

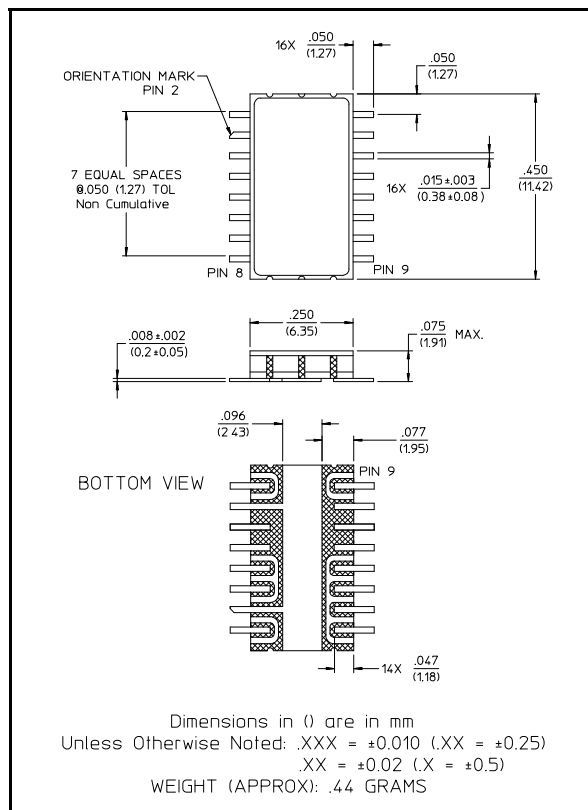
Features

- Attenuation: 16 dB steps to 32 dB
- Temperature Stability: ± 0.18 dB from -40°C to $+85^{\circ}\text{C}$ Typical
- Low DC Power Consumption
- Surface Mount Package
- Integral TTL Driver
- Low Cost/High Performance
- 50 Ohm Nominal Impedance

Description

M/A-COM's AT20-0273 is a GaAs FET digital attenuator with a 16 dB minimum step size and 32 dB total attenuation. This attenuator and integral TTL driver is in a sealed ceramic 16-lead surface mount package. The AT20-0273 is ideally suited for use where accuracy, fast switching, very low power consumption and low intermodulation products are required. Typical applications include dynamic range setting in precision receiver circuits and other gain/leveling control circuits. Available with enhanced performance as fully hermetic version. Environmentally screenable as P/N AT-273.

CR-11



Electrical Specifications: $T_A = 25^{\circ}\text{C}^1$

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Reference Insertion Loss	—	DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz	dB dB dB	— — —	1.2 1.3 1.5	1.6 1.7 1.9
Attenuation Accuracy ²	C1 Bit Full Attenuation (32 dB)	DC - 2.0 GHz DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz		$\pm 3\%$ of attenuation setting in dB $\pm 3\%$ of attenuation setting in dB $\pm 3\%$ of attenuation setting in dB, -1 dB $\pm 3\%$ of attenuation setting in dB, -3 dB		
VSWR	—	DC - 2.0 GHz	Ratio	—	—	1.4:1
Trise, Tfall	10% to 90%	—	ns	—	50	—
Ton, Toff	50% Control to 90/10% RF	—	ns	—	150	—
Transients	In-Band (peak-peak)	—	mV	—	50	—
1 dB Compression	Input Power Input Power	0.05 GHz	dBm	—	+20	—
		0.5 - 2.0 GHz	dBm	—	+28	—
Input IP3	For two-tone Input Power Up to +5 dBm	0.05 GHz	dBm	—	+38	—
		0.5 - 2.0 GHz	dBm	—	+48	—
Input IP2	For two-tone Input Power Up to +5 dBm	0.05 GHz	dBm	—	+44	—
		0.5 - 2.0 GHz	dBm	—	+68	—
Vcc	—	—	V	4.5	5.0	5.5
Vee	—	—	V	-8.0	—	-5.0

1. All specifications apply when operated with bias voltages of +5V for Vcc and -5.0V for Vee.
 2. This attenuator is guaranteed monotonic.

