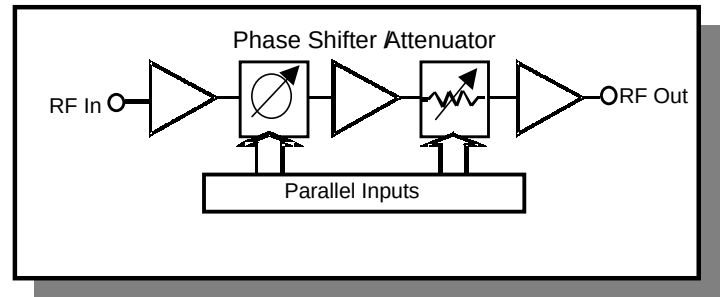


Features

- 8 to 11 GHz Operation
- 50 Ω Input Impedance
- Self-Aligned MSAG[®] MESFET Process



Description

The ITT373503D is a high dynamic range X-Band Parallel Input 5-Bit Attenuator / 6-Bit Phase Shifter / Buffer Amplifier fabricated using ITT GaAsTEK's mature GaAs Self-Aligned MSAG[®] MESFET Process. This product is fully matched to 50 ohms on both the input and the output.

Maximum Ratings (T_A = 25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
DC Drain Supply Voltage	V _D	8	V
DC Gate Supply Voltage	V _G	-6	V
Digital Supply Voltage	V _{EE}	-6	V
RF Input Power	P _{IN}	200	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-40 to +150	°C

ELECTRICAL CHARACTERISTICS V_D=5.0 V, V_G = -4.0 V, V_{EE} = -4.0 V, T=25 °C, Input and Output Connected to 50 Ω .

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency Range	—	8.0	—	11.0	GHz
Maximum Gain	—	16	18	20	dB
Input and Output Return Loss	RL	11	13	—	dB
Gain Flatness (Peak-to-Peak over any 250 MHz band)	—	—	0.5	1	dB
Attenuation Range (5-Bits, 32 Steps 0.75 dB Nominal)	—	—	—	23.3	dB
RMS Attenuation Error (uncorrected)	—	—	0.25	0.45	dB
Phase Shift Range (6-Bits, 64 Steps 5.6 degrees Nominal)	—	—	—	353.4	Deg
RMS Phase Error (uncorrected)	—	—	2	3	Deg
Gain Variation (Over all Phase Shifter Settings)	—	—	+/- 1	+/- 1.5	dB
Input Third Order Intercept Point	TOI	7.5	8.5	—	dBm
Output Third Order Intercept Point	TOI	25.5	26.5	—	dBm
1-dB Compression Point	P _{1dB}	21.5	22.5	—	dBm
Noise Figure	—	—	10	—	dB
Non-Harmonic Spurious Output	—	—	—	-60	dBc

