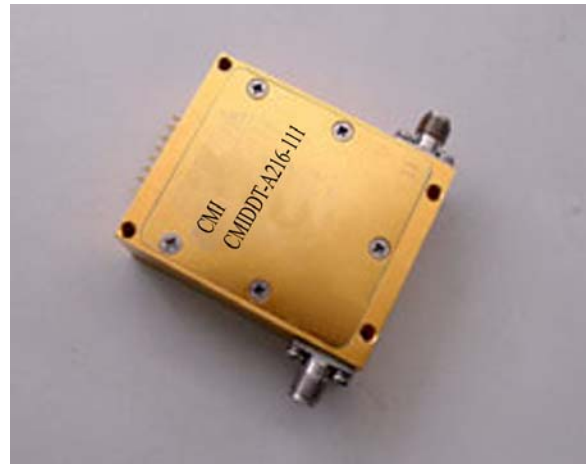


### **Digitally Programmable Attenuator**

CMI's line of switched-bit pin-diode digital attenuators offers precision, reliability, and repeatability for the most demanding applications. The CMIDDT series digital attenuators are available in convenient binary 4-, 5-, and 6-bit configurations with 0.5dB resolution and up to 63dB total attenuation. The attenuators require  $\pm 5V$  DC power supply and feature TTL-compatible control logic. Standard screened devices incorporate epoxy sealed lids and undergo a stringent yet cost effective screening cycle. The switches are also available with a high-rel option featuring MIL-STD-883 screening.

#### **Features:**

- Automatic Gain Control
- EW Systems
- Communications Systems
- Leveling Circuits
- Precision Test Equipment
- Electronic Simulators



#### **Ordering Information:**

- Delivery: Stock to eight weeks
- Additional options: The attenuators can be modified for custom applications. Contact the factory to discuss specific requirements.

**CALL OUR SALES DEPARTMENT FOR MORE INFORMATION OR VARIATIONS OF THIS PRODUCT.**

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### Absorptive Digitally Programmable Attenuator- switched-bit pin-diode digital attenuators

Part Number	Frequency	Type	Insertion Loss (dB max)	Total Attention (dB)	Flatness (dB)	Accuracy (dB)	Speed (ns)	VSWR (max)
CMIDDT-A216-111	0.1–0.5GHz	6-BIT	4	63	±0.5	±1.0	200	1.5
CMIDDT-B216-111	0.5–1.0GHz	6-BIT	4	63	±0.5	±1.0	200	1.5
CMIDDT-C216-111	1.0–2.0GHz	6-BIT	4	63	±0.5	±1.0	50	1.5
CMIDDT-D216-111	2.0-4.0GHz	6-BIT	5	63	±0.5	±1.0	50	1.5
CMIDDT-E216-111	4.0-8.0GHz	6-BIT	6	63	±0.5	-0.5 ~ 1.5	50	1.5
CMIDDT-F216-111	8.0-12GHz	6-BIT	8	63	±1.0	-0.5 ~ 1.5	50	1.6

