

Mini-Circuits

PRECISION

# N-type Calibration Standard SOL-63-NM+

50Ω DC to 6 GHz

## THE BIG DEAL

- Precision N-type calibration standard up to 6 GHz
- Works out of the box with Mini-Circuits' eVNA-63+
- N-Male Short / Open / Load standard
- Performs a one-port calibration on a VNA
- Cardboard storage case



Generic photo used for illustration purposes only

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## APPLICATIONS

- VNA Calibration

Model Number	SOL-63-NM+
Case Style	VR3263
Connector	N-Male

## PRODUCT OVERVIEW

Mini-Circuits' SOL-63-NM+ is an N-Male short, open, & load calibration standard intended for VNA measurements of any N-Male DUT (device under test). The standard is supplied in a cardboard storage and display case.

SOL-63-NM+ is offered in Mini-Circuits' calibration kit, KSOLT-63-N+, which is supported by Mini-Circuits eVNA-63+ vector network analyzer right out of the box, with all calibration definitions pre-loaded within the eVNA Studio software. The standards can also be used as a cost-effective, high-performance alternative to calibration kits from a wide range of VNA suppliers.

## KEY FEATURES

Feature	Advantages
Cost effective	Cost effective when comparing against competitors with similar specifications
1 Port Calibration	Single standard is all you need for one-port calibration of N-type Male devices
2 Port Calibration	Combine with a thru to make fully calibrated 2-port or greater measurements with a VNA
Excellent return loss, 42 dB typ. at load port	Precision calibration standards with high return loss minimize the measurement errors within a VNA system





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## ELECTRICAL SPECIFICATIONS

Standard	Parameter	Min	Typ	Max	Units
	Frequency Range	DC		6	GHz
	Impedance		50		$\Omega$
SHORT	Phase Error <sup>1</sup>		1.5	3.0	°
OPEN	Phase Error <sup>1</sup>		1.5	3.5	°
LOAD	Return Loss	36	42		dB

1. Phase error is the phase deviation from the calkit model definition

MAXIMUM RATINGS<sup>2</sup>

Parameter	Ratings
Operating Temperature <sup>3</sup>	20°C to 26°C
Storage Temperature	-20°C to 75°C
Supply Voltage	0.5 W

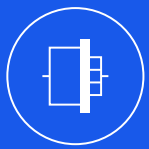
2. Permanent damage may occur if any of these limits are exceeded.

3. Operating temperature specified for optimal performance

## CALKIT MODEL DEFINITION

P/N	Standard Label	Parameter	Value	Units	Additional Format
SOL-63-NM+	SHORT -M-	Offset Delay	59.44	ps	17.83 mm
		Offset Loss	1	G $\Omega$ /s	0.003 dB/ $\sqrt{\text{GHz}}$
		Z0	50	$\Omega$	50 $\Omega$
		L0	0.000	(1E-12) H	0 pH
		L1	0.000	(1E-24) H/Hz	0 pH/GHz
		L2	0.000	(1E-33) H/Hz <sup>2</sup>	0 pH/GHz <sup>2</sup>
		L3	0.000	(1E-42) H/Hz <sup>3</sup>	0 pH/GHz <sup>3</sup>
	OPEN -M-	Offset Delay	59.44	ps	17.83 mm
		Offset Loss	1	G $\Omega$ /s	0.003 dB/ $\sqrt{\text{GHz}}$
		Z0	50	$\Omega$	50 $\Omega$
		C0	-4.000	(1E-15) F	-4 fF
		C1	200.000	(1E-27) F/Hz	0.2 fF/GHz
		C2	0.000	(1E-36) F/Hz <sup>2</sup>	0 fF/GHz <sup>2</sup>
		C3	1.100	(1E-45) F/Hz <sup>3</sup>	0.0011 fF/GHz <sup>3</sup>
	LOAD	Offset Delay	0	ps	0 mm
		Offset Loss	0	G $\Omega$ /s	0 dB/ $\sqrt{\text{GHz}}$
		Z0	50	$\Omega$	50 $\Omega$



