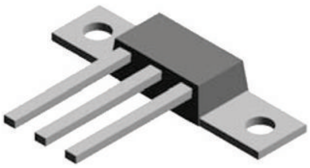
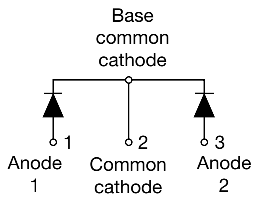
High Performance Schottky Rectifier New Generation 3 D-61 Package, 2 x 55 A

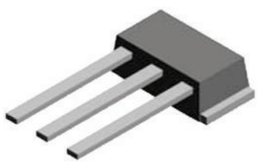
VS-113CNQ100APbF

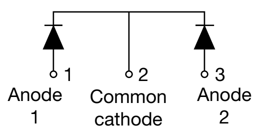




D-61-8

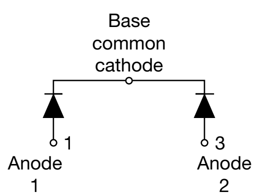
VS-113CNQ100ASMPbF





D-61-8-SM

VS-113CNQ100ASLPbF



D-61-8-SL

PRODUCT SUMMARY	
Package	D-61-8, D-61-8-SM, D-61-8-SL
$I_{F(AV)}$	2 x 55 A
V_R	100 V
V_F at I_F	0.81 V
I_{RM} max.	32 mA at 125 °C
T_J max.	175 °C
Diode variation	Common cathode
E_{AS}	15 mJ

FEATURES

- 175 °C T_J operation
- Center tap module
- 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

Available
RoHS*
Available

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 series has been optimized for low reverse leakage at high temperature. 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.

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	**CHARACTERISTICS**	**VALUES**	**UNITS**
$I_{F(AV)}$	Rectangular waveform	110	A
V_{RRM}		100	V
I_{FSM}	t_p = 5 µs sine	7000	A
V_F	55 A_{pk}, T_J = 125 °C (per leg)	0.66	V
T_J	Range	-55 to +175	°C

VOLTAGE RATINGS			
PARAMETER	**SYMBOL**	**VS-113CNQ100APbF**	**UNITS**
Maximum DC reverse voltage	V_R	100	V
Maximum working peak reverse voltage	V_{RWM}		

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 = 150 °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	7000	A
			10 ms sine or 6 ms rect. pulse		720	
Non-repetitive avalanche energy per leg		E_{AS}	T_J = 25 °C, I_{AS} = 1 A, L = 30 mH		15	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		1	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	0.81	V
		110 A		1.00	
		55 A	T_J = 125 °C	0.66	
		110 A		0.79	
Maximum reverse leakage current per leg See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	1.0	mA
		T_J = 125 °C		32	
Maximum junction capacitance per leg	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °C		1960	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 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		Recommended hardware 3M stainless screw	12 (10)	kgf · cm (lbf · in)
	maximum			24 (20)	
Marking device			Case style D-61-8	113CNQ100A	
			Case style D-61-8-SM	113CNQ100ASM	
			Case style D-61-8-SL	113CNQ100ASL	

