Fairview Microwave
an INFINITE brand

FMAM5086
DATA SHEET

High Power GaN Amplifier, 8W Psat, 30 MHz to 2700 MHz, 35 dB Gain, Class AB 12V, SMA

The FMAM5086 is a high power amplifier that operates from 0.5 to 2.8 GHz and generates 8W of saturated output power. The module utilizes Gallium Nitride (GaN) and chip-and-wire technology in the manufacturing process that ensures state-of-the-art power performance with excellent power-to-volume ratio that's ideal for broadband high power linear applications. The power amplifier is capable of supporting any signal type and modulation format, including but not limited to 3-4G telecom WLAN, OFDM, DVB, and CW/AM/FM. This Class AB amplifier is designed for a 50 ohm input/output impedance and offers high efficiency and high linearity, with impressive typical performance that includes 8 Watts output Psat, 35 dB small signal gain, and 1 microsecond switching speed. The design incorporates internal voltage regulation and supports a supply voltage range from +12Vdc to +30Vdc. The compact and rugged package operates over -40°C to +85°C, supports SMA-Female RF Connectors, an 8-Pin locking rectangular connector for DC Command Control, and is guaranteed to meet MIL-STD-810 environmental conditions for Shock and Vibration. In addition to exposure up to 95% humidity and up to 30,000 Ft. altitude. An available cable assembly with DC socket connector is available as a an accessory (model PE15J000) for this model. See illustration below.

Features:

- 0.3 GHz to 2.7 GHz Frequency Range
- Output Psat: 8 Watts typ
- Small Signal Gain: 35 dB typ
- Gain Flatness: ±1.5 dB typ
- 50 Ohms Input and Output Matched
- Wide DC input Range: +12 to +30 Vdc
- Operating Temperature Range -40°C to +85°C
- Input/Output Connectors SMA Female
- High Speed On/Off Control
- Temperature Monitor Output Pin
- Over-Temperature Protection
- Available Cable Assembly with DC Socket Connector (PE15J000)

Applications:

- Simple CW to Highly Modulated Signals
- Commercial / Military Radio Systems
- Software Defined Radios
- General Purpose Amplification
- Radar & Communication Systems

Electrical Specifications

(TA = +25°C)

Description	Min	Typ	Max	Unit
Frequency Range	0.03		2.7	GHz
Small Signal Gain		35		dB
Gain Flatness		±1.5		dB
Input Power (CW)			+8	dBm
Psat		39		dBm
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input Return Loss	-12	-15		dB
Switching Speed for On/Off Switch Gate		1	2	usec
Operating DC Voltage	12		30	Volts
Operating DC Current		1.4		A

Electrical Specification Notes: Gain flatness recorded represents a peak-peak measurement across the entire operating band. Gain flatness is typically much lower across significant portions of this band. Consult the gain response plots for details if available.

Mechanical Specifications

Size	
Length	3.25 in [82.55 mm]
Width	2.42 in [61.47 mm]
Height	0.54 in [13.72 mm]
Weight	4 lbs [1.81 kg]
Input Connector	SMA Female
Output Connector	SMA Female
Bias Connector	8-Pin Rectangular Locking Male
Cooling	Baseplate Conduction

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Environmental Specifications

Storage Range	-40 to +85 deg C
PA Baseplate Shutoff Temperature	85 deg C
Humidity	0 to 95%
Shock	MIL-STD-810 and equivalents
Vibration	MIL-STD-810 and equivalents
Altitude	0 to 30000 ft

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

- Values at 25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink.

Amplifier Power-up Precautions

1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.

2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.

3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.

4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.

5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.

6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.

7.) Perform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.

8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.

9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
   P_{in} for Small Signal Gain = P1dB-SSG-10 dB
   P_{in} for P1dB = P1dB-SSG+1 dB

10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.

