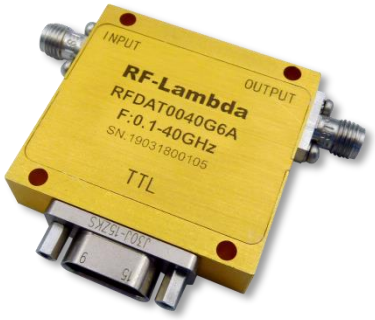
Absorptive Digital Control Attenuator
0.1 - 40GHz



Features

- Ultra Wide Band Operation 0.1-40GHz
- 1dB LSB Steps to 63dB
- Single Positive Control Line Per Bit
- Customization available upon request

RoHS Compliant

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test & Measurement

Electrical Specifications, TA = +25°C, Vdd = +5V, Vss = -5V & VCTL = 0/ +5V

Description	PN: RFDAT0040G6A									
	Absorptive Digital Attenuator									
Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1~18			18~30			30~40			GHz
Attenuation Range		63			62			61		dB
Insertion Loss		10.0	11.0		12.0	13.0		14.0	15.0	dB
Insertion Loss Temperature Coefficient		0.01			0.01			0.01		dB/°C
Attenuation Flatness: (Referenced to Insertion Loss)		±4.0			±5.0			±6.0		dB
Control Bits			6			6			6	Bit
Control Step size	1			1			1			dB
Input VSWR (All Atten. States)		1.8	2.1		1.9	2.0		1.9	2.0	: 1
Output VSWR (All Atten. States)		1.8	2.1		1.9	2.0		1.9	2.0	: 1
Input 0.1 dB Compression Point (P0.1dB)		25			25			25		dBm
Input IP3		45			45			45		dBm
Switching Speed	200									ns
Weight	1.06									Ounces
Impedance	50									Ω
Bias Current (+5V / - 5V)	140/50									mA
Input / Output Connectors	2.92mm-Female									
Interface and Control Connector	MICRO-D15 (Female)									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (Optional)									

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Absolute Maximum Ratings

Biasing	+5V±10%/-5V±10%
TTL Control Voltage	0~0.8V/2.8~5V

Ordering Information

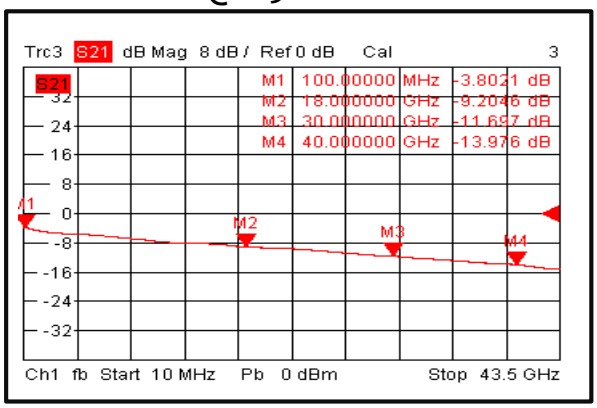
Part No.	ECCN	Description
RFDAT0040G6A	EAR99	0.1-40GHz Digital Control Attenuator

Environmental Specifications and Test Standards

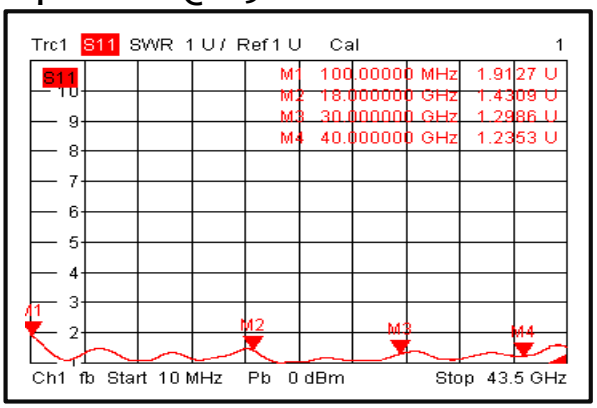
Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45℃~+85℃
Storage Temperature		-55℃~+125℃
Thermal Shock		1 Hour@ -45℃ → 1 Hour @ +85℃ (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85℃ for 72 Hours
Shock		1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude		Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883	MIL-STD-883 (For Hermetically Sealed Units)

