

# Power Amplifiers

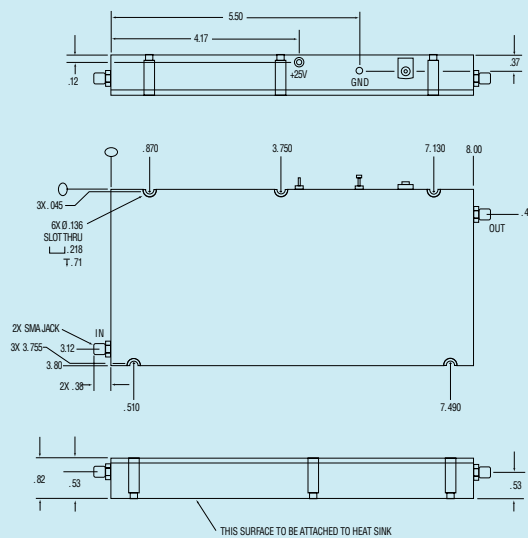


## SA1076 TDMA 30-Watt 1.93 GHz to 1.99 GHz Linear Power Amplifier Module

- *45 dB Gain*
- *P1dB: +48 dBm*

**PRELIMINARY**

OUTLINE DRAWING



Watkins-Johnson's SA1076 Power Amplifier provides exceptional linearity and low vector error for TDMA digital modulation applications. Utilizing WJ's GaAs amplifiers driving bipolar transistors in the class AB output stage, the SA1076 achieves a very high output third-order intercept point combined with superior efficiency. Special non-linear design techniques are utilized to minimize unwanted adjacent channel power and reduce RMS vector error. The unit also includes an alarm to signal if an active device fails, and a shutdown control circuit for safe, open circuit operation.

*The Wireless Edge™*

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WATKINS-JOHNSON

# Power Amplifiers

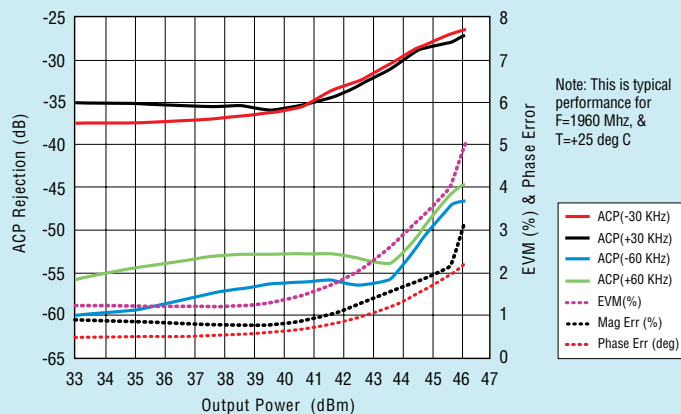
## SA1076

### TDMA 30-Watt 1.93 GHz to 1.99 GHz Linear Amplifier Power Module

#### Specifications (Preliminary)

Parameters	Typical Level	Specified Limits	Comments
Frequency		1.930-1.990 GHz	
Pout at 1 dB Gain Compression	+48.5 dBm	+47 dBm	Min
Gain (-30°<T<+85°C)	Minimum Gain Maximum Gain	44.0 dB 46.0 dB	Min Max
Gain Variation Versus Frequency Over 1.930-1.990 GHz (at fixed temperature, -30<T<+85°C) <sup>1</sup>		±0.75 dB	Max
NADC Parameters (with Pout ≥44.8 dBm, -30<T<+50°C, or Pout ≥44.0 dBm, +50°C <T<+85°C) <sup>2</sup> .	Output Power ACP (30 KHz offset) ACP (60 KHz offset) Error Vector Magnitude Magnitude Error Phase Error	+45.5 dBm -27 dBc -46 dBc 4.0% 2.1% 1.9°	+44.8 dBm -25 dBc -45 dBc 4.5% 2.5% 2.2° See Note 2
Third-Order 2-Tone Rejection (measured with +37 dBm per tone, T = +25°C)	-37 dBc	-32 dBc	Min
Spurious 10 KHz to 10 GHz (with a +44.8 dBm output at 1960 MHz) <sup>3</sup>	<-45 dBm	<-35 dBm	Min
Harmonic Output (with a +44.8 dBm TDMA Output at the fundamental)			
a) 2nd harmonic	+10 dBm		Max
b) 3rd Harmonic	+10 dBm		Max
Noise Figure	5.5 dB	6.0 dB	Max
Input & Output Impedence	50 Ohm		
Return Loss (1.930-1.990 GHz)	Input Output	16 dB 15 dB	Min Min
Load Mismatch Sustainable Without Damage (Pin ≤0 dBm Vsupply ≤+26.0 VDC)		infinite	
Supply Voltages		+5 & +25 VDC	
Maximum Supply Without Damage	a) +25 volt supply b) +5 volt supply	+26.5 VDC +8 VDC	Max Max
Maximum DC Current (Pout ≤45 dBm TDMA)	a) +25 volt supply b) +5 volt supply	6800 mA 550 mA	Max Max
DC Power Dissipation (Pout ≤45 dBm TDMA)	a) +25 volt supply b) +5 volt supply	175 Watts 3.0 Watts	Max Max
Baseplate Temperature Range <sup>4</sup>		-30 to +85°C	
RF Connectors		SMA Female	
Stability (No spurious outputs above -50 dBm)		Unconditionally stable for all loads	
Size (Refer to interface control drawing W-J 299029SK)		0.82" (H), 3.80" (W), 8.00" (L)	

W-J SA1076 PCS ACP Rejection & EVM as a Function of Output Power (NADC TDMA Format)



Note:

TDMA spectral regrowth is measured with a spread spectrum input from a Marconi 2051 Signal Generator selecting the "Digital/Cellular/NADC" modulation system that produces II/4DQPSK modulation with 24.30 KHz symbol rate and Root Nyquist filtering with alpha = 0.35

This unit is to be mounted on a ground plane and thermal heat sink, with a maximum heat sink temperature of +85°C.

- Gain Variation is relative to gain at 1.960 GHz (center frequency)
- Refer to plot of Spectral Regrowth and Error Vector Magnitude as a function of Output Power.
- Spurious search excludes 1930 to 1990 MHz and harmonics of the primary signal.
- Applies to all specified parameters unless otherwise noted.

The Wireless Edge™

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