



### Product Description

The D10040200GT is a Hybrid Power Doubler amplifier module. The part employs GaAs die and is operated from 40MHz to 1000MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.

### Features

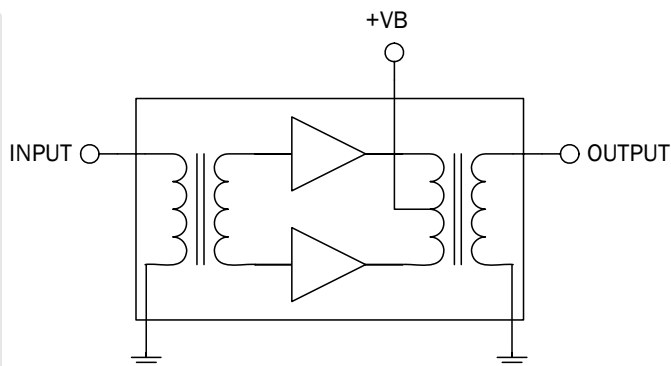
- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Unconditionally Stable Under All Terminations
- 20.0dB Min. Gain at 1GHz
- 375mA Max. at 24VDC

### Applications

- 40MHz to 1000MHz 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.  |      |  |
| <b>Overall</b>                 |               |       |       |      | $V_B = 24V; T_{MB} = 30^\circ C; Z_S = Z_L = 75\Omega$ |
| Power Gain                     | 19.5          | 20.0  | 20.5  | dB   | f=50MHz  |
|                                | 20.0          | 21.5  | 22.0  | dB   | f=1000MHz  |
| Slope [1]                      | 1.0           | 1.5   | 2.0   | dB   | f=40MHz to 1000MHz                                     |
| Flatness of Frequency Response |               |       | 0.8   | dB   | f=40MHz to 1000MHz (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                                     |
|                                | 16.0          |       |       | dB   | f=870MHz to 1000MHz                                    |
| Output Return Loss             | 20.0          |       |       | dB   | f=40MHz to 320MHz                                      |
|                                | 19.0          |       |       | dB   | f=320MHz to 640MHz                                     |
|                                | 18.0          |       |       | dB   | f=640MHz to 870MHz                                     |
|                                | 17.0          |       |       |      | f=870MHz to 1000MHz                                    |
| Noise Figure                   |               | 5.5   | 6.5   | dB   | f=50MHz to 1000MHz                                     |
| Total Current Consumption (DC) |               | 350.0 | 375.0 | 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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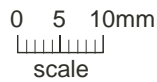
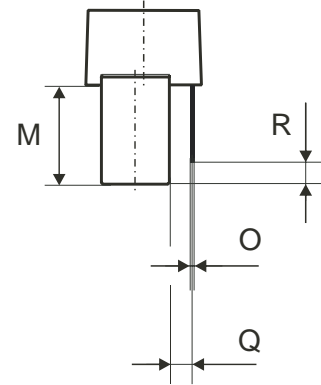
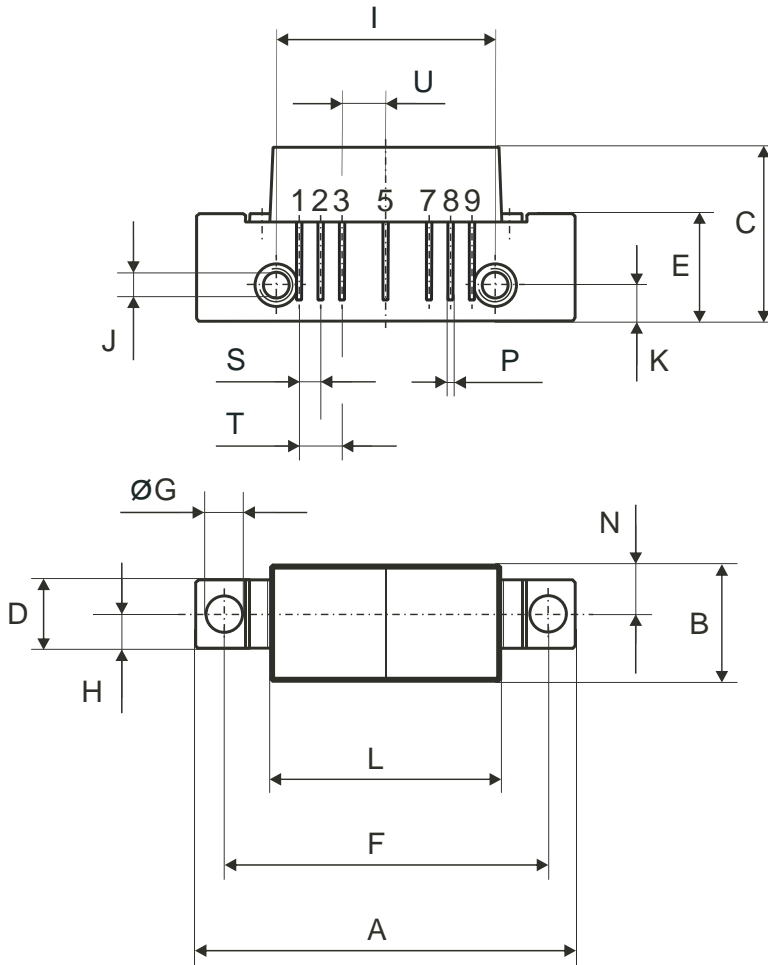
| Parameter                              | Specification |      |      | Unit | Condition  |
|--|---------------|------|------|------|--|
|  | Min.          | Typ. | Max. |      |  |
| <b>Distortion data 40MHz to 870MHz</b> |               |      |      |      | $V_B = 24V$ ; $T_{MB} = 30^\circ C$ ; $Z_S = Z_L = 75\Omega$ |
| CTB                                    |               | -64  | -62  | dBc  | 132 ch flat; $V_O = 44 \text{ dBmV}^{[2]}$                   |
| XMOD                                   |               | -60  | -58  | dBc  | 132 ch flat; $V_O = 44 \text{ dBmV}^{[2]}$                   |
| CSO                                    |               | -65  | -63  | dBc  | 132 ch flat; $V_O = 44 \text{ dBmV}^{[2]}$                   |

2. 132 channels, NTSC frequency raster: 55.25MHz to 865.25MHz, +44dBmV flat 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.

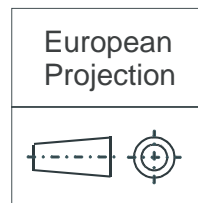
Cross Modulation (XMOD) - Cross modulation (XMOD) is measured at baseband (selective voltmeter method), referenced to 100% modulation of the carrier being tested.



**Pinning:**

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

**Notes:**



**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  |

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