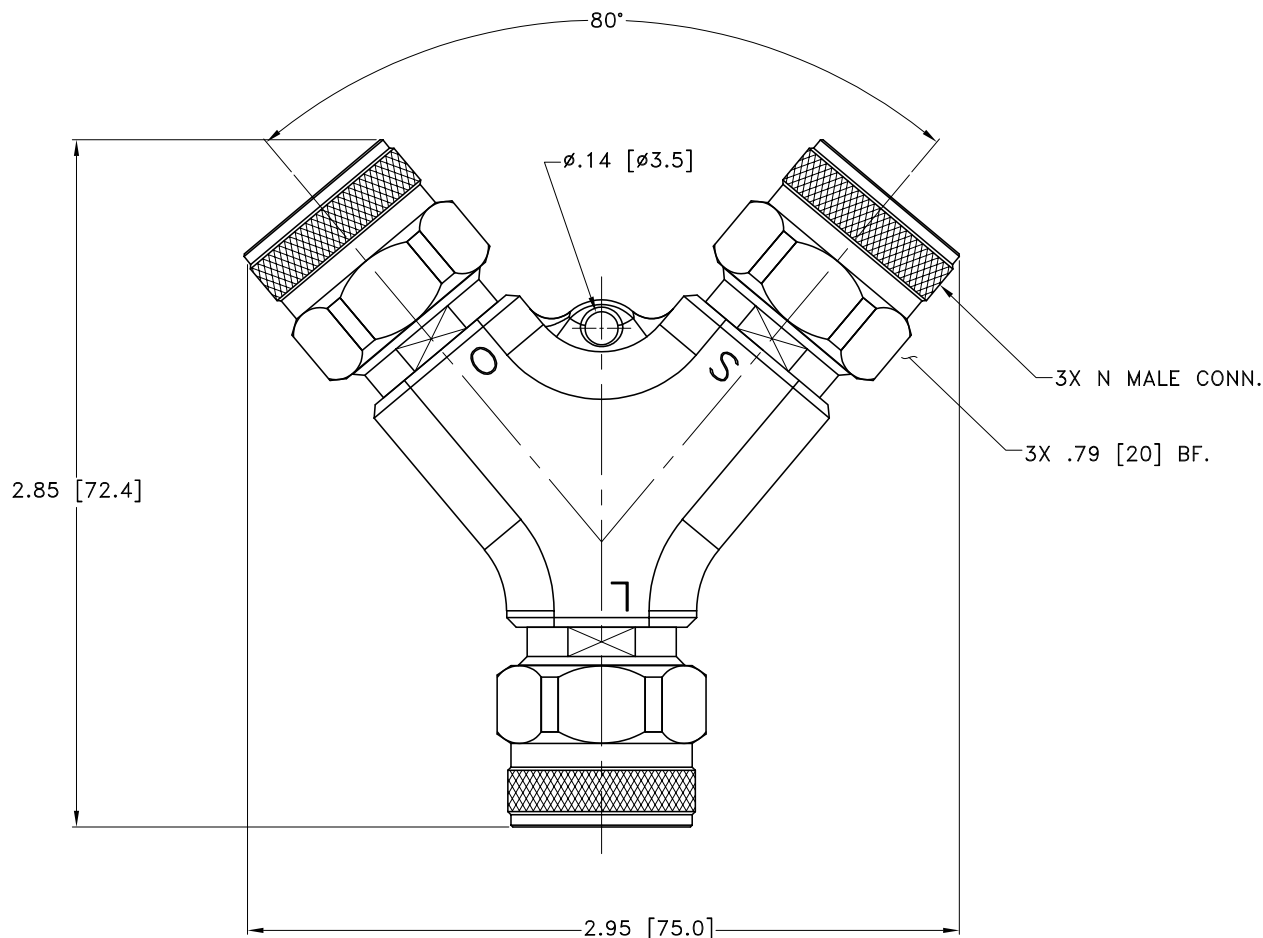


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## OUTLINE DRAWING



Weight: 178.0 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl.  $\pm 0.03$ ; 3 Pl.  $\pm 0.015$

### Notes:

1. Case material: Aluminum
2. Case Finish: Blue Anodize

### NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

