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D10040230PH1

45-1000MHz GaAs/GaN PWR DBLR HYBRID

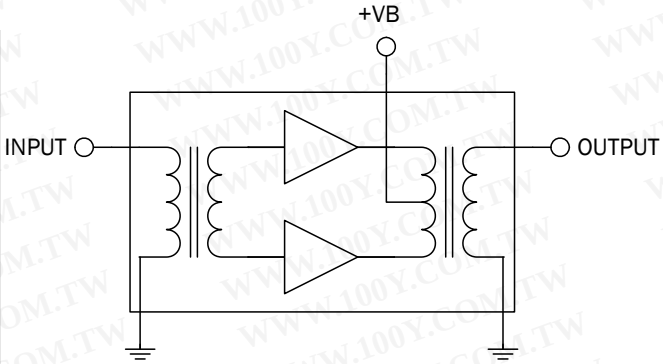
Package: SOT-115J

Product Description

The D10040230PH1 is a Hybrid Power Doubler amplifier module. The part employs GaAS pHEMT die and GaN pHEMT die, has high output capability, and is operated from 45MHz to 1000MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.

Optimum Technology Matching® Applied

- ☐ GaAs HBT
- ☐ GaAs MESFET
- ☐ InGaP HBT
- ☐ SiGe BiCMOS
- ☐ Si BiCMOS
- ☐ SiGe HBT
- ☑ GaAs pHEMT
- ☐ Si CMOS
- ☐ Si BJT
- ☑ GaN HEMT
- ☐ RF MEMS



Features

- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- Extremely High Output Capability
- 22.5dB Min. Gain at 1GHz
- 450mA Max. at 24VDC

Applications

- 45MHz to 1000MHz CATV Amplifier Systems

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					V_B= 24V; T_{MB}=30°C; Z_S=Z_L=75Ω
Power Gain	21.0	21.5	22.0	dB	f=45MHz
	22.5	23.0	24.0	dB	f=1000MHz
Slope [1]	1.0	1.5	2.5	dB	f=45MHz to 1000MHz
Flatness of Frequency Response			0.8	dB	f=45MHz to 1000MHz (Peak to Valley)
Input Return Loss	20			dB	f=45MHz to 320MHz
	19			dB	f=320MHz to 640MHz
	18			dB	f=640MHz to 870MHz
	16			dB	f=870MHz to 1000MHz
Output Return Loss	20			dB	f=45MHz to 320MHz
	19			dB	f=320MHz to 640MHz
	18			dB	f=640MHz to 870MHz
	17			dB	f=870MHz to 1000MHz
Noise Figure		3.0	4.0	dB	f=50MHz to 1000MHz
Total Current Consumption (DC)		430.0	450.0	mA	

1. The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.

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Absolute Maximum Ratings

Parameter	Rating	Unit
RF Input Voltage (single tone)	60	dBmV
DC Supply Over-Voltage (5 minutes)	30	V
Storage Temperature	-40 to +100	°C
Operating Mounting Base Temperature	-30 to +100	°C

Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

RoHS status based on EU Directive 2002/95/EC (at time of this document revision).

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Distortion data 40MHz to 550MHz					
CTB		-77	-74	dBc	79 ch 7dB tilted; V_O=50dBmV at 550MHz, plus 75 digital channels (-6dB offset)[2]
XMOD		-71	-68	dBc	79 ch 7dB tilted; V_O=50dBmV at 550MHz, plus 75 digital channels (-6dB offset)[2]
CSO		-71	-68	dBc	79 ch 7dB tilted; V_O=50dBmV at 550MHz, plus 75 digital channels (-6dB offset)[2]
CIN	63	66		dB	79 ch 7dB tilted; V_O=50dBmV at 550MHz, plus 75 digital channels (-6dB offset)[2]

2. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +43dBmV to +50dBmV tilted output level, plus 75 digital channels, -6dB offset relative to the equivalent analog carrier.
Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by the NCTA.
Composite Triple Beat (CTB) - The CTB parameter is defined by the NCTA.
Cross Modulation (XMOD) - Cross modulation (XMOD) is measured at baseband (selective voltmeter method), referenced to 100% modulation of the carrier being tested.
Carrier to Intermodulation Noise (CIN) - The CIN parameter is defined by ANSI/SCTE 17 (Test procedure for carrier to noise).

