

TSA-220005-1

High Power GaN Amplifier

2 to 18 GHz, 20 Watt High Power GaN Amplifier

EXPORT RESTRICTIONS MAY APPLY



Description

The TSA220005-1 amplifier provides nominal output power of 20 Watts. The amplifier uses control circuitry to ensure safe startup and automatic thermal shutdown and recovery. The amplifiers have an external pin for TTL on/off control. On/Off Low or High can be specified; standard is Off/Low.

Heat sinking is required to keep the case temperatures within a safe operating range. A thin layer of thermal grease or HiTherm (for example the HT-2500 series) helps provide a low resistance thermal path between the case and the mounting surface. The mounting surface should be metal with heat conduction of aluminum or better. Heat sink size depends on whether fan-driven air cooling is used, or if only convection is used.

HEAT SINK WARNING:

This amplifier requires an adequate heat sink to prevent damage. Maximum case temperature must not be exceeded. The package is designed to provide adequate heat transfer to proper aluminum heat sink.

Typical Values

- Broadband: 2-18 GHz
- High Saturated Power, P_{sat} : 20 W, (43dBm)
- Small hermetic package
- Dimensions: 2.9”L x 2.0”W x 0.41”H

Specifications*

Parameter	Guaranteed -55 to +85°C (Case)
Frequency (Min.)	2-18 GHz
Small Signal Gain (Min.)	54 dB
Noise Figure (Max.)	6.5 dB
SWR (Max.) Input/Output	2.0:1/2.5:1
Power Output (Min.) @ Pin- -5dBm	+42 dBm (43 dBm mid-band)
Harmonics (Max.) @ Pin = -5 dBm	-10 dBc
DC Current (Max.) @ Pin = -5 dBm	6.0A (22V), 0.5A (8V) Typ.

* Measured in a 50-ohm system at +22V

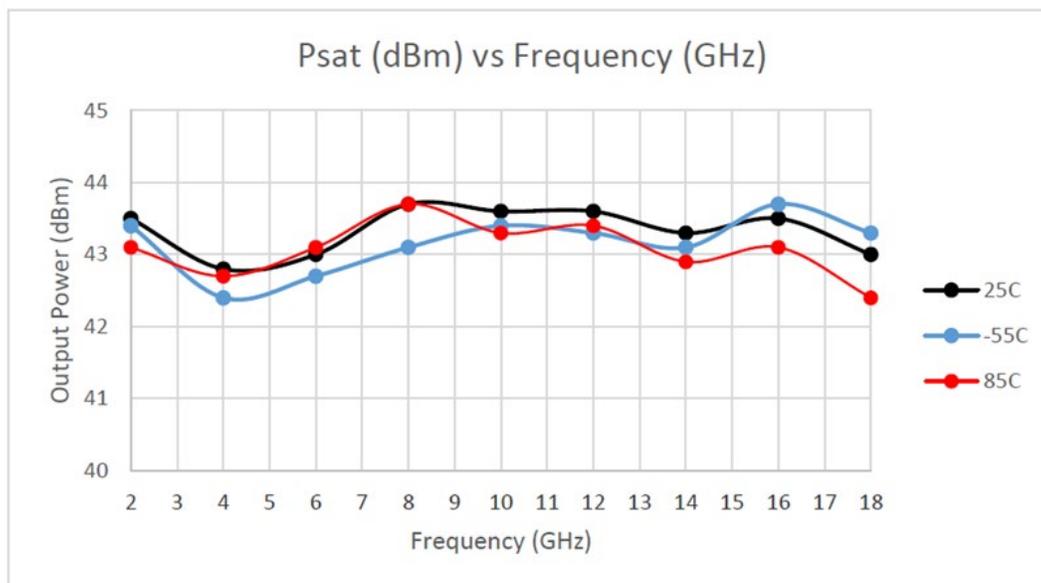
^ Faster switching speed option available upon request