Typical Performance Plots

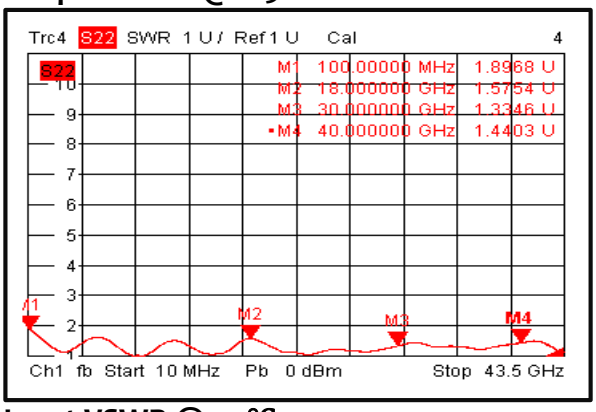
Insertion Loss @+25℃



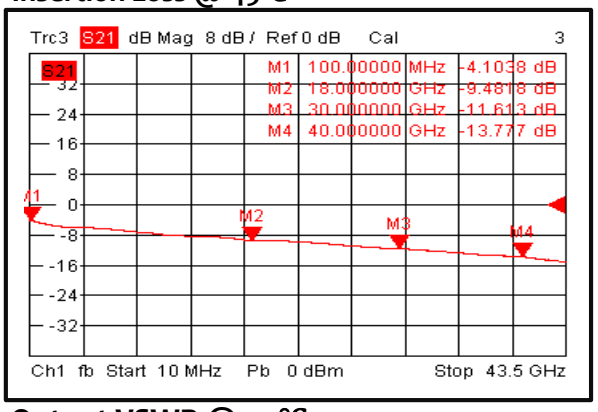
Input VSWR @+25℃



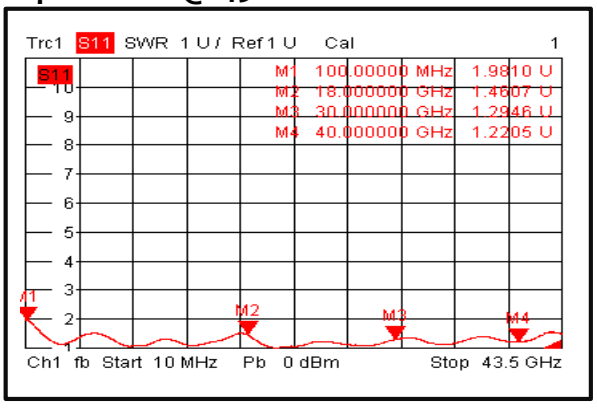
Output VSWR @+25℃



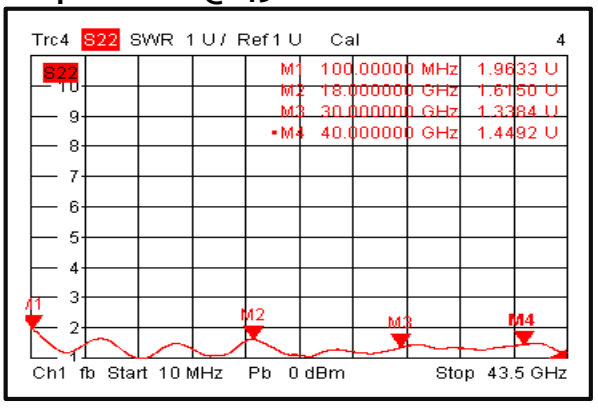
Insertion Loss @-45℃



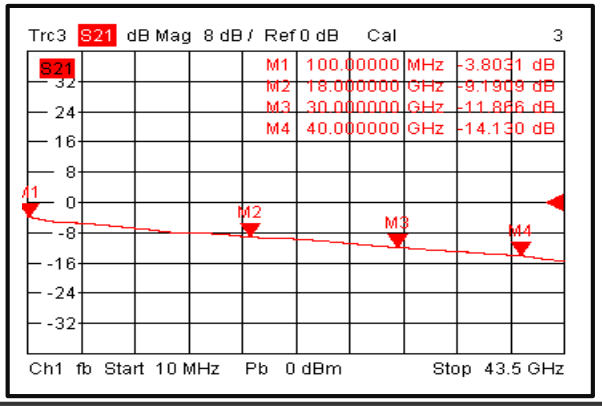
