



FEI Microwave, Inc.
A SUBSIDIARY OF FREQUENCY ELECTRONICS, INC.

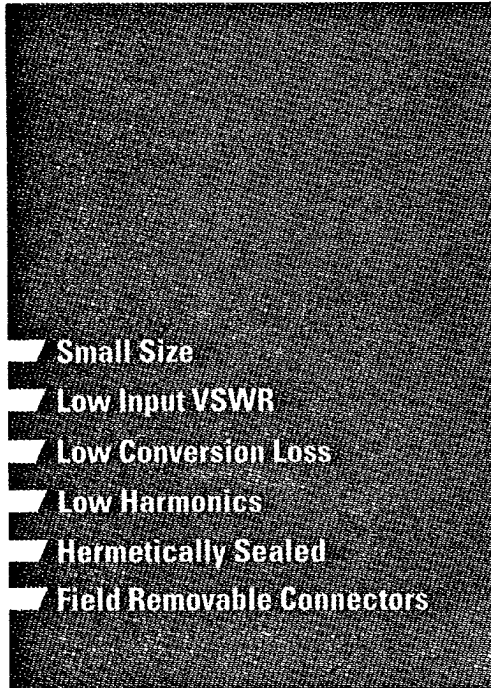
B-77-05-09

T-77-05-05

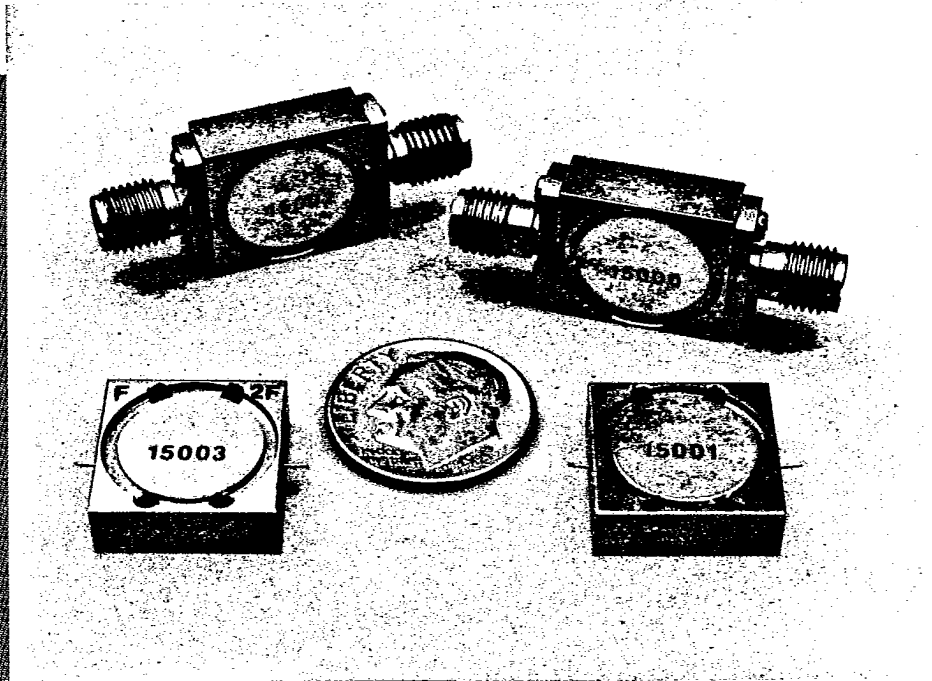
查询"2275C0000-01"供应商

Frequency Doubler

2-13 GHz In/ 4-26 GHz Out



- Small Size
- Low Input VSWR
- Low Conversion Loss
- Low Harmonics
- Hermetically Sealed
- Field Removable Connectors



FEI Microwave's broadband Frequency Doubler operates from 2 to 13 GHz on the input and 4 to 26 GHz on the output.

