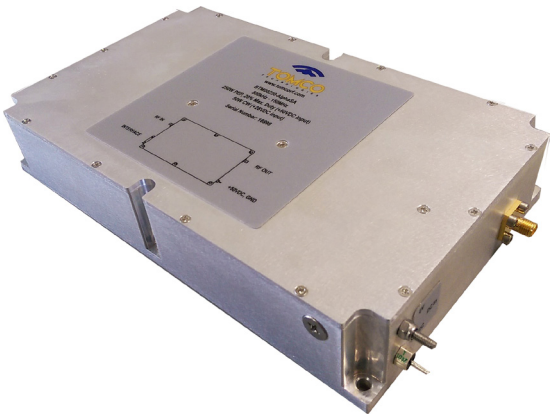
RF Amplifier Module Data Sheet

TOMCO

BTM00100-DeltaS
200MHz-650MHz
100W Pulsed/15W CW

- Scientific and Industrial Applications



The BTM-DeltaS series is a range of class AB RF power amplifier modules covering the 200MHz to 650MHz 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

Can be supplied as amplifier module only or with optional heatsink and cooling fans

RF Specifications

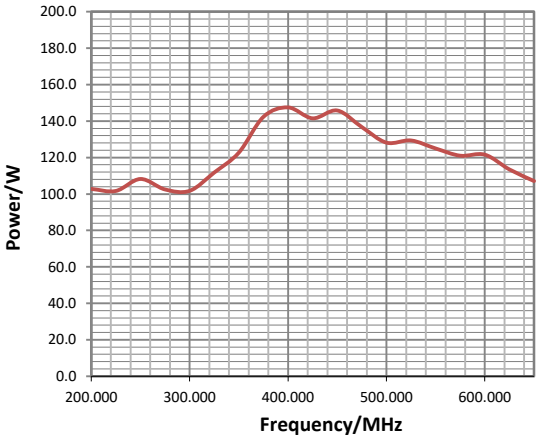
Rated power in pulsed mode	100W minimum PEP for input power of 0dBm
Rated power in CW mode	15W minimum CW operation is automatically available at output power level less than approx. 15% of full rated power
P1dB	80W minimum in pulsed mode 12W minimum in CW mode Minimum output power at P1dB compression
Gain	50dB minimum in pulsed mode 42dB minimum in CW mode
Type	Class AB MOSFET
Frequency	200MHz-650MHz
Gain flatness	±2dB maximum (measured at 1/10th rated output power)
Max. duty cycle in pulsed operation	20% Maximum GATE duty cycle in pulsed mode
Max. pulse width in pulsed operation	300ms Maximum GATE pulse width in pulsed mode
Pulse droop	0.5dB maximum Measured at max. pulse width at P1dB level
Pulse rise and fall times	Risetime: 200ns typical Falltime: 100ns typical using a pre-gated RF input signal
Gate rise and fall times	Risetime: 300ns typical Falltime: 150ns typical
Gate delay	Rising edge: 1µs typical Falling edge: 500ns typical Rising edge measured from rising edge of GATE pulse to 90% RF output voltage. Falling edge measured from falling edge of GATE pulse to 10% RF output voltage
Harmonics	Odd: -20dBc typical, -10dBc max. Even: -30dBc typical, -20dBc max. Measured at 1dB below rated output power
Spurious	<-70dBc maximum
Output noise (blanked)	<10dB above thermal (100kHz bandwidth)
Phase change/power	<10˚ from -40dB to full power
Phase stability	<1˚ across 300ms pulse
Input/output impedance	50 Ω nominal
Load VSWR	Tolerates at least 3:1 @ full rated power without damage External mismatch protection is recommended No internal mismatch protection included
Gain control range	10dB minimum for 0-5V control voltage Control via parallel interface
RF Input	0dBm nominal, +10dBm for no damage for full rated power in pulsed mode CW mode automatically available at RF input of approx. <-10dBm
GATE (blanking)	Logic low = Blank, logic high = unblank. CMOS and TTL compatible

Electrical Specifications

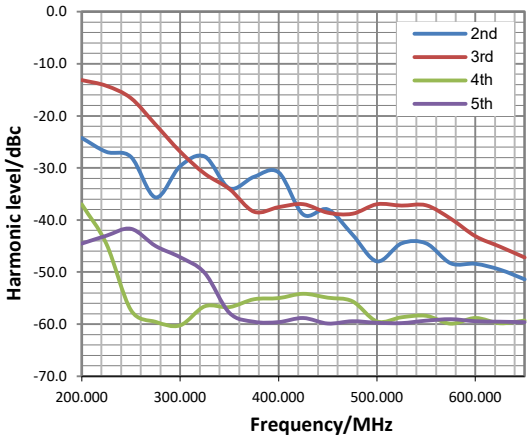
DC supply voltage	28V max. at approx. 8A
DC connection	Solder pin

