Features

- V-band coverage
- P1dB/PSAT: 19.5/22.5 dBm
- Gain: 21 dB
- OIP3: 25.5dBm
- Size: 12 x 20 x 4 mm
- Evaluation board available

Typical Applications

- Point-to-point communication
- Instrumentation
- Active imaging
- General purpose

Description

gMTX0061 is a surface-mount GaAs transmitter for the 57-66 GHz frequency band. The transmitter offers a wide IF bandwidth from DC to 10 GHz suitable for direct conversion or IF modulation/demodulation. The package output has a WR-15 aperture for low-loss connection to a rectangular waveguide.

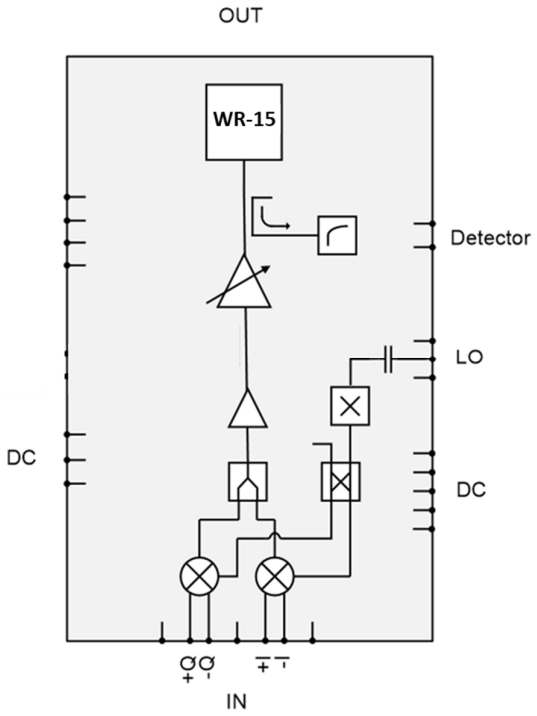

Figure 1. Block diagram

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ELECTRICAL PERFORMANCE

Table 1. Electrical performance T_A=25°C

Parameter	Min	Typ	Max	Unit
RF frequency (performance)	57		66	GHz
RF frequency (extended) [1]	52		72	GHz
IF frequency	DC		10	GHz
LO input frequency	8.7		12	GHz
LO input power		10		dBm
LO multiplication factor		6		
Max conversion gain		21		dB
Gain control range		25		dB
Gain temperature slope		-0.04		dB/°C
Image rejection ratio (IRR)		24		dB
OP1dB		19.5		dBm
PSAT		22.5		dBm
OIP3		25.5		dBm
RF return loss		10		dB
IF return loss		10		dB
LO return loss		10		dB
PDC (quiescent)		1.6		W

ABSOLUTE MAXIMUM RATINGS

Table 2. Absolute Maximum Ratings

Parameter	
Gate-source voltage	-2 to +0.7 V
Drain-source voltage	4.5 V
Gate-drain breakdown voltage	8 V
Operating temperature	-40 to + 85°C
Storage temperature	-65 to +150°C

[1] Operational, but full performance not guaranteed

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PIN CONFIGURATION AND BIAS

Always apply the gate supplies first followed by the drain supplies. It is recommended to initially set all gates to -1.6 V and adjust the gate supplies to obtain the specified drain currents. The typical gate voltage can vary by up to 0.2 V from what is noted. The drain currents are listed with all RF input signals off.

Note: Not connected (NC) pins are floating and must not be grounded.

Table 3. Pin functions and electrical settings

Pin	Reference	Supply (V)	Current (mA)	Function
1	NC			
2	NC			
3	NC			
4	NC			
5	NC			
6	NC			
7	NC			
8	NC			
9	NC			
10	VG_PD	0.9		Bias
11	NC			
12	VD2_VGA	3.3	150	Bias
13	VG2_VGA	-0.4 (typ)		Bias
14	VG1_VGA	-0.4 (typ)		Bias
15	VD1_VGA	2.5	112	Bias
16	NC			
17	NC			
18	NC			
19	NC			
20	VD_BUF	3.3	120	Bias
21	VG_BUF	-0.6 (typ)		Bias
22	VG_MIX	-0.7 (typ)		Bias
23	Q+	Zo = 100Ω differential impedance, DC-coupled		Input
24	Q-			Input
25	I+	Zo = 100Ω differential impedance, DC-coupled		Input
26	I-			Input
27	NC			
28	VG_AMP_X2	-0.5 (typ)	(80)	Bias
29	VD_AMP_X2	3.3	85 (80+5)	Bias
30	VG_X2	-0.9 (typ)	(5)	Bias
31	VD_X3	3.3	50	Bias

