

General Description

The P100W32-38CP SSPA is a high power, broadband, solid state power amplifier housed in an EIA compatible 3U height rack mountable chassis. The amplifier incorporates a wide input range AC-DC power supply, fan-forced convective thermal management, and an internal driver amplifier. The amplifier is appropriate for high-power wide-band testing, communications, radar, or any application requiring capability for simultaneous power amplification of signals across the 32.0–38.0 GHz spectrum.

The P100W32-38CP incorporates high efficiency GaN MMICs, spatially combined in a compact structure to achieve robust, high performance power amplification across the 32.0–38.0 GHz frequency range.

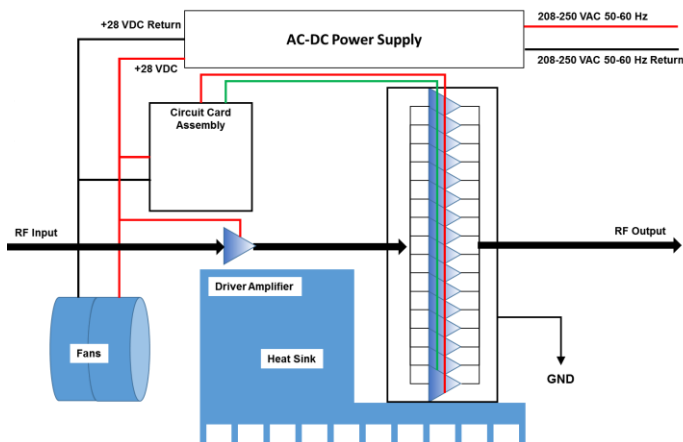


Product Features

- 32.0–38.0 GHz
- 100 Watts saturated output power, CW
- 62 dB small signal gain
- 54 dB nominal power gain
- 208–250 VAC 47–63 Hz AC input
- Air cooling - back panel inlet and outlet
- Built in PPG - optional
- Liquid or air cooled options

Performance is typical across frequency. Please reference electrical specification table and data plots for more details.

Functional Block Diagram



Applications

- Radar
- Communications
- Test & Measurement
- EMI Testing

Ordering Information

Part No.	ECCN	Description
P100W32-38CP	TBD	32.0–38.0 GHz 100 Watt Amplifier

Absolute Maximum Ratings

Parameter	Rating
RF Input Power, CW, 50 Ω, T _{CASE} =25 °C	+10 dBm
Load VSWR	3.0:1
AC Current (120, 220, 250 VAC)	8.0, 4.5, 3.8 A
Storage Air Temperature	-30 to +75 °C
Operating Air Temperature	-5 to +55 °C

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
Voltage (V _{AC})	90	220	265	V _{RMS}
AC Frequency	47	60	63	Hz
Operating Air Temperature	0	25	50	°C
RF Input Power, CW		0		dBm

Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions.

Electrical Specifications - Simulated

Please reference data plots for more details.

Parameter	Conditions ⁽¹⁾	Min	Typ	Max	Units
Operational Frequency Range	Pulsed @ +25C Duty 100%	32.0		38.0	GHz
Output Power ($P_{IN} = 0$ dBm)	32 GHz		51.2		dBm
	33 GHz		51.5		dBm
	34 GHz		51.5		dBm
	35 GHz		51.4		dBm
	36 GHz		51.3		dBm
	37 GHz		51.0		dBm
	38 GHz		49.8		dBm
Power Gain ($P_{IN} = 0$ dBm)	32 GHz		51.2		dB
	33 GHz		51.5		dB
	34 GHz		51.5		dB
	35 GHz		51.4		dB
	36 GHz		51.3		dB
	37 GHz		51.0		dB
	38 GHz		49.8		dB
Small Signal Gain	32 GHz		62		dB
	32 GHz		62		dB
	34 GHz		68		dB
	35 GHz		68		dB
	36 GHz		64		dB
	37 GHz		62		dB
	38 GHz		62		dB
Small Signal Gain Flatness			See plot		dB
Input Return Loss (average)			TBM		dB
Non-Harmonic Spurious	$F_0 = 32 - 38$ GHz, $P_{IN} = 0$ dBm			-60	dBc
AC Input Power (average)			790	1000	W
AC Fuse	15A 250VAC 5x20mm Slow-Blow	Littelfuse 0218015.HXP or similar			

Notes:

