

AR201045

BLP2425M10S250P,
2400-2500 MHz, 250W

v1.0 – March 06, 2020

AMPLEON

Application Report

Document information

Status	v1.0
Abstract	Measurement results of the demo BLP2425M10S250P in 2400-2500 MHz.
Demo Number	AR201045

1. Revision History

Table 1 – Report revisions

Revision	Date	Description	Author
1.0	2020.03.06	Initial document	

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5. General description

This report presents the measurement results of the high efficiency 250W GEN 10 LDMOS demo using the BLP2425M10S250P transistor in the frequency range from 2400 MHz to 2500 MHz. The demo is matched to 50 Ω at input and output.

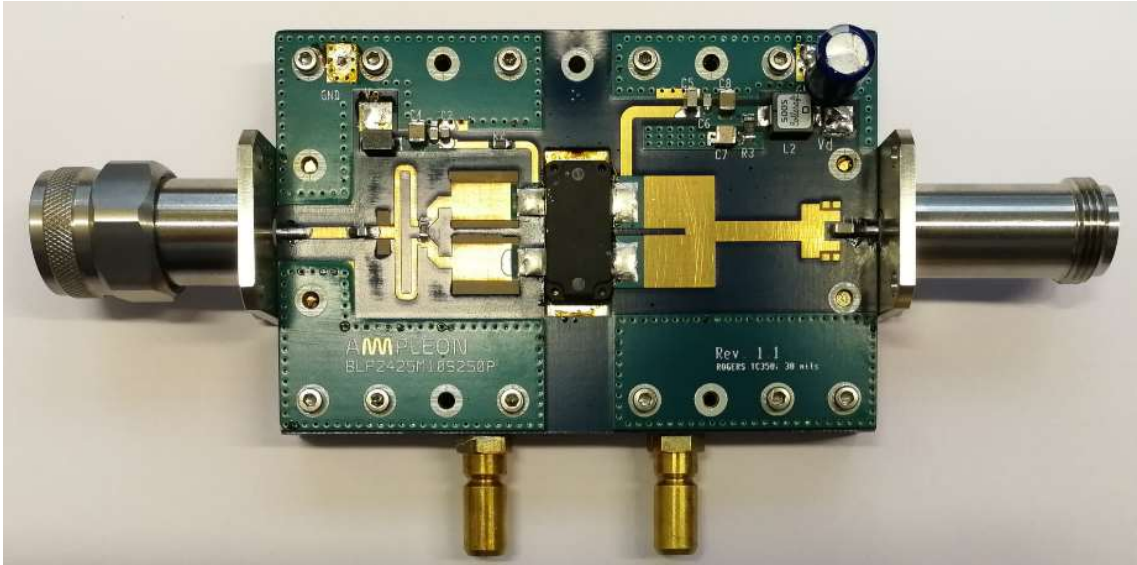


Figure 1 – Demo view of the BLP2425M10S250P

Table 2 – Test circuit information

Parameter	Description	Unit
Input Laminate Type	TC350	
Output Laminate Type	TC350	
Laminate thickness	0.762	mm
Overall dimensions	90 x 60	mm
Cooling type	Indirect water cooling	
Device Package	OMP-780	

6. RF characteristics

Table 3 – RF characteristics

Test signal: CW; RF performance at $V_{DS}=32V$; $I_{Dq}=100mA$; $T_{amb}=21^{\circ}C$; $T_{cooling\ water}=25^{\circ}C$

Symbol	Parameter	Conditions	Typical	Unit
f	Frequency		2400–2500	MHz
V_{DS}	Drain-source voltage		32	V
V_{GS}	Gate-source voltage	$I_{Dq} = 100mA$	1.85	V
G_p	Power gain	$P_{1dBcp} = 290.3W$	14.4	dB
η_D	Drain efficiency	$P_{1dBcp} = 290.3W$	67.4	%

