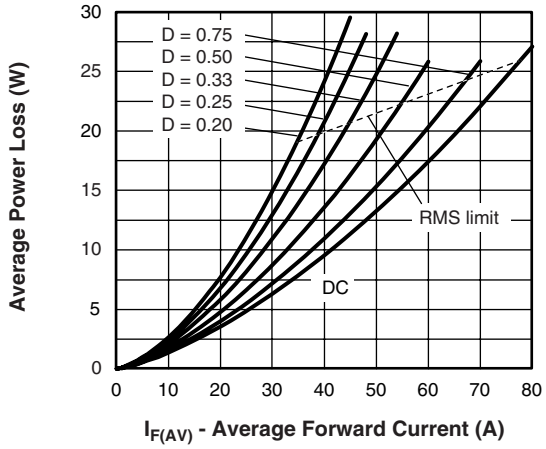


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

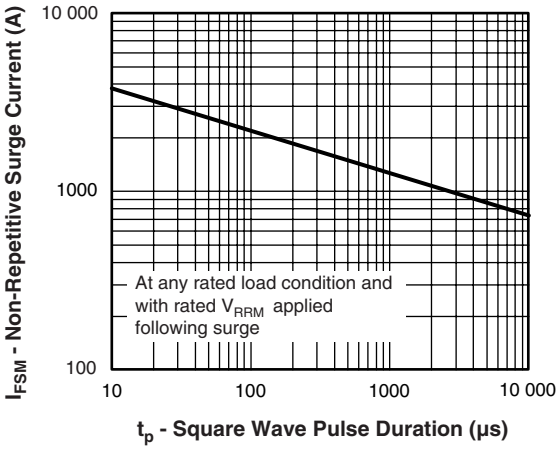


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

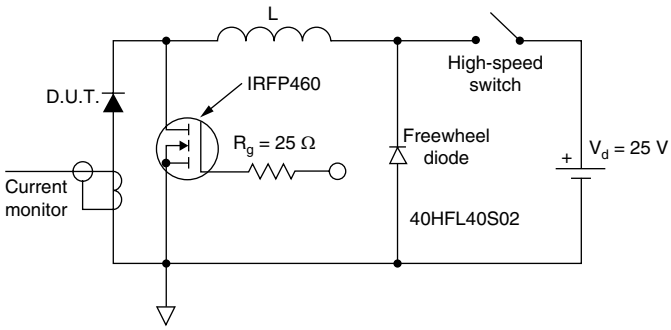


Fig. 8 - Unclamped Inductive Test Circuit

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

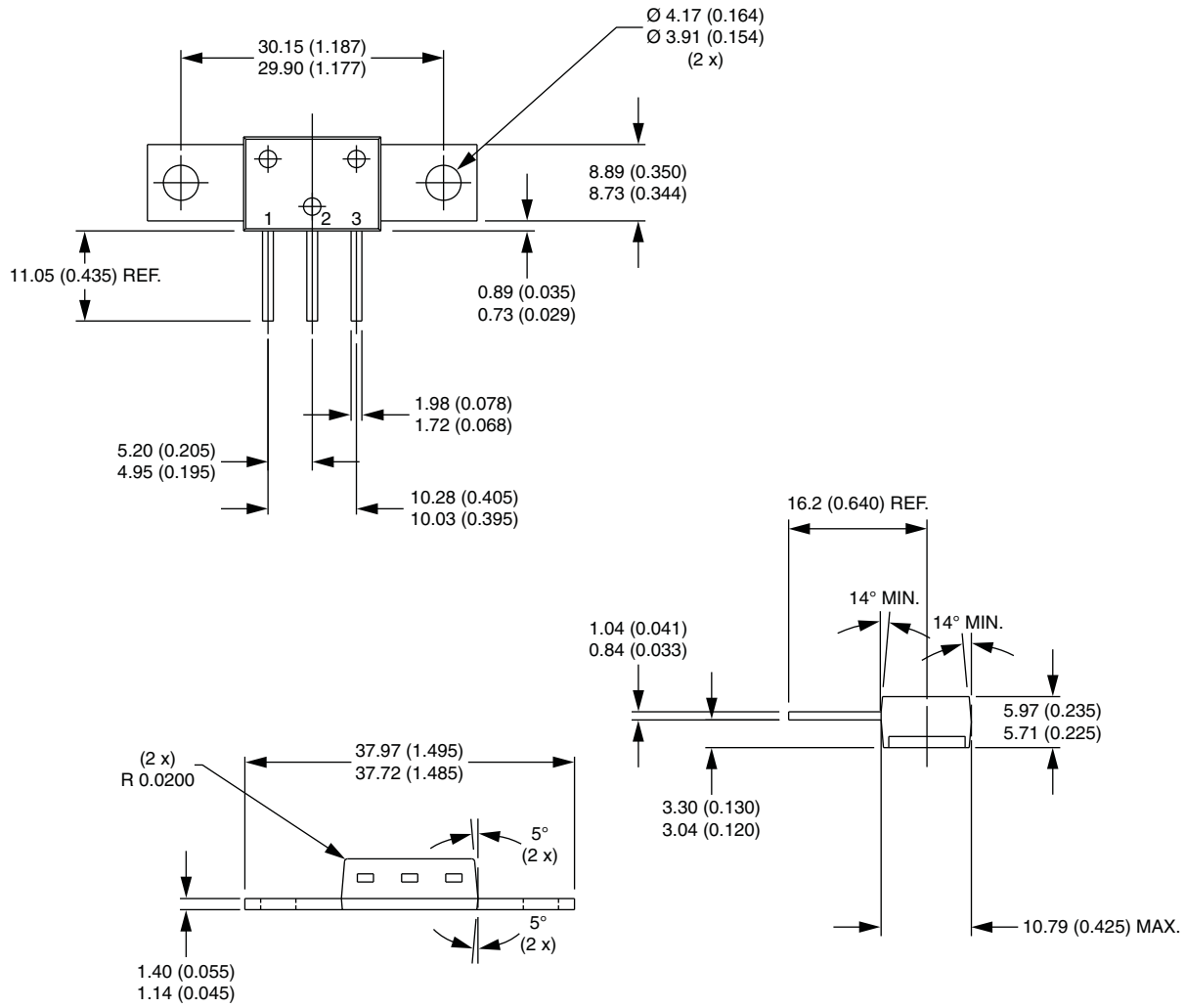
- 1 - HPP product suffix
- 2 - Current rating (110 A)
- 3 - Circuit configuration:
  C = Common cathode
- 4 - Package:
  N = D-61
- 5 - Schottky “Q” series
- 6 - Voltage rating (015 = 15 V)
- 7 - Package style:
  - A = D-61-8
  - ASM = D-61-8-SM
  - ASL = D-61-8-SL
- 8 - • None = Standard production
  • PbF = Lead (Pb)-free