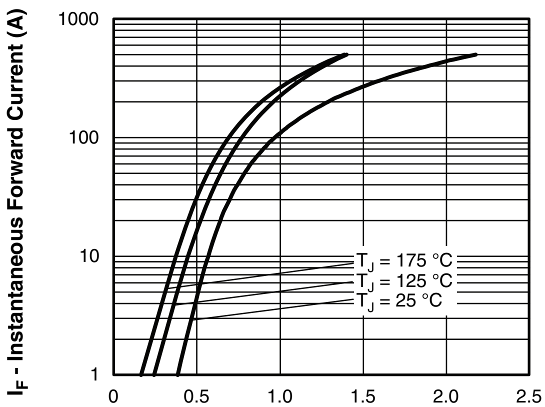


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

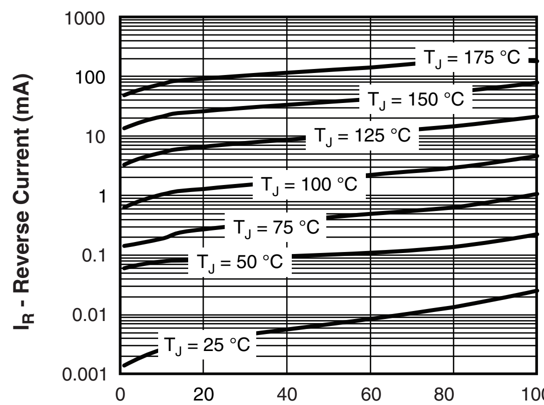


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

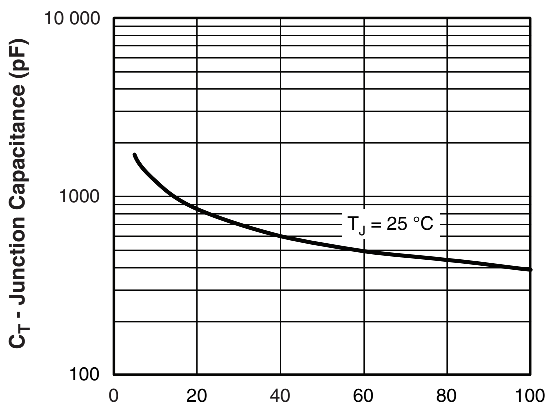


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

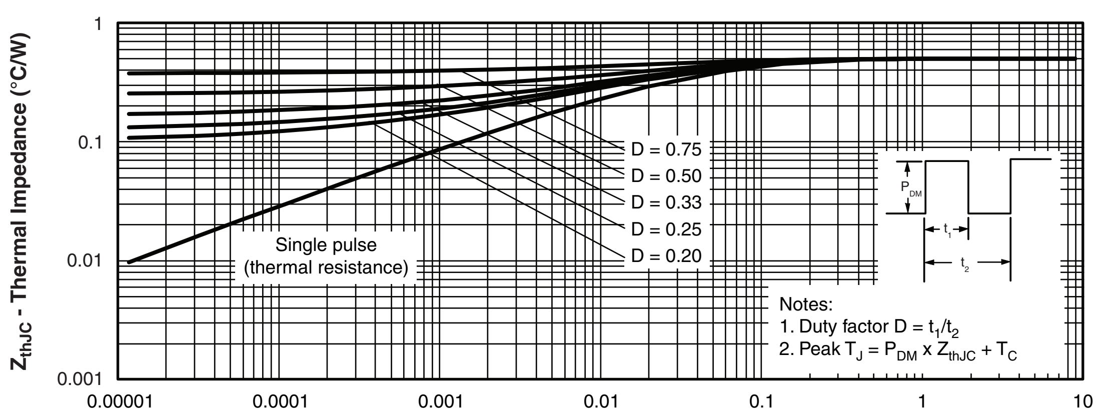


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

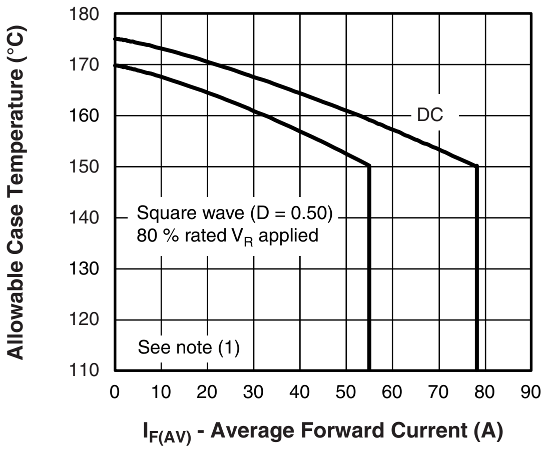


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

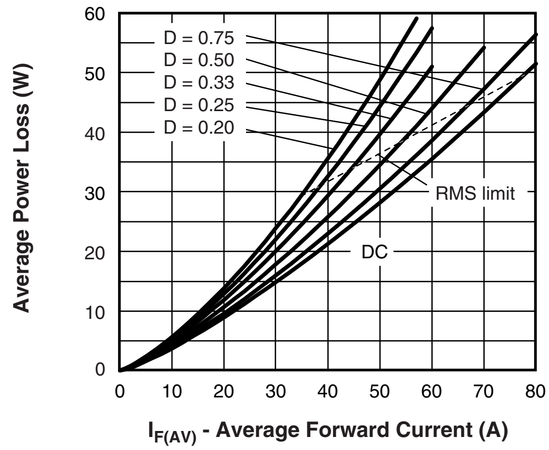


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