1. Test conditions unless otherwise noted: $V_{AC} = 220$ V_{RMS}, 60 Hz, Air Temp = +25 °C, 50 Ω system.

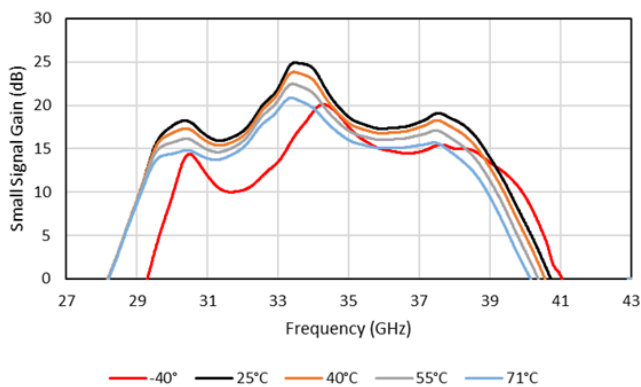
Performance Plots

Test conditions unless otherwise noted: $V_{AC}=220$ VAC_{RMS}, Ambient Air Temp.=+25 °C, 50 Ohm system

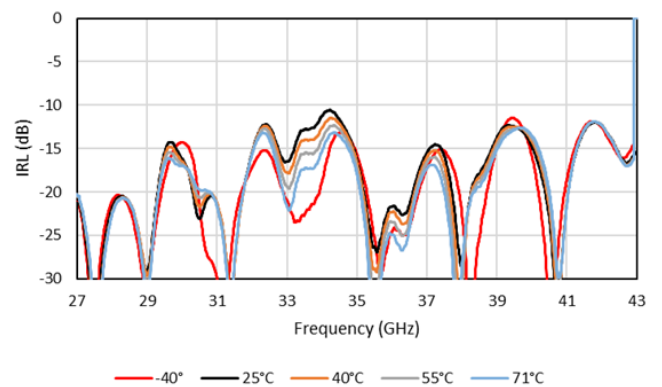
Small Signal Parameters vs Temperature

$V_d = 24V$, $I_{dq} = 4.8A$

Small Signal Gain



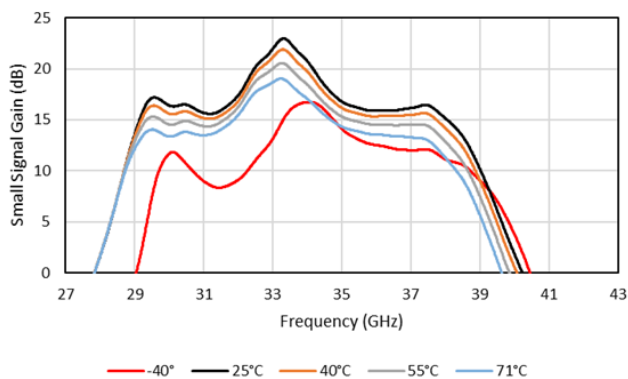