### Reflective Digitally Programmable Attenuator

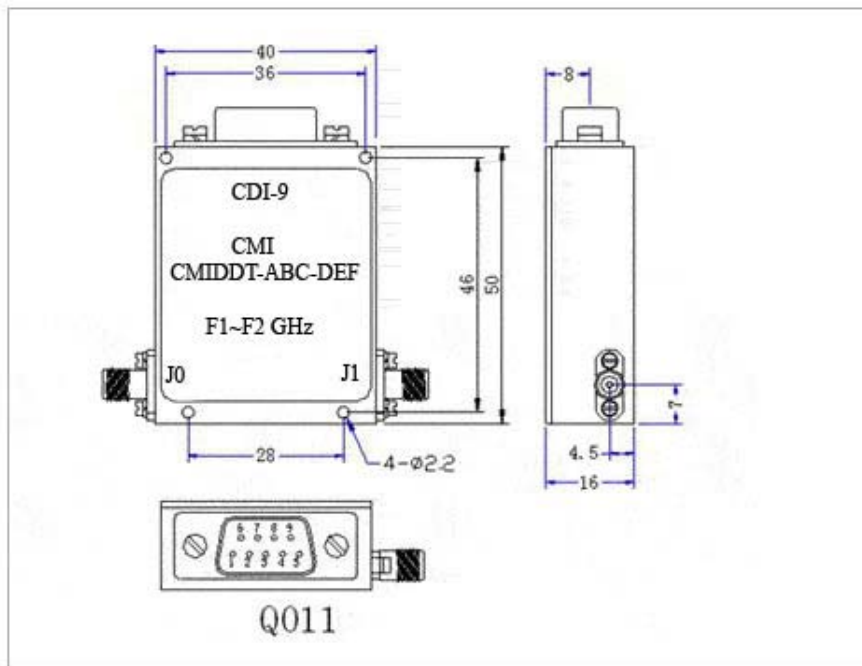
Part Number	Frequency	Bandwidth	Type	Insertion Loss (dB max)	Total Attention (dB)	Flatness (dB)	Accuracy (dB)	Speed (ns)	VSWR (max)
CMIDDT-C116-111	1.0–2.0GHz	20%	6-BIT	1.5	63	±0.5	±1.0	2	1.5
		Full		1.8					
CMIDDT-D116-111	2.0-4.0GHz	20%	6-BIT	1.8	63	±0.5	±1.0	2	1.5
		Full		1.8					
CMIDDT-E116-111	4.0-8.0GHz	20%	6-BIT	2.0	63	±0.5	-0.5 ~ 1.5	2	1.5
		Full		2.2					
CMIDDT-F116-111	8.0-12GHz	20%	6-BIT	2.2	63	±1.0	-0.5 ~ 1.5	2	1.6
		Full		2.5					
CMIDDT-G116-111	12-18GHz	20%	6-BIT	2.5	63	±0.5	±1.0	2	1.5

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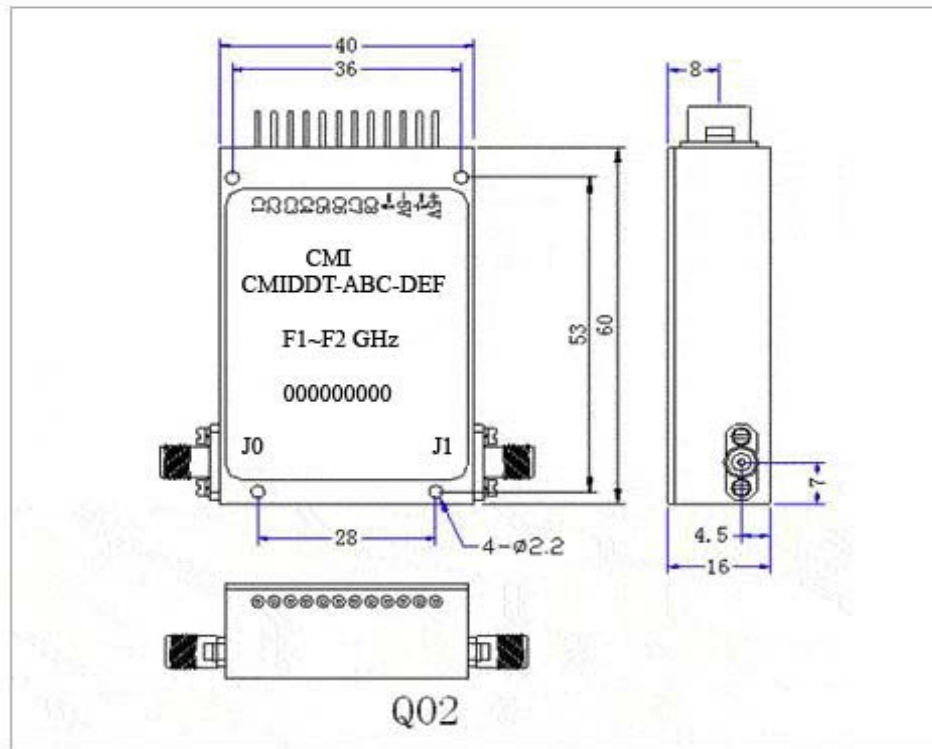
ELECTRICAL NOTES		MECHANICAL SPECIFICATIONS	
Switching Speed: 200 nsec max.		Case Style: Q011,Q02	
Attenuation Accuracy:		Finish: Gold plating per MIL-G-45204	
	± 0.4dB up to 20dB Attenuation	Connectors: SMA female per MIL-C-39012	
	± 2% above 20dB Attenuation	Bias and Control:	
DC Bias: +5.0 ± 0.5V @	160 mA max. (4-bits)	0.020"dia x 0.15" long solder pins	
-5.0 ± 0.5 V @	200 mA max. (5-bits)	Weight:	
	240 mA max. (6-bits)	Mounting: 2.2mm dia through holes (4) pics.	
Control: TTL Logic 0: = Low Loss			
TTL Logic 1: = Attenuation			



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### **Voltage Variable Attenuators**

CMI's line of current controlled attenuators offers high performance and compact size. They can be optimized for narrow or broadband frequency ranged up to 18GHz. Detailed specifications are available on request from the factory or your local sales representative. Contact the factory for custom designs and applications.