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

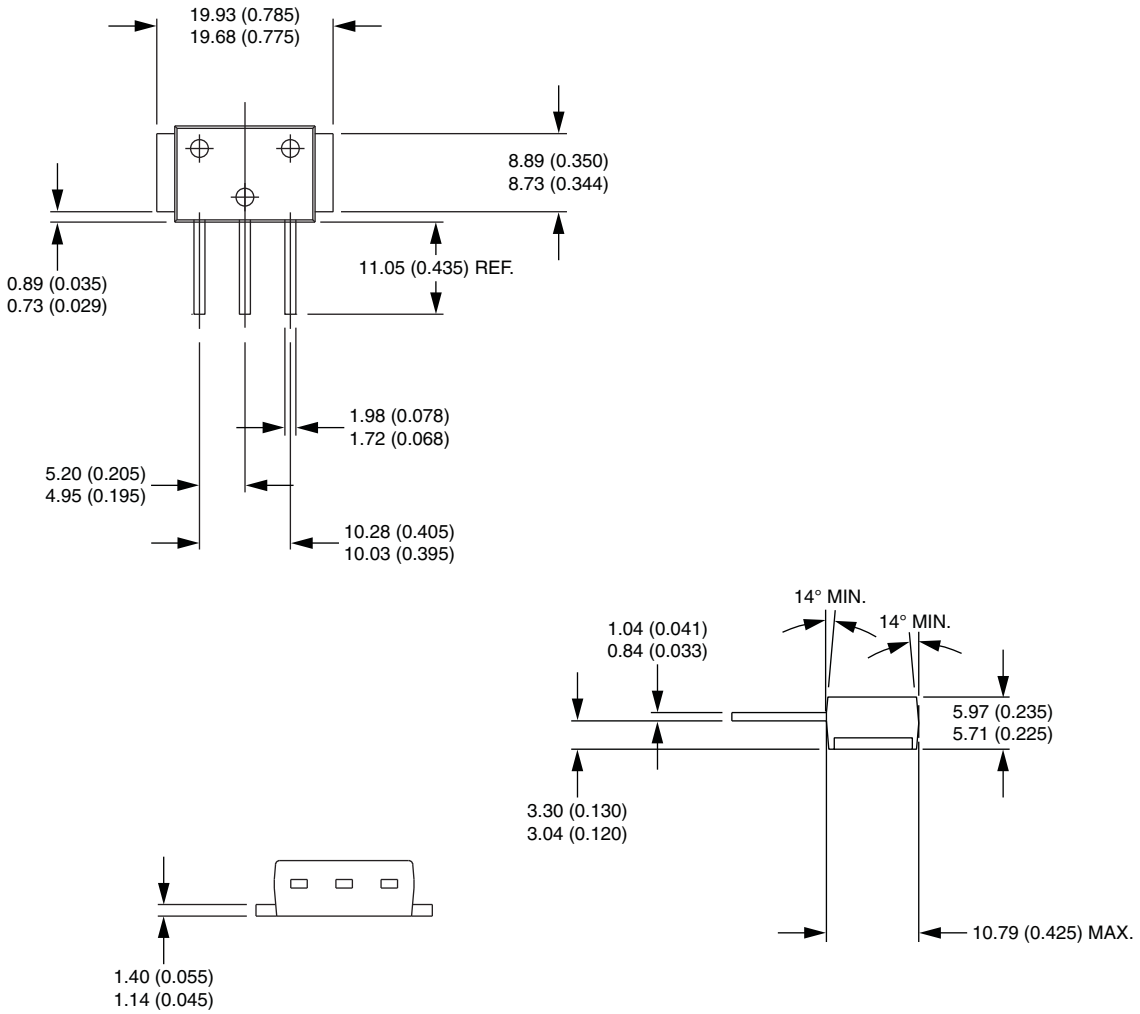
LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95354
Part marking information	www.vishay.com/doc?95356