Input Return Loss



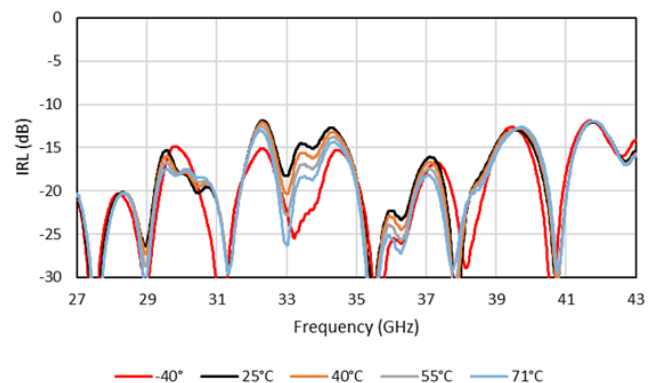
Small Signal Parameters vs Temperature

$V_d = 20V$, $I_{dq} = 4.8A$

Small Signal Gain



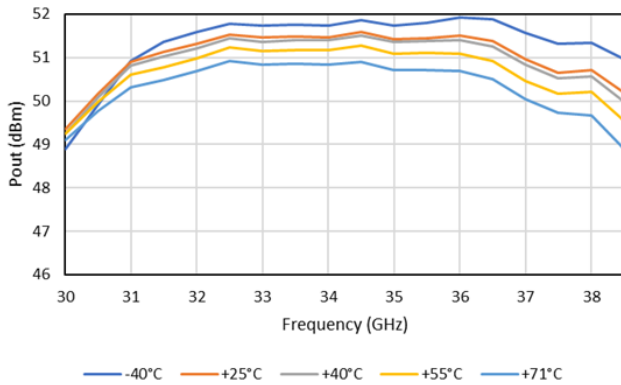
Input Return Loss



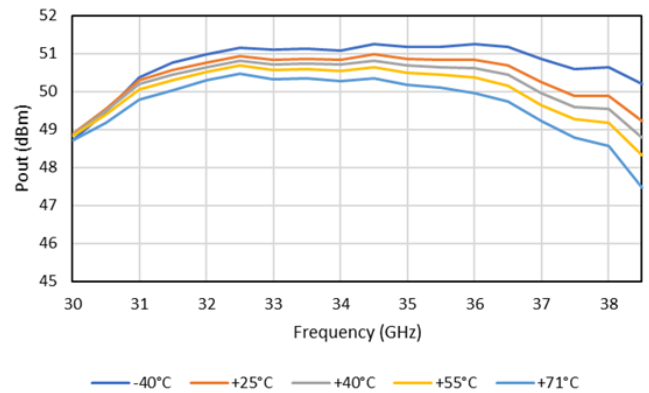
CW Output Power vs Temperature

Vd = 24V and 20V, Idq = 4.8A

Vd = 24V



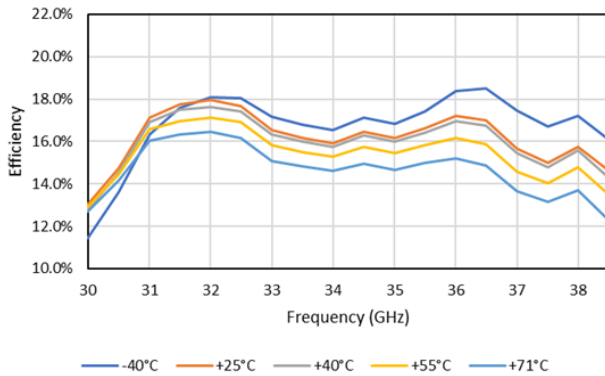
Vd = 20V



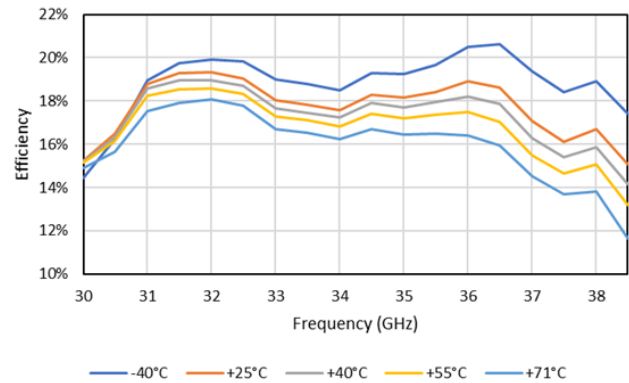
CW Efficiency vs Temperature