#### **Applications:**

- Automatic Gain Control
- EW & Radar Systems
- Communications Systems
- Leveling Circuits
- Precision Test Equipment
- Electronic Simulators



#### **Ordering Information:**

- Delivery: Stock to eight weeks
- Additional options: The attenuators can be modified for custom applications. Contact the factory to discuss specific requirements.

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### **Reflective Voltage Variable Attenuators**

<b>Part Number</b>	<b>Frequency Range</b>	<b>Insertion Loss</b>	<b>Attenuation</b>	<b>VSWR</b>	<b>Package</b>
CMIDT-213-111	2-18 GHz	2.0dB	20dB	2:1	X101,x103,x104,x105
CMIDT-213-111	2-18 GHz	2.2dB	35dB	2:1	X101,X103,X104,x105
CMIDT-213-111	2-18 GHz	2.5dB	50dB	2:1	X101,X103,X104,x105
CMIDT-A12-111	0.02-0.5GHz	1.5dB	25dB	1.5:1	X101,X103,X104,x105
CMIDT-B13-111	0.5 - 1 GHz	1.5dB	50dB	1.5:1	X101,X103,X104,x105
CMIDT-C13-111	1 - 2GHz	0.8dB	50dB	1.5:1	X101,X103,X104,x105
CMIDT-D13-111	2 - 4 GHz	1.2dB	50dB	1.5:1	X101,X103,X104,x105
CMIDT-E13-111	4-8GHz	1.8db	50dB	1.8:1	X101,X103,X104,x105
CMIDT-F13-111	8- 12 GHz	2.2dB	50dB	1.8:1	X101,X103,X104,x105
CMIDT-G13-111	12 - 18 GHz	2.4dB	50dB	1.9:1	X101,X103,X104,x105

### **Non-Reflective Voltage Variable Attenuators**

<b>Part Number</b>	<b>Frequency Range</b>	<b>Insertion Loss</b>	<b>Attenuation</b>	<b>VSWR</b>	<b>Control</b>
CMIDT-B22-111	0.5 - 1 GHz	1.5dB	30dB	1.5:1	X101,X103,X104,x105
CMIDT-C22-111	1 - 2GHz	1.5dB	30dB	1.5:1	X101,X103,X104,x105
CMIDT-D23-111	2 - 4 GHz	1.2dB	30dB	1.5:1	X101,X103,X104,x105
CMIDT-E23-111	4-8GHz	2.0db	30dB	1.6:1	X101,X103,X104,x105
CMIDT-F23-111	8- 12 GHz	2.5dB	30dB	1.8:1	X101,X103,X104,x105
CMIDT-G23-111	12 - 18 GHz	3.0dB	30dB	1.8:1	X101,X103,X104,x105

