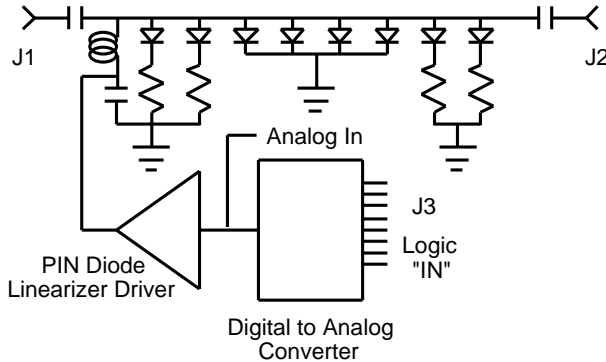


# STANDARD PRODUCTS

## DESCRIPTION

This line of octave band, linearized, temperature compensated, and digitized Digital PIN Diode Attenuators can be tailored to meet specific requirements. Options allow specifying the attenuation as well as the frequency range when ordering.

## SCHEMATIC



## Digital PIN Diode Attenuators SERIES "DPDA-"

## ELECTRICAL SPECIFICATIONS

**Mean Attenuation Ranges:** 30, 32, 60, 64, or as specified up to 80 dB. (see note 1 and "Specifying an Attenuator")

**Attenuation Accuracy (dB):** (see note 2)

0-30 dB.....	±0.5
30-50 dB.....	±1.0
50-60 dB.....	±1.5
60-80 dB.....	±2.0

**Logic Code:** 8-BIT Binary, All Inputs = "0" = Insertion Loss, All Inputs = "1" = Maximum Attenuation, MSB is set at the specified Mean Attenuation Range divided by 2.

**Logic "In" Impedance:** Each control BIT, 1 TTL Load

**Monotonicity:** Guaranteed

**Operating Power:** 10 mW CW or Pk/50 mW CW or Pk (see note 3)

**Survival Power:** 1W Avg., 25 W Pk (1 µsec PW)

**Switching Time:** 10 µsec max/1 µsec max (see note 4)

**Supply Requirements:** +12V ± 5% @ 150 mA max., -12V ± 5% @ 50 mA max. (see "Specifying an Attenuator" for options)

## J3 PIN FUNCTIONS

PIN N°	FUNCTION	PIN N°	FUNCTION
1	GND	9	BIT 5 (MSB/8)
2	ANALOG IN	10	BIT 6 (MSB/4)
3	NOT USED	11	BIT 7 (MSB/2)
4	GND	12	BIT 8 (MSB)
5	BIT 1 (LSB)	13	+V
6	BIT 2 (MSB/64)	14	-V
7	BIT 3 (MSB/32)	15	NOT USED
8	BIT 4 (MSB/16)		

## TYPICAL PERFORMANCE

FREQ CODE	FREQUENCY RANGE (GHZ)	INSERTION LOSS (DB)	VSWR	FLATNESS (DB) IN MEAN ATTENUATION RANGE OF				
				0-10 DB	10-20 DB	20-40 DB	40-60 DB	60-80 DB
005010	0.5-1.0	1.8	1.8	±.3	±.8	±1.7	±2.2	±3.5
010020	1.0-2.0	2.0	1.8	±.3	±.8	±1.7	±2.2	±3.5
020040	2.0-4.0	2.4	1.8	±.3	±.8	±1.5	±2.2	±3.5
040080	4.0-8.0	2.9	1.7	±.3	±.8	±1.5	±2.2	±3.5
080180	8.0-18.0	4.0	1.8	±.7	±1.0	±1.5	±2.2	±3.5

(1) Mean Attenuation Range is specified in part number when ordering (see "Specifying an Attenuator").

(2) As applicable to the mean attenuation range of the specified attenuator. (see \*1)

(3) Maximum operating power is 10 mW CW or peak for all units where the lowest operating frequency is less than 2 GHz and 50 mW CW or peak for all units where the lowest operating frequency is greater than or equal to 2 GHz.

