



FEATURES

- 92-96 GHz (WR10 interface)
- 25.5/27 dBm P1dB/PSAT
- 12 dB gain
- RMS power detector
- Die temperature monitor
- Supplies: +5.0 V and -5 V
- Size: 51 x 38 x 42 mm

APPLICATIONS

- Radar and imaging
- Point-to-point communication
- Instrumentation
- Fiber over radio

DESCRIPTION

GBL0016 is a W-band power amplifier module based on GaAs MMIC technology. The module has internal voltage regulation and requires a supply voltage of +5 V and -5 V. RMS power detection and die temperature monitor outputs are available. The RF input and output ports are standard WR-10 waveguides.

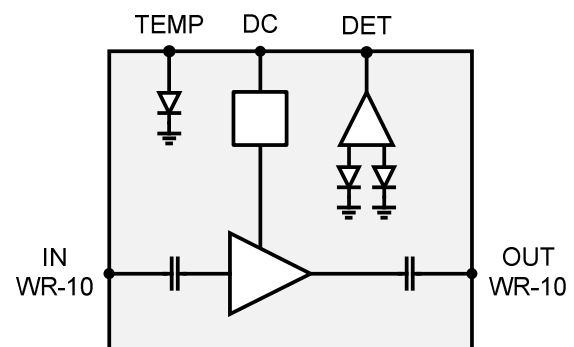


Figure 1. Module block diagram

ELECTRICAL SPECIFICATIONS

Table 1. Electrical specifications, backside temperature +25 °C, nominal bias

Parameter	Min	Typ	Max	Unit
Frequency Range (performance)	92		96	GHz
Frequency Range (extended)	85		100	GHz
Gain		12		dB
Gain Temperature Slope		-0.05		dB/°C
OP1dB		25.5		dBm
PSAT (3 dB compression)		27		dBm
PAE at PSAT (5.0 V supply)		5		%
OIP3		TBD		dBm
Input Return Loss		15		dB
Output Return Loss		15		dB
Detector Output at POUT (VRMS)	-10 dBm		3	mV
	0 dBm		20	
	10 dBm		100	
	20 dBm		500	
	30 dBm		2000	
PDC (quiescent)	5.0 V / 1.3 A		6500	mW

Table 2. Absolute maximum ratings

V+ supply	-20 to 20 V
V- supply	-20 to 20 V
Operating temperature	
Standard	+5 to +50 °C
Optional	-40 to +85 °C

PIN CONFIGURATION AND BIAS

Each module is supplied with the necessary connection cables (AWG22, 0.5 m).

The wires are color-coded for ease of use.

Table 3. Pin configuration

Pin No.	Reference	Supply (V)	Current (mA)	Function
1	V+	+5.0	~1300	Positive supply
2	V-	-5.0	~86	Negative supply
3	GND_PWR			V+ and V- GND
4*	GND_SIG			VRMS and VTEMP GND
5*	VRMS	See detector output		Detector output
6*	VTEMP	See temperature monitor		Die temperature output
7	NC			
8	NC			

* Pins 4, 5 and 6 can be left as no-connect if not used.

TEMPERATURE MONITOR

On-chip die temperature monitor output voltage (VTEMP) is 1210 mV (typ.) at +25 °C and -1.4 mV/°C.

DETECTOR OUTPUT

A temperature compensated RMS power detector is available.

The typical output voltage (VRMS) response vs output power is shown below.

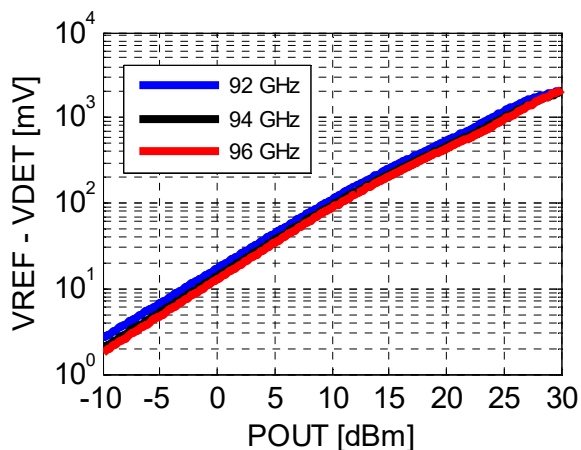


Figure 2. Detector output

TYPICAL PERFORMANCE

Unless otherwise noted, all data presented has been obtained at room temperature.