Vd = 24V and 20V, Idq = 4.8A

Vd = 24V



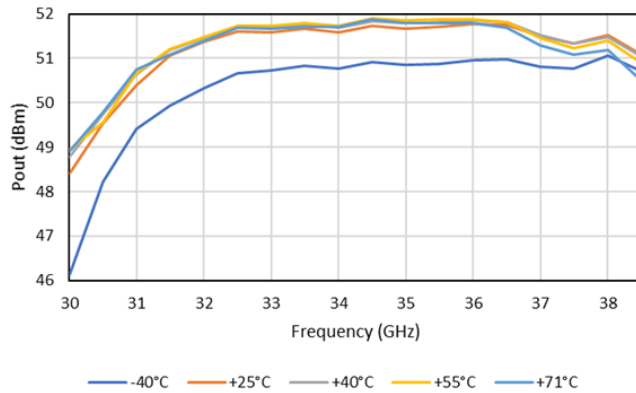
Vd = 20V



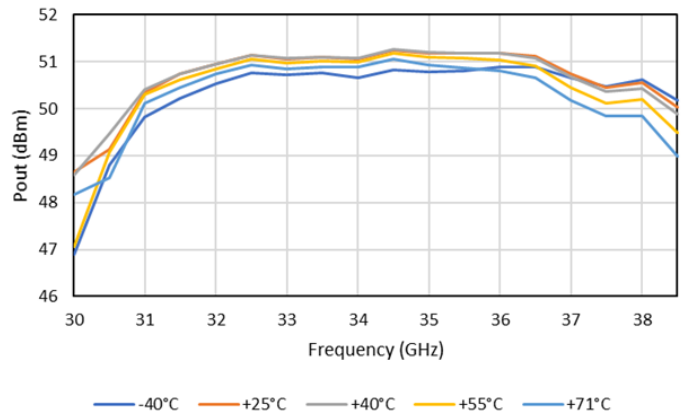
Pulsed Output Power vs Temperature

Vd = 24V and 20V, Idq = 4.8A, PW = 9us, DC = 12%

Vd = 24V

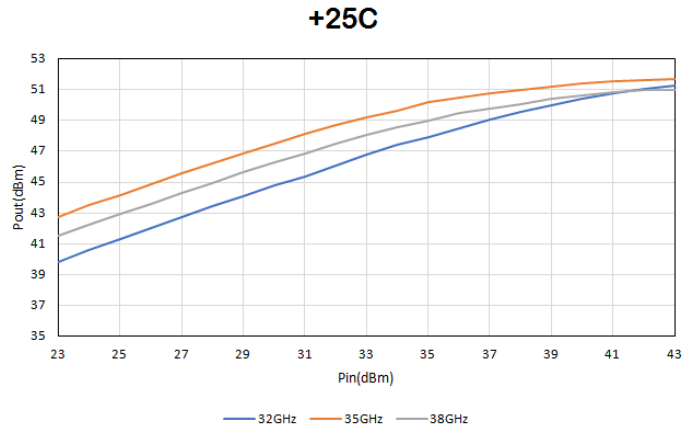
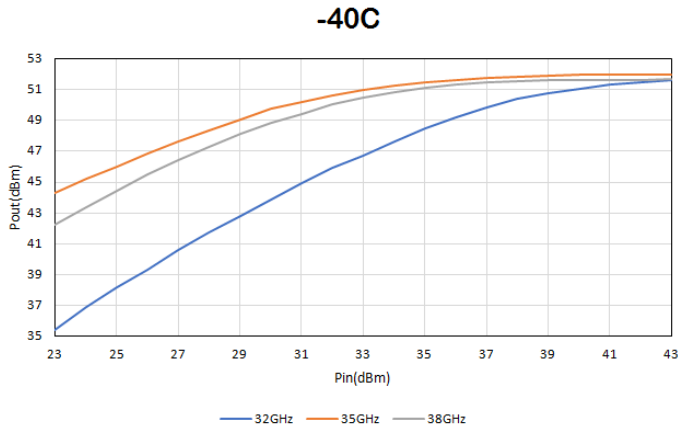


Vd = 20V



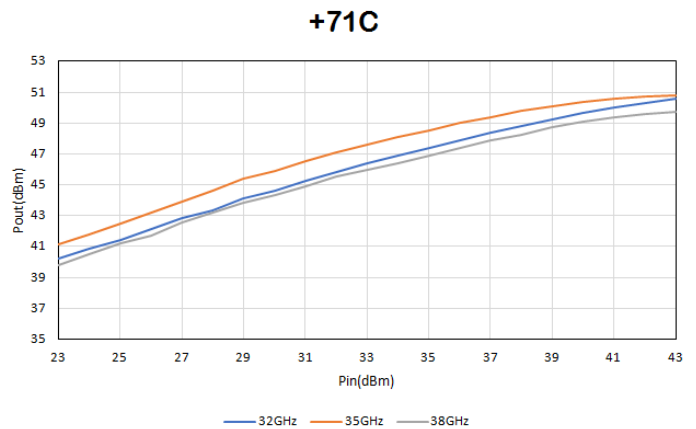
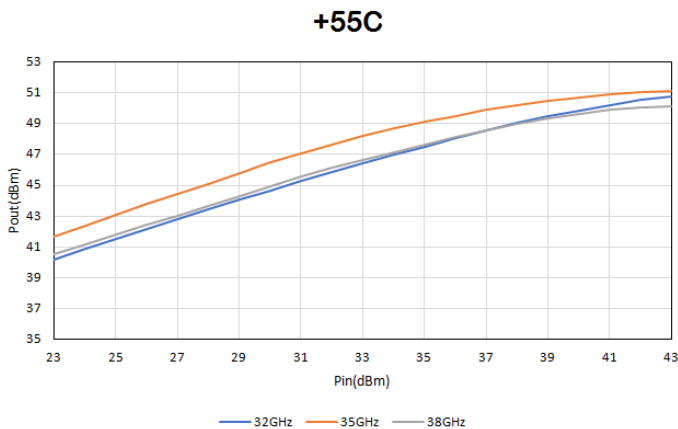
Output Power vs Input Power