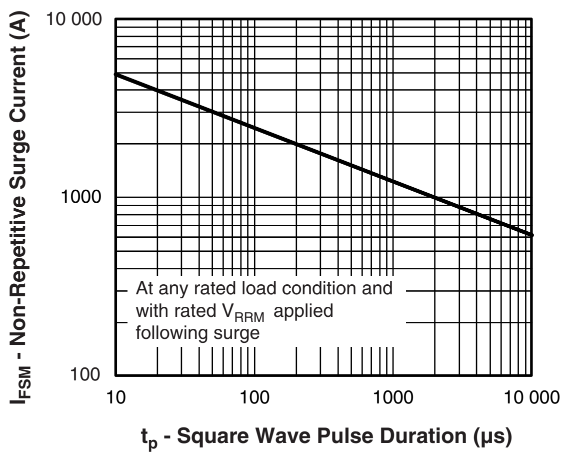


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

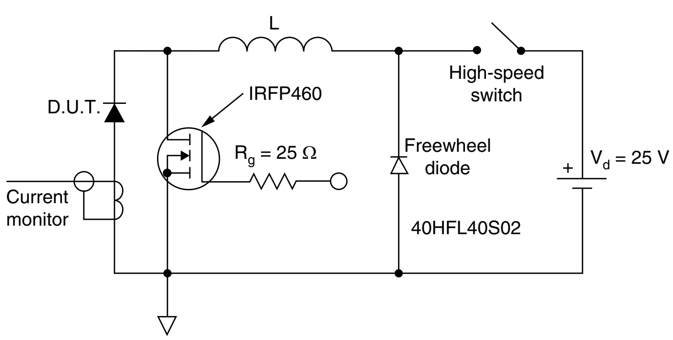


Fig. 8 - Unclamped Inductive Test Circuit

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} = 80 % rated V_R

ORDERING INFORMATION TABLE

Device code	VS-	113	C	N	Q	100	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 (100 = 100 V)

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

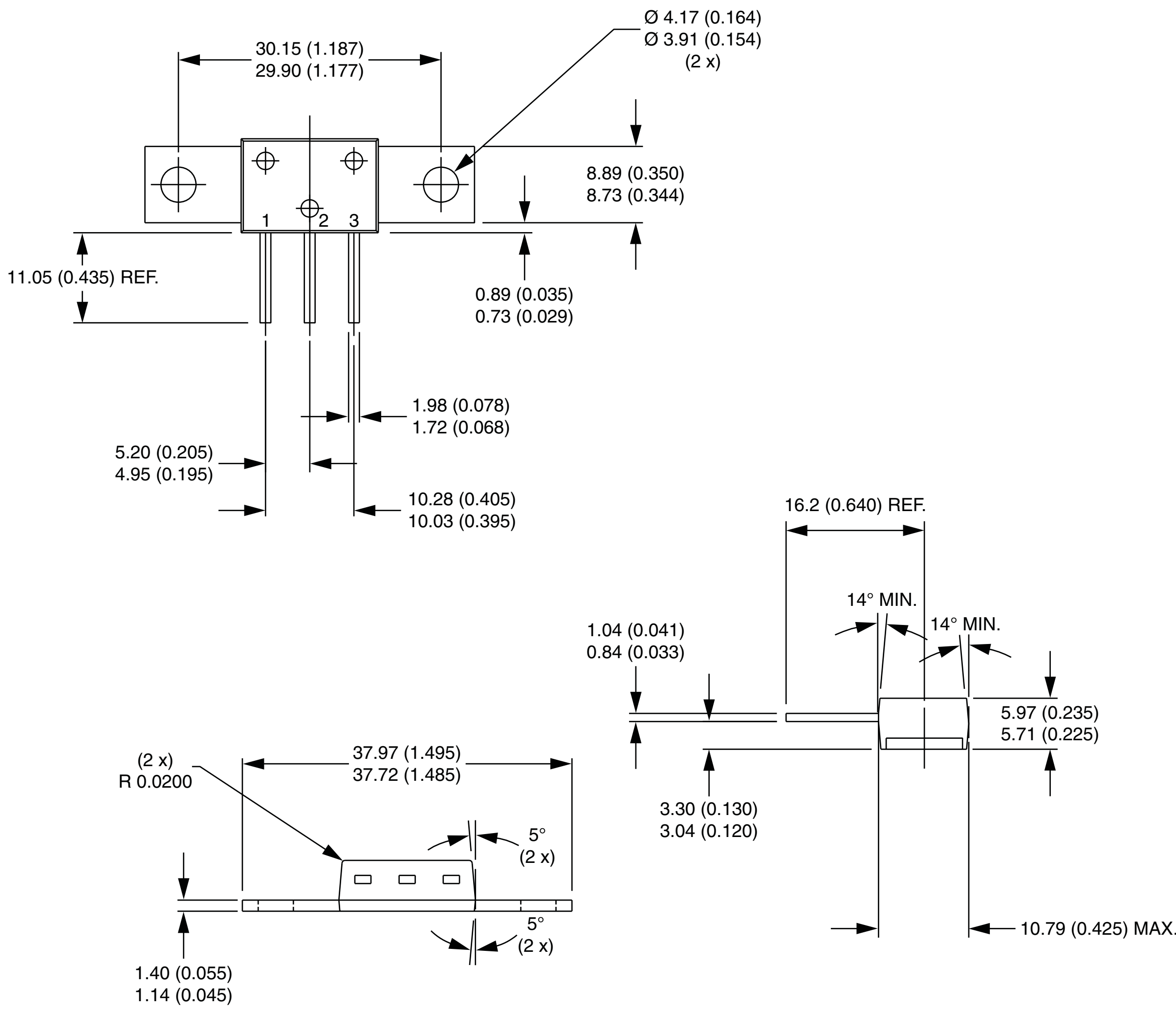
8 -
- None = standard production
- PbF = lead (Pb)-free