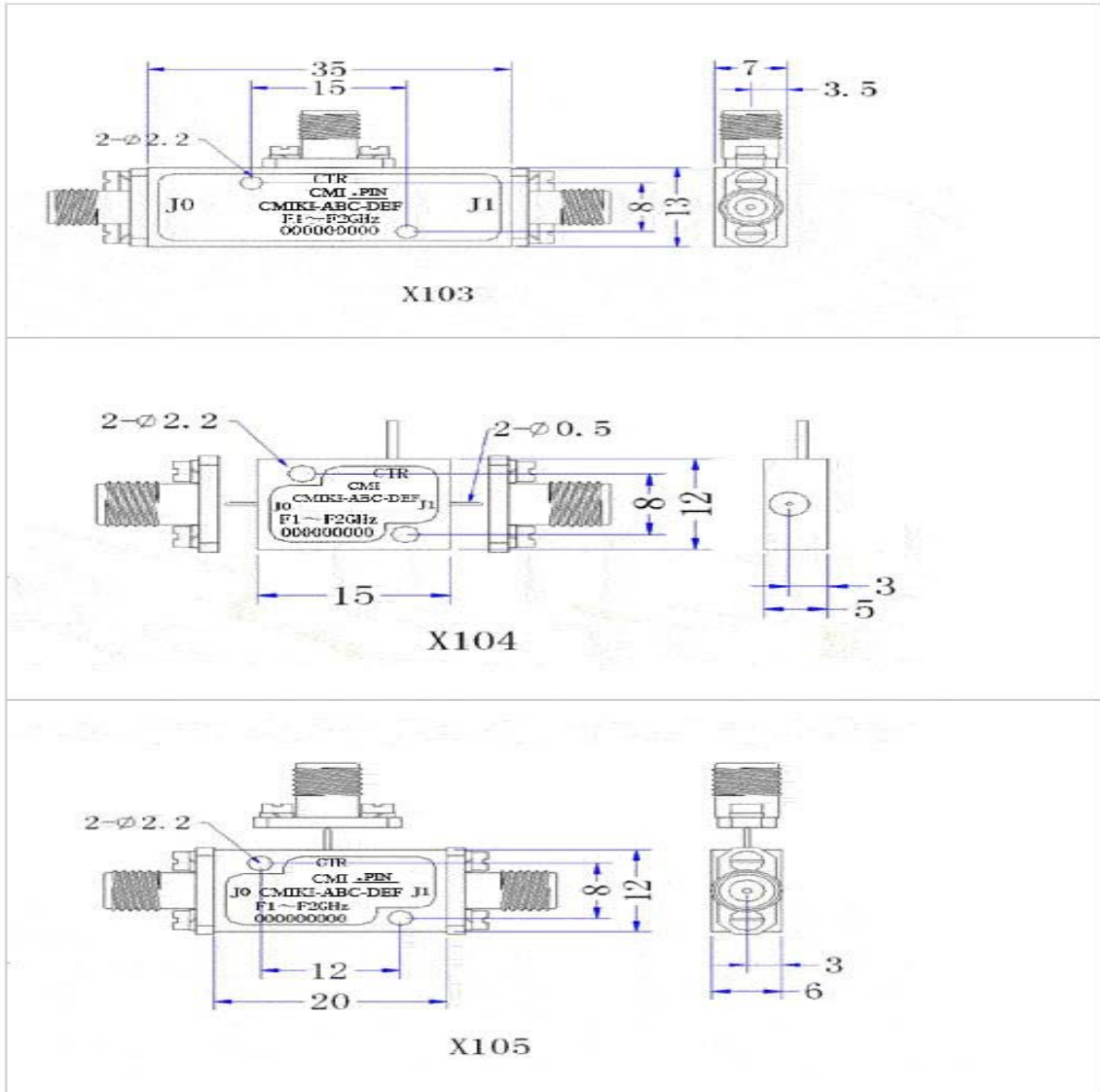
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**Note:**

1. All of the voltage variable attenuators are current control, the control current: 15-30 mA
2. When using the attenuator, a current limiting base resistor should be connected to the control PIN
3. The power handing capability: 1 Watt
4. Temp. Range: -55°C to +85°C



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### Pin Diode Limiters

CMI's CMIXF series pin diode limiters are built to protect sensitive circuit elements such as receiver front ends or detectors. They reduce high power inputs to a low level that can be tolerated by the next component. CMIXF limiter models cover various frequency ranges from 100 MHz to 18 GHz, Conventional limiters typically have leakage levels up to +20 dBm.

**Features:**

- Low Insertion Loss
- Low Leakage Power Circuit Protection
- Custom Designs Available
- High CW Power Handling
- May Available as Modules or Connectorized Units



Model Number <sup>3</sup>	Frequency Range (GHz)	Peak Input Power (Watts) Style <sup>2</sup>	CW Input Power (Watts)	Max. Flat Leakage (+dBm)	Peak Max. Flat Leakage <sup>1</sup> (+dBm) (CW)	Insertion Loss (dB)	VSWR (max)	Standard Case
CMIXF-212-212	2.0-18.0	100	2	20	17	2.0	2.0:1	X107 X108
CMIXF-211-212	2.0-18.0	100	2	20	17	2.2	2.2:1	X107 X108
CMIXF-B12-112	0.5-1.0	100	2	20	17	0.4	1.2:1	X107 X108
CMIXF-C12-112	1.0 – 2.0	100	2	20	17	0.5	1.3:1	X107 X108
CMIXF-D12-112	2.0 – 4.0	100	2	20	17	0.6	1.4:1	X107 X108
CMIXF-E12-112	4.0 - 8.0	100	2	20	17	1.0	1.5:1	X107 X108
CMIXF-F11-112	8.0 – 12.0	100	2	20	17	1.6	1.6:1	X107 X108
CMIXF-G11-112	12.0 - 18.0	100	2	20	17	1.8	1.8:1	X107 X108