Input VSWR @-45℃



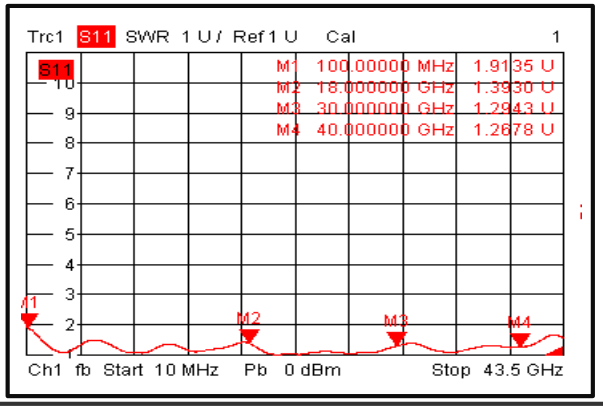
Output VSWR @-45℃



Insertion Loss @+85℃



Input VSWR @+85℃



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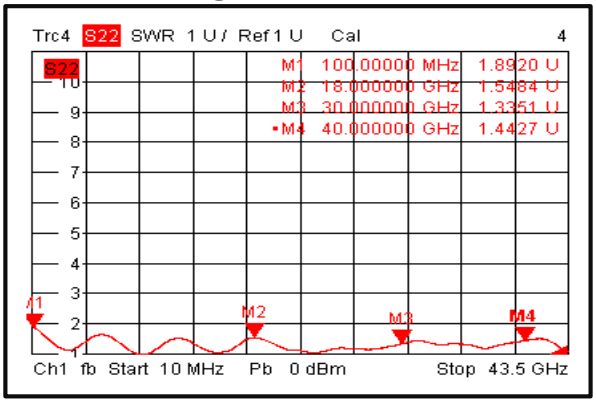
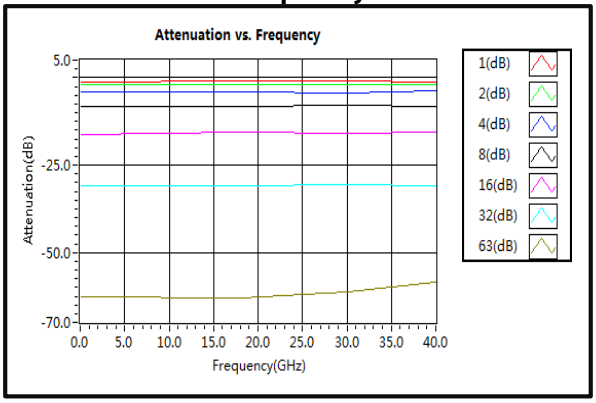
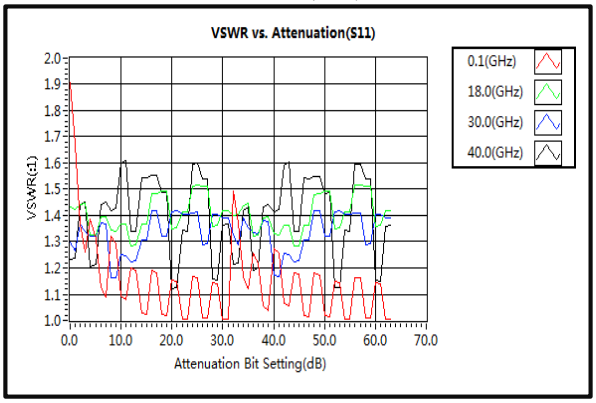
Output VSWR @+85℃