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

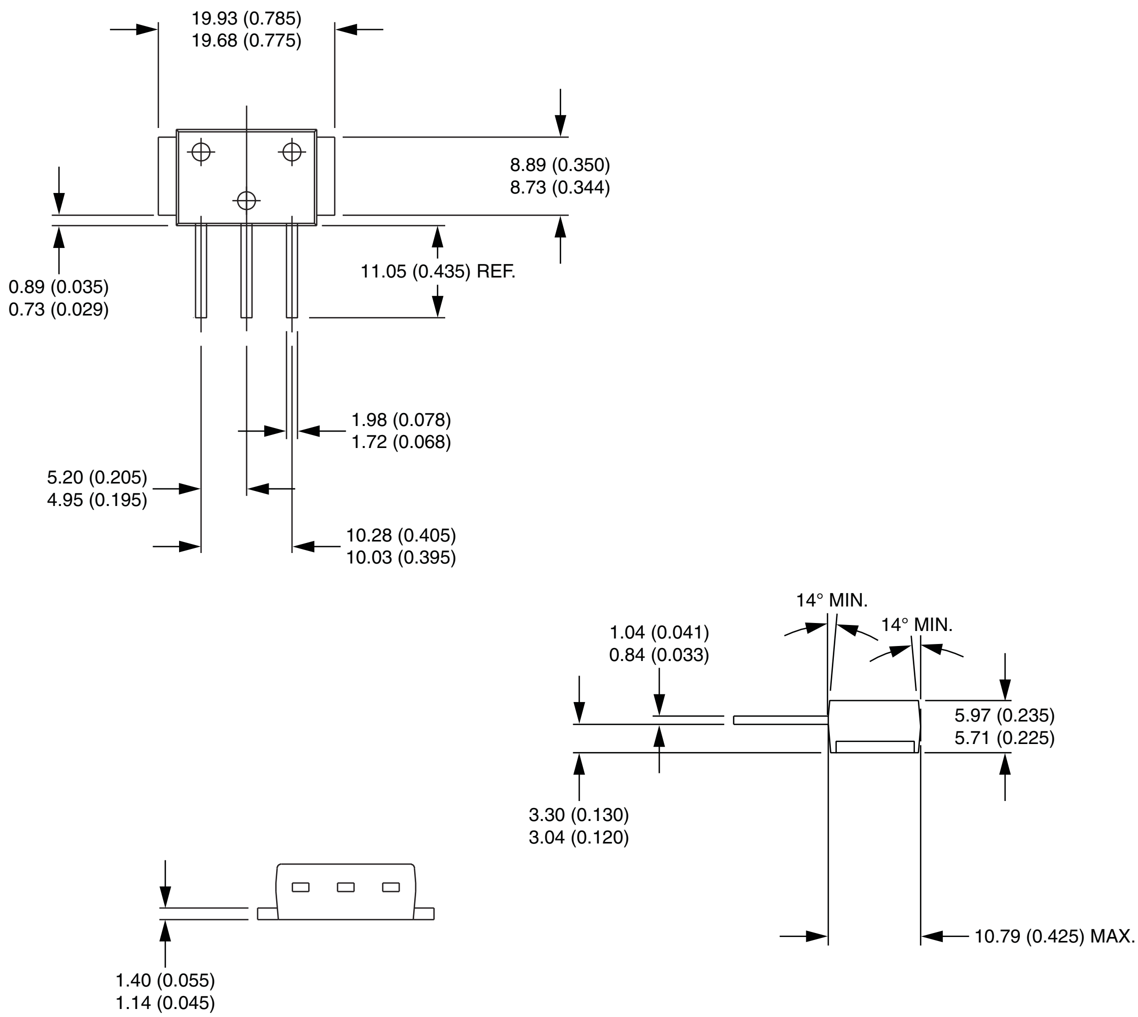
LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95354
Part marking information	www.vishay.com/doc?95356