Vd = 24V, Idq = 4.8A



Output Power vs Input Power

Vd = 24V, Idq = 4.8A

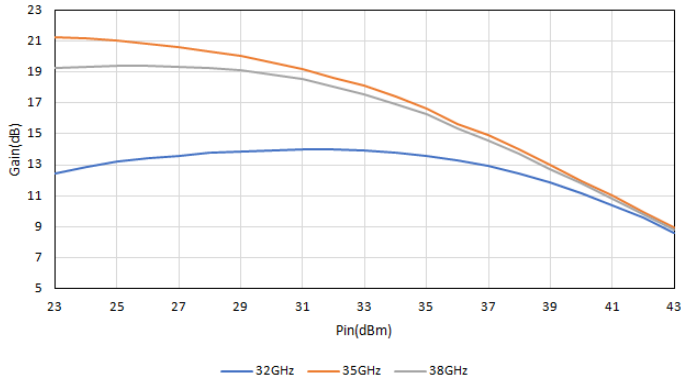


- Pin = 43dBm; Freq sweep 30-38.5GHz, .5GHz step

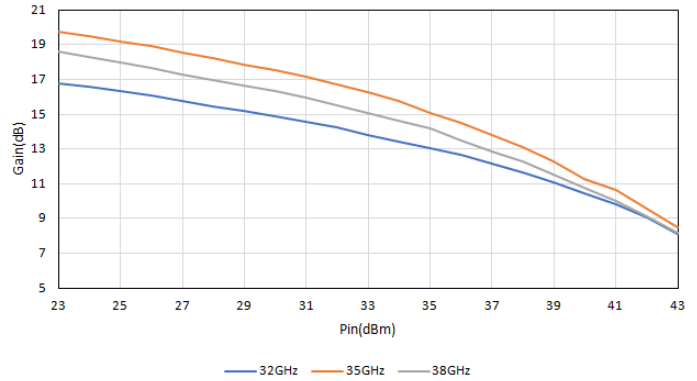
Gain Compression

Vd = 24V, Idq = 4.8A

-40C



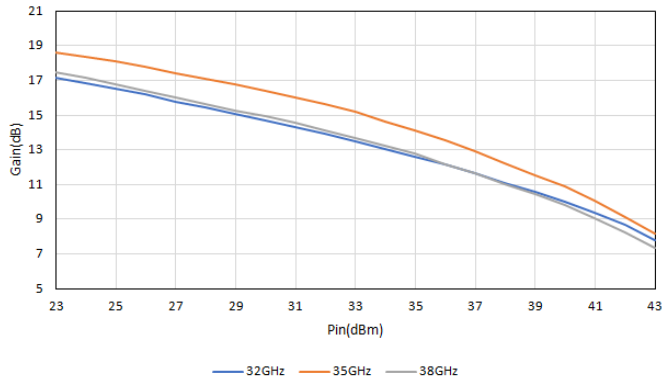
