

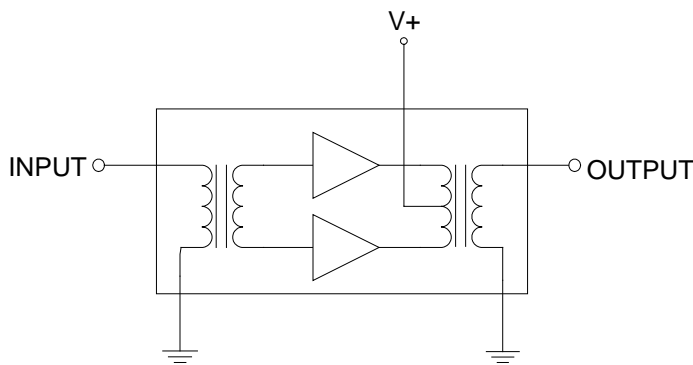
### Product Description

The QPA3350 is a Hybrid Power Doubler amplifier module. The part employs GaAs/GaN die and is operated from 45 MHz to 1003 MHz. It provides excellent linearity and superior return loss performance with low noise and optimal reliability.



Package: SOT-115J

### Functional Block Diagram



### Product Features

- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Extremely Low Noise
- Unconditionally Stable Under all Terminations
- 24.5dB Min Gain at 1003 MHz
- 480 mA Max. at 24 VDC

### Applications

- 45 – 1003 MHz CATV Amplifier Systems

### Ordering Information

| Part No. | Description     |
|----------|-----------------|
| QPA3350  | Box with 50 pcs |
|          |                 |
|          |                 |
|          |                 |
|          |                 |
|          |                 |

## QPA3350 Absolute Maximum Ratings

| Parameter                           | Value / Range |
|-------------------------------------|---------------|
| 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 |

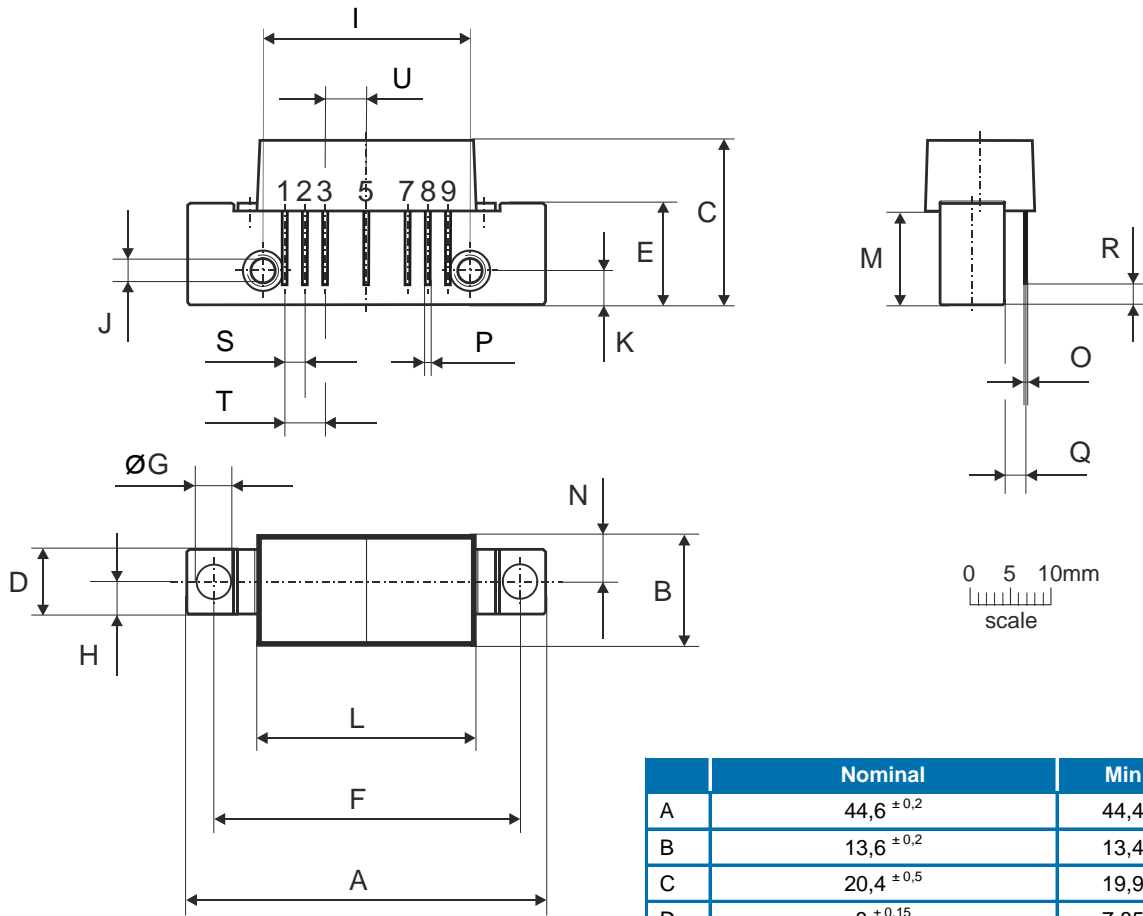
Operation of this device outside the parameter ranges given above may cause permanent damage.