The Doubler is designed for optimum performance with input power in the range of +10 to +13 dBm. At +13 dBm input, the conversion loss is less than 12 dB up to 24 GHz and 13 dB up to 26 GHz. To achieve maximum output flatness, the output should be terminated with a low VSWR load, such as a 50 ohm pad or a FEI Microwave isolator.

This Frequency Doubler provides attenuation of the input signal at the output (isolation) of greater than 23 dB below the input level up to 9 GHz, and 20 dB up to 13 GHz. The third, fifth and sixth harmonics are suppressed greater than 25 dB below the second harmonic output, and the fourth harmonic 15 dB below the second harmonic output. To achieve best spurious performance, undesired signals appearing at the input should be kept as low as possible since they will "mix" with the desired input to produce in-band signals 9 dB down from their input level (9 dB conversion loss).

The unit is hermetically sealed and can be special ordered with a guaranteed leak rate of $<1 \times 10^{-7}$ cc/sec. All units are cleaned, baked, and then, without being exposed to the outside atmosphere, placed in a dry box filled with an inert gas, where the lids are welded to the housing. The connectors are removable for drop-in microstrip or stripline applications.



Specifications¹ @ +25°C

T-77-05-05 -

Part No.	Input Frequency (GHz)	Output Frequency (GHz)	Conversion Loss (dB, max)	Isolation ² (dB, min)
2275C0000-01	2.0–13.0	4.0–26.0	13 (4.0–20.0 GHz) 15 (20.0–26.0 GHz)	20 (2.0–10.0 GHz) 17 (10.0–13.0 GHz)

Note:

1. Specifications are guaranteed when tested in a padded 50 ohm system with +13 dBm input power.
 2. Power output of fundamental is 20 dB below the input power.

Maximum Ratings

Operating Temperature	–54°C to +100°C
Storage Temperature	–65°C to +125°C
Input Power	200 mW @ +25°C Derate linearly to 80 mW @ +100°C

Weight

12.0 grams (0.42 oz)

Note: Weight includes connectors**Environmental**

This doubler is capable of meeting specified performance after exposure to the following MIL-STD-202 environmental tests.

Tests	Method	Condition
Thermal Shock	107	B
Altitude	105	G
H.F. Vibration	204	D
Random Vibration (15 min per axis)	214	11F
Mechanical Shock	213	C
Salt Atmosphere ¹	101	A
Seal Test ¹	112	1×10 ⁻⁷ cc/sec
Solderability ¹	208	—
Terminal Strength ¹	211	C
Resistance To Soldering Heat ¹	210	B

Note:

1. Connectors are removed for these tests

Materials

Housing	Passivated Stainless Steel
Lids	Passivated Stainless Steel
Feedthroughs	Glass to Metal Seals—Gold Plated Kovar
Connectors	Passivated Stainless Steel

Typical Harmonic Suppression

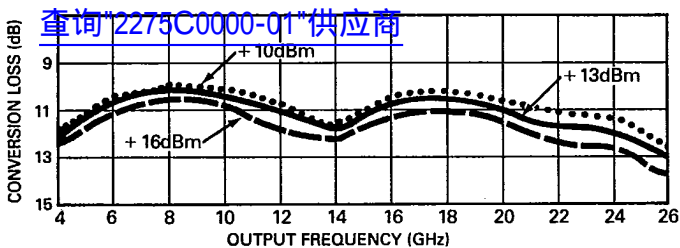
Test Conditions	Harmonic	Freq. (GHz)	dB below 5 GHz Output
RF = 2.5 GHz @ +13 dBm	3rd	7.5	29
	4th	10.0	17
	5th	12.5	26
	6th	15.0	27