+25C



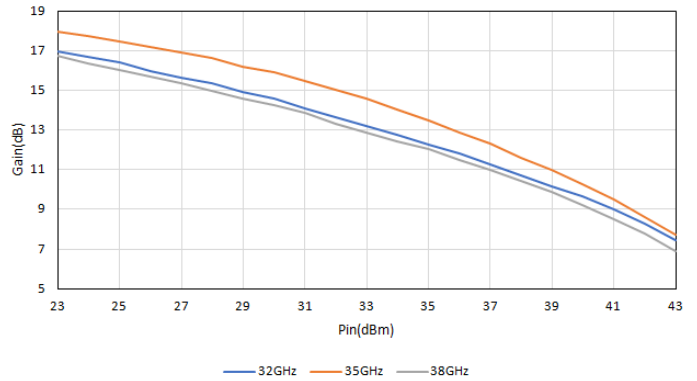
Gain Compression

Vd = 24V, Idq = 4.8A

+55C



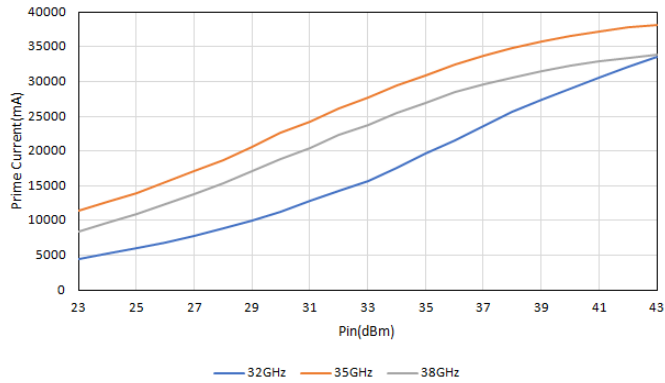
+71C



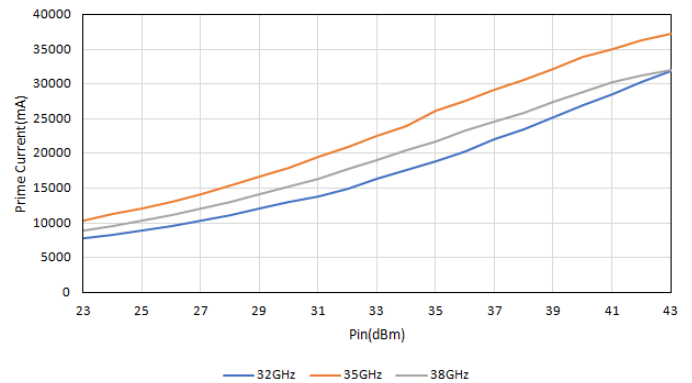
Current vs Input Power

Vd = 24V, Idq = 4.8A

-40C



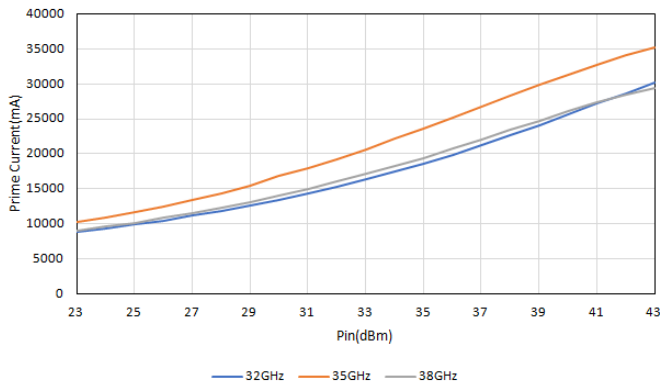
+25C



