

MGA-718540-HP3 7.1 – 8.5 GHz 10 W High Efficiency GaN Power Amplifier

Features:

- 13 dB Gain
- 40 dBm and LSG ≥ 10 dB CW
- OIP3 ≥ 54 dBm at 34 dBm per tone
- PAE: 40 % at 40 dBm
- Matched Input and Output for Easy Cascade
- Surface Mount Package with RoHS Compliance
- Thermal Resistance is 3.3 °C / W
- MTTF > 100 years @ 85 °C ambient temperature

Applications:

- Point-To-Point Radio
- Wireless Connectivity

Description:

The MGA-718540-HP3 is a 10 W GaN power amplifier. Operating from 7.1 GHz to 8.5 GHz, the amplifier's CW RF power output is 10W typical and PAE of 40 %. The amplifier's RF input and output are matched to 50 Ω . External bias tees are required. The OIP3 is 54 dBm (34 dBm per tone).

The MGA-718540-HP3 packaged base is a solid copper offering superior thermal management. The overall Rth is 3.3 °C / W.

Typical RF Performance: $V_{ds} = 28$ V, $V_{gs} = -2.3$ V, $I_{dq} = 200$ mA, $T_a = +25$ °C, $Z_0 = 50$ Ω

Parameter	Units	Typical Data
Frequency Range	MHz	7100 - 8500
Gain (Typ / Min)	dB	14 / 12
Gain Flatness (Typ / Max)	$\pm$ dB	1.0 / 1.5
Input Return Loss	dB	10
Output Return Loss	dB	7
Output P3dB	dBm	42
OIP3(1)	dBm	54
Operating Current Range	A	1.3
Thermal Resistance	°C / W	3.3

(1) Output IP3 is measured with two tones at output power of 34 dBm / tone separated by 10 MHz.

ESD Caution



High-performance RF integrated circuits are highly sensitive to electrostatic discharge (ESD) and may contain unprotected inputs and outputs. Handling and assembly should be conducted in an ESD-controlled environment. It is recommended that ESD precautions and protocols are adopted to minimise the risk of electrostatic discharge and protect product integrity.

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Typical RF Performance: $V_{ds} = 28.0\text{ V}$, $I_{dq} = 200\text{ mA}$ and 400 mA , $Z_0 = 50\ \Omega$, $T_a = +25\ ^\circ\text{C}$

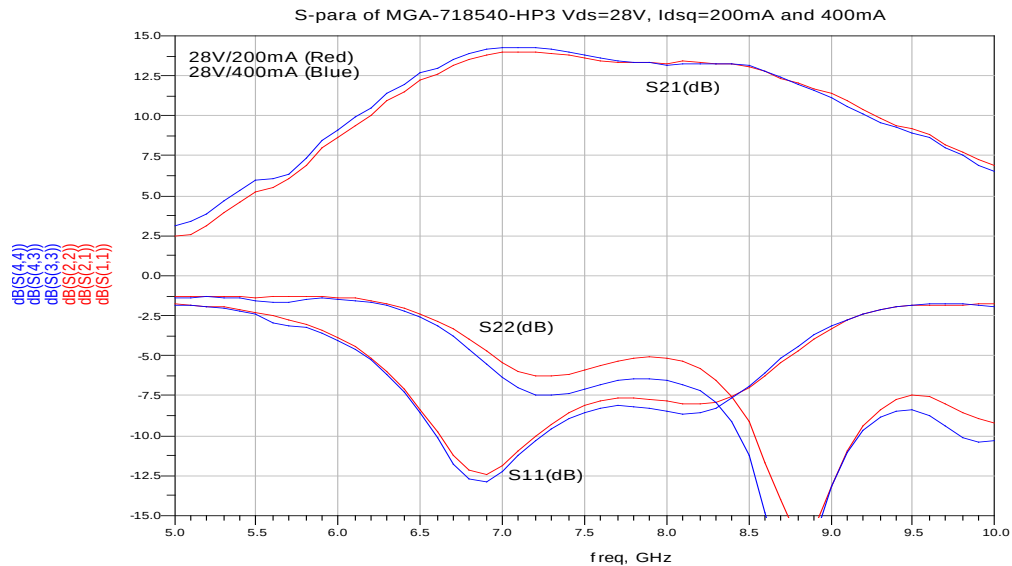


Figure 1 - SSG Response $V_{ds} = 28\text{ V}$, $I_{dq} = 200\text{ mA}$ and 400 mA