7. Performance Details

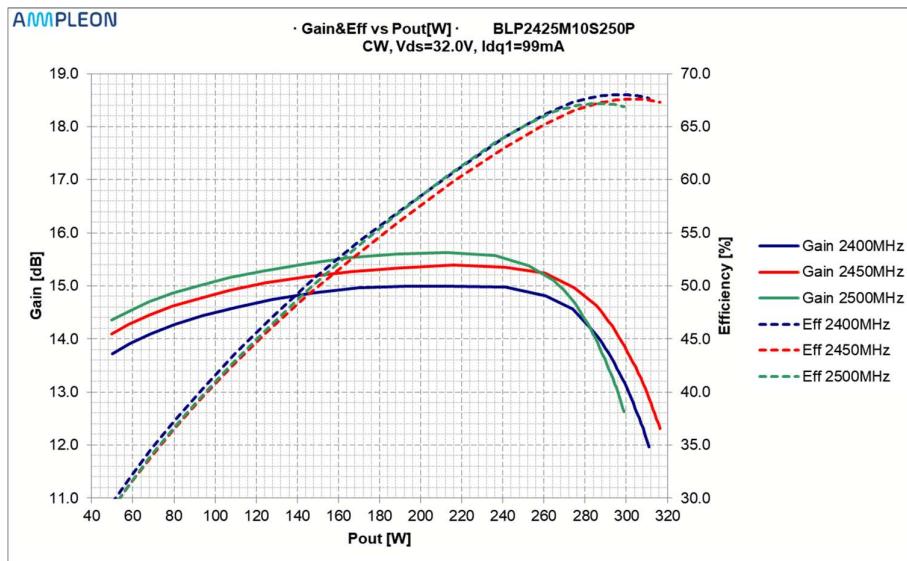


Figure 2 – BLP2425M10S250P demo board performance

Table 4 – RF Performance overview

Freq [MHz]	Gmax [dB]	Pout@Gmax [W]	P1dB [W]	P2dB [W]	P3dB [W]	Effmax [%]	Pout@Effmax [W]	Eff P1dB [%]	Eff P2dB [%]	Eff P3dB [%]
2400	15	216.3	286.9	301	310.9	68	295.5	67.9	68	67.7
2450	15.4	215.9	290.3	305.6	315.7	67.6	304.6	67.4	67.6	67.3
2500	15.6	212.5	275.6	289.5	298.9	67.2	288.4	67	67.2	66.9

