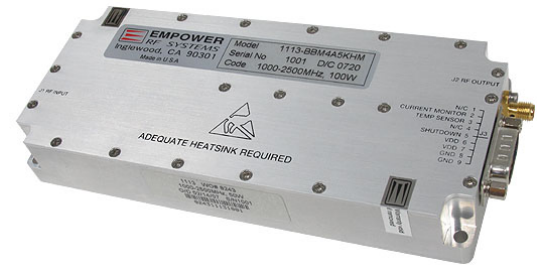


Solid State Broadband High Power Amplifier

1113 – BBM4A5KHM
1000 – 2500 MHz, 50 Watts

The BBM4A5KHM (SKU 1113) is suitable for broadband mobile jamming and band specific high power linear applications in the P/L/S frequency bands. This compact module utilizes high power advanced GaN devices that provide excellent power density, high efficiency, wide dynamic range and low distortion. Exceptional performance, long term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, machined housings and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state class AB linear design
- Extremely wide instantaneous bandwidth
- Compact and lightweight
- Built-in control, monitoring and protection circuits
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance

ELECTRICAL SPECIFICATIONS @ +28V_{DC} or +24V_{DC}, 25 °C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1000		2500	MHz
Power Output (CW) @ 28V _{DC}	P _{SAT}	50			Watt
Power Output CW @ 24V _{DC} (OPT042)	P _{SAT}		40		Watt
Output Power @ 1dB Gain Compression	P _{1dB}	30			Watt
Small Signal Gain	G _{1dB}	46	48		dB
Input Power for Rated P _{SAT}	P _{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ max. gain	NF			10	dB
Third Order Intercept Point 2-Tones @ 33dBm/Tone, 100kHz Spacing	IP3		+50		dBm
Harmonics @ P _{OUT} = 30W	2 ND / 3 RD		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (28V _{DC})	V _{DC}	26	28	30	Volt
Operating Voltage (24V _{DC} OPT042)	V _{DC}	22	24	26	Volt
Current Consumption @ P _{OUT} = 50W	I _{DD}			6.5	Amp
Quiescent Current	I _{DQ}		2.0		Amp
Switching Speed (10% to 90%)	T _{SW}		2	5	uSec

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension	6.4 x 2.68 x 1.0	Inch
Weight	1.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connector	D-sub 9-pin, Male	
Cooling	External Heatsink (not supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	-20		+85	°C
Non-operating Temperature	T _{STG}	-40		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration / Shock MIL-STD-810F Method 514.5/516.5 – Proc I	VI / SH		Airborne		

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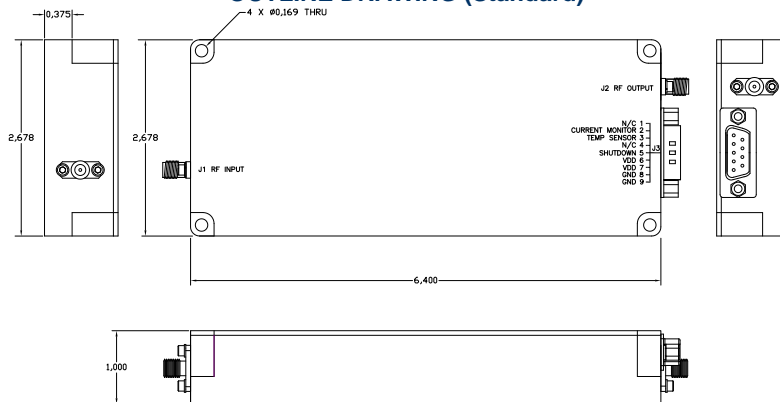
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P _{OUT} = 40W	∞:1 @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	Graceful degradation	Max

DC INTERFACE CONNECTOR – D-sub 9-pin, Male

Pin #	Description	Specification
1	N/C	No Connection
2	Current Monitor	Analog voltage relative to I _D @ 50mV/100mA
3	Temperature Monitor	Analog voltage relative to Module's Temperature @ 10mV/°C
4	N/C	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
6&7	VDD	+26.0-30.0V _{DC}
8&9	GND	Ground

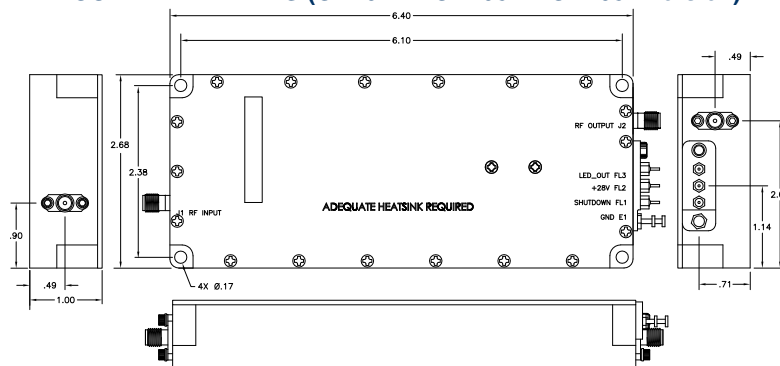
OUTLINE DRAWING (Standard)



