**Product Specification**

# D8740200GTH

**GaAs Power Doubler, 40 – 870MHz, 20.5dB min. Gain @ 870MHz, 440mA max. @ 24VDC**

## FEATURES

- Excellent linearity
- Superior return loss performance
- Extremely low distortion
- Optimal reliability
- Low noise
- Unconditionally stable under all terminations
- High output capability

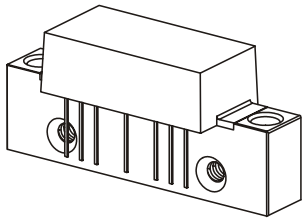
## APPLICATION

- 40 to 870 MHz CATV amplifier systems

## DESCRIPTION

- Hybrid Power Doubler amplifier module with high output capability employing GaAs die

**D8740200GTH**



**GaAs Power Doubler Hybrid**
**High Output Capability**
**40 – 870MHz**
**20.5dB min. Gain @ 870MHz**
**440mA max. @ 24VDC**

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134)

| SYMBOL | PARAMETER | MIN. | MAX. | UNIT |
|---|---|---|---|---|
| $V_i$ | RF input voltage (single tone) | - | 75 | dBmV |
| $V_{ov}$ | DC supply over-voltage (5 minutes) | - | 30 | V |
| $T_{stg}$ | storage temperature | - 40 | + 100 | °C |
| $T_{mb}$ | operating mounting base temperature | - 30 | + 100 | °C |

## CHARACTERISTICS

Table 1: S-Parameter, Noise Figure, DC Current; $V_B$ = 24V; $T_{mb}$ = 30°C; $Z_S = Z_L$ = 75 Ω

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $G_p$ | power gain | f = 50 MHz | 19.5 | 20.0 | 20.5 | dB |
| | | f = 870 MHz | 20.5 | 21.0 | 21.5 | dB |
| SL | slope [1)] | f = 40 to 870 MHz | 0.6 | 1.0 | 1.4 | dB |
| FL | flatness of frequency response | f = 40 to 870 MHz (Peak to Valley) | - | | 0.6 | dB |
| $S_{11}$ | input return loss | f = 40 to 320 MHz | 20.0 | | - | dB |
| | | f = 320 to 640 MHz | 19.0 | | - | dB |
| | | f = 640 to 870 MHz | 17.0 | | - | dB |
| $S_{22}$ | output return loss | f = 40 to 320 MHz | 20.0 | | - | dB |
| | | f = 320 to 640 MHz | 19.0 | | - | dB |
| | | f = 640 to 870 MHz | 18.0 | | - | dB |
| F | noise figure | f = 50 to 870 MHz | - | 5.5 | 6.5 | dB |
| $I_{tot}$ | total current consumption (DC) | | | 420.0 | 440.0 | mA |

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

## CHARACTERISTICS

Table 2: Distortion data 40 – 870 MHz; $V_B$ = 24V; $T_{mb}$ = 30°C; $Z_S = Z_L$ = 75 Ω

| SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|
| CTB | 79 ch. flat; Vo = 48 dBmV; [1] | - | - 68 | - 66 | dBc |
| | 112 ch. flat; Vo = 48 dBmV; [2] | - | - 62 | - 60 | |
| | 132 ch. flat; Vo = 48 dBmV; [3] | - | - 58 | - 56 | |
| | 79 ch. 7 dB tilted; Vo = 53 dBmV @ 550 MHz; [4] | - | - 66 | - 64 | |
| | 112 ch. 10 dB tilted; Vo = 54 dBmV @ 750 MHz; [5] | - | - 60 | - 58 | |
| XMOD | 79 ch. flat; Vo = 48 dBmV; [1] | - | - 62 | - 60 | dBc |
| | 112 ch. flat; Vo = 48 dBmV; [2] | - | - 59 | - 57 | |
| | 132 ch. flat; Vo = 48 dBmV; [3] | - | - 57 | - 55 | |
| | 79 ch. 7 dB tilted; Vo = 53 dBmV @ 550 MHz; [4] | - | - 60 | - 58 | |
| | 112 ch. 10 dB tilted; Vo = 54 dBmV @ 750 MHz; [5] | - | - 53 | - 51 | |
| CSO | 79 ch. flat; Vo = 48 dBmV; [1] | - | - 70 | - 68 | dBc |
| | 112 ch. flat; Vo = 48 dBmV; [2] | - | - 66 | - 64 | |
| | 132 ch. flat; Vo = 48 dBmV; [3] | - | - 64 | - 62 | |
| | 79 ch. 7 dB tilted; Vo = 53 dBmV @ 550 MHz; [4] | - | - 69 | - 67 | |
| | 112 ch. 10 dB tilted; Vo = 54 dBmV @ 750 MHz; [5] | - | - 65 | - 63 | |