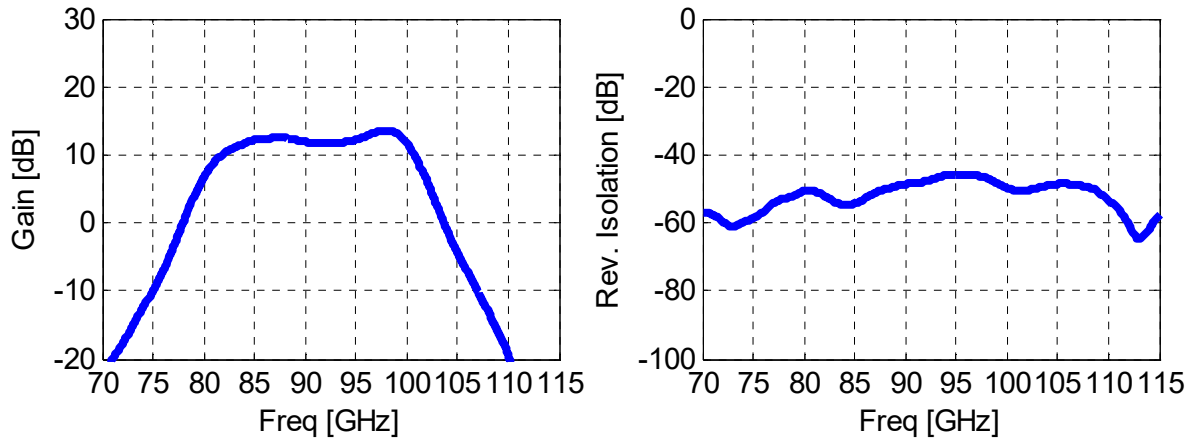


Figure 3. Gain (left) and reverse isolation (right)

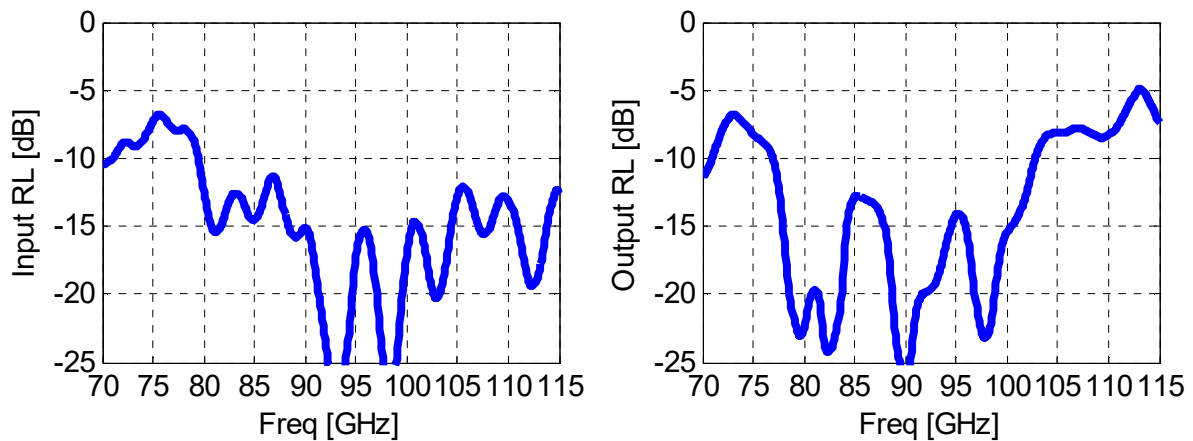


Figure 4. Input (left) and output return loss (right)

