

## BT00100-Gamma 5MHz-400MHz 100W

- Scientific and Industrial Applications



The BT-Gamma series is a range of class AB RF power amplifiers covering the 5MHz to 400MHz frequency range.

- Rugged, solid-state design - high reliability
- Extremely high phase and amplitude stability
- Very fast pulse rise/fall times
- High linearity
- Very low interpulse noise
- Competitively priced

### RF Specifications

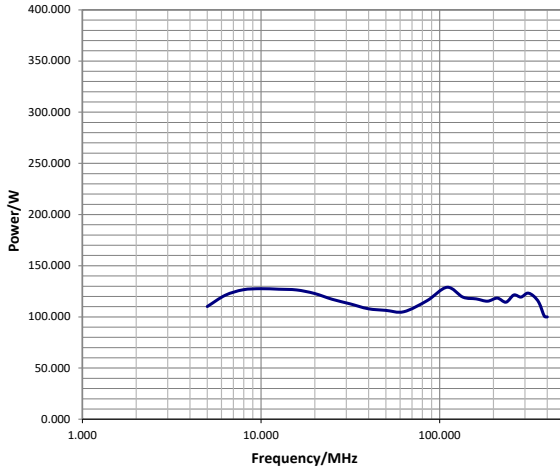
|                           |  |
|---------------------------|--|
| Type                      | Class AB MOSFET  |
| Rated Power               | 100W minimum<br>PEP for input power of 0dBm  |
| P1dB                      | 80W minimum<br>Minimum output power at P1dB compression  |
| Gain                      | 50dB minimum   |
| Frequency                 | 5MHz-400MHz  |
| Gain flatness             | ±2dB maximum (measured at 1/10th rated output power)   |
| Max. duty cycle           | 20%<br>Maximum GATE duty cycle   |
| Max. pulse width          | 300ms<br>Maximum GATE pulse width  |
| Rated power in CW mode    | 10W<br>CW operation is automatically available at output power level less than approx. 10% of full rated power   |
| Pulse droop               | 0.5dB maximum<br>Measured at max. pulse width at P1dB level  |
| Pulse rise and fall times | Risetime: 200ns typical<br>Falltime: 100ns typical<br>using a pre-gated RF input signal  |
| Gate rise and fall times  | Risetime: 300ns typical<br>Falltime: 150ns typical   |
| Gate delay                | Rising edge: 1µs typical<br>Falling edge: 500ns typical<br>Rising edge measured from rising edge of GATE pulse to 90% RF output voltage.<br>Falling edge measured from falling edge of GATE pulse to 10% RF output voltage |
| Harmonics                 | Odd: -16dBc typical, -10dBc max.<br>Even: -30dBc typical, -20dBc max.<br>Measured at 1dB below rated output power  |
| Spurious                  | <-70dBc maximum  |
| Output noise (blanked)    | <10dB above thermal (100kHz bandwidth)   |
| Output sample             | -50dB into 50 Ω (forward voltage sample)   |
| Input/output impedance    | 50 Ω nominal   |
| Load VSWR                 | Tolerates at least 3:1 @ full rated power without shut down  |
| Gain control range        | 10dB minimum for 0-5V control voltage<br>Control via parallel interface  |
| RF Input                  | 0dBm nominal, 10dBm for no damage  |
| GATE (blanking)           | Logic low = Blank, logic high = unblank. CMOS and TTL compatible   |

### Electrical Specifications

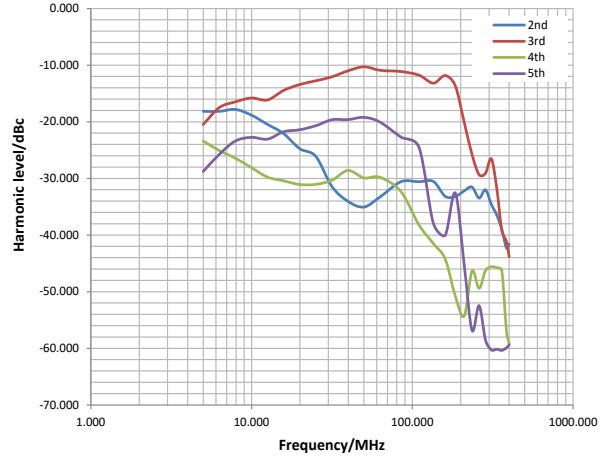
|                      |   |
|----------------------|---|
| Mains supply voltage | 110-240V, 50-60Hz, single phase           |
| Rated Power          | 500VA maximum                             |
| Mains inlet          | 1 x IEC inlet (mains power cord supplied) |