11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

Functional Block Diagram

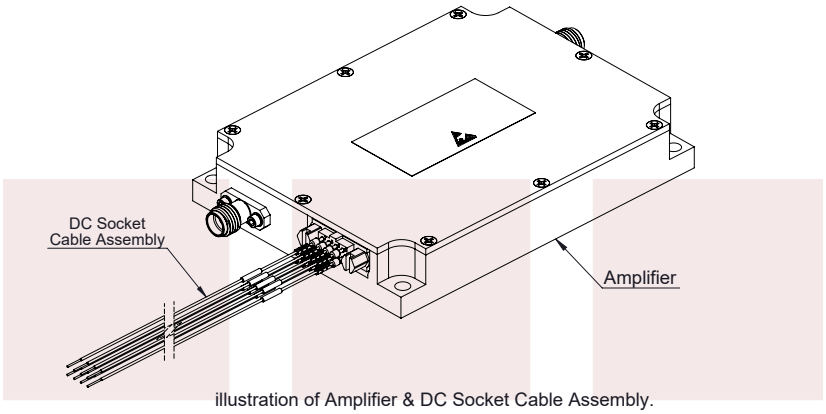
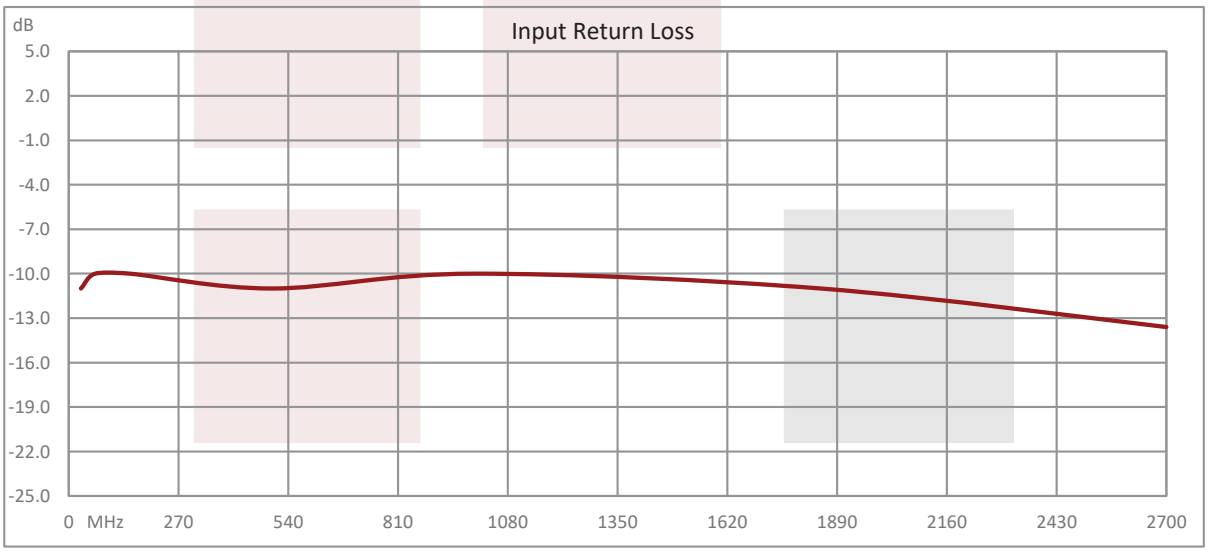
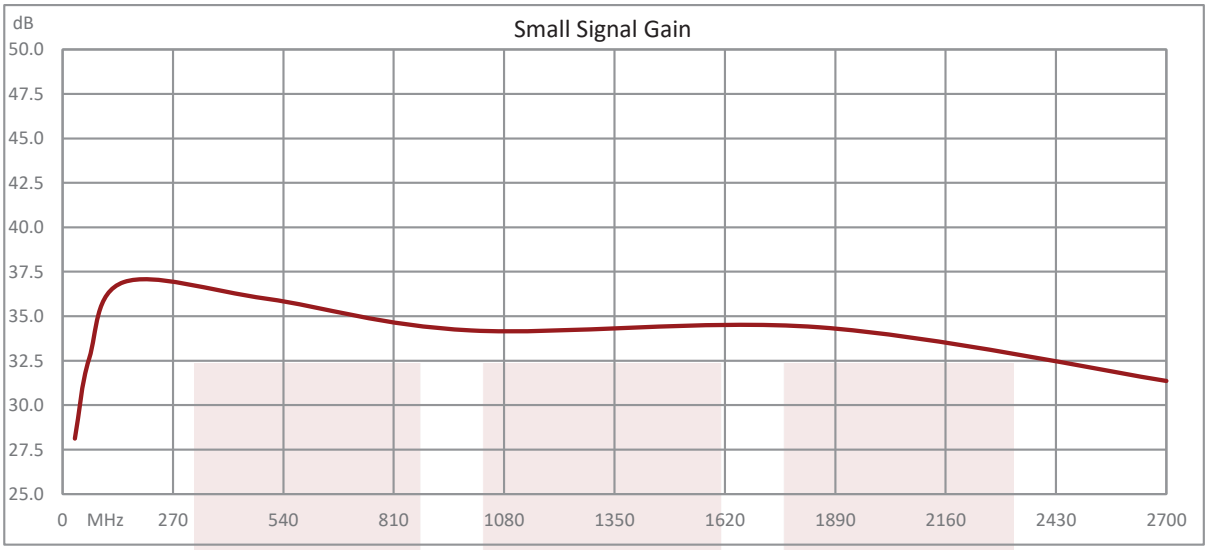
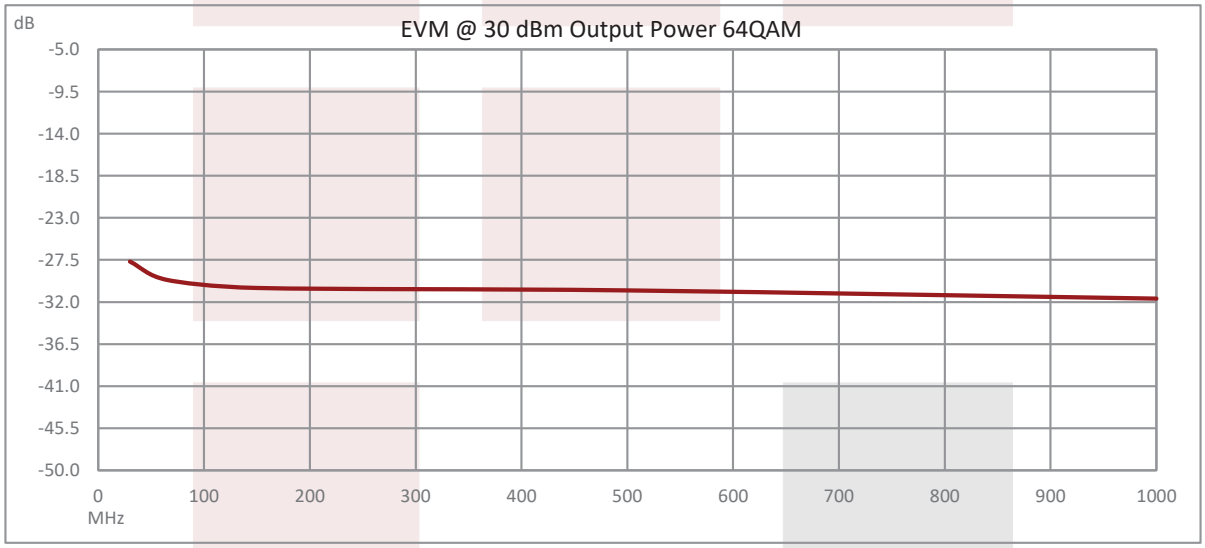


