

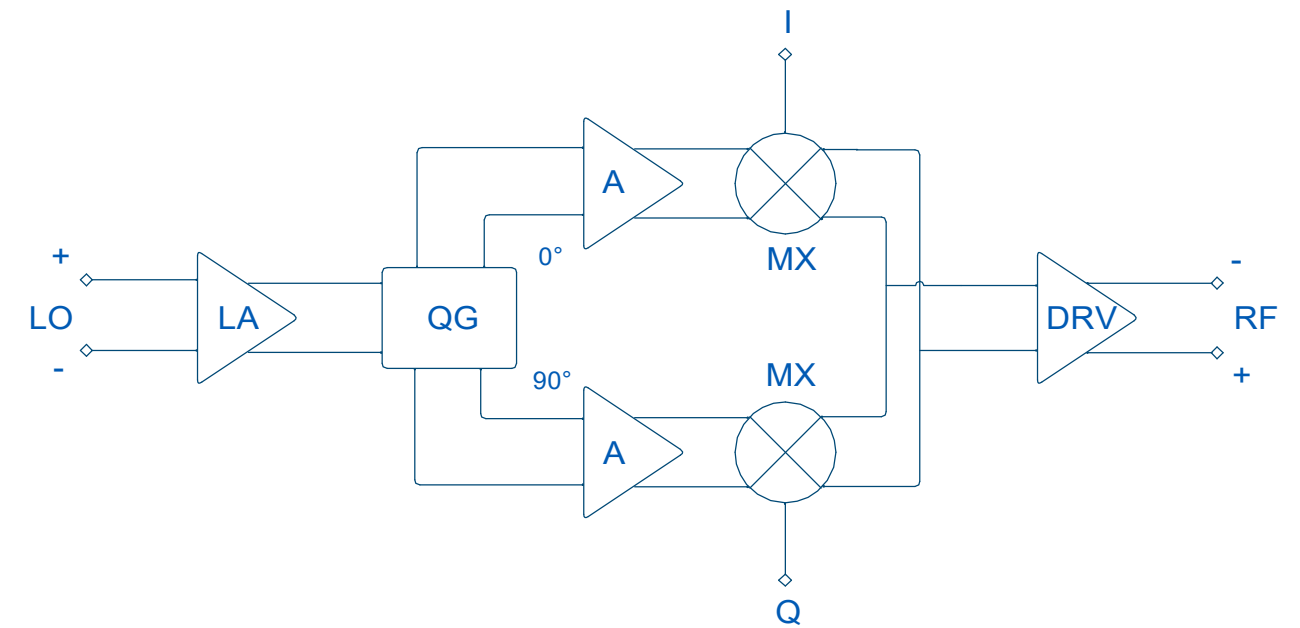
DESCRIPTION:

THE PIQ-1-SMT-EVAL IS AN EVALUATION BOARD FOR PIQ-1-SMT. THE PIQ-1-SMT IS AN INTEGRATED BROADBAND IQ VECTOR MODULATOR WITH FULLY DIFFERENTIAL INPUTS AND OUTPUTS (LO AND RF) PORTS AND SINGLE ENDED ON THE BASEBAND (I AND Q) INPUTS. AN ON-CHIP BROADBAND QUADRATURE GENERATOR NETWORK ALLOWS THE PIQ-1-SMT TO ACHIEVE MULTI-OCTAVE FREQUENCY COVERAGE. THE PIQ-1-SMT OPERATES WITH A SINGLE POSITIVE VCC = 4V @ 250 mA SUPPLY AND IS SUPPLIED IN A QFN PACKAGE. THE EVALUATION BOARD FEATURES FOUR FEMALE 2.92 mm BOARD EDGE MOUNT CONNECTORS (LO+, LO-, RF+, RF-) AND TWO SMA EDGE MOUNT CONNECTORS (I, Q). IT HAS TWO 2 POS HEADER CONNECTORS FOR SUPPLYING POWER (4V) AND GROUND TO THE IQ VECTOR MODULATOR CHIP.