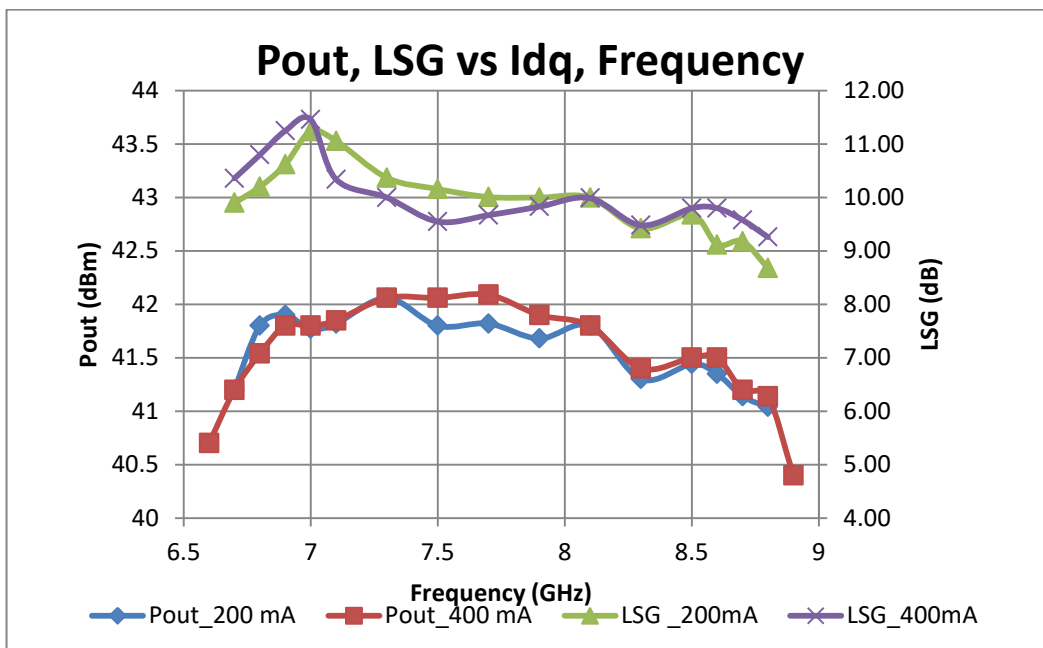


Figure 2 - Typical RF Power (CW) Performance $V_{ds} = 28\text{ V}$, $I_{dq} = 200\text{ mA}$ and 400 mA