(4) Switching time is 10 µsec for all units where the lowest operating frequency is less than 2 GHz and 1 µsec for all units where the lowest operating frequency is greater than or equal to 2 GHz.

(5) Outline dimensions for a specified attenuator (other than those attenuators listed in the tables) shall be that of the listed attenuator within which is contained the lowest operating frequency of the specified attenuator. For example, a 7.9-8.4 GHz attenuator will have the dimensions of the "040080" frequency code attenuator since 7.9 is between 4.0 and 8.0.

## ENVIRONMENTAL RATINGS

### Temperature:

Operating ——— -55°C to +85°C  
 Non-operating ——— -65°C to +125°C

### Altitude:

MIL-STD-202C, Method 105C,  
 Cond. B (50,000ft)

### Humidity:

MIL-STD-202C, Method 103B,  
 Cond. B (96 hrs. at 95%)

### Temp Cycling:

MIL-STD-202C, Method 105C,  
 Cond. D, 5 cycles

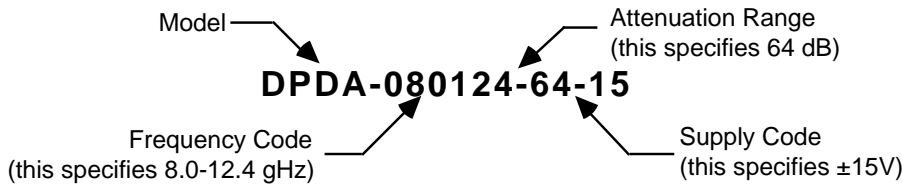
### Vibration:

MIL-STD-202C, Method 204A,  
 Cond. B (0.06" double amplitude  
 or 15G, whichever is less)

### Shock:

MIL-STD-202C, Method 213,  
 Cond. B (750G, 6ms)

## SPECIFYING AN ATTENUATOR

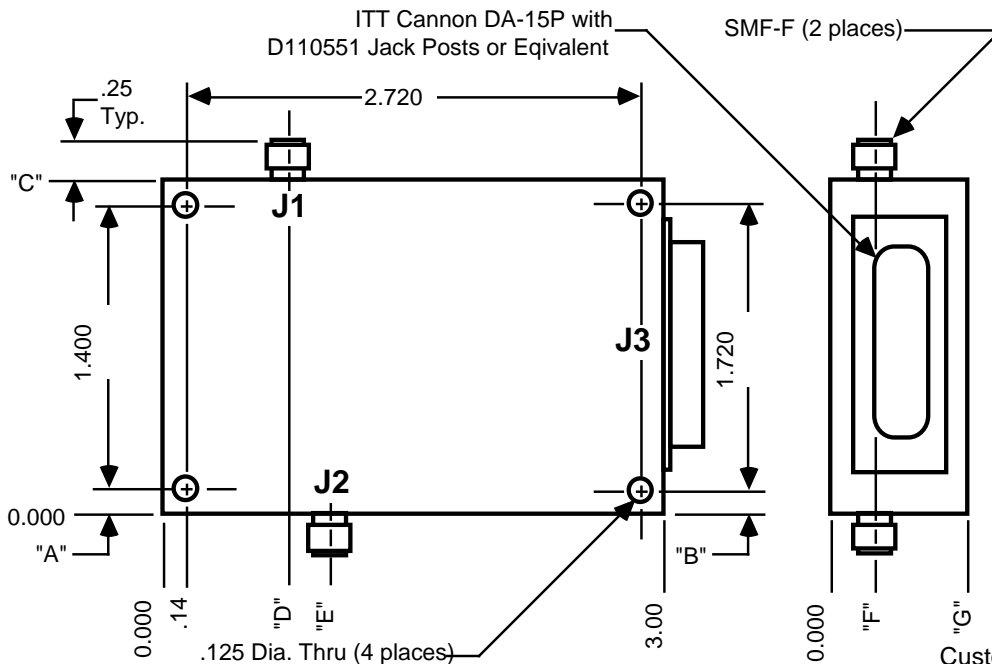


SUPPLY CODES	VOLTAGES
(NONE)	±12V
15	±15V

## OUTLINE

(see \*5 for more details)