Typical Spurious Suppression

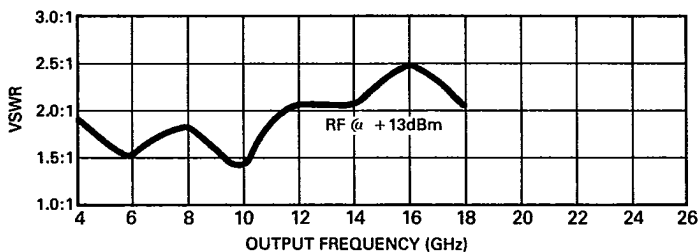
Test Conditions	Product	Freq. (GHz)	dB below 8 GHz Output RF2 = 0 dBm	dB below 8 GHz Output RF2 = –10dBm
RF1 = 4.0 GHz @ +13 dBm	RF1 + RF2	8.5	9	18
	2RF2	9.0	36	>40
RF2 = 4.5 GHz	4RF1-2RF2	7.0	36	>40
	3RF1-RF2	7.5	19	29

Typical Electrical Performance

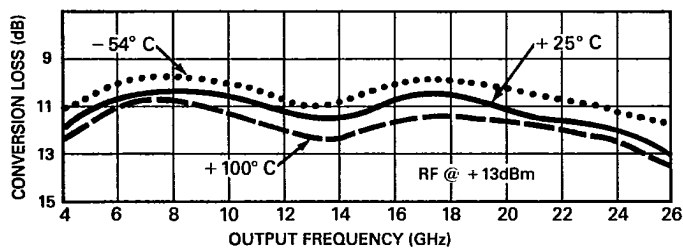
Conversion Loss vs Frequency and Input Power



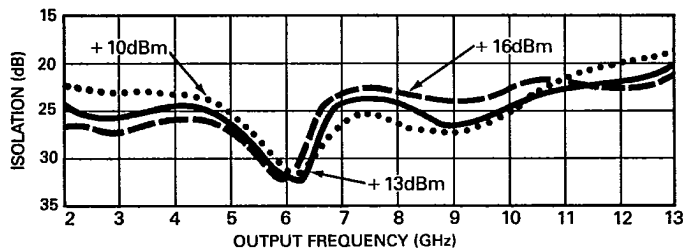
Output VSWR vs Frequency



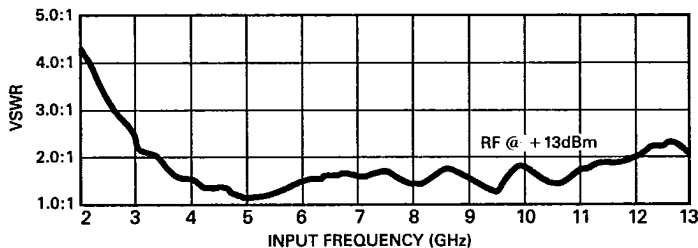
Conversion Loss vs Frequency and Temperature



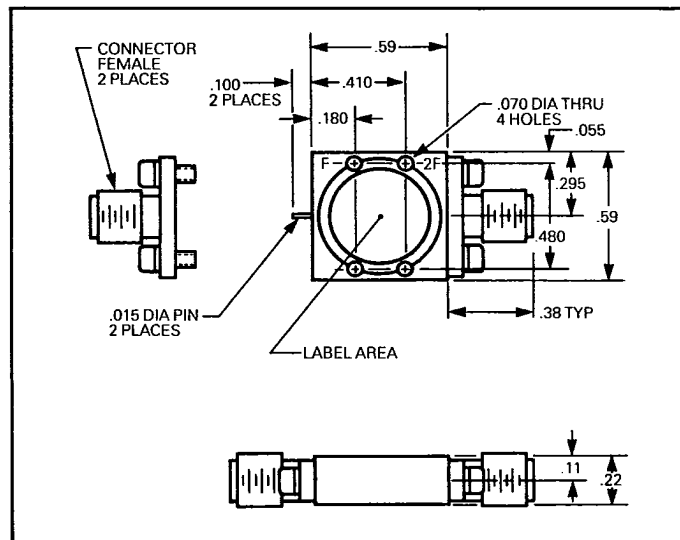
Isolation vs Frequency and Input Power



Input VSWR vs Frequency



Outline Drawing



Notes:

1. All units are shipped with SMA Female Connectors installed.
2. Tolerances—.xx ± .02; .xxx ± .010.
3. All dimensions are in inches.