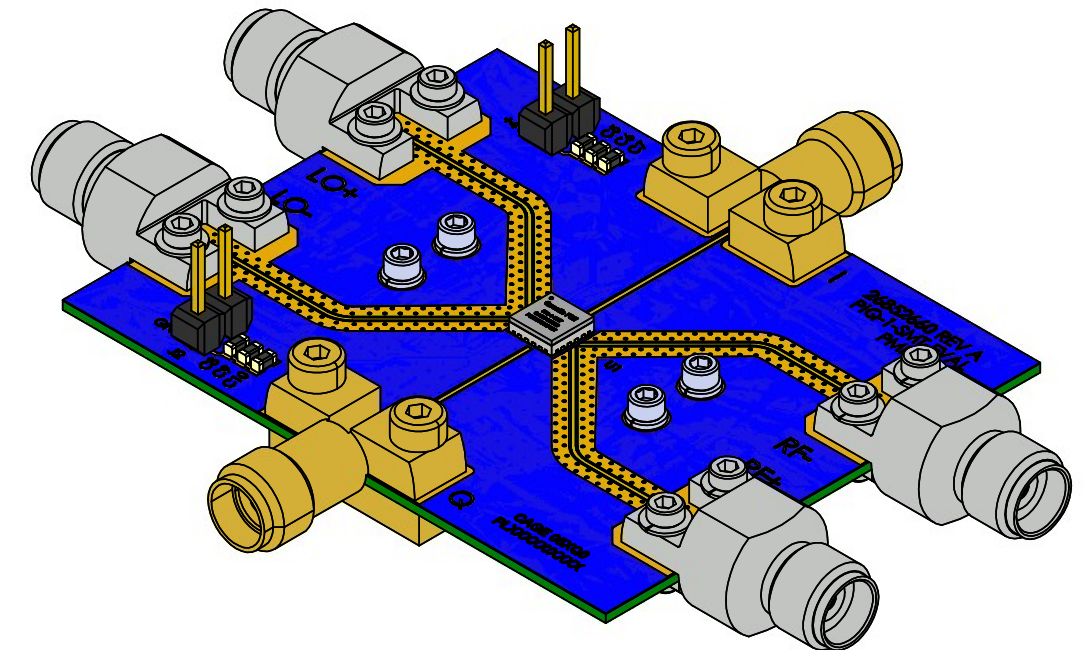
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	8/7/25	
	A2	ECN #26-0022	2/8/26	

SPECIFICATIONS:

- **INPUTS:**..... LO+ (POSITIVE PHASE TERMINAL OF THE LO): 2.92 mm FEMALE
 LO- (NEGATIVE PHASE TERMINAL OF THE LO): 2.92 mm FEMALE
 LO PORTS ARE 100Ω DIFFERENTIAL
 I (IN-PHASE COMPONENT): SMA FEMALE
 Q (QUADRATURE-PHASE COMPONENT): SMA FEMALE
 I AND Q PORTS ARE 50Ω SINGLE-ENDED
- **OUTPUTS:**..... RF+ (POSITIVE PHASE TERMINAL OF THE RF): 2.92 mm FEMALE
 RF- (NEGATIVE PHASE TERMINAL OF THE RF): 2.92 mm FEMALE
 RF PORTS ARE 100Ω DIFFERENTIAL
- **LO BANDWIDTH:**..... 100 MHz TO 20 GHz
 COMMON MODE DC LEVEL IS NOMINALLY 2.16V ± 100 mV
 LO INPUTS MUST BE DC BLOCKED
- **RF BANDWIDTH:**..... 100 MHz TO 20 GHz
 COMMON MODE DC LEVEL IS NOMINALLY 3.4V ± 100 mV
 RF OUTPUTS MUST BE DC BLOCKED
- **IQ BANDWIDTH:**..... I AND Q INPUT CAN BE USED DC COUPLED OR AC COUPLED
 DC: 0 TO 2.16V. COMMON MODE LEVEL IS 1.08V ± 50 mV
 AC: UP TO 10 GHz LINEAR TO 0 dBm IN TOTAL (EQUIVALENT TO -3 dBm AT BOTH I AND Q)
 DC BLOCKING IS REQUIRED ON THE BASEBAND INPUTS I AND Q WHEN THEY ARE AC-COUPLED
- **LO POWER:**..... 10 dBm MAX.
- **VCC:**..... 4V ± 5%
 POWER HAS TO BE SUPPLIED THROUGH BOTH 2 POS HEADER CONNECTORS
- **CURRENT:**..... 250 mA TYP.
- **DC POWER DISSIPATION (W):**..... 1.2 W MAX.
- **BOARD SIZE:**..... 2.0" x 1.6" x 0.031"
- **HEAT SINK SIZE:**..... 1.2" x 0.8" x 0.25"
- **MOUNTING HOLES:**..... 4X 4-40 UNC-2B
- **ADDITIONAL NOTES:**..... FOR SINGLE ENDED LO DRIVE OR SINGLE ENDED RF OUTPUT, USE ONE LO INPUT (OR RF OUTPUT) WHILE TERMINATING THE UNUSED INPUT INTO A 50 Ω LOAD (DC BLOCKING IS STILL REQUIRED)