FREQ CODE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"	DIM "F"	DIM "G"
005010	.58	.42	2.56	.56	1.53	.31	.82
010020	.58	.42	2.56	.56	1.53	.29	.82
020040	.30	.14	2.00	.50	1.29	.34	.82
040080	.30	.14	2.00	.75	1.19	.34	.82
080180	.30	.14	2.00	.75	1.00	.27	.80



Custom Microwave Components, Inc.  
 44249 Old Warm Springs Blvd.  
 Fremont, California 94538  
 510-651-3434



## Description

Mechanically adjustable attenuators, as unexciting as they may appear, have the unsung reputation of being a "work horse" microwave component. They are, however, unsurpassed in applications requiring an inexpensive field-adjustable narrow to medium-bandwidth attenuator.

## Features

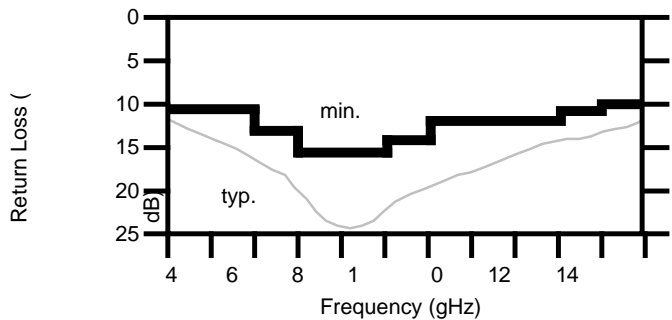
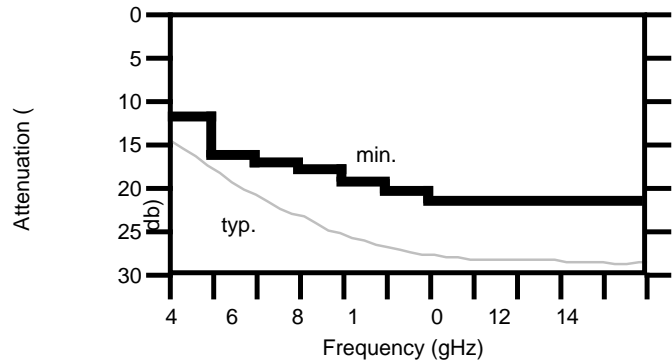
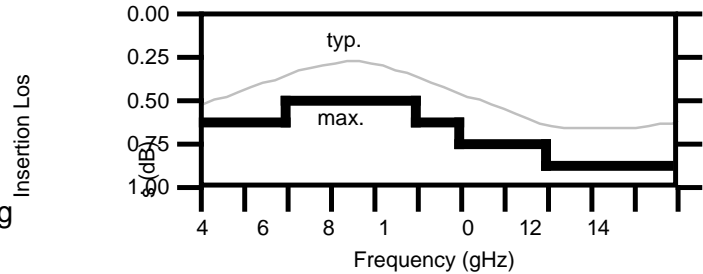
- 1) Broadband (up to 4 to 15 GHz)
- 2) Continuously variable attenuation providing fine tuning control.
- 3) Thermally stable attenuation.
- 4) Reliable and repeatable operation.
- 5) Extremely low EMI/RFI emittance and susceptance.
- 6) All stainless steel fittings, hardware, and connectors providing superior tolerance to harsh environments.