8. User Guide

8.1 Biasing

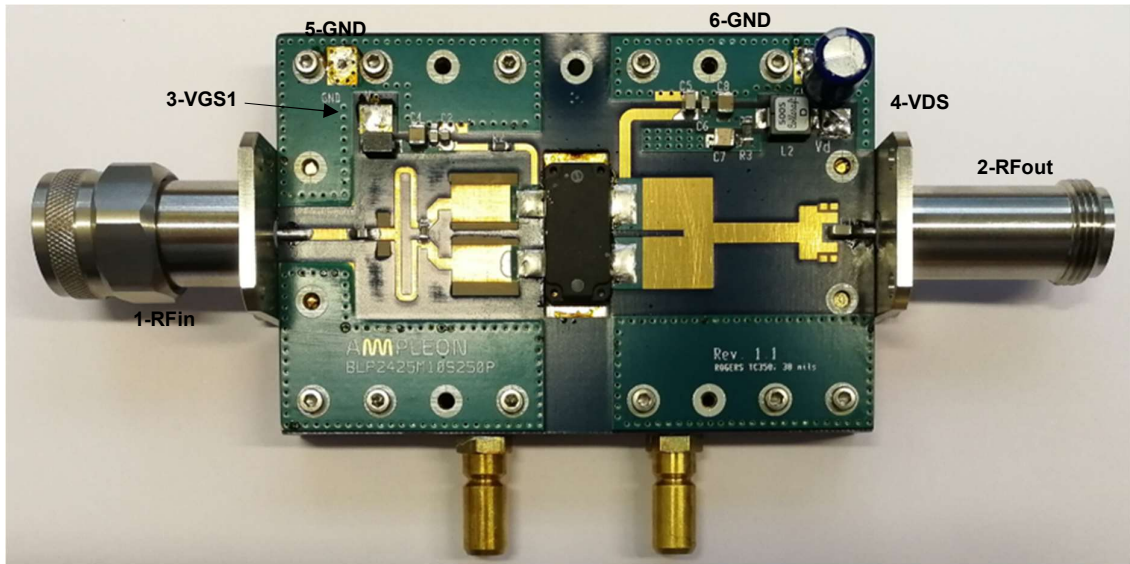


Figure 3 – BLP2425M10S250P demo board pin configuration

Table 5 – Pin description

Symbol	Pin	Description
RF _{IN}	1	RF input
RF _{OUT}	2	RF output
V _{GS}	3	Gate-source voltage
V _{DS}	4	Drain-source voltage
GND	5, 6	Negative supply terminal for V _{GS} and V _{DS} respectively

Remark: Use an electrolytic capacitor, 10000µF/63V, external to the application circuit but close to supply pin 4 ,6 for usage in Pulsed mode.

8.2 Bill of Materials

Table 6 – Bill of Materials

Part	Description	Part number	Value/Remark
C1, C2	Multilayer ceramic chip capacitor	22 pF	ATC 800A
C3, C6	Multilayer ceramic chip capacitor	1000 pF, 50 V	C0805
C4, C8	Multilayer ceramic chip capacitor	1 μ F, 50 V	C1206
C5, C10	Multilayer ceramic chip capacitor	22 pF	ATC 800B
C7	Multilayer ceramic chip capacitor	560 pF	ATC 100B
C9	Electrolytic capacitor	100 μ F, 63V	
R1	Chip resistor	100 Ω	R0805
R2	Chip resistor	10 Ω	R0805
R3	Chip resistor	1.5 Ω	R1206
L1	Ferrite bead inductor	1 μ H	SMD type
L2	Inductor	0.05 μ H	Coilcraft SLC7530D-500MLC
T1	LDMOS transistor	BLP2425M10S250P	Ampleon
Input PCB	Rogers TC350		30 mil thickness
Output PCB	Rogers TC350		30 mil thickness

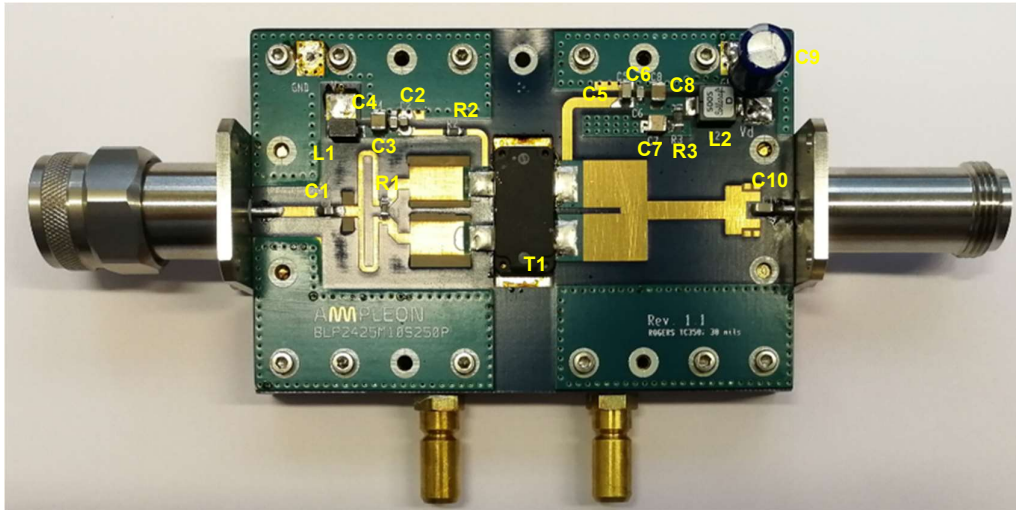


Figure 4 – BLP2425M10S250P application board component description

8.3 Temperature behavior

For operation of this demo board water cooling should be applied.

8.4 Device markings

Table 7 – Module specifics

Parameter	Value
Manufacturer	Ampleon
Device	BLP2425M10S250P
Comments	Engineering sample

9. Legal information

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