mmTron
Unleashing the mmWave Frontier

TMC686-D
1-80 GHz Distributed Amplifier

Product Features

- RF frequency: 1 to 80 GHz
- Linear Gain: 13 dB
- Noise Figure: 7 dB
- Die Size: X=2.6 mm, Y=1.45 mm, Z=0.05mm
- DC Power: 5 VDC, 270 mA

Application

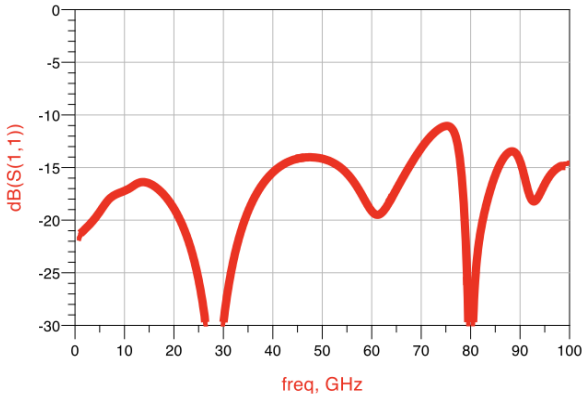
- Point-to-Point Radios and VSATs
- Test instrumentation
- Fiber Optics
- Military, EW and Space

Product Description

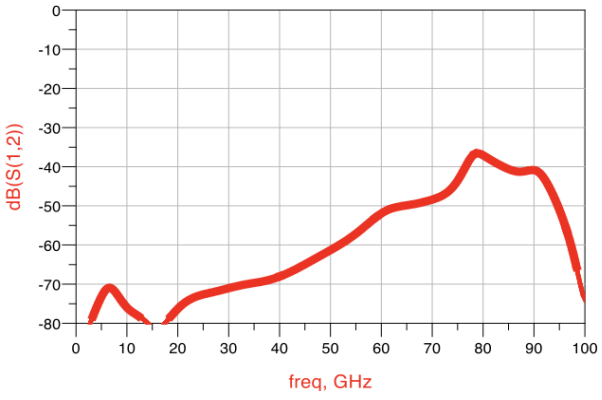
The TMC686D GaAs PHEMT Distributed amplifier is a broadband high gain device with positive gain slope, designed for use in Radios, Test instrumentation, Military, EW and Space applications. The TMC686D is a 50 W matched design providing 7dB of noise figure, offers excellent return loss at low-end for optical instrumentation, interface to photodiodes, and eliminates the need for RF port matching. Both bond pad and backside metallization are Au-based that is compatible with ribbon and wedge bonding and high conductivity epoxy and eutectic die attach methods.

Electrical Performance : **Vdd = 5 V, Vgg = -0.4 V, TA = 25 °C, F = 70 GHz**				
	min	**Typ**	**Max**	**Units**
Frequency	1		80	GHz
Gain		13		dB
P1dB		18		dBm
Psat		19		dBm
Noise Figure		7		dB
OIP3		26		dBm
Bias Voltage		5		V
Bias Current		230		mA