## Typical Performance Plots

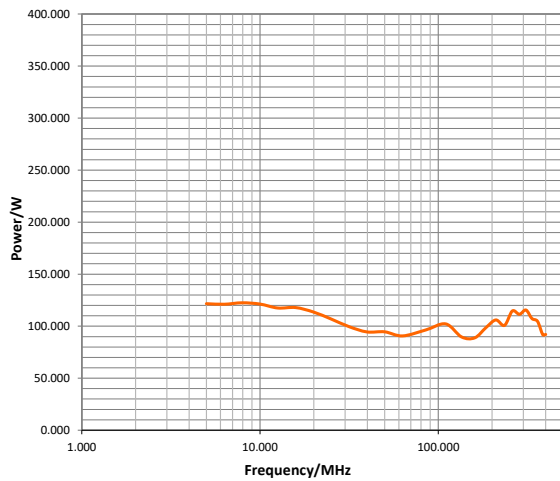
Peak output power for 0dBm RF drive



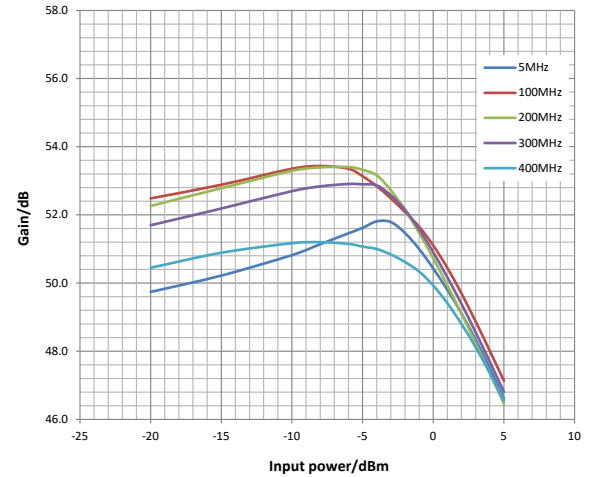
Harmonics



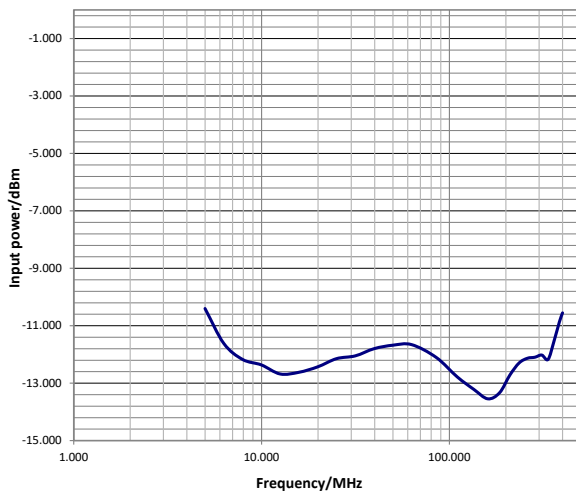
Peak output power at 1dB compression



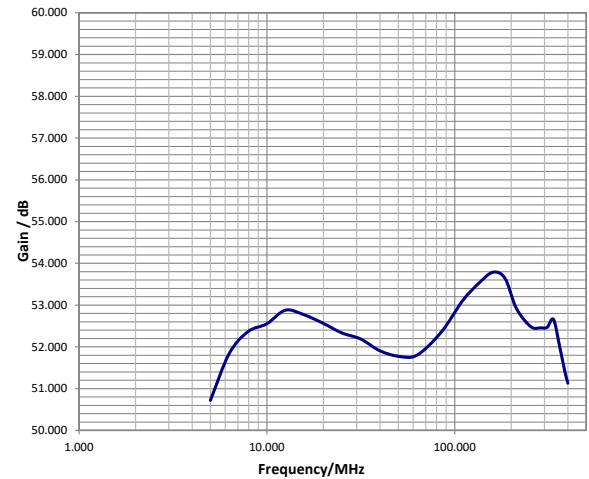
Gain as a function of input power



Maximum input power for auto-CW operation



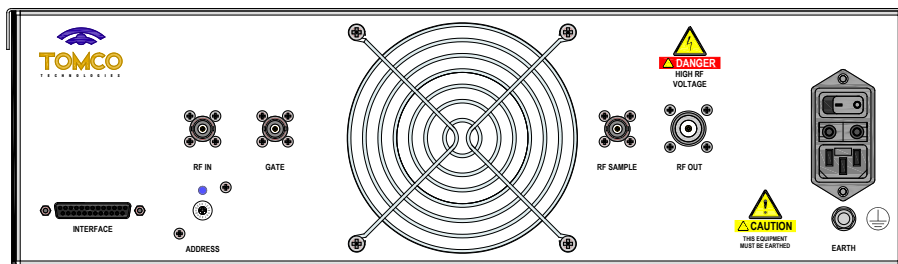
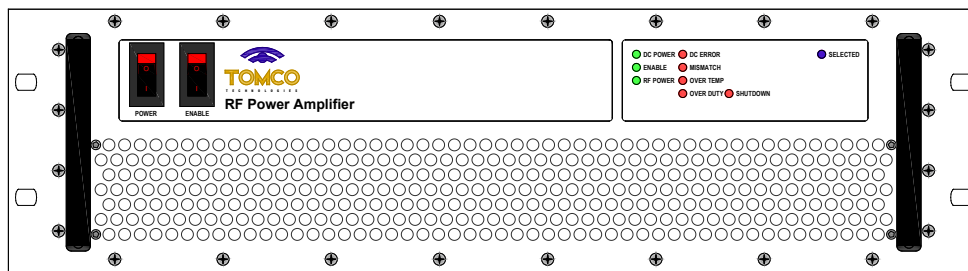
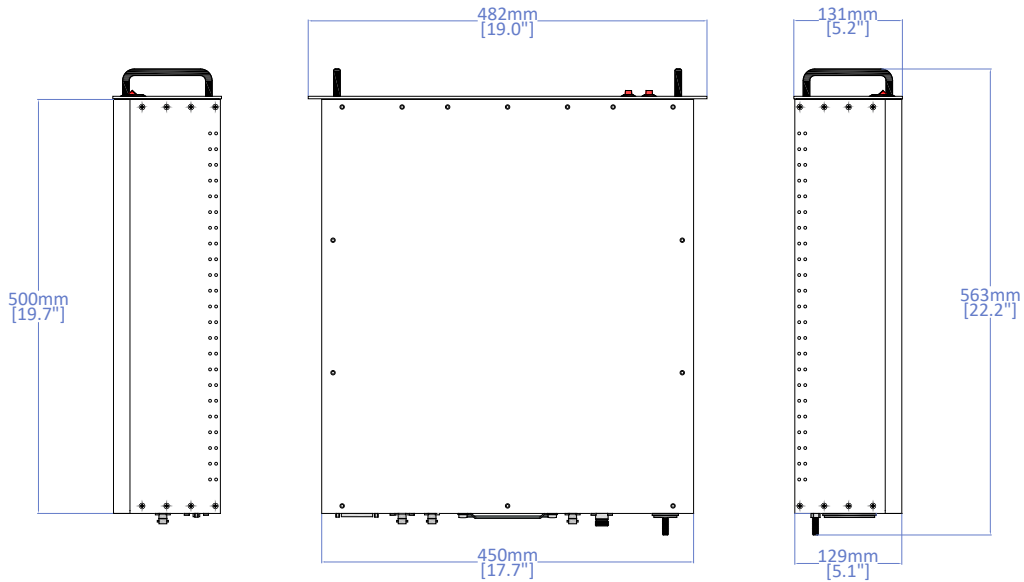
Small signal gain measured at 10% of maximum rated power



# RF Amplifier Data Sheet

## Mechanical Specifications

|                          |  |
|--------------------------|--|
| Connectors               | RF IN: BNC female<br>GATE: BNC female<br>RF SAMPLE: BNC female<br>RF OUT: N type female<br>INTERFACE: DB25 female<br><br>Other connectors types available on request |
| Dimensions               | Chassis size: 450mmW (17.7"W) x 500mmD (19.7"D) x 129mmH (5.1"H)<br>Total size: 482mmW (19"W) x 563mm (22.2"D) x 131mm (5.2"H)<br>Rack compatibility: 19" 3RU        |
| Weight                   | approx. 13kg (28lbs)   |
| Enclosure classification | IP20   |