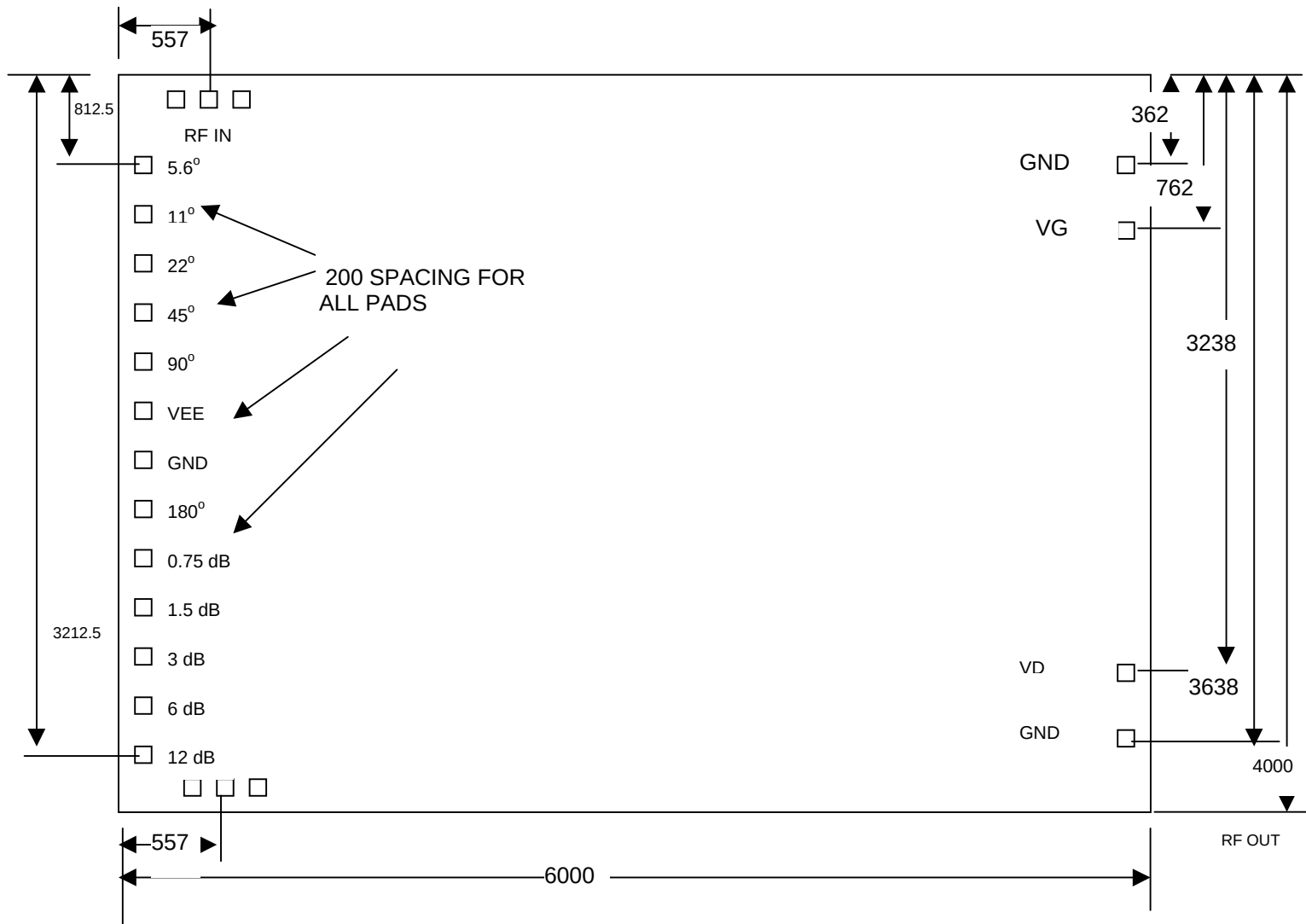
X-Band Parallel Input 5-Bit Attenuator / 6-Bit Phase Shifter / Buffer Amplifier Die - High Dynamic Range ITT373503D

ADVANCED INFORMATION

Characteristic	Symbol	Min	Typ	Max	Unit
DC Power Supplies					
Microwave					
Drain Supply Voltage	V_D	—	5	—	V
Gate Supply Voltage	V_G	—	-4	—	V
Drain Supply Current	I_D	295	340	385	mA
Gate Supply Current	I_G	1.0	1.5	2.0	mA
Digital					
Source Supply Voltage	V_{EE}	—	-4	—	V
Source Supply Current	I_{EE}	4	10	16	mA
Logic Levels at Input					
Input High Voltage	V_{ih}	3.0	—	—	V
Input Low Voltage	V_{il}	—	—	0.4	V
Input High Input Current	I_{ih}			0.5	mA
Input Low Input Current	I_{il}			0.1	mA
Timing Delay between enable signal and bit change			25	50	ns
Reliability (80 °C Baseplate)	MTTF	10^6			Hours



MECHANICAL INFORMATION



Notes:

Dimensions in microns

Pad dimensions	Bias Pad (Vd, Vg)	150umX150um
	Control Pads	125umX125um
Ground-RF-Ground Spacing		225um