## Electrical Specifications

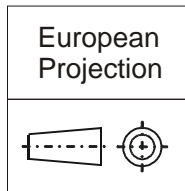
| Parameter                   | Test Conditions: $V_+ = 24V$ , $T_{MB} = 30^\circ C$ , $Z_S = Z_L = 75\Omega$   | Min  | Typ  | Max  | Unit |
|-----------------------------|---|------|------|------|------|
| Operational Frequency Range | –   | 40   | –    | 1003 | MHz  |
| Gain                        | $f_o = 50$ MHz  | 23.3 | 23.8 | 24.3 | dB   |
| Gain                        | $f_o = 1003$ MHz  | 24.5 | 25.0 | 26.0 |      |
| Gain Slope                  | 40 to 1003 MHz <sup>[1]</sup>   | 0.5  | 1.0  | 2.0  |      |
| Gain Flatness               | 40 to 1003 MHz  |      |      | 0.8  |      |
| Input Return Loss           | $f_o = 40$ to 320 MHz   | 20   |      | –    | dB   |
|                             | $f_o = 320$ to 640 MHz  | 19   |      | –    |      |
|                             | $f_o = 640$ to 870 MHz  | 18   |      | –    |      |
|                             | $f_o = 870$ to 1003 MHz   | 17   |      | –    |      |
| Output Return Loss          | $f_o = 40$ to 320 MHz   | 20   |      | –    | dB   |
|                             | $f_o = 320$ to 640 MHz  | 19   |      | –    |      |
|                             | $f_o = 640$ to 870 MHz  | 18   |      | –    |      |
|                             | $f_o = 870$ to 1003 MHz   | 17   |      | –    |      |
| Noise Figure                | $f_o = 50$ to 1003 MHz  | –    |      | 4.0  | dB   |
| IDC                         |   |      | 470  | 480  | mA   |
| CTB                         |   |      | -73  | -68  | dBc  |
| XMOD                        | $V_o = 61.0$ dBmV at 1000MHz, 18dB extrapolated tilt, 79 analog channels plus 75 digital channels (-6dB offset) <sup>[2][4]</sup>   |      | -65  | -60  | dBc  |
| CSO                         |   |      | -76  | -70  | dBc  |
| CIN                         |   | 55   | 60   |      | dB   |
| CTB                         |   |      | -77  |      | dBc  |
| XMOD                        | $V_o = 56.4$ dBmV at 1000MHz, 13.4dB extrapolated tilt, 79 analog channels plus 75 digital channels (-6dB offset) <sup>[3][4]</sup> |      | -75  |      | dBc  |
| CSO                         |   |      | -77  |      | dBc  |
| CIN                         |   |      | 66   |      | dB   |

1. The slope is defined as the difference between the gain at the start frequency and the gain at the stop frequency.
2. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +43dBmV to +52.4dBmV tilted output level, plus 75 digital channels, -6dB offset relative to the equivalent analog carrier.
3. 79 analog channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +43dBmV to +50.0dBmV tilted output level, plus 75 digital channels, -6dB offset relative to the equivalent analog carrier.
4. Composite Triple Beat (CTB) - The CTB parameter is defined by ANSI/SCTE 6.  
Composite Second Order (CSO) - The CSO parameter (both sum and difference products) is defined by ANSI/SCTE 6.  
Cross Modulation (XMOD) - Cross modulation (XMOD) is defined by ANSI/SCTE 58, 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).

Package Drawing (Dimensions in millimeters)



Notes:



Pinning:

| Pin | Name   |
|-----|--------|
| 1   | Input  |
| 2-3 | GND    |
| 4   |        |
| 5   | V+     |
| 6   |        |
| 7-8 | GND    |
| 9   | Output |

|   | 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  |

## Handling Precautions

| Parameter                    | Rating | Standard                   |
|------------------------------|--------|----------------------------|
| ESD – Human Body Model (HBM) | 1C     | ANSI/ESD/JEDEC JS-001-2012 |



Caution!  
ESD-Sensitive Device

## RoHS Compliance

This part is compliant with 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) as amended by Directive 2015/863/EU.

## Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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