Electrical Specifications: $T_A = 25^\circ\text{C}$

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
I _{cc}	V _{cc} = 4.5 to 5.5V V _{ctl} = 0 to 0.8V, or V _{cc} -2.1V to V _{cc}	—	mA	—	—	2.0
I _{ee}	V _{ee} = -5.0 to -8.0V	—	mA	—	—	1.0

Absolute Maximum Ratings ³

Parameter	Absolute Maximum
Max Input Power 0.5 GHz 0.5 - 2.0 GHz	+27 dBm +34 dBm
Supply Voltages V _{cc} V _{ee}	+5.5V -8.5V
Control Voltage ⁴	-0.5V to V _{cc} +0.5V
Operating Temperature	-40°C to +125°C
Storage Temperature	-65°C to +150°C

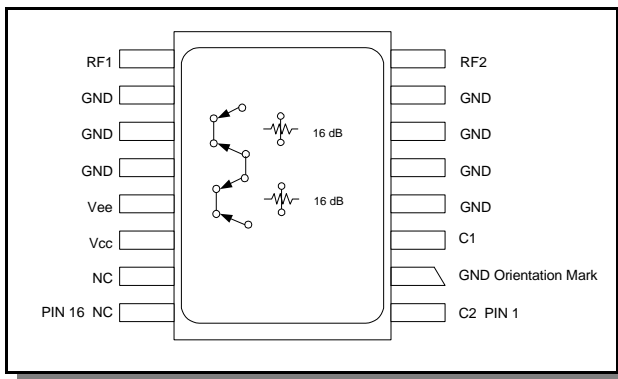
Truth Table

Control Input		
C2	C1	Attenuation
0	0	Reference
0	1	16 dB
1	0	32 dB

0 = TTL Low 1 = TTL High

- 3. Operation of this device above any one of these parameters may cause permanent damage.
- 4. Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

Functional Schematic (Top View) ⁵



- 5. Use the C1 control for a single 16-dB bit.

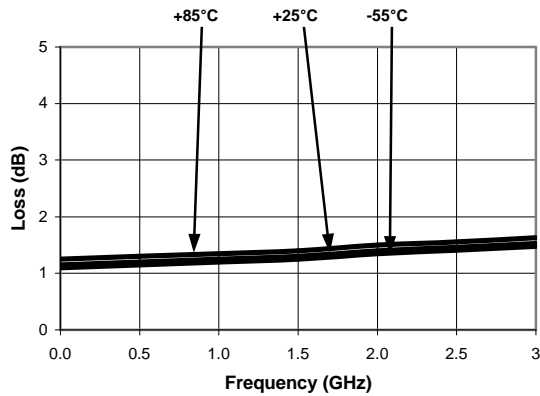
Specifications subject to change without notice.

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

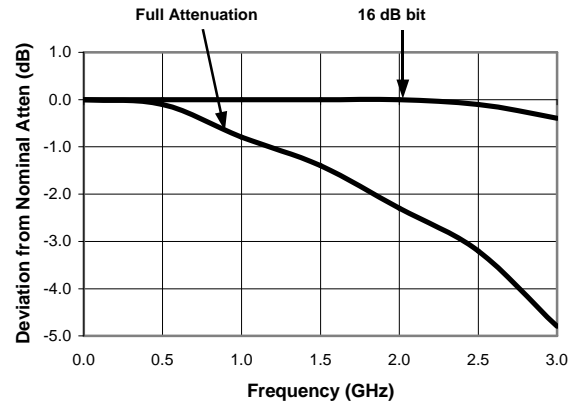
Visit www.macom.com for additional data sheets and product information.

Typical Performance Curves

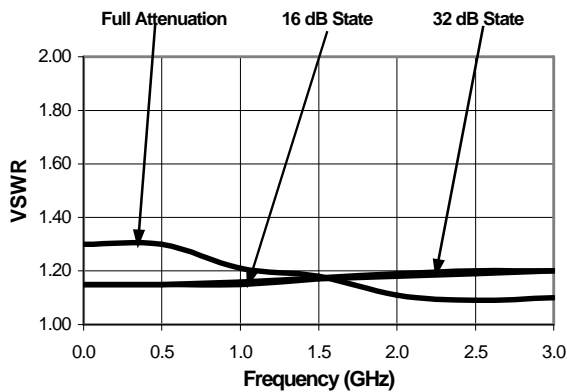
Ref. Insertion Loss vs. Frequency



Attenuation Accuracy vs. Frequency



VSWR vs. Frequency



Ordering Information

Part Number	Package
AT20-0273	CR-11

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