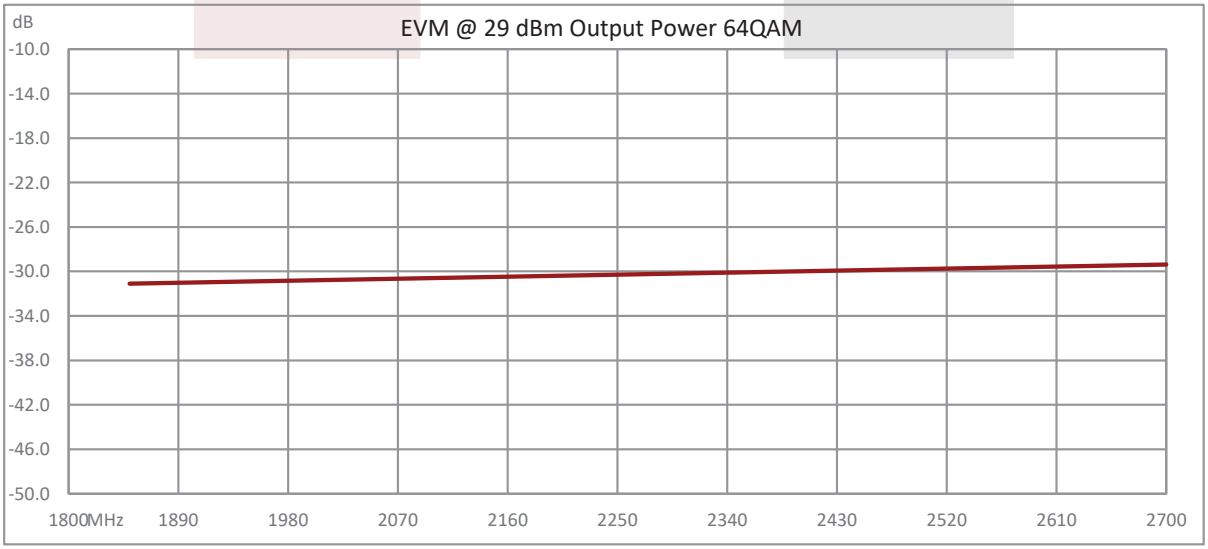
illustration of Amplifier & DC Socket Cable Assembly.
Cable Assembly model PE15J000 sold separately
(Picture shown for Reference Only)