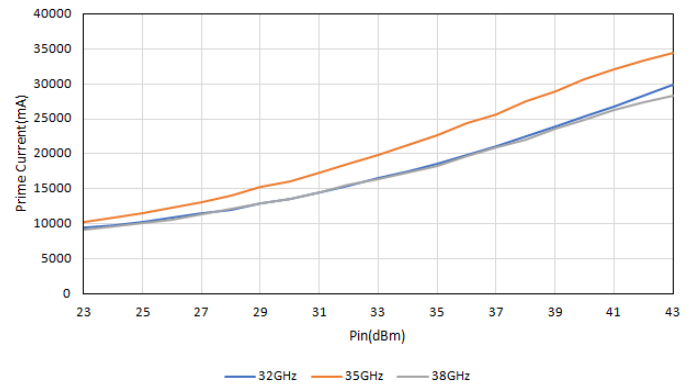
Current vs Input Power

Vd = 24V, Idq = 4.8A

+55C

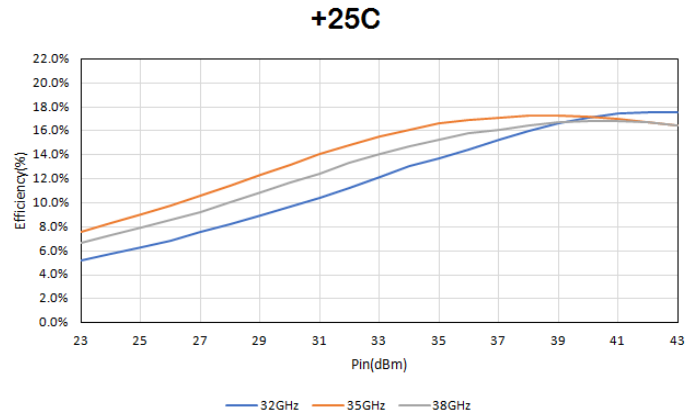
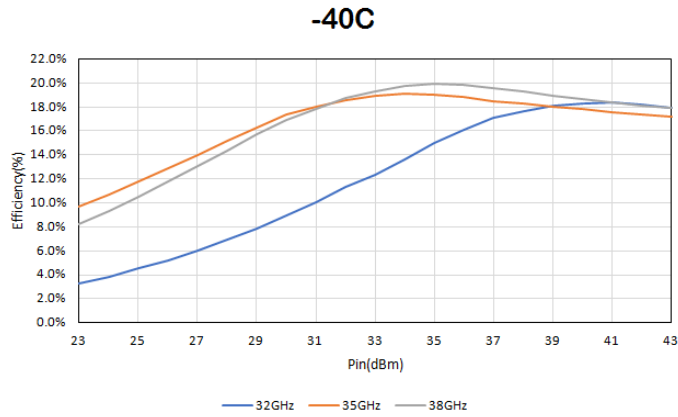


+71C



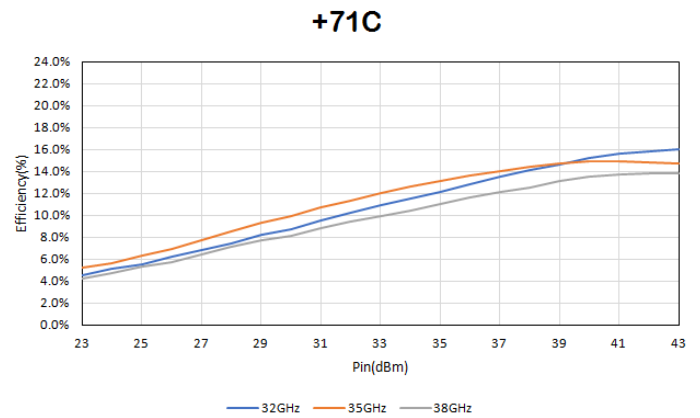
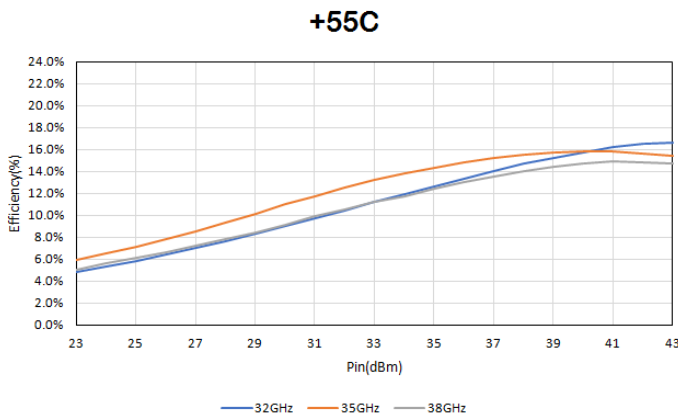
Efficiency vs Input Power