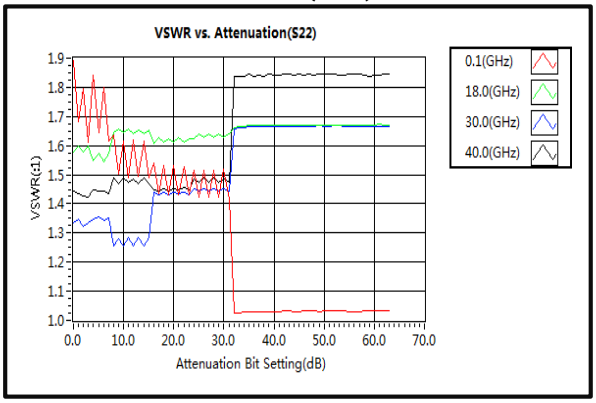
Attenuation vs. Frequency



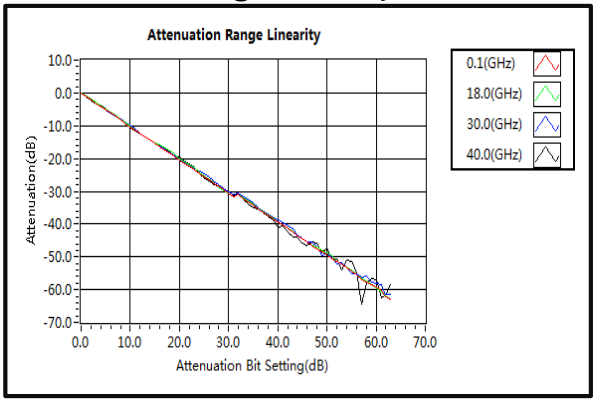
VSWR vs. Attenuation(S11)



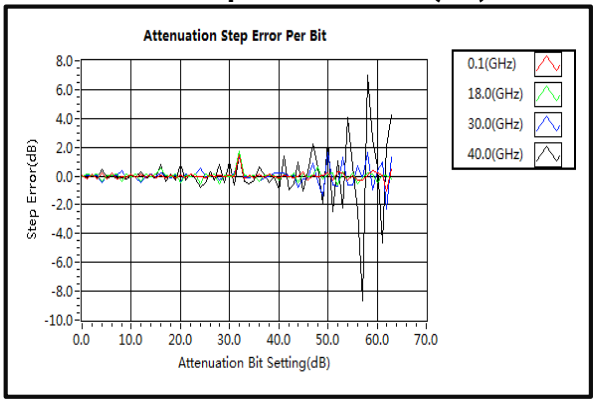
VSWR vs. Attenuation(S22)



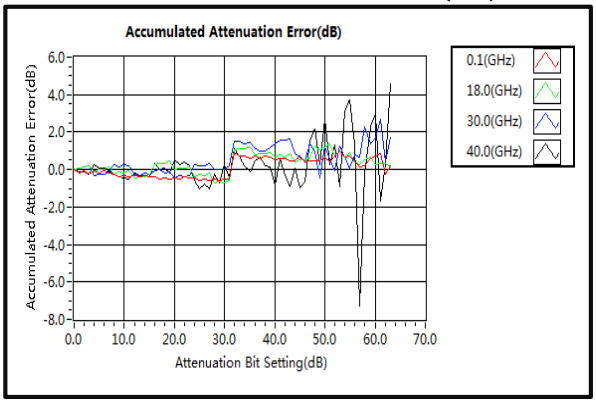
Attenuation Range Linearity



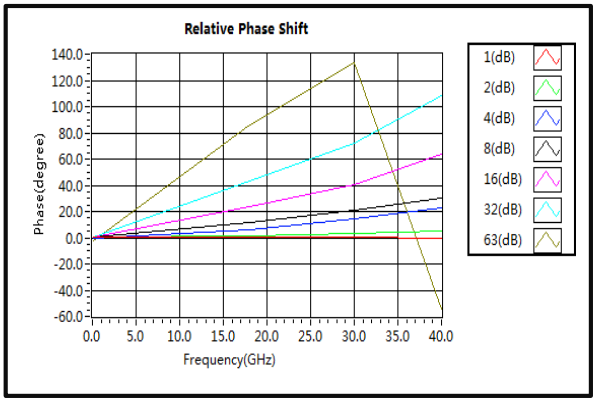
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error(dB)