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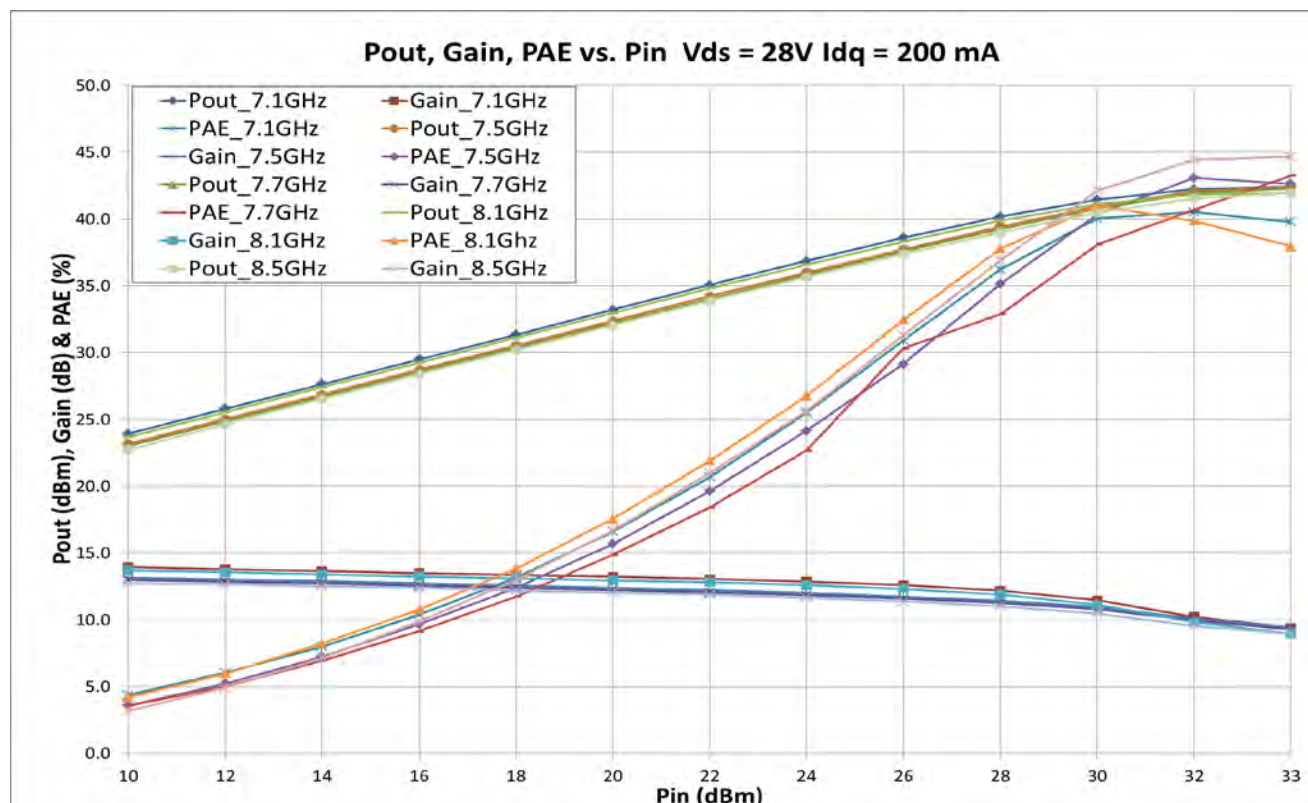


Figure 3 - Pout, Gain, and PAE vs. Pin

Absolute Maximum Ratings: ($T_a = 25^\circ\text{C}$)*

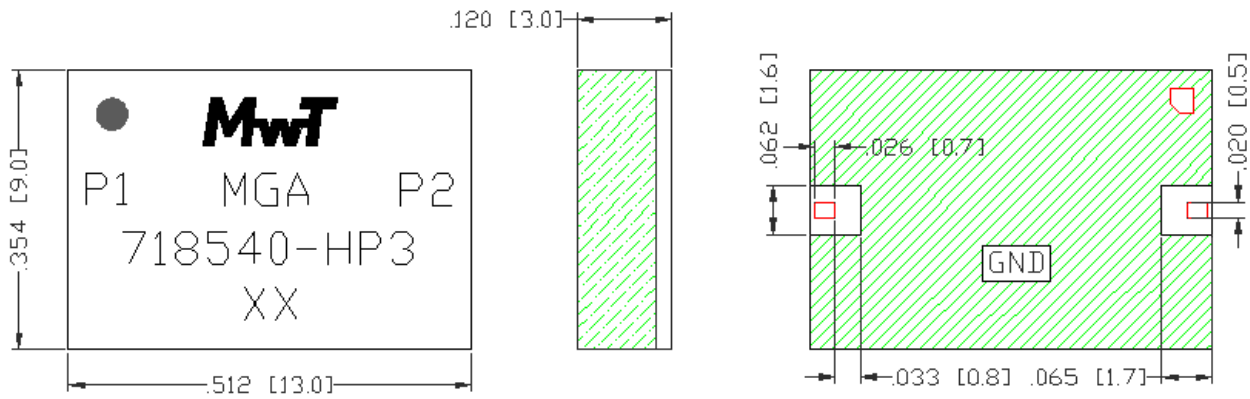
SYMBOL	PARAMETERS	UNITS	ABSOLUTE MAXIMUM
Vds	Drain-Source Voltage	V	29
Id	Drain Current	mA	2500
Ig	Gate Current	mA	2.0
Pdiss	DC Power Dissipation	W	60
Pin max	RF Input Power	dBm	+36
Tch	Channel Temperature	$^\circ\text{C}$	225
Tstg	Storage Temperature	$^\circ\text{C}$	-55 to 125

