



Product Description

The D8740180GTH is a Hybrid Power Doubler amplifier module. The part employs GaAs die and is operated from 40MHz to 870MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.

Features

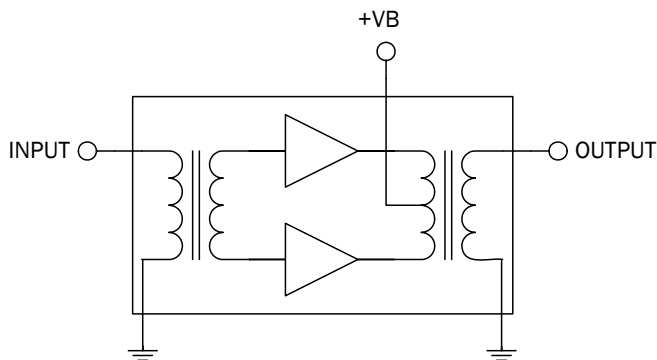
- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- 18.5dB Min. Gain at 870MHz
- 440mA Max. at 24VDC

Applications

- 40 MHz to 870 MHz CATV Amplifier Systems

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



| Parameter | Specification | | | Unit | Condition |
|--------------------------------|---------------|-------|-------|------|--|
| | Min. | Typ. | Max. | | |
| Overall | | | | | $V_B = 24V; T_{MB} = 30^\circ C; Z_S = Z_L = 75\Omega$ |
| Power Gain | 18.5 | | 20.0 | dB | f=870MHz |
| Slope ^[1] | 0.6 | 1.0 | 1.4 | dB | f=40MHz to 870MHz |
| Flatness of Frequency Response | | | 0.6 | dB | f=40MHz to 870MHz (Peak to Valley) |
| Input Return Loss | 20.0 | | | dB | f=40MHz to 320MHz |
| | 19.0 | | | dB | f=320MHz to 640MHz |
| | 17.0 | | | dB | f=640MHz to 870MHz |
| Output Return Loss | 20.0 | | | dB | f=40MHz to 320MHz |
| | 19.0 | | | dB | f=320MHz to 640MHz |
| | 18.0 | | | dB | f=640MHz to 870MHz |
| Noise Figure | | | 6.5 | dB | f=50MHz to 870MHz |
| Total Current Consumption (DC) | | 420.0 | 440.0 | mA | |

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

Absolute Maximum Ratings

| Parameter | Rating | Unit |
|-------------------------------------|-------------|------|
| RF Input Voltage (single tone) | 75 | 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).

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| Parameter | Specification | | | Unit | Condition |
|--|---------------|------|------|------|---|
| | Min. | Typ. | Max. | | |
| Distortion data 40 MHz to 870 MHz | | | | | $V_B = 24V, T_{MB} = 30^\circ C, Z_S = Z_L = 75\Omega$ |
| CTB | | -68 | -66 | dBc | 79 ch. flat; $V_O = 48\text{dBmV}^{[1]}$ |
| | | -62 | -60 | dBc | 112 ch. flat; $V_O = 48\text{dBmV}^{[2]}$ |
| | | -58 | -56 | dBc | 132 ch. flat; $V_O = 48\text{dBmV}^{[3]}$ |
| | | -66 | -64 | dBc | 79 ch. 7 dB tilted; $V_O = 53\text{dBmV}$ at 550 MHz ^[4] |
| | | -60 | -58 | dBc | 112 ch. 10 dB tilted; $V_O = 54\text{dBmV}$ at 750 MHz ^[5] |
| XMOD | | -62 | -60 | dBc | 79 ch. flat; $V_O = 48\text{dBmV}^{[1]}$ |
| | | -59 | -57 | dBc | 112 ch. flat; $V_O = 48\text{dBmV}^{[2]}$ |
| | | -57 | -55 | dBc | 132 ch. flat; $V_O = 48\text{dBmV}^{[3]}$ |
| | | -60 | -58 | dBc | 79 ch. 7 dB tilted; $V_O = 53\text{dBmV}$ at 550 MHz ^[4] |
| | | -53 | -51 | dBc | 112 ch. 10 dB tilted; $V_O = 54\text{dBmV}$ at 750 MHz ^[5] |
| CSO | | -70 | -68 | dBc | 79 ch. flat; $V_O = 48\text{dBmV}^{[1]}$ |
| | | -66 | -64 | dBc | 112 ch. flat; $V_O = 48\text{dBmV}^{[2]}$ |
| | | -64 | -62 | dBc | 132 ch. flat; $V_O = 48\text{dBmV}^{[3]}$ |
| | | -69 | -67 | dBc | 79 ch. 7 dB tilted; $V_O = 53\text{dBmV}$ at 550 MHz ^[4] |
| | | -65 | -63 | dBc | 112 ch. 10 dB tilted; $V_O = 54\text{dBmV}$ at 750 MHz ^[5] |

1. 79 channels, NTSC frequency raster: 55.25 MHz to 547.25 MHz, +48 dBmV flat output level.