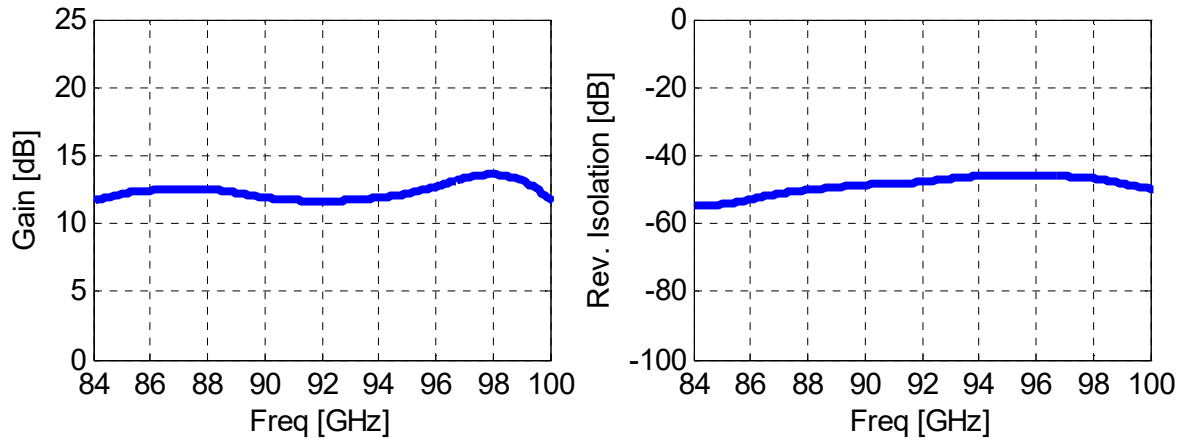


Figure 5. In-band gain (left) and reverse isolation (right)

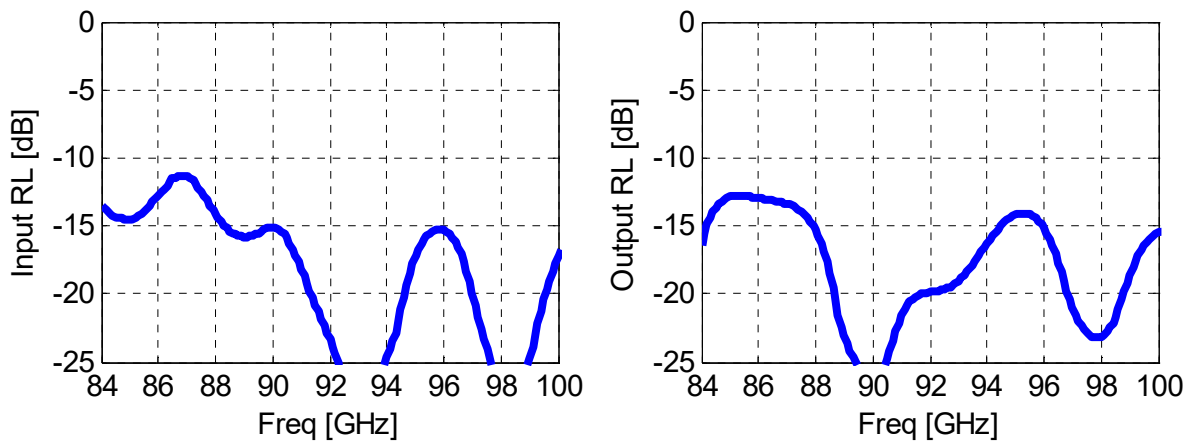


Figure 6. In-band input (left) and output return loss (right)

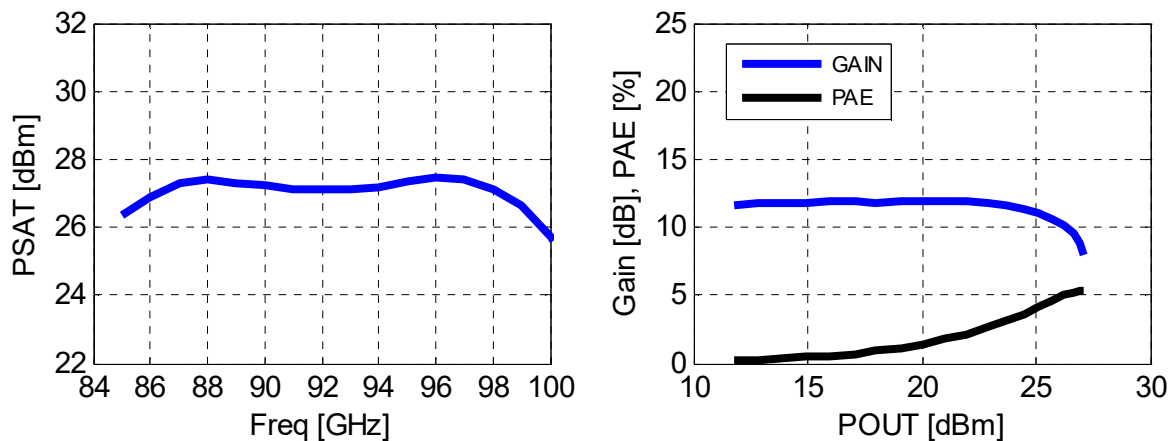


Figure 7. PSAT (left) and PAE at 94 GHz (right)