Relative Phase Shift



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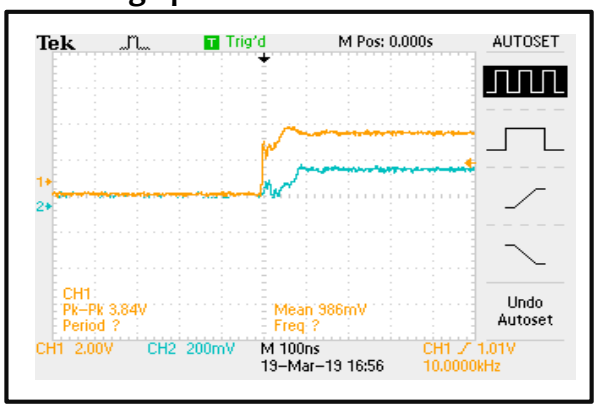
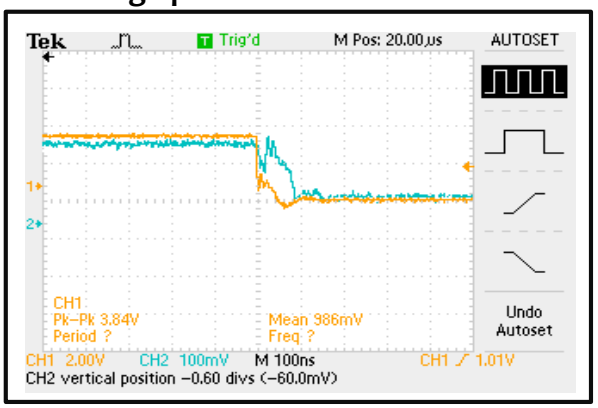
Switching Speed

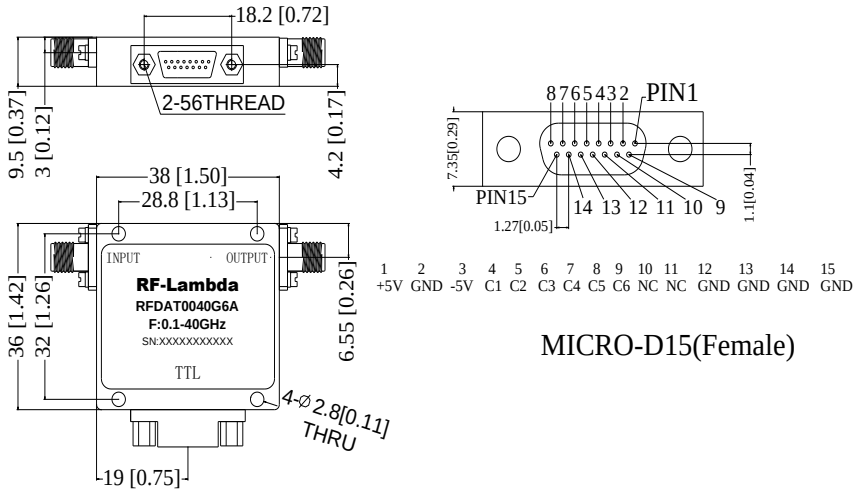


Switching Speed



Outline Drawing:

All Dimensions in mm [inches]



Truth Table

Control Voltage Input						
C6	C5	C4	C3	C2	C1	Attenuation state
1	1	1	1	1	1	Reference IL
1	1	1	1	1	0	1dB
1	1	1	1	0	1	2dB
1	1	1	0	1	1	4dB
1	1	0	1	1	1	8dB
1	0	1	1	1	1	16dB
0	1	1	1	1	1	32dB
0	0	0	0	0	0	63dB

Important Notice