Absolute Maximum Ratings

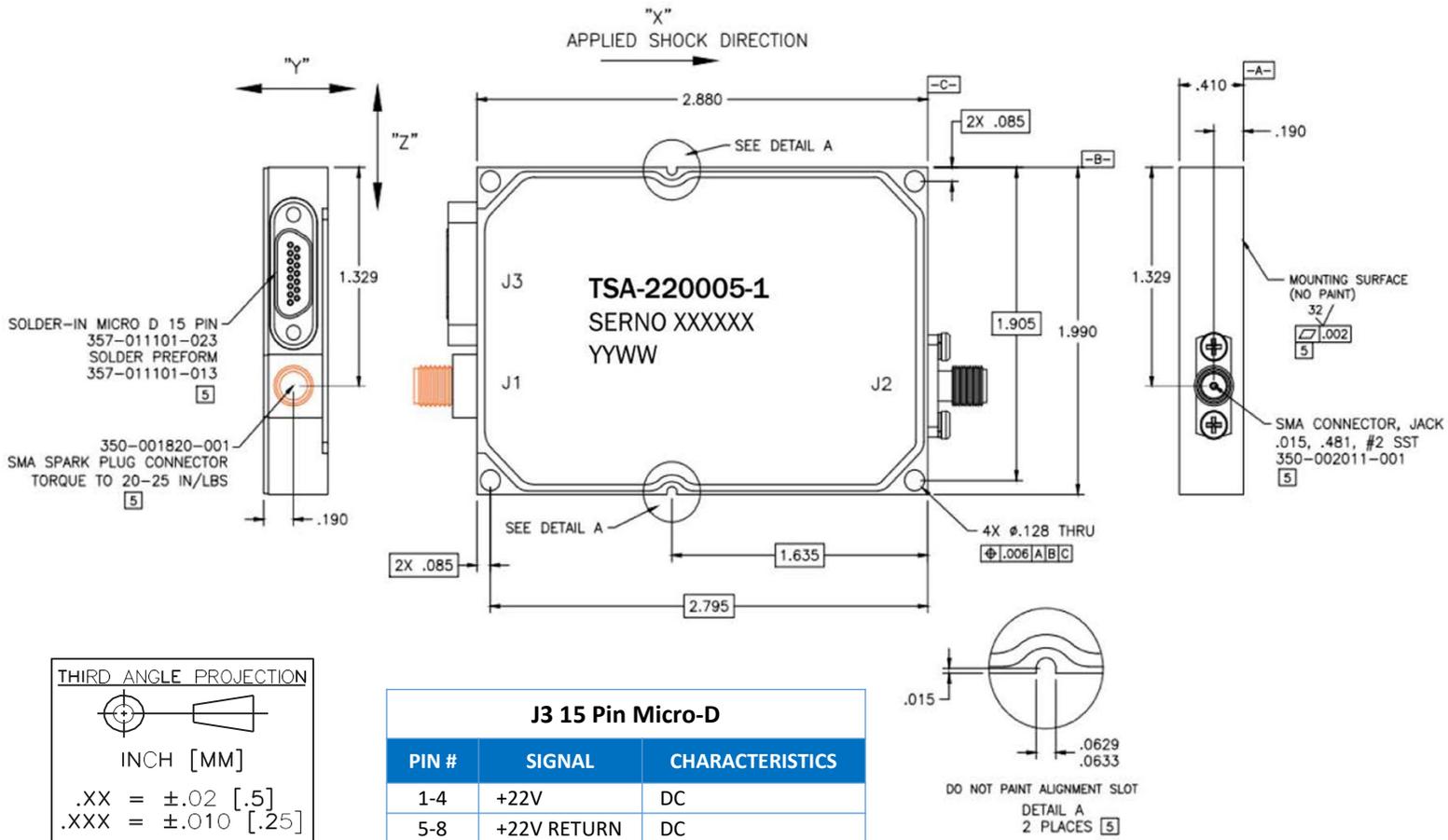
Parameter	Value
Storage Temperature	-62 to +125°C
Maximum Case Temperature, +29V	+85°C
Maximum DC Voltage	+29 Volts
Maximum RF Input Power	+20 dBm
Burn-in Temperature, +29V	+85°C
Thermal Resistance ¹ (θ_{jc})	+1.52°C/Watt
Junction Temperature Rise Above Case (T_{jc}), +29V, +25°C	+112°C

¹ Thermal resistance is based on total power dissipation

PSAT Performance



Outline Drawing – High Power GaN Amplifier



NOTES: (Unless otherwise specified)

1. Dimensions are in inches
2. Tolerances: X.XXX ± 0.005
X.XX ± 0.01
3. Marking as shown shall be permanent and legible per MIL-STD-130 using black epoxy base ink
4. Case material: Aluminum
5. Finish: All surfaces except mounting surface, connectors and pins, alignment slots and Micro-D connector, are painted with epoxy paint per MIL-C-22750 over epoxy primer per MIL-P-23377, Type I. Color is Teledyne standard color chip 36231 per FED-STD-595 mounting surface is Chem Film per MIL-DTL-5541, Class 3, Type I.
6. Weight not to exceed 0.40 pounds.