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32	VG_X3	-0.5 (typ)		Bias
33	LO	Zo = 50Ω, AC-coupled		LO
34	NC			
35	NC			
36	NC			
37	NC			
38	NC			
39	NC			
40	NC			
41	NC			
42	NC			
43	VREF_1			Detector reference
44	VDET_1			Detector output
45	NC			
46	NC			
47	NC			
48	RF OUT	WR-15		Output
49-61	GND			

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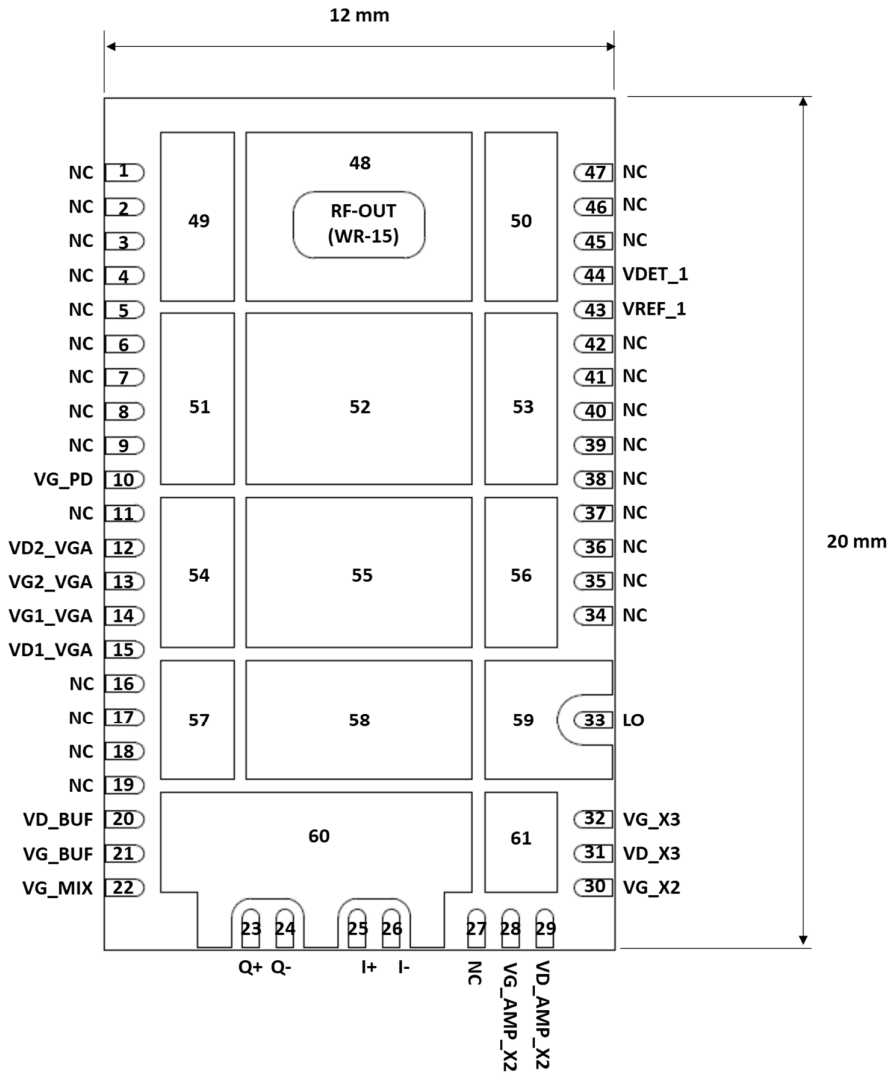

Figure 2. Pin configuration.