## Miscellaneous Characteristics

R.F. Power Handling: 36 dBm  
 Characteristic Impedance: 50  
 Attenuation Stability: 0.2 dB  
 EM Radiation: <-60 dBc  
 EM Susceptibility: <-60 dBc  
 Size: (see outline on back of this sheet)  
 Finish: Black epoxy paint with white epoxy ink labeling.

# Mechanically Adjustable Attenuator CMCV0590

## Typical R.F. Performance



## Tabulated Electrical Performance

Frequency (GHz)		4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15
Insertion Loss (dB)	typ.	0.5	0.5	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7
	max.	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8
Attenuation Range (dB)	typ.	14	19	22	23	25	26	27	27	27	27	27
	min.	12	16	17	18	19	20	21	21	21	21	21
VSWR	max.	1.85:1	1.85:1	1.60:1	1.40:1	1.40:1	1.50:1	1.70:1	1.70:1	1.70:1	1.80:1	1.90:1



# Environmental Ratings

**Temperature:**

Operating \_\_\_\_\_ -0.0°C to +85°C  
 Non-Operating \_\_\_\_\_ -55°C to +85°C

**Humidity:**

MIL-STD-202, Method 203,  
 Condition B (96 hours at 95%)

**Vibration:**

MIL-STD-167 (1 hour per resonance)  
 Sinusoidal - 0.1 g's 25-2000 Hz  
 Random - 6 g's 20-2000 Hz

**Shock:**

MIL-S-901, Grade A, Class I  
 or II as appropriate

**Altitude:**

MIL-STD-202, Method 105C,  
 Condition B (50,000 ft.)

**Thermal Cycling:**

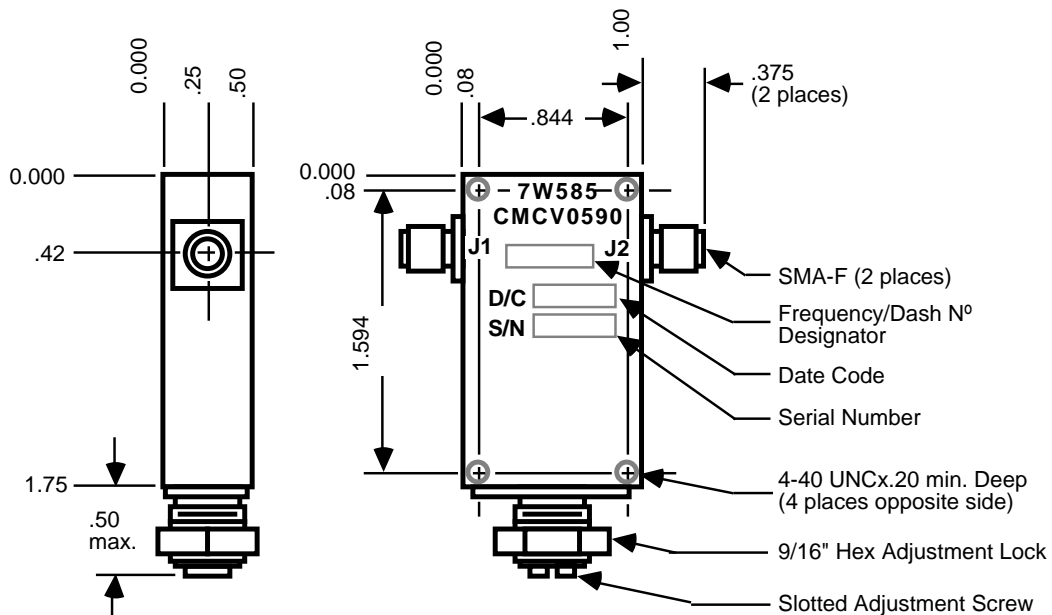
MIL-STD-202C, Method 213,  
 Condition B (5 cycles)

# Specifying An Attenuator



Note: This particular Freq/Dash N° specifies a 4.8 to 11.3 GHz attenuator.

# Outline Drawing



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REL V0590-1192