

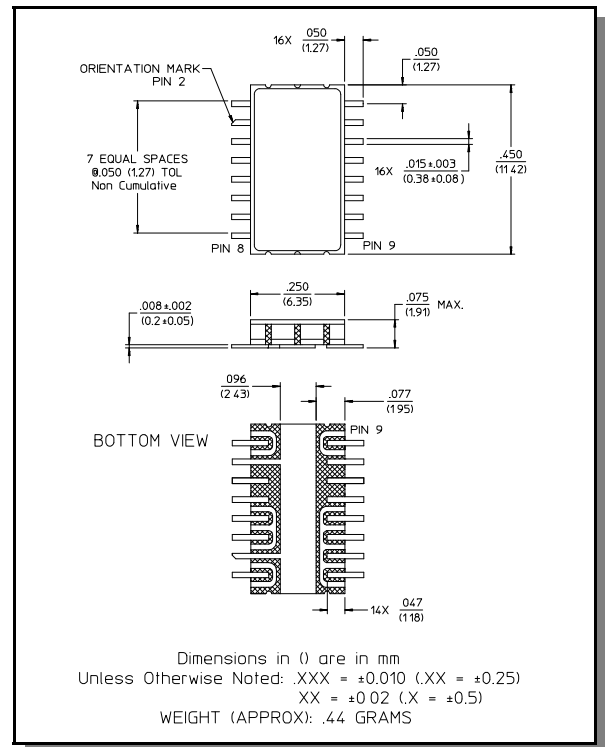
## Features

- Attenuation: 16.0 dB Steps to 32 dB
- Low DC Power Consumption
- Hermetic Surface Mount Package
- Integral TTL Driver
- 50 ohm Impedance
- Temperature Stability:  $\pm 0.18$  dB from  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  Typ.
- Tape and Reel Packaging Available

## Description

M/A-COM's AT-273 is a GaAs FET digital attenuator with a 16.0 dB minimum step size and a 32 dB total attenuation range. This attenuator and integral TTL driver is in a hermetically sealed ceramic 16-lead surface mount package. The AT-273 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. Environmental screening is available. Contact the factory for information.

## CR-11



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

| Parameter            | Test Conditions  | Frequency     | Units   | Min  | Typ | Max   |
|----------------------|--|---------------|---|------|-----|-------|
| Insertion Loss       | —  | DC - 0.5 GHz  | dB  | —    | —   | 1.6   |
|                      |  | DC - 1.0 GHz  | dB  | —    | —   | 1.7   |
|                      |  | DC - 2.0 GHz  | dB  | —    | —   | 1.9   |
| Attenuation Accuracy | C1 Bit<br>Full Attenuation (32 dB)<br>Full Attenuation (32 dB)<br>Full Attenuation (32 dB) | DC - 2.0 GHz  | $\pm 3\%$ of attenuation setting in dB        |      |     |       |
|                      |  | DC - 0.5 GHz  | $\pm 3\%$ of attenuation setting in dB        |      |     |       |
|                      |  | DC - 1.0 GHz  | $\pm 3\%$ of attenuation setting in dB, -1 dB |      |     |       |
|                      |  | DC - 2.0 GHz  | $\pm 3\%$ of attenuation setting in dB, -3 dB |      |     |       |
| VSWR                 | Full Range   | DC - 2.0 GHz  | Ratio   | —    | —   | 1.6:1 |
| Trise, Tfall         | 10% to 90%   | —             | ns  | —    | 7   | —     |
| Ton, Toff            | 50% Cntl to 90% / 10% RF   | —             | ns  | —    | 28  | —     |
| Transients           | In-Band (peak-to-peak)   | —             | mV  | —    | 30  | —     |
| 1 dB Compression     | Input Power<br>Input Power   | 0.05 GHz      | dBm   | —    | +20 | —     |
|                      |  | 0.5 - 2.0 GHz | dBm   | —    | +28 | —     |
| Input IP3            | Two-tone inputs up to +5 dBm   | 0.05 GHz      | dBm   | —    | +38 | —     |
|                      |  | 0.5 - 2.0 GHz | dBm   | —    | +48 | —     |
| Input IP2            | Two-tone inputs 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  |
| Vctl                 | Logic (0) TTL  | —             | V   | 0.0  | —   | 0.8   |
|                      | Logic (1) TTL  | —             | V   | 2.0  | —   | 5.0   |

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

| Parameter                    | Test Conditions  | Frequency | Units         | Min | Typ | Max |
|------------------------------|--|-----------|---------------|-----|-----|-----|
| Input Leakage Current (Low)  | 0 to 0.8V  | —         | $\mu\text{A}$ | —   | —   | 1.0 |
| Input Leakage Current (High) | 2.0 to 5.0V  | —         | $\mu\text{A}$ | —   | —   | 1.0 |
| I <sub>cc</sub>              | V <sub>cc</sub> = 4.5 to 5.5V<br>V <sub>ctl</sub> = 0 to 0.8V, or V <sub>cc</sub> -2.1V to V <sub>cc</sub> | —         | mA            | —   | —   | 2.0 |
| -I <sub>ee</sub>             | V <sub>ee</sub> = -5.0 to -8.0V  | —         | mA            | —   | —   | -1  |

## Pin Configuration

| Pin No. | Function | Pin No. | Function        |
|---------|----------|---------|-----------------|
| 1       | C2       | 9       | RF1             |
| 2       | GND      | 10      | GND             |
| 3       | C1       | 11      | GND             |
| 4       | GND      | 12      | GND             |
| 5       | GND      | 13      | V <sub>ee</sub> |
| 6       | GND      | 14      | V <sub>cc</sub> |
| 7       | GND      | 15      | NC              |
| 8       | RF2      | 16      | NC              |

Absolute Maximum Ratings <sup>1</sup>

| Parameter                                     | Absolute Maximum               |
|---|--------------------------------|
| Max. Input Power<br>0.05 GHz<br>0.5 - 2.0 GHz | +27 dBm<br>+34 dBm             |
| +V <sub>cc</sub>                              | +5.5V                          |
| -V <sub>ee</sub>                              | -8.5V                          |
| Control Voltage                               | -0.5 to V <sub>cc</sub> + 0.5V |
| Operating Temperature                         | -55°C to +125°C                |
| Storage Temperature                           | -65°C to +150°C                |

1. Operation of this device above any one of these parameters may cause permanent damage.

## Truth Table

| C1 | C2 | Attenuation     |
|----|----|-----------------|
| 0  | 0  | Loss, Reference |
| 0  | 1  | 16.0 dB         |
| 1  | 1  | 32.0 dB         |

0 = TTL Low; 1 = TTL High

## Ordering Information

| Part Number | Package        |
|-------------|----------------|
| AT-273      | Bulk Packaging |
| AT-273TR    | Tape and Reel  |

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](http://www.macom.com) for additional data sheets and product information.

**tyco** / Electronics

**MACOM**