LO = Local oscillator input
 LA = Limiting amplifier
 QG = Quadrature generator
 MX = Mixer
 DRV = Driver
 A = Amplifier
 RF = RF output
 I/Q = Vector modulation inputs



ENVIRONMENTAL RATINGS:

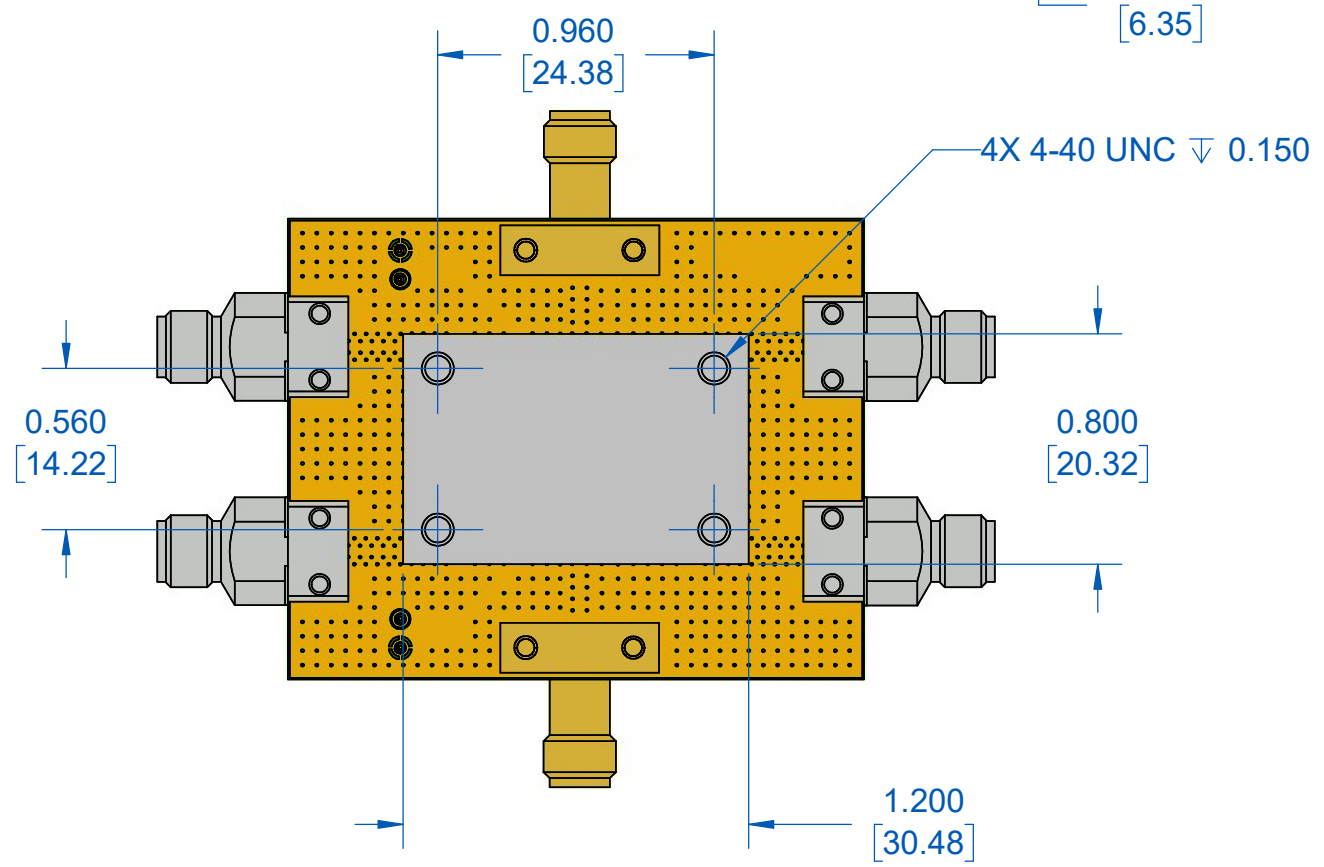
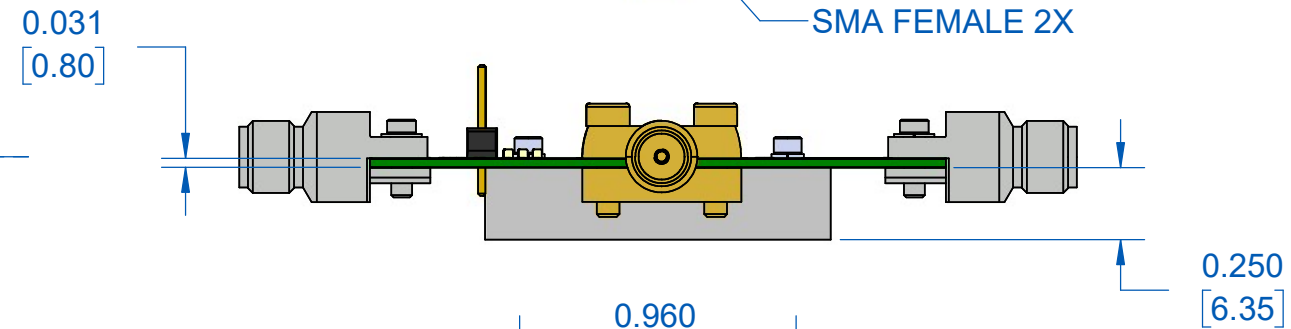
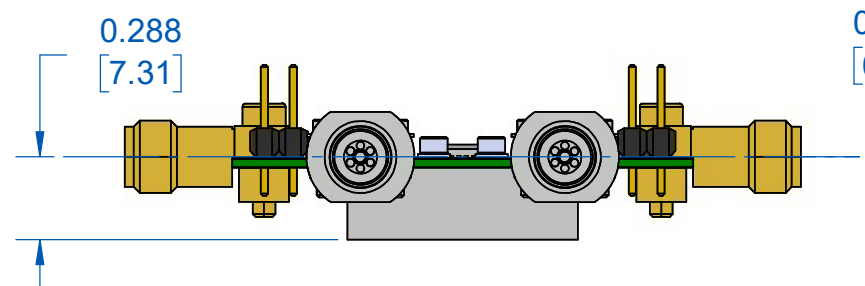
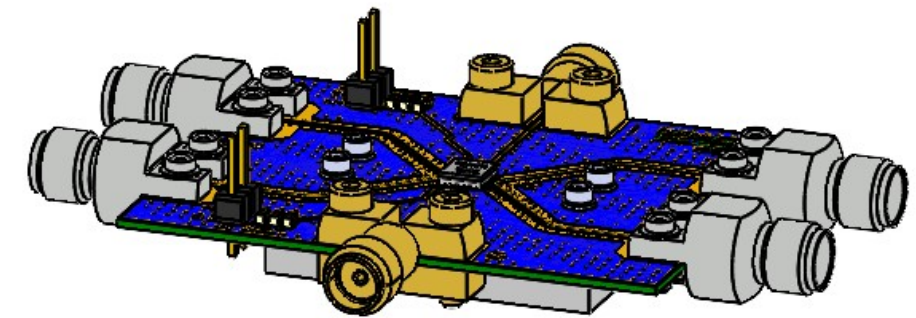
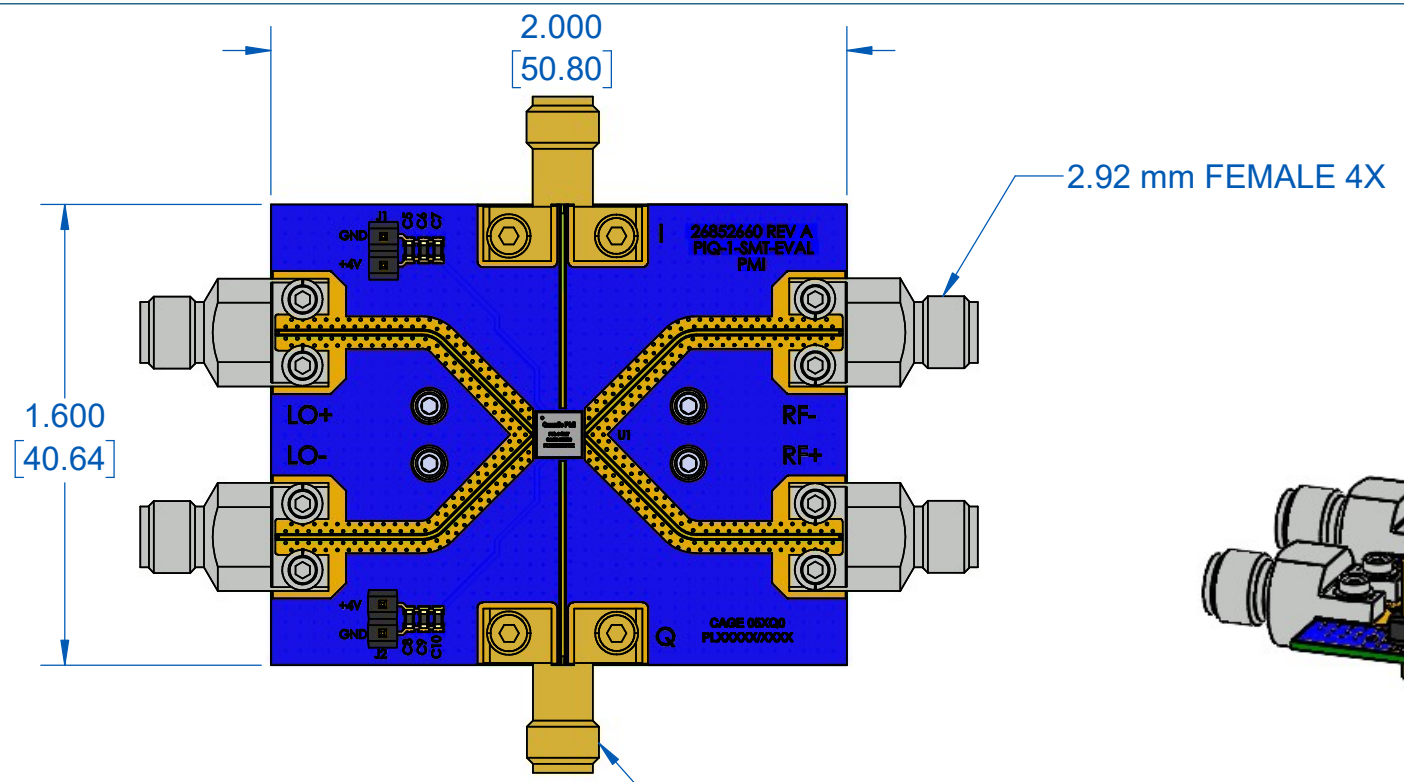
- **TEMPERATURE:**..... -55°C TO +85°C (OPERATING)
 -64°C TO +125°C (STORAGE)
- **HUMIDITY:**..... MIL-STD-202, METHOD 103B COND. B
- **SHOCK:**..... MIL-STD-202, METHOD 213B COND. B
- **VIBRATION:**..... MIL-STD-202, METHOD 204D COND. B
- **ALTITUDE:**..... MIL-STD-202, METHOD 105C COND. B
- **TEMPERATURE CYCLE:**..... MIL-STD-202, METHOD 107D COND. A

NOTE: SPECIFICATIONS WILL VARY OVER TEMPERATURE
 NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± 0.02 ± .XXX ± 0.01		APPROVALS DRAWN AL REDRAWN ISSUED	DATE 8/7/2025	TITLE OUTLINE PIQ-1-SMT-EVAL	SIZE B	FSCM NO. 05XQ0	DWG NO. 27052660	REV. A2
		SCALE 1:1				SHEET 1 OF 2		





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TITLE			
OUTLINE			
PIQ-1-SMT-EVAL			
SIZE	FSCM NO.	DWG NO.	REV.
B	05XQ0	27052660	A2
SCALE 1.5:1			SHEET 2 OF 2