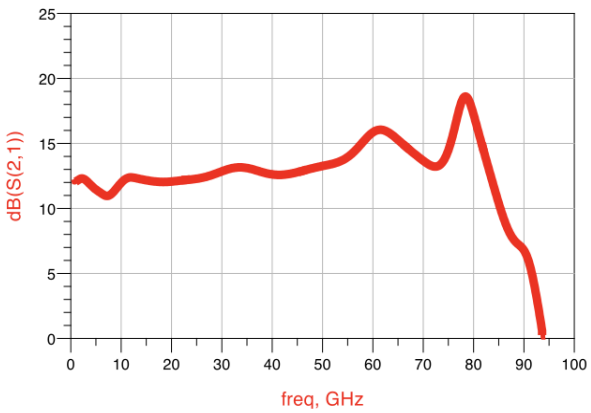
TMC685 Input Return Loss



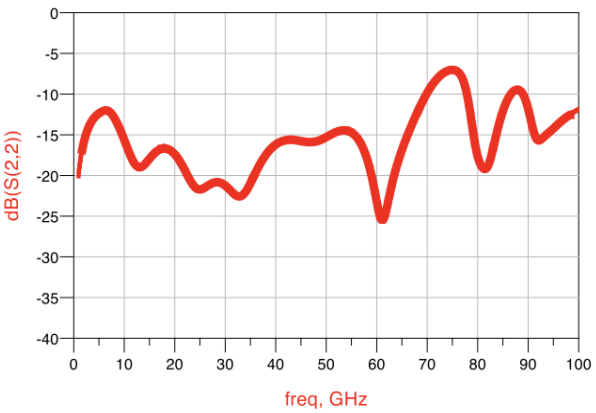
TMC685 Reverse Isolation



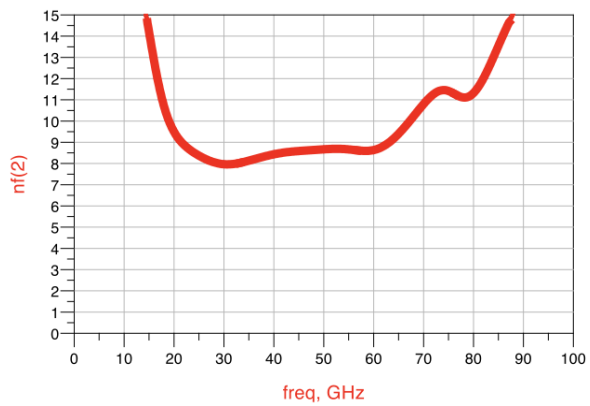
TMC685 Gain

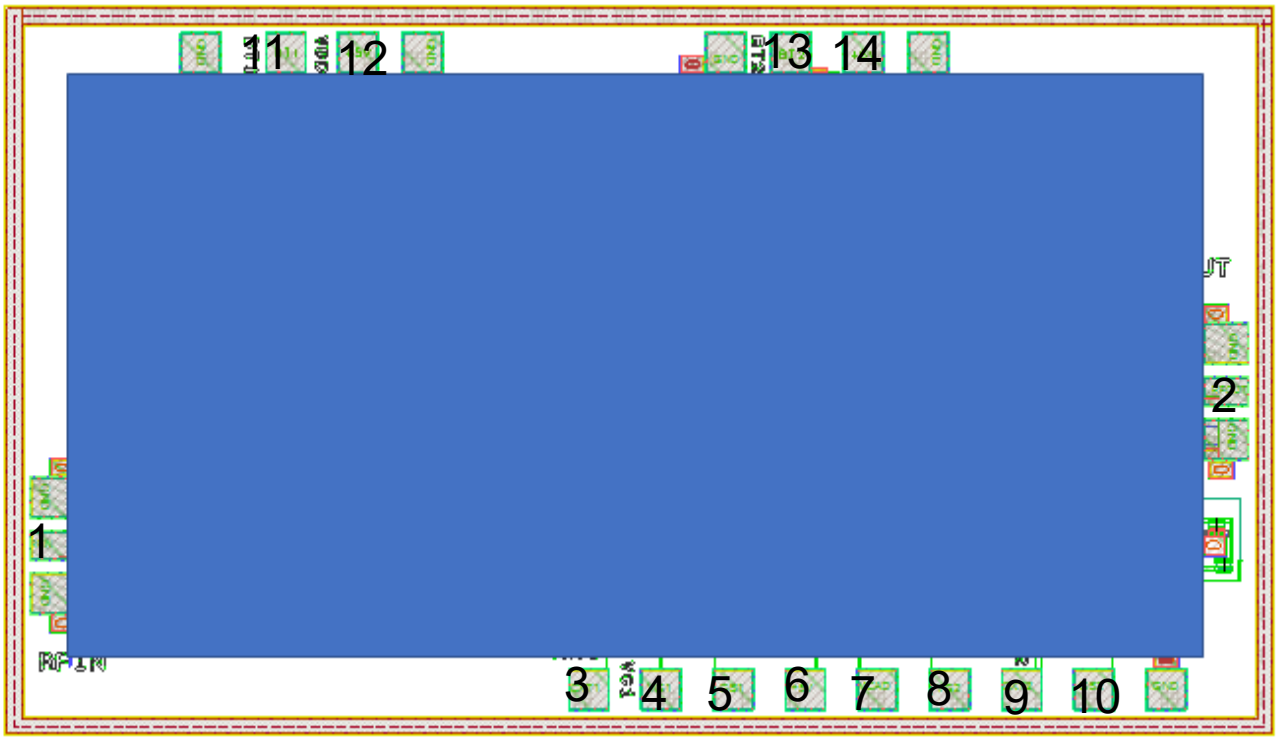


TMC685 Output Return Loss



TMC685 Noise Figure





Pad #	Function
1	RF INPUT
2	RF OUTPUT
3	CXT1
4	VG1
5	GS1
6,12,14	VDD
7	VCAD
8	VG2
9	CXT2
10	GS2
11	BT1
13	BT2



Electrostatic Discharge Caution

This integrated circuit can be damaged by ESD. mmTron Inc. recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications. III-V MMICs are ESD-sensitive. Preventative ESD measures must be employed in all aspects of storage, handling, and assembly. MMIC ESD precautions, handling considerations, and die-attach and bonding methods are critical factors in successful III-V MMIC performance and reliability.



RoHS Compliant

This part is RoHS compliant, meeting the requirements of the EU Restriction of Hazardous Substances Directive 2002/95/EC, commonly known as RoHS. Six substances are regulated: lead, mercury, cadmium, chromium VI (hexavalent chromium), polybrominated biphenyls (PBB), and polybrominated biphenyl ethers (PBDE). RoHS compliance requires that any residual concentration of these substances is below the Directive's maximum concentration values (MCV): cadmium 100ppm by weight and all others 1000ppm by weight.

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