Digital Attenuator, 15.5 dB, 5-Bit
DC - 2 GHz

AT-280

V 2.00

Features

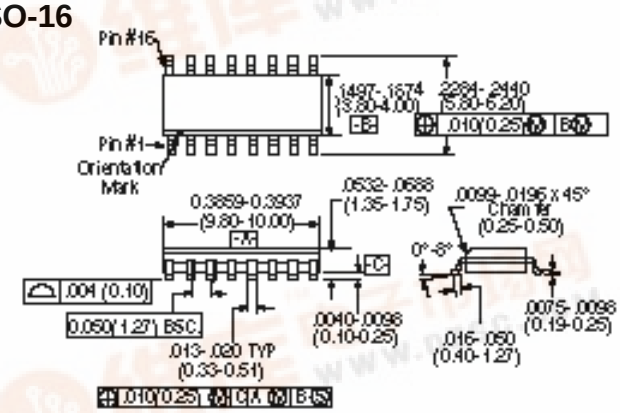
- Attenuation: 0.5-dB Steps to 15.5 dB
- Temperature Stability: ± 0.15 dB from -40°C to +85°C Typical
- Ultra Low DC Power Consumption
- Low Intermodulation Products, IP_3: 45 dBm
- Tape and Reel Packaging Available

Description

M/A-COM's AT-280 is a 5-bit, 0.5 dB-step GaAs MMIC digital attenuator in a low cost SOIC 16-lead surface mount plastic package. The AT-280 is ideally suited for use where high accuracy, fast switching, very low power consumption and low intermodulation products are required at a low cost. Typical applications include radio and cellular equipment, wireless LANS, GPS equipment and other Gain/Level Control circuits.

The AT-280 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

SO-16



16-Lead SOP outline dimensions
Narrow body .150
(All dimensions per JEDEC No. MS-012-AC, Issue C)
Dimensions in ( ) are in m m.
Unless Otherwise Noted: .xxx = ± 0.010 (.xx = ± 0.25)
.xx = ± 0.02 (.x = ± 0.5)

Ordering Information

Part Number	Package
AT-280 PIN	SOIC 16-Lead
AT-280TR	Forward Tape & Reel*
AT-280RTR	Reverse Tape & Reel*

* If specific reel size is required, consult factory for part number assignment.

Electrical Specifications, T_A = 25°C

Parameter	Test Conditions[2]	Unit	Min.	Typ.	Max
Reference Insertion Loss	DC – 0.1 GHz DC – 0.5 GHz DC – 1.0 GHz DC – 2.0 GHz	dB dB dB dB		1.1 1.3 1.5 1.8	1.3 1.5 1.8 2.0
Attenuation Accuracy[2]	DC – 1.0 GHz DC – 2.0 GHz	± (0.20 dB + 3% of Atten. Setting in dB) dB ± (0.30 dB + 3% of Atten. Setting in dB) dB			
VSWR	(any state)		1.5:1	1.8:1	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF 50% Control to 90% RF, 50% Control to 10% RF In Band	nS nS mV		12 18 30	
One dB Compression	Input Power 0.05 GHz Input Power 0.5 – 2.0 GHz	dBm dBm		22 27	
IP_2	Measured Relative to Input Power (for two-tone input power up to +5 dBm) 0.05 GHz 0.5 – 2.0 GHz	dBm dBm		53 68	
IP_3	Measured Relative to Input Power (for two-tone input power up to +5 dBm) 0.05 GHz 0.5 – 2.0 GHz	dBm dBm		40 45	

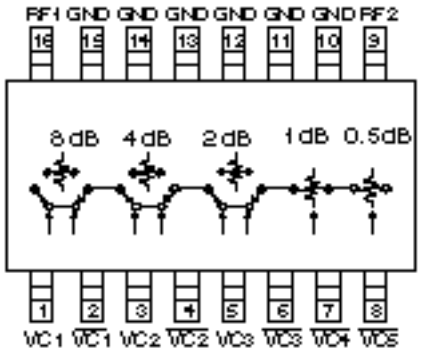
1. All measurements at 1 GHz in a 50Ω system, unless otherwise specified.
2. Attenuation accuracy specifications apply with negative bias control and low inductance grounding.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum[1]
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2.0 GHz	+34 dBm
Control Voltage	+5V, –8.5V
Operating Temperature	–40˚C to +85°C
Storage Temperature	–65˚C to +150˚C

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

Functional Schematic



Truth Table

Control Inputs								
$\overline{VC5}$	$\overline{VC4}$	$\overline{VC3}$	VC3	$\overline{VC2}$	VC2	$\overline{VC1}$	VC1	**Attenuation (dB)**
1	1	1	0	1	0	1	0	Reference
0	1	1	0	1	0	1	0	0.5 dB
1	0	1	0	1	0	1	0	1 dB
1	1	0	1	1	0	1	0	2 dB
1	1	1	0	0	1	1	0	4 dB
1	1	1	0	1	0	0	1	8 dB
0	0	0	1	0	1	0	1	15.5 dB

0 = VinLow = 0 V = 0 to -0.2 V @ 20 A maximum

Typical Performance