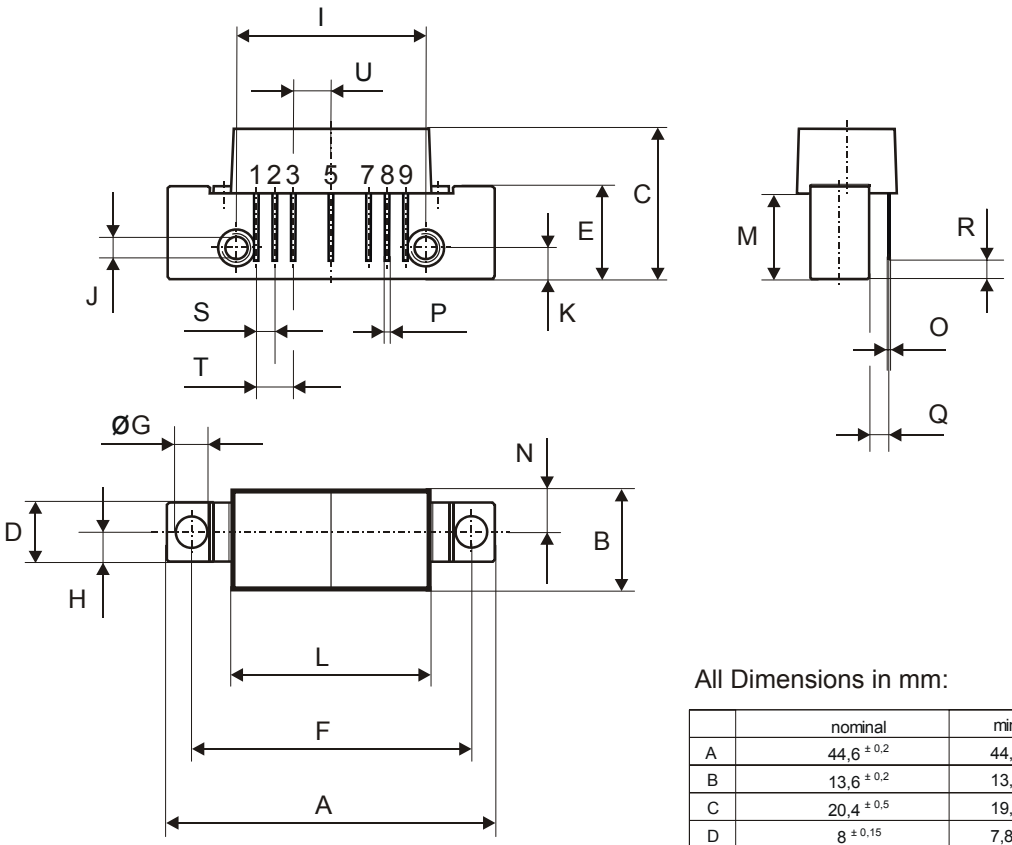
Notes:

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 ± 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 |

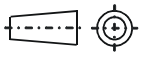
0 5 10mm
scale

Pinning:

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

Notes:

European Projection



## DEFINITIONS

| **Data Sheet Status** | |
|---|---|
| Objective Product Specification | This data sheet contains target or goal specifications for product development. |
| Preliminary Product Specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product Specification | This data sheet contains final product specifications. |
| **Limiting values** | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| **Application information** | |
| Where application information is given, it is advisory and does not form part of the specification. | |



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