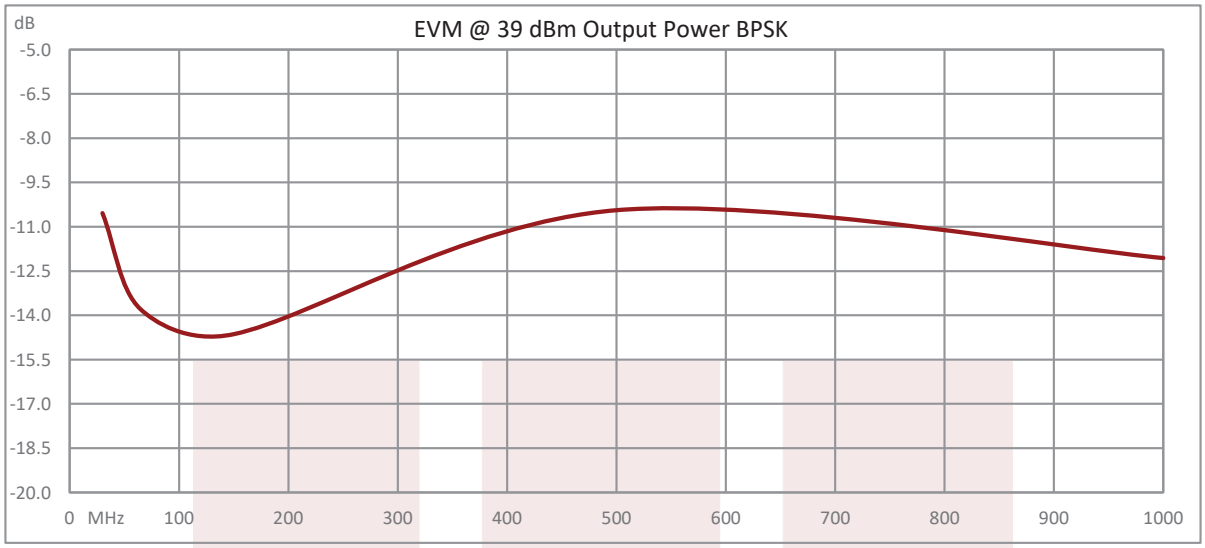
Typical Performance Data

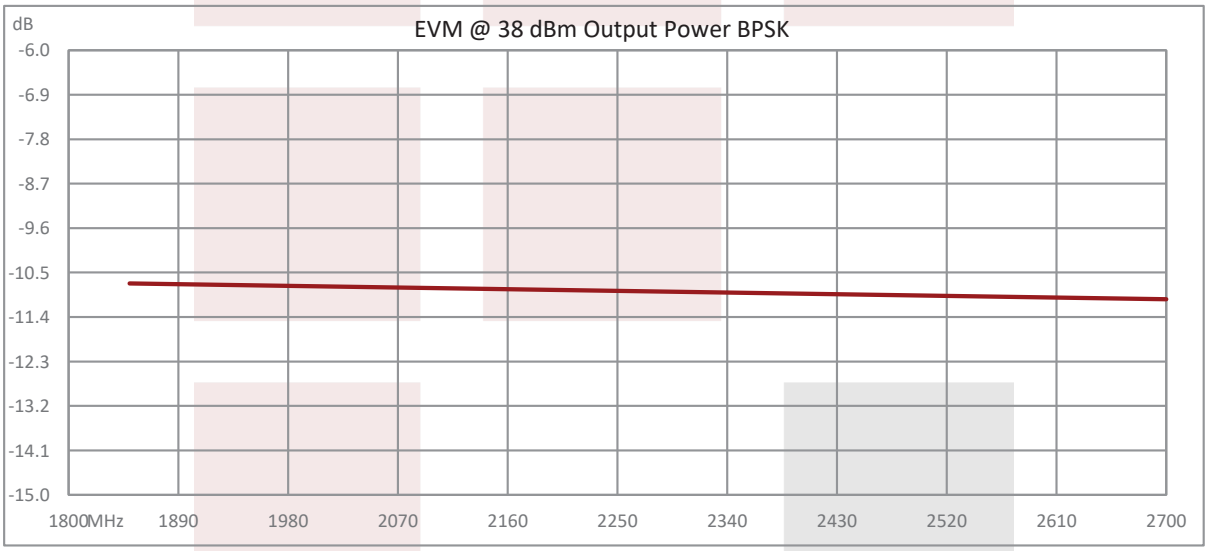












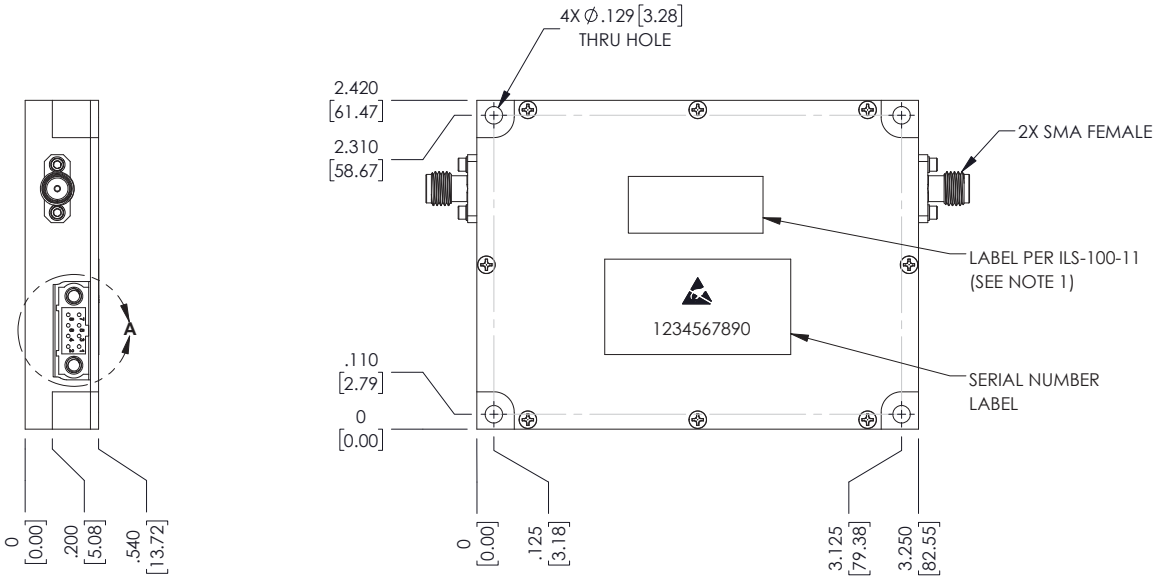
High Power GaN Amplifier, 8W Psat, 30 MHz to 2700 MHz, 35 dB Gain, Class AB 12V, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

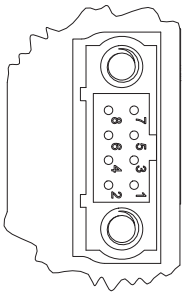
For additional information on this product, please click the following link: High Power GaN Amplifier, 8W Psat, 30 MHz to 2700 MHz, 35 dB Gain, Class AB 12V, SMA FMAM5086

URL: https://www.fairviewmicrowave.com/high-power-amplifier-8watt-36db-fmam5086-p.aspx

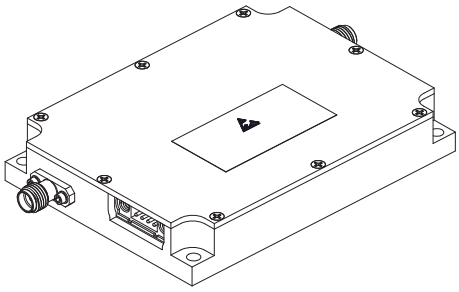
NOTE: SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE. TYPICAL PERFORMANCE AT VDC AT 25°C IN A 50Ω SYSTEM.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	03/23/121	T.GALLA





DETAIL A



8 PIN RECTANGULAR MALE				
PIN	NAME	DESCRIPTION	TYPE	LEVEL
1	TEMP	Analog Temperature Sensor Output	Power	--
2,4,6	GND	Ground	Power	--
3	Tx/Rx	TTL Hi = Transmit Mode, TTL Lo or No Connection = Receive Mode	Input	5V TTL
5,7	+VDC	Min: +12V / Max: 30V	Power	--
8	SGND	Signal Ground	Input	--

NOTE:
1. LABEL PER ILS-100-11. FOR INTERNAL REFERENCE ONLY.

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TITLE

High Power GaN Amplifier, 8W Psat, 30 MHz to 2700 MHz, 35 dB Gain, Class AB 12V, SMA

UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:

.X = ± .2 [5.08]
.XX = ± .02 [.51]
.XXX = ± .005 [.13]
FRACTIONS ± 1/32
ANGLES ± 1°

CABLE LENGTH (L) TOLERANCES:

L ≤ 12 [305] = +1 [25] / -0
12 [305] < L ≤ 60 [1524] = +2 [51] / -0
60 [1524] < L ≤ 120 [3048] = +4 [102] / -0
120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
300 [7620] < L = +5%L / -0

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

SHEET	OF
1	2

SCALE: N/A

SIZE	CAGE CODE	DRAWN BY	ITEM NO.	REV
A	3FKR5	DFRISIELLO	FMAM5086	A

T-Rev.D