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

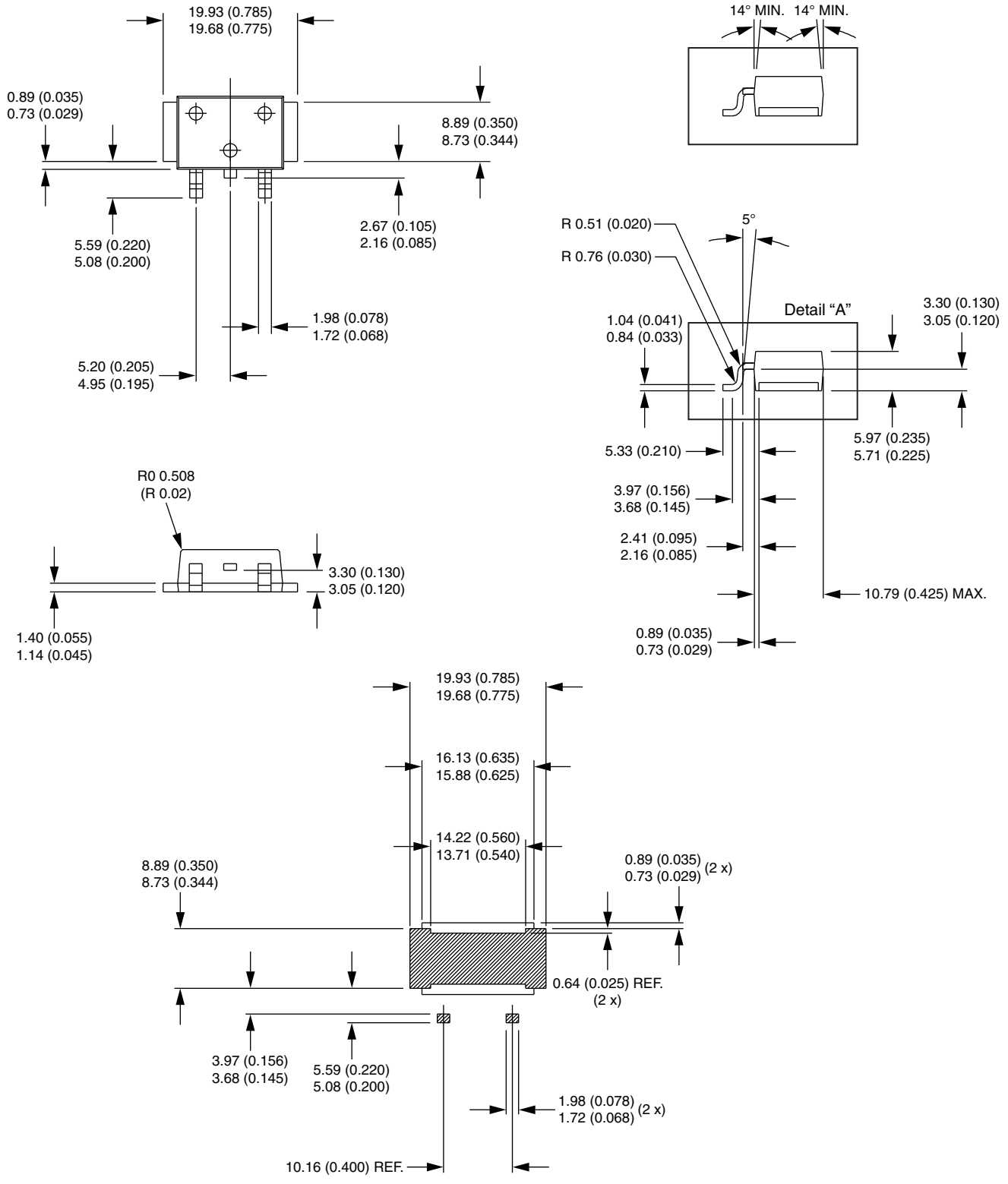
DIMENSIONS - D-61-8 in millimeters (inches)



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



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



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