Typical Performance Plots

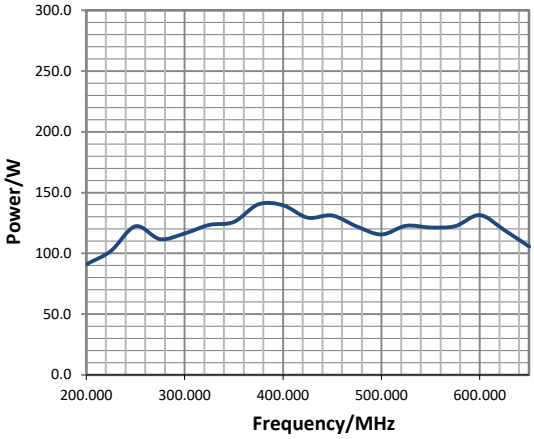
Peak output power for 0dBm RF drive



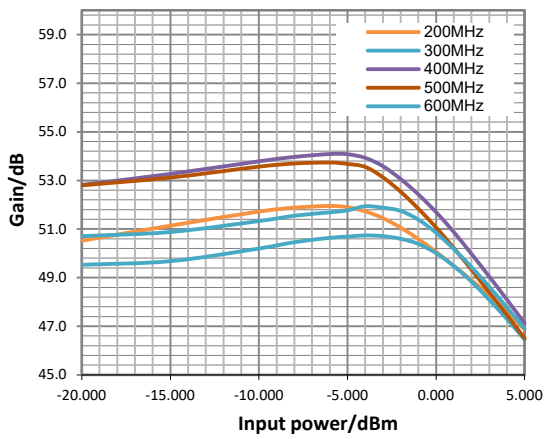
Harmonics



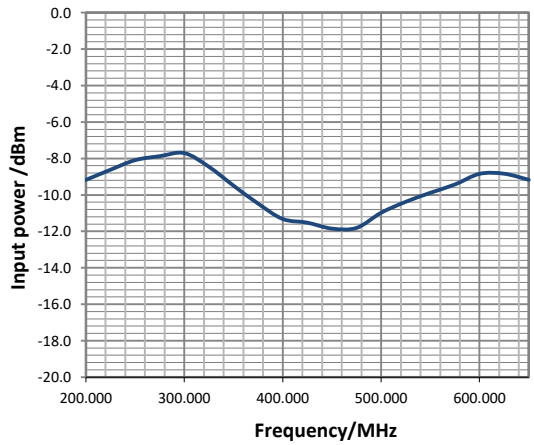
Peak output power at 1dB compression



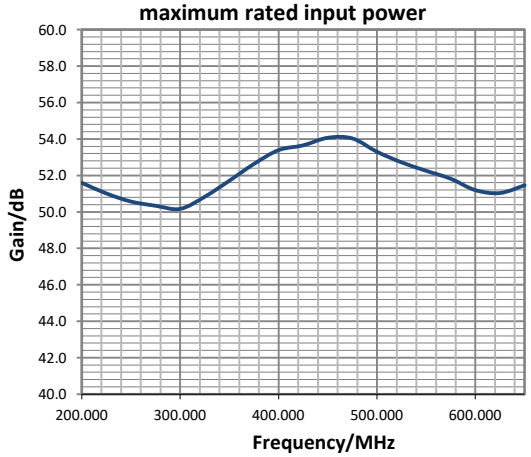
Gain as a function of input power



RF input for 15W CW output

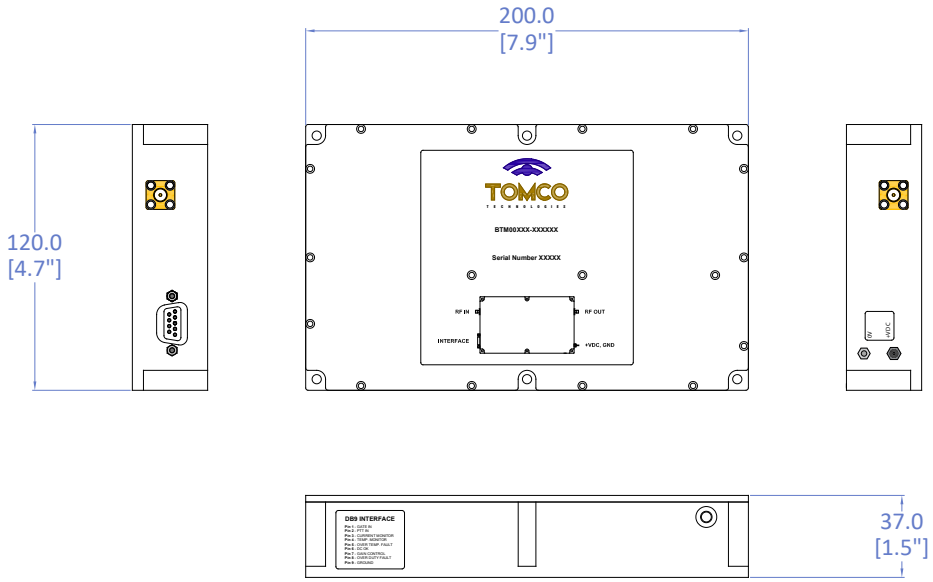


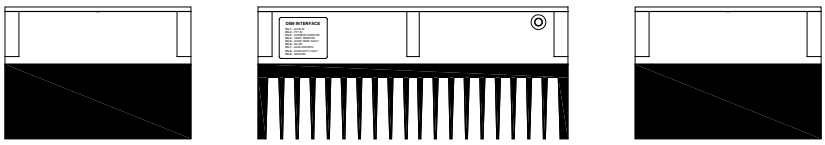
Small signal gain measured at 10% of maximum rated input power



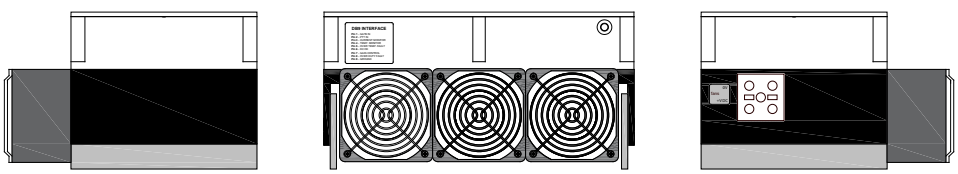
Mechanical Specifications

Connectors	RF IN: SMA RF OUT: SMA INTERFACE: DB9 female
Dimensions	Module only: 200mm (7.9”) x 120mm (4.7”) x 37mm (1.5”) Module with heatsink: 200mm (7.9”) x 120mm (4.7”) x 85mm (3.3”) Module with heatsink and fan assembly: 200mm (7.9”) x 168mm (6.6”) x 85mm (3.3”)
Weight	approx. 1.3kg (2.8lbs), module only
Enclosure classification	IP20





With optional heatsink



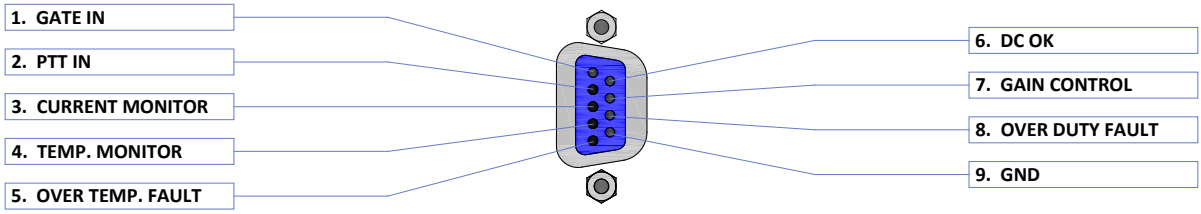
With optional heatsink and fan assembly

Protection

Over temperature	Self-resetting shutdown protection activates if thermal limits are exceeded
Reverse polarity	Reverse-current protection circuitry
Input/output transients	High voltage transient protection circuitry

Monitoring and Control

Parallel Interface	9-pin D-connector female



Environmental

General	Intended for use only in controlled, indoor environment. Non-consumer product for industrial and scientific use
Cooling	Requires heatsink and/or external fan (optional extras)
Operating temperature	+5^{0}C to +40^{0}C
Storage temperature	-20^{0}C to +60^{0}C
Humidity	80% for temperature up to 31^{0}C, decreasing linearly to 50% relative humidity at 40^{0}C
Operating altitude	Up to 2000m
Pollution degree	2
Electromagnetic compatibility	In line with IEC61326-1:2012 ISM sub-assembly, Group 1, Class A
Safety	In line with IEC61010-1:2010
Electromagnetic field strength	In line with ICNIRP Guidelines: 1998, occupational limits

Change record

Document/Issue number	Originator	Date	Change
DS006716A	JR	21/08/2018	Original
DS006716B	LS	06/05/2021	p.1:H