*Operation of this device above any one of these parameters may cause permanent damage.

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Mechanical Information: *This Package is RoHS compliant*



Pin	Functions
1	RF in, Vgs feed in
2	RF out, Vds feed in
GND	The GND area of the bottom should be thermally and electrically grounded.

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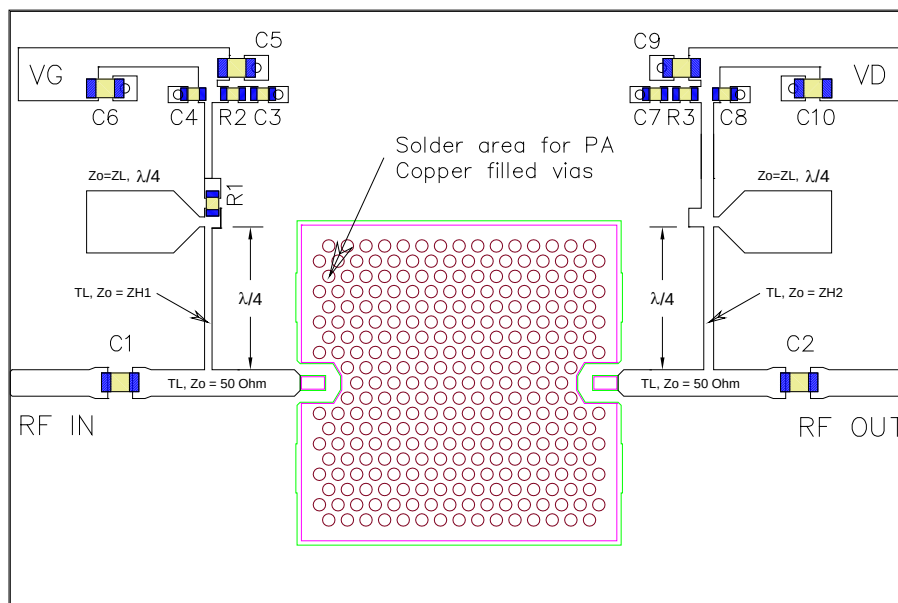


Figure 6 - Evaluation Board

Items	Descriptions
R1	12 Ω , 0402, 25 V
R2, R3	50 Ω , 0402, 50 V
C1, C2	2.0 pF, 0603, 50 V, High Q RF Ceramic Capacitors
C3, C7	0.1 μ F, 0402, 50 V, High Q RF Ceramic Capacitors
C4, C8	1000 pF, 0402, 50 V, High Q RF Ceramic Capacitors
C5, C6, C9, C10	0.1 --- 10 μ F, 0603 or 0402, 50 V

Table 2 - Evaluation BOM

The evaluation board, Figure 6, can be requested by contacting sales@cmlmicro.com

RoHS Compliance



CML Micro certifies, to the best of our knowledge, that its products comply with RoHS directive (2011/65/EU), as amended by Directive (EU) 2015/863.

REACH Compliance



CML Micro certifies, to the best of our knowledge, that its products do not contain any of the banned substances specified in the SVHC list at <https://echa.europa.eu/candidate-list-table>. CML Micro are committed to ensuring the safety of products and the compliance with regulations. Publications will be updated in the event that REACH control is compromised.

Contact Information

For further information please contact your local CML sales representative.
Contact details can be found at www.cmlmicro.com.

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