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

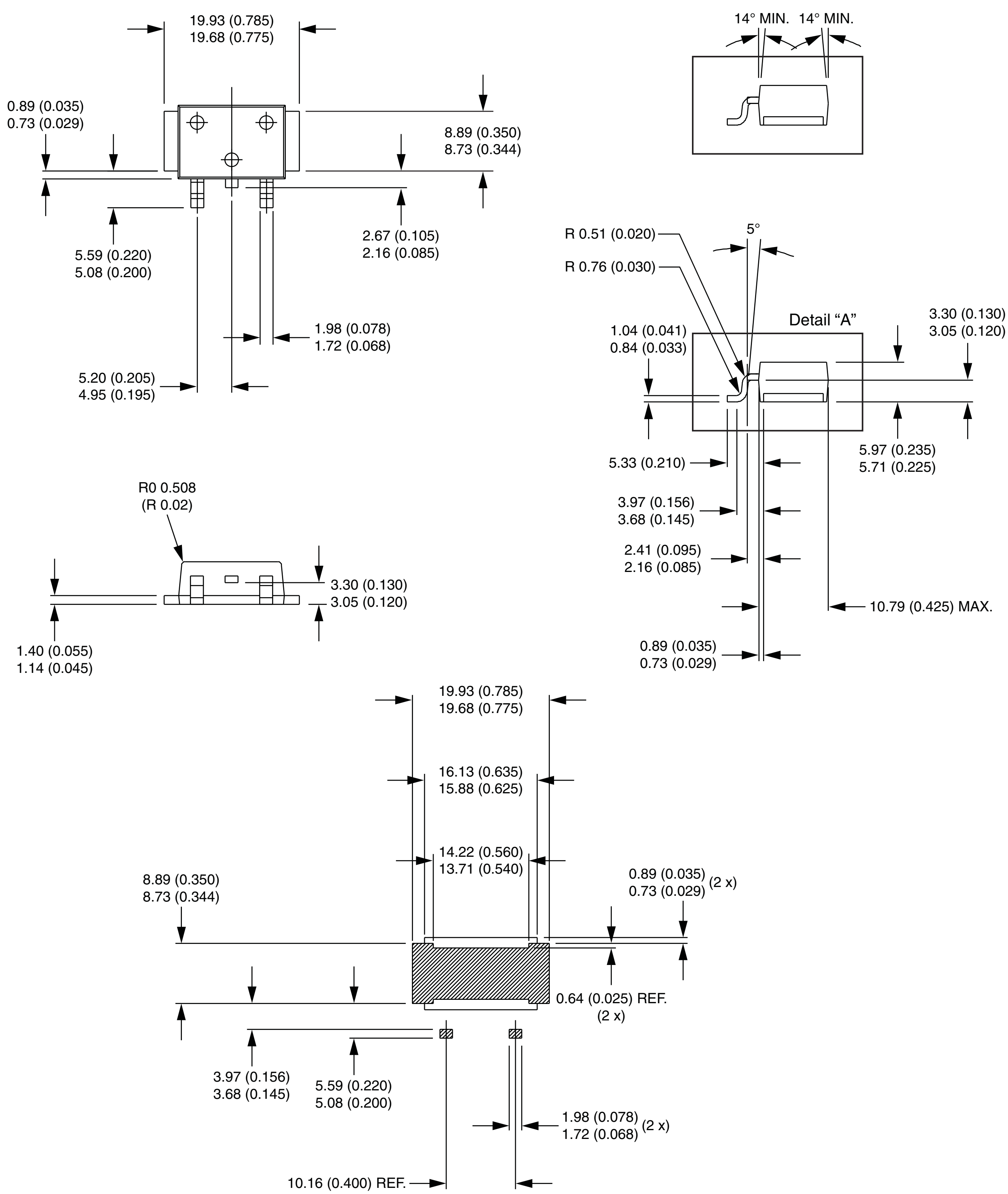
DIMENSIONS - D-61-8 in millimeters (inches)



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



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



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