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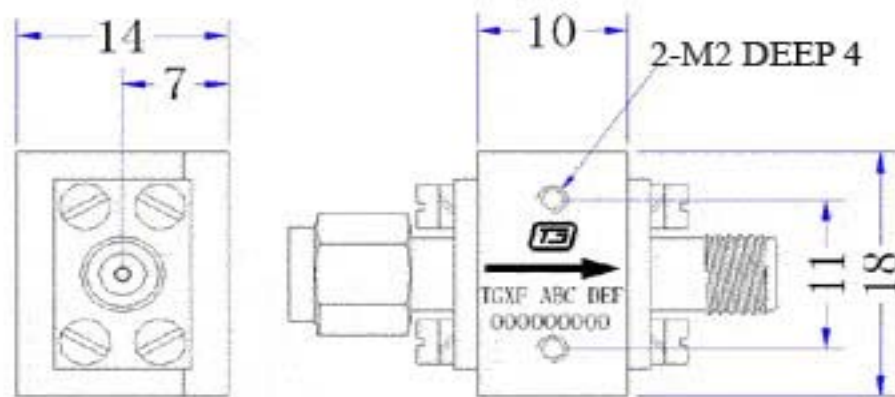
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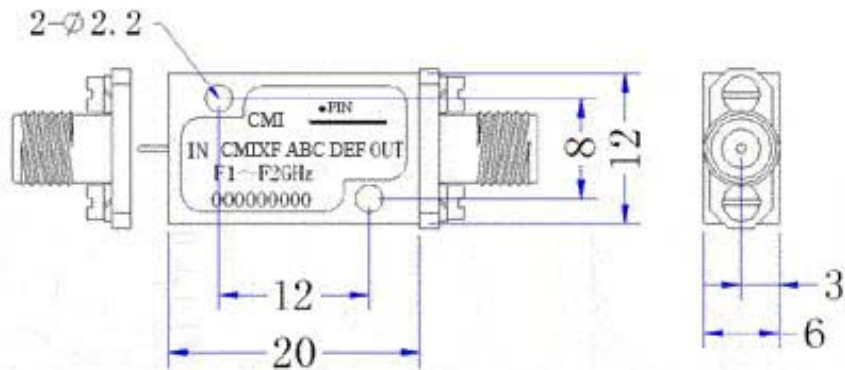


**Note:**

1. IL and VSWR are tested at the input power of – 10 dBm
2. Recovery Time :50-100 ns
3. Spike Leakage 0.5 ergs(max)
4. Higher power versions are also available.



X107



X108

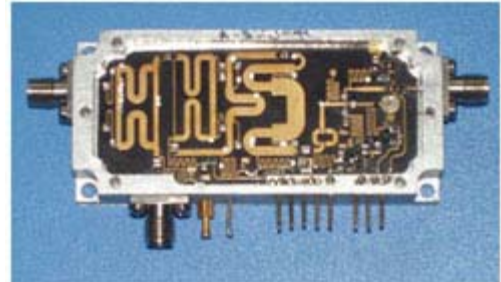
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### **Phase Shifters**

CMI designs custom digital phase shifters with high performance and compact size. They are available with frequency ranges up to 8 GHz and 5-bit resolution. Detailed specifications are available on request from the factory or your local sales representative. Contact the factory for custom designs and applications.



Module Number	Freq. Range (GHz)	IL (dB)	VSWR	Accuracy (°)	Power Handling (Watt)	Speed ns
CMIPS-C215-111	1.0 – 2.0	3.0	1.5	±3	3	50
CMIPS-D215-111	2.0 – 4.0	3.5	1.5	±3	3	50
CMIPS-E215-111	4.0 – 8.0	5.0	1.5	±3	3	50

Operation Temperature: -55° to + 85°.

5-bits TTL Driving

"00000" Denote the status of insertion loss being tested

Bandwidth is about 10%

For broadband phase shifters, please contact the factory.

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