DC INTERFACE CONNECTIONS – Feed Thru (OPT077 + OPT081 + OPT082 Version)

Pin #	Description	Specification
FL1	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
FL2	+VDD	+22.0-26.0V _{DC}
FL3	LED OUT	RF Indicator (2mA max source)
E1	GND	Ground

OUTLINE DRAWING (OPT077 + OPT081 + OPT082 Version)



Solid State Broadband High Power Amplifier

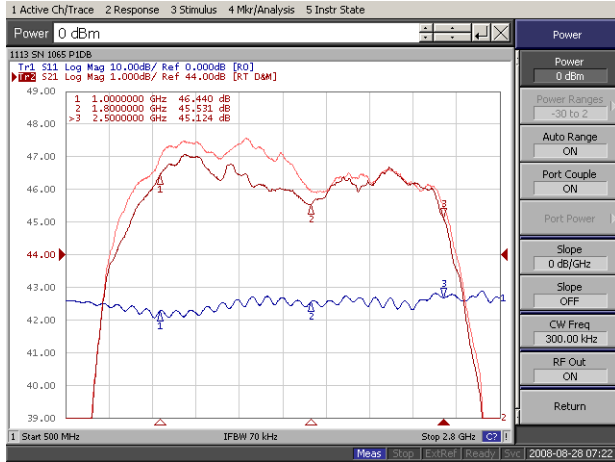
1113 – BBM4A5KHM

1000 – 2500 MHz, 50 Watts

TYPICAL PERFORMANCE PLOTS (28V_{DC} Version)

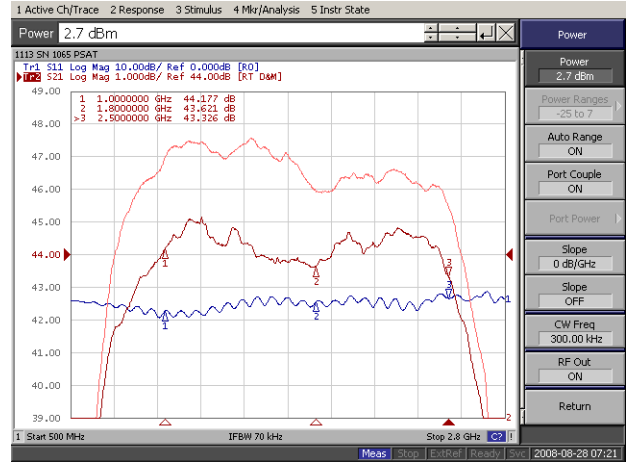
Plot 1 – Small Signal Gain & P_{1dB}

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{1dB}, P_{IN} = 0dBm
 Reference: 44dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div



Plot 2 – Small Signal Gain & P_{SAT}

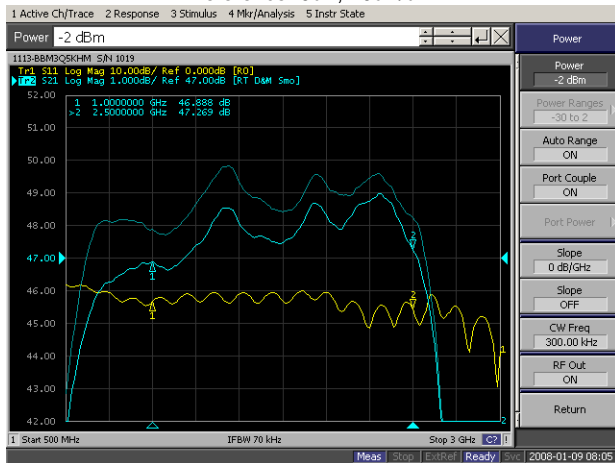
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{SAT}, P_{IN} = 2.7dBm
 Reference: 44dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div



TYPICAL PERFORMANCE PLOTS (24V_{DC} OPT042 Version)

Plot 1 – Small Signal Gain and P_{1dB}

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{1dB}, P_{IN} = -2.2dBm
 Reference: 47dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 2 – Small Signal Gain and P_{SAT}

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{SAT}, P_{IN} = +1.8dBm
 Reference: 45dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