2. 112 channels, NTSC frequency raster: 55.25 MHz to 745.25 MHz, +48 dBmV flat output level.

3. 132 channels, NTSC frequency raster: 55.25 MHz to 865.25 MHz, +48 dBmV flat output level.

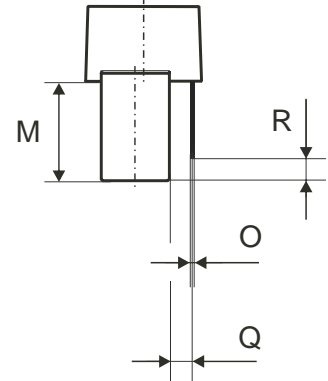
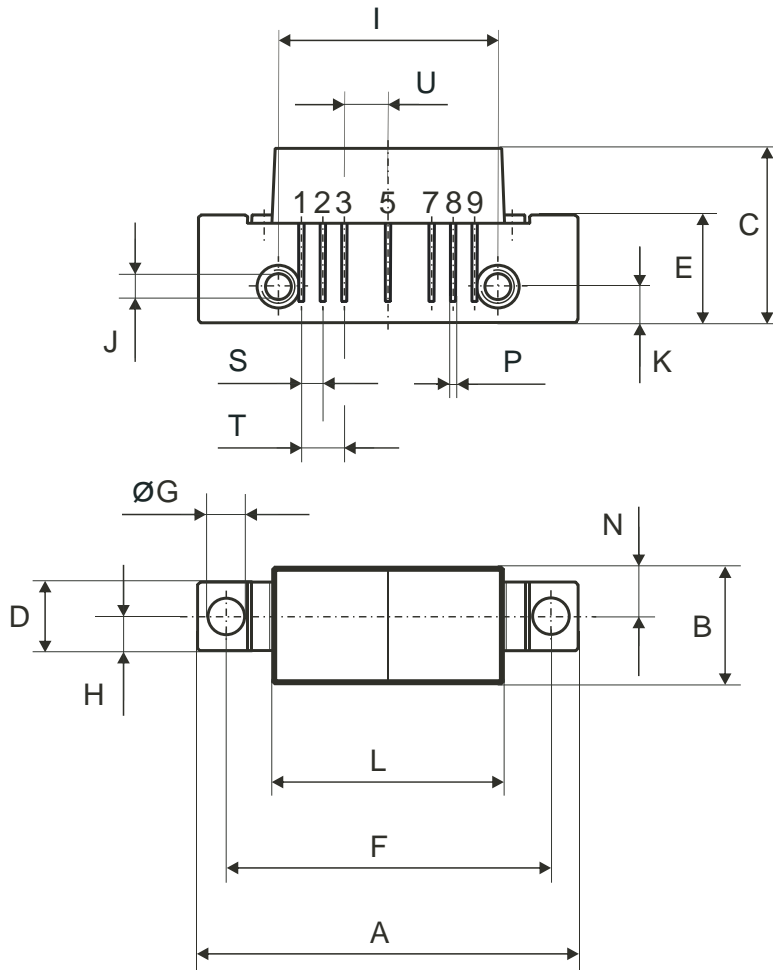
4. 79 channels, NTSC frequency raster; 55.25 MHz to 547.25 MHz, +46 dBmV to +53 dBmV tilted output level.

5. 112 channels, NTSC frequency raster: 55.25 MHz to 745.25 MHz, +44 dBmV to +54 dBmV tilted output level.

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.

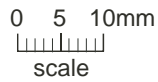


All Dimensions in mm:

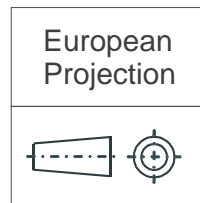
| | nominal | min | max |
|---|---------------------|-------|-------|
| A | 44,6 $\pm 0,2$ | 44,4 | 44,8 |
| B | 13,6 $\pm 0,2$ | 13,4 | 13,8 |
| C | 20,4 $\pm 0,5$ | 19,9 | 20,9 |
| D | 8 $\pm 0,15$ | 7,85 | 8,15 |
| E | 12,6 $\pm 0,15$ | 12,45 | 12,75 |
| F | 38,1 $\pm 0,2$ | 37,9 | 38,3 |
| G | 4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

Pinning:

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



Notes:



D8740180GTH



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