OUTLINE DRAWING

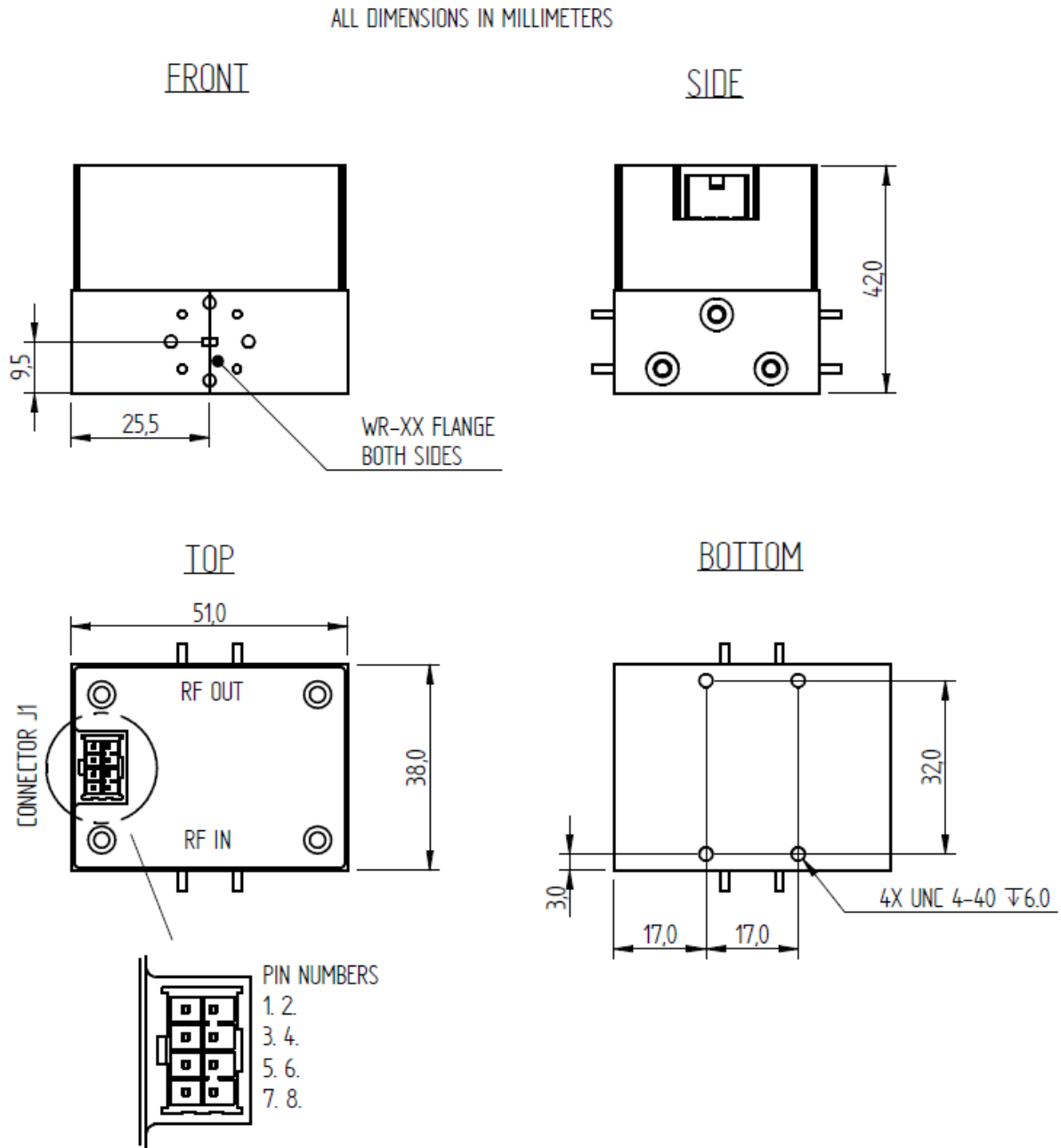


Figure 8. Outline drawing