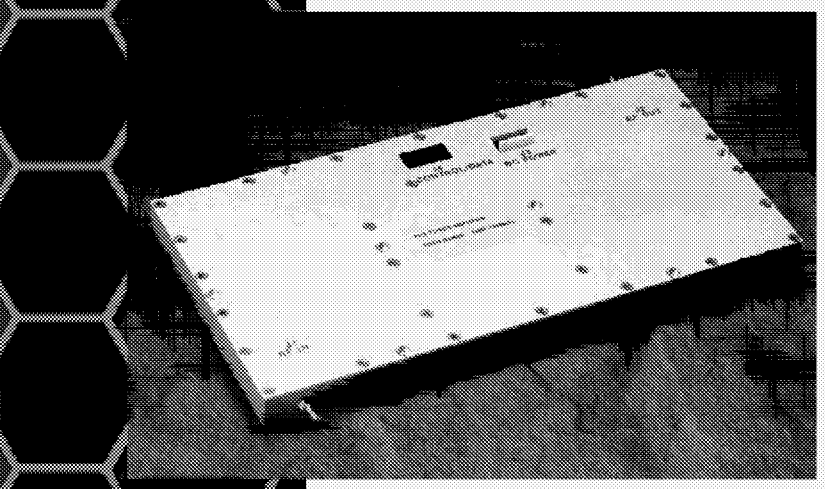
Power Amplifiers

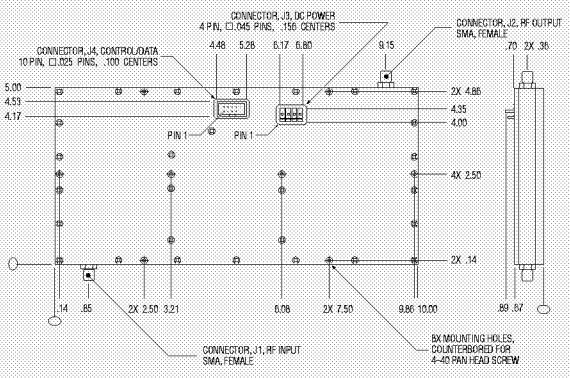


SA1106

TDMA 40-Watt
1.93 GHz to 1.99 GHz
Linear Power Amplifier Module

- *40 Watts TDMA IS-136*
- *+48 dBm P1dB*
- *45 dB Gain*
- *-30°C to +85°C*

OUTLINE DRAWING



Watkins-Johnson's SA1106 Power Amplifier provides exceptional linearity for TDMA digital modulation applications. Utilizing WJ's GaAs amplifiers driving bipolar transistors in the class AB output stage, the SA1106 achieves a high third-order intercept point combined with superior efficiency when compared to an equivalent power class A amplifier. Special non-linear design techniques are utilized to minimize unwanted adjacent channel power. To aid top level system diagnostics and reliability, the unit includes alarms to identify if an active part fails or if a poor load is presented to the RF output. In the event that a fault is detected or to simply save DC power, a digitally controlled shutdown is provided. The amplifier is protected from thermal overload by an internal temperature sensor which triggers a digital alarm and shuts down the power stages if the baseplate temperature rises above 95°C. An integral logarithmic power detector measures the output power of the amplifier over a 16 dB dynamic range.

The Wireless Edge™

Power Amplifiers

SA1106

TDMA 40-Watt 1.93 GHz to 1.99 GHz Linear Power Amplifier Module

Specifications

Parameters (Baseplate Temperature: -30°C to +85°C)	Typical Level	Specified Limits
Frequency		1.930-1.990 GHz
P_{out} at 1 dB Gain Compression	+48 dBm	
Gain (Small signal at 25°C)		45 ± 1.0 dB
Gain Variation over Temp (-30°C to +85°C)		±1.5 dB
NADC IS-136 Specifications: P_{out} = 40 watts		
ACP (30 KHz offset)	-27 dBc	-26 dBc max
ACP (60 KHz offset)	-47 dBc	-45 dBc max
ACP (90 KHz offset)	-13.5 dBm	-13 dBm max
Harmonic Output (with a +46 dBm TDMA output at the fundamental)		
a) 2nd Harmonic	0 dBm	
b) 3rd Harmonic	-5 dBm	
Third-Order 2-Tone Output Intermodulation Product Rejection (P_{out} = +37 dBm per CW tone)	-35 dB	-30 dB max
Maximum Noise Figure	5.0 dB	6.5 dB
Input and Output Impedence		50 ohm
Return Loss (1.930-1.990 GHz)		
Input and Output	-20 dB	-15 dB
Load Mismatch Sustainable without Damage		3.0:1
Output Power Monitor		
a) P_{out} = +46 dBm CW	4.5 V	5.0 V max, 4.0 V min
b) P_{out} = +38 dBm CW	2.5 V	3.0 V max, 2.0 V min
a) P_{out} = +30 dBm CW	0.5 V	1.0 V max, 0.0 V min
Supply Voltages	+24 V	23.5-26.5 V
Maximum Supply without Damage, +24 Volt Supply		+28 VDC
Maximum DC Current, +24 Volt Supply	11 amps	12.5 amps
Maximum DC Power Dissipation, +24 Volt Supply	265 watts	300 watts
RF Connectors	SMA Female	
Stability (No spurious outputs above -50 dBc)	Unconditionally stable for all loads	
Size (Heat sink not included)	0.67" (H), 5.0" (W), 10.0" (L)	
Weight (Heat sink not included)	40 oz. max	