

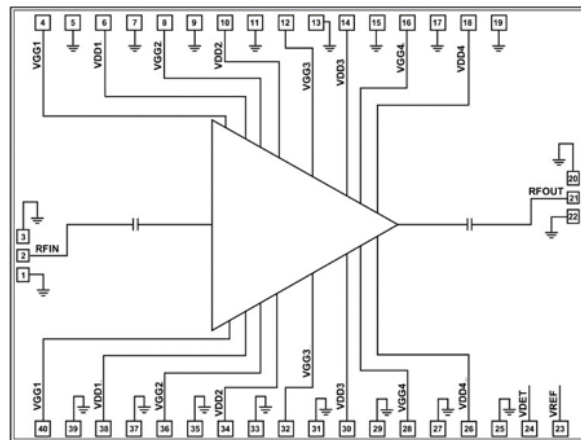
**Features**

- Frequency: 81-86GHz
- Maximum Gain : >18.5dB
- P1dB (@Max.gain): >24.5dBm
- Psat (@Max.gain): > 26dBm
- OIP3 (@Max.gain): > 32dBm
- Input standing wave: 15dB (typ.)
- Output standing wave: 15dB(typ.)
- Power Supply : 4.0V@800mA
- Die Size:3.8 x 3.0 x 0.05 mm

**Typical Applications**

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

**Functional Block Diagram**



**Electrical Specifications**

(T = -40°C~ +85°C) (VDD1=VDD2=VDD3=4V, adjust VGG1/VGG2/VGG3 so that IDD1+IDD2+IDD3=400mA; VDD4=4V, adjust VGG4 so that IDD4=400mA; VREF=VDET=4V)

Item	Unit	Test Condition	min	type	max
Frequency Range	GHz		81.00	/	86.00
Max.gain	dB	/	18.5		26.5
Gain Tuning Range	dB	@slew>10mA/dB	15.00	/	/
OIP3(At MAX gain) (Pout=18.5dBm/single tone)	dBm	tone separation:10M ~2G	32	/	/
OIP3(At gain=18.5dB)(Pout=18.5dBm/single tone)	dBm	/	29	/	/
OIP3(At gain=13.5dB)(Pout=10dBm/single tone)	dBm	/	24	/	/
OIP3(At gain=8.5dB)(Pout=5dBm/single tone)	dBm	/	19	/	/
OIP3(At gain=3.5dB)(Pout=0dBm/single tone)	dBm	/	14		



Output P1dB(At MAX gain)	dBm	/	24.5	/	/
Output Psat(At MAX gain)	dBm	/	26	/	/
Output P1dB(At gain=18.5dB)	dBm	/	23.5	/	/
Output Psat(At gain=18.5dB)	dBm	/	25	/	/
Output P1dB (At gain=13.5dB)	dBm	/	20	/	/
Output Psat (At gain=13.5dB)	dBm	/	21.5	/	/
Output P1dB (At gain=8.5dB)	dBm	/	14.5	/	/
Output Psat (At gain=8.5dB)	dBm	/	16	/	/
Output P1dB (At gain=3.5dB)	dBm	/	10		
Output Psat (At gain=3.5dB)	dBm	/	11.5		
NF(At MAX gain)	dB	/	/	/	8.00
NF(At gain=18.5dB)	dB	/	/	/	8.00
NF(At gain=13.5dB)	dB	/	/	/	11.50
NF(At gain=8.5dB)	dB	/	/	/	16.00
NF(At gain=3.5dB)	dB	/	/	/	20.50
Gain Flatness	dB	81GHz~86GHz		1.00	3.50
Input Return Loss	dB	/	/	-15.00	-10.00
Output Return Loss	dB	/	/	-15.00	-10.00
Input port impedance (Single-end)	Ohm		/	50.00	/
Output port impedance (Single-end)	Ohm		/	50.00	/
Band rejection (71~76GHZ)	dB		2	/	/
Isolation between PA input port and output port	dB	/	42.00	/	/
Detector Dynamic Range	dBm	(-4 <= Pout<= 25 dBm)	-4.00	/	25.00
Detector Vref-Vdet Sensitivity	mV/dB	(0<= Pout<=25dBm)	4.00	/	/
	mV/dB	(-4<= Pout<= 0dBm)	1.00	/	/
Detector Vref-Vdet max.voltage	V	@ 25dBm output	/	/	4.00
Detector Vref-Vdet min.voltage	mV	@ -4dBm output	10.00	/	/
PA_VD1/PA_VD2/PA_VD3/ PA_VD4	V	5% accuracy	3.80	4.00	4.20
PA_VG1/PA_VG2/PA_VG3	V	Adjust the grid voltage to ensure PA_VD1, PA_VD2, PA_VD3 current sum is 400mA, and further adjustment of the gate voltage to reduce the current provides 15dB dynamics;	-2.00	/	0.00

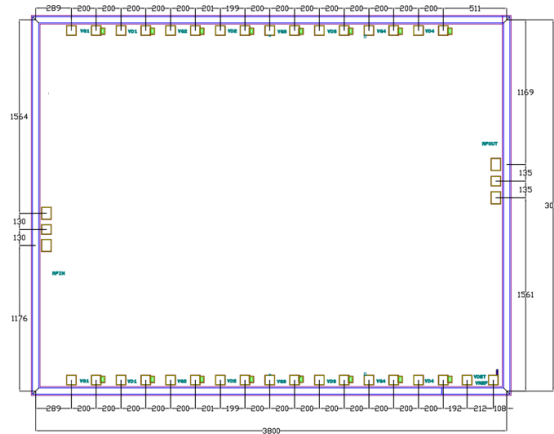


PA_VG4	V	Adjust the gate pressure to ensure that PA_VD4 current is 400mA;	-2.00	/	0.00
DC power Dissipation	W	Pout=25dBm	/	3.20	4.00
maximum Junction Temperature (Meets million hour life)	°C	/	185		
★Operating Temperature Range	°C	/	-40	/	85
★Storage Temperature Range	°C	/	-65	/	150
θjc	°C/W	/	17.2		
★Lifetime at max. Tj	Years		≥10		
VD	V	/	/	/	4.5
VG	V	/	-3	/	0.2
Peak Reflow Temperature	°C	/	260		
★ESD Sensitivity , HBM	V		≥250		
ESD Sensitivity ,CDM	V		≥250		

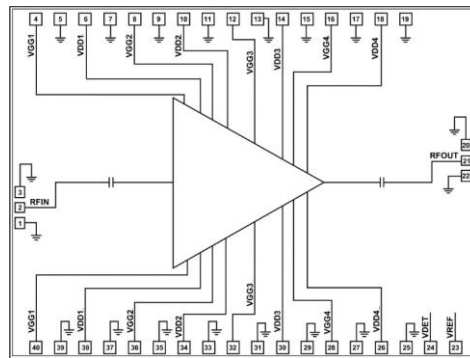
Absolute Maximum Ratings					
VD	V	/	/	/	4.5
VG	V	/	-3	/	0.2
Peak Reflow Temperature	°C	/	260		
★ESD Sensitivity ,HBM	V		≥110		
ESD Sensitivity ,CDM	V		≥110		



### Outline Drawing: All Dimensions in $\mu\text{m}$



### Pad Description



PAD	FUNCTION
2	RFIN
4	VGG1
6	VDD1
8	VGG2
10	VDD2
12	VGG3
14	VDD3
16	VGG4
18	VDD4
21	RFOUT
23	VREF
24	VDET
26	VDD4
28	VGG4
30	VDD3
32	VGG3
34	VDD2
36	VGG2
38	VDD1
40	VGG1



### Peripheral circuits