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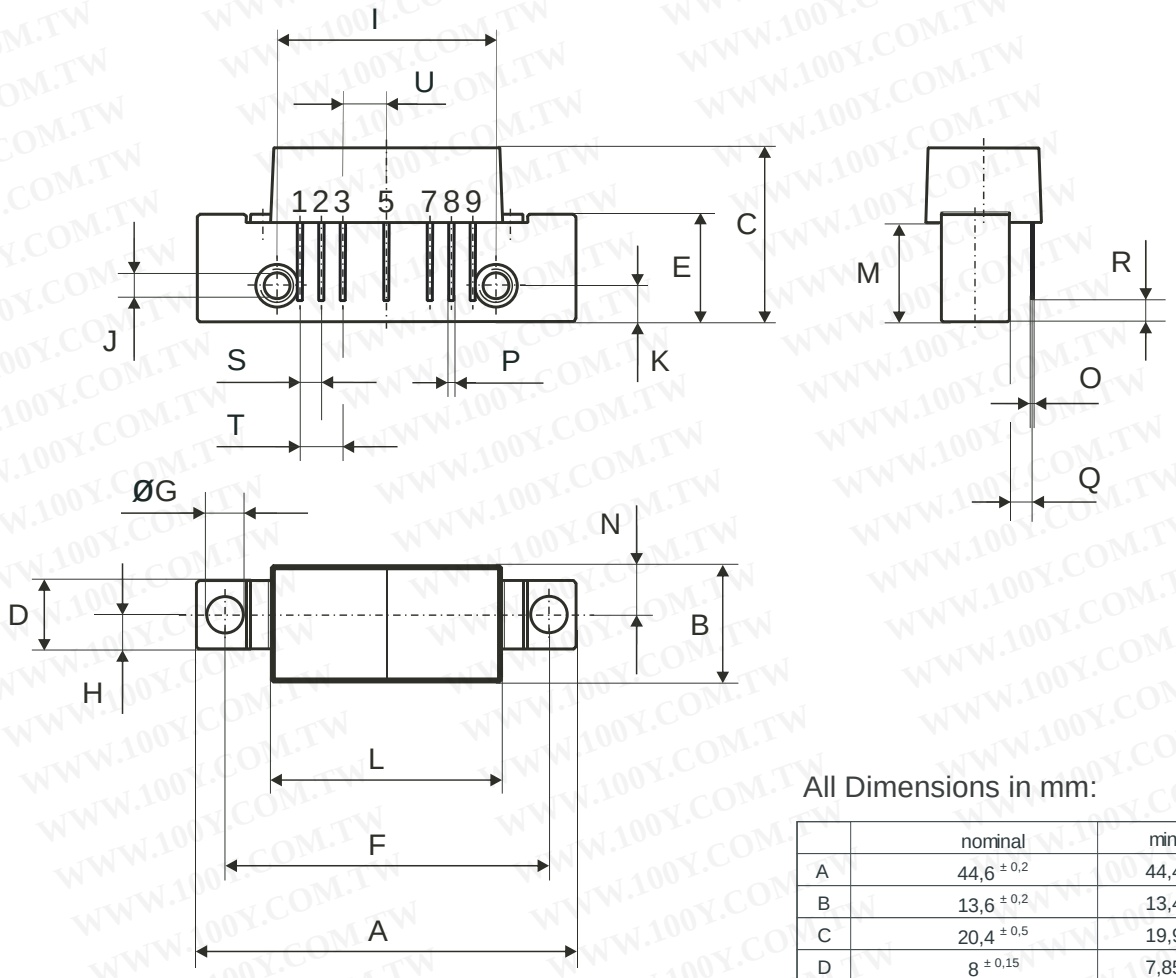
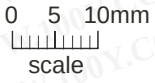


All Dimensions in mm:

	nominal	min	max
A	44,6 ± 0,2	44,4	44,8
B	13,6 ± 0,2	13,4	13,8
C	20,4 ± 0,5	19,9	20,9
D	8 ± 0,15	7,85	8,15
E	12,6 ± 0,15	12,45	12,75
F	38,1 ± 0,2	37,9	38,3
G	4 +0,2 / -0,05	3,95	4,2
H	4 ± 0,2	3,8	4,2
I	25,4 ± 0,2	25,2	25,6
J	UNC 6-32	-	-
K	4,2 ± 0,2	4,0	4,4
L	27,2 ± 0,2	27,0	27,4
M	11,6 ± 0,5	11,1	12,1
N	5,8 ± 0,4	5,4	6,2
O	0,25 ± 0,02	0,23	0,27
P	0,45 ± 0,03	0,42	0,48
Q	2,54 ± 0,3	2,24	2,84
R	2,54 ± 0,5	2,04	3,04
S	2,54 ± 0,25	2,29	2,79
T	5,08 ± 0,25	4,83	5,33
U	5,08 ± 0,25	4,83	5,33

Pinning:



1	2	3	4	5	6	7	8	9
INPUT	GND	GND		+VB		GND	GND	OUTPUT

Notes:

European Projection

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