Vd = 24V, Idq = 4.8A

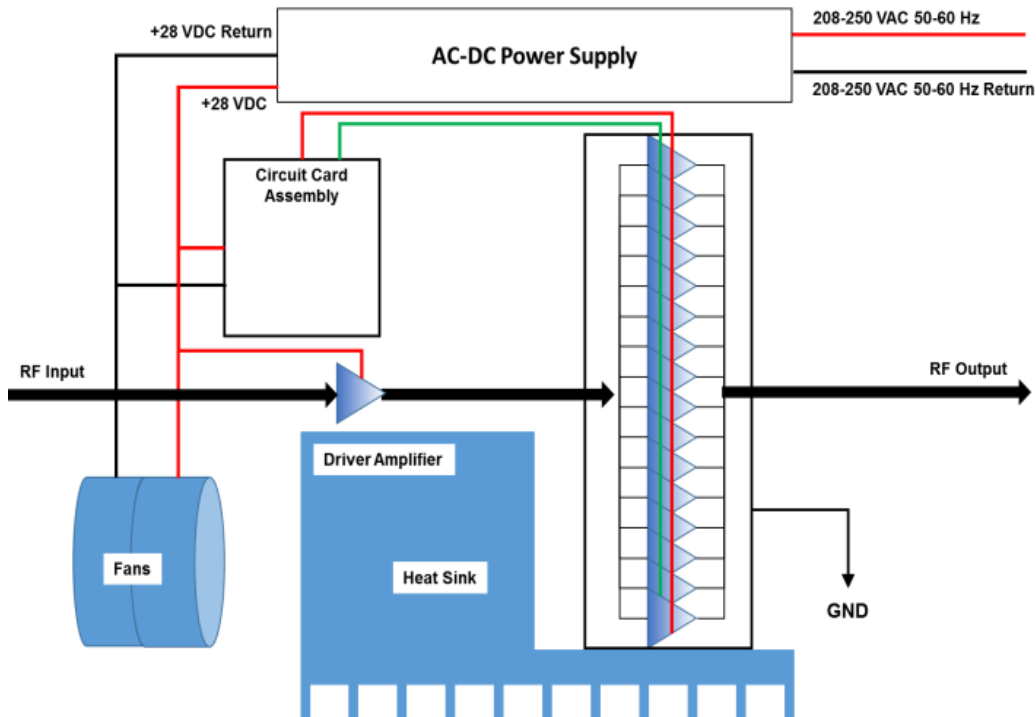


Efficiency vs Input Power

Vd = 24V, Idq = 4.8A

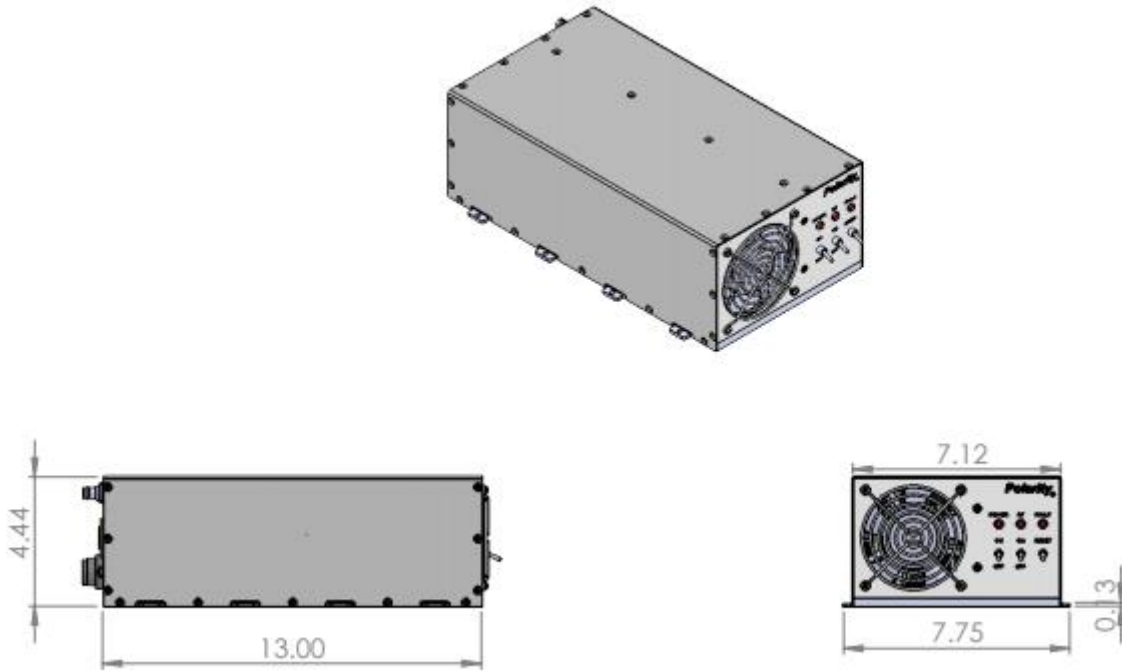


Block Diagram and Description



I/O Port	Label	Description
RF In	N/A	2.92 mm (F) RF Input
RF Out	N/A	WR28 High Power RF Output Waveguide
120-265 VAC	N/A	IEC 320-Standard Sheet C13 straight female connector with Retaining Clip

Package Marking and Dimensions



Handling Precautions



Caution!
ESD-Sensitive Device

Contact Information

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