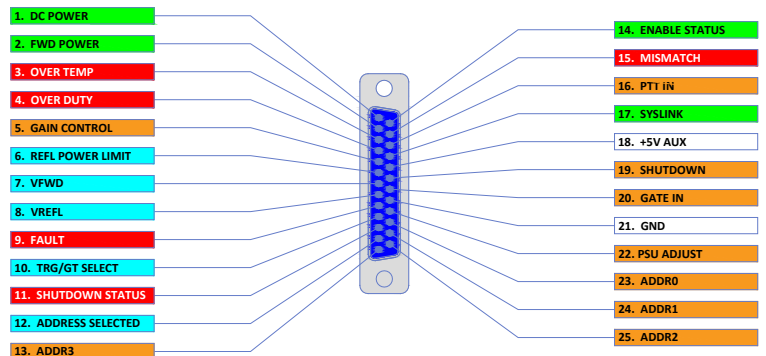
## Protection

|                  |   |
|------------------|---|
| Load VSWR        | Tolerates up to VSWR 3:1 at full rated power without shutdown<br>Self-resetting shutdown protection activates if VSWR limits are exceeded   |
| Over temperature | Self-resetting shutdown protection activates if thermal limits are exceeded   |
| Duty cycle       | Duty cycle limit is determined from the GATE signal duty cycle. Self-resetting shutdown protection activates if duty cycle limit is exceeded<br>If output power is less than approx. 10% of maximum rated power, duty cycle protection is disabled and auto-CW operation is available |
| Pulse width      | Pulse width limit is determined from the GATE signal pulse width. Self-resetting shutdown protection activates if pulse width limit is exceeded   |

## Monitoring and Control

|                      |  |
|----------------------|--|
| Front panel switches | Power (turns on DC power)<br>Enable (enables RF)   |
| Front panel LEDs     | <ul style="list-style-type: none"> <li>• DC POWER</li> <li>• ENABLE</li> <li>• RF POWER</li> <li>• DC ERROR</li> <li>• MISMATCH</li> <li>• OVER TEMP</li> <li>• OVER DUTY</li> <li>• SELECTED</li> <li>• SHUTDOWN</li> </ul> |
| Parallel interface   | 25-pin D-connector (pinout available at <a href="http://www.tomcorf.com/pdf/interface.pdf">www.tomcorf.com/pdf/interface.pdf</a> )*  |

-  Output signal indicating normal operation
-  Output signal indicating fault condition
-  Output signal for information only
-  Input signal



\*Some functions may be unavailable on select amplifier models

## Environmental

|                                 |  |
|---------------------------------|--|
| General                         | Intended for use only in controlled, indoor environment. Non-consumer product for industrial and scientific use. This product is not authorised for stand-alone on-air use. Additional systems, hardware and considerations are required to meet local spectral management regulations. Compliance of the final complete system is the responsibility of the end user. |
| Cooling                         | Forced air, front to rear  |
| Operating temperature           | +5°C to +40°C  |
| Storage temperature             | -20°C to +60°C   |
| Humidity                        | 80% for temperature up to 31°C, decreasing linearly to 50% relative humidity at 40°C   |
| Operating altitude              | Up to 2000m  |
| Pollution degree                | 2  |
| Transient voltage compatibility | Category II, in line with IEC 60364-4-44:2007  |
| Electromagnetic compatibility   | In line with IEC61326-1:2012<br>ISM equipment, Group 1, Class A<br>For use only in shielded areas. ENC55011 (CISPR 11) limits exceeded by up to 40dB   |
| Safety                          | In line with IEC61010-1:2010   |
| Electromagnetic field strength  | In line with ICNIRP Guidelines: 1998, occupational limits  |

BT00100-Gamma

Change record

| Document/Issue number | Originator | Date       | Change   |
|-----------------------|------------|------------|----------|
| DS006679A             | JR         | 31/07/2018 | Original |
| DS006679B             | LS         | 03/09/2020 | p.4:E    |
| DS006679C             | LS         | 12/01/2021 | p.1:H    |
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