

WP485P03025MH

25W RF GaN Power Transistor



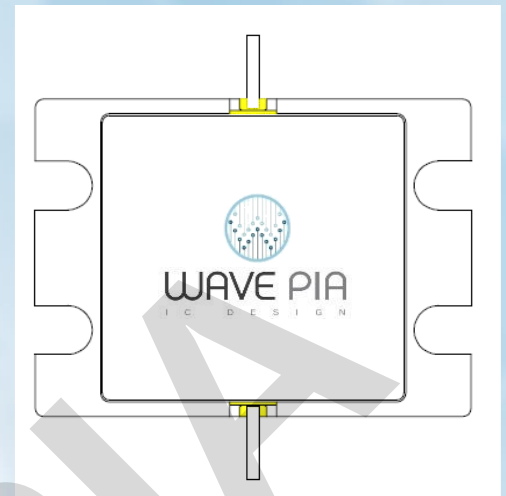
WAVEPIA
I C D E S I G N

Product Features

- Up to 6 GHz Operation
- 14.5 dB Small Signal Gain at 5.06 GHz
- 25W Typical Psat at 5.06 GHz (CW)
- 26% Efficiency at Psat at 5.06 GHz (CW)
- 48 V Operation

Applications

- Broadband Amplifiers
- Test Instrumentation
- Radar application



Absolute Maximum Ratings

Parameter	Symbol	Rating	Units	Conditions
Drain-Source Voltage	V_{DSS}	160	Volts	25 °C
Gate-to-Source Voltage ³	V_{GS}	-10, +2	Volts	25 °C
Storage Temperature ³	T_{STG}	-65, +150	° C	
Operating Junction Temperature ^{1,3}	T_J	225	° C	
Maximum Forward Gate Current ³	I_{GMAX}	30	mA	25 °C
Maximum Drain Current ²	I_{DMAX}	1	A	$I_d @ V_d = 10V, V_g = 1V$
Soldering Temperature ³	T_S	245	° C	
Storage Temperature ³	T_{STG}	-65, +150	° C	

Note:

1. Continuous use at maximum temperature will affect MTTF.
2. Current limit for long term, reliable operation
3. After additional updates

DC Characteristics¹ (TC = 25 °C)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Gate Threshold Voltage	$V_{GS(th)}$		-3.1		V_{DC}	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.79		V_{DC}	$V_{DS} = 48\text{ V}, I_D = 300\text{ mA}$
Saturated Drain Current ²	I_{DS}		1000		mA/mm	$V_{DS} = 10\text{ V}, V_{GS} = 1\text{ V}$
Drain-Source Breakdown Voltage	V_{BR}	160			V_{DC}	$I_D = 1\text{ mA/mm}$

Note:

1. Measured on wafer prior to packaging.
2. Scaled from PCM data.

RF Characteristics (TC = 25 °C, F0 = 5.06 GHz unless otherwise noted)

Parameter	Symbol	MIN	TYP	MAX	Units	Conditions
Power Gain	G_{SS}		11.5		dB	$V_{DD} = 4.8\text{ V}, I_{DQ} = 300\text{ mA}, CW$
Output Power	P_{OUT}		25		W	$V_{DD} = 4.8\text{ V}, I_{DQ} = 300\text{ mA}, CW$
Saturated Output Power	P_{SAT}		30		W	$V_{DD} = 4.8\text{ V}, I_{DQ} = 300\text{ mA}, CW$
Pulsed Drain Efficiency ¹	η		26		%	$V_{DD} = 4.8\text{ V}, I_{DQ} = 300\text{ mA}, CW$
Output Mismatch Stress	VSWR	-	-	10:1		No damage at all phase angles, $V_{DD} = 4.8\text{ V}, I_{DQ} = 300\text{ mA}, P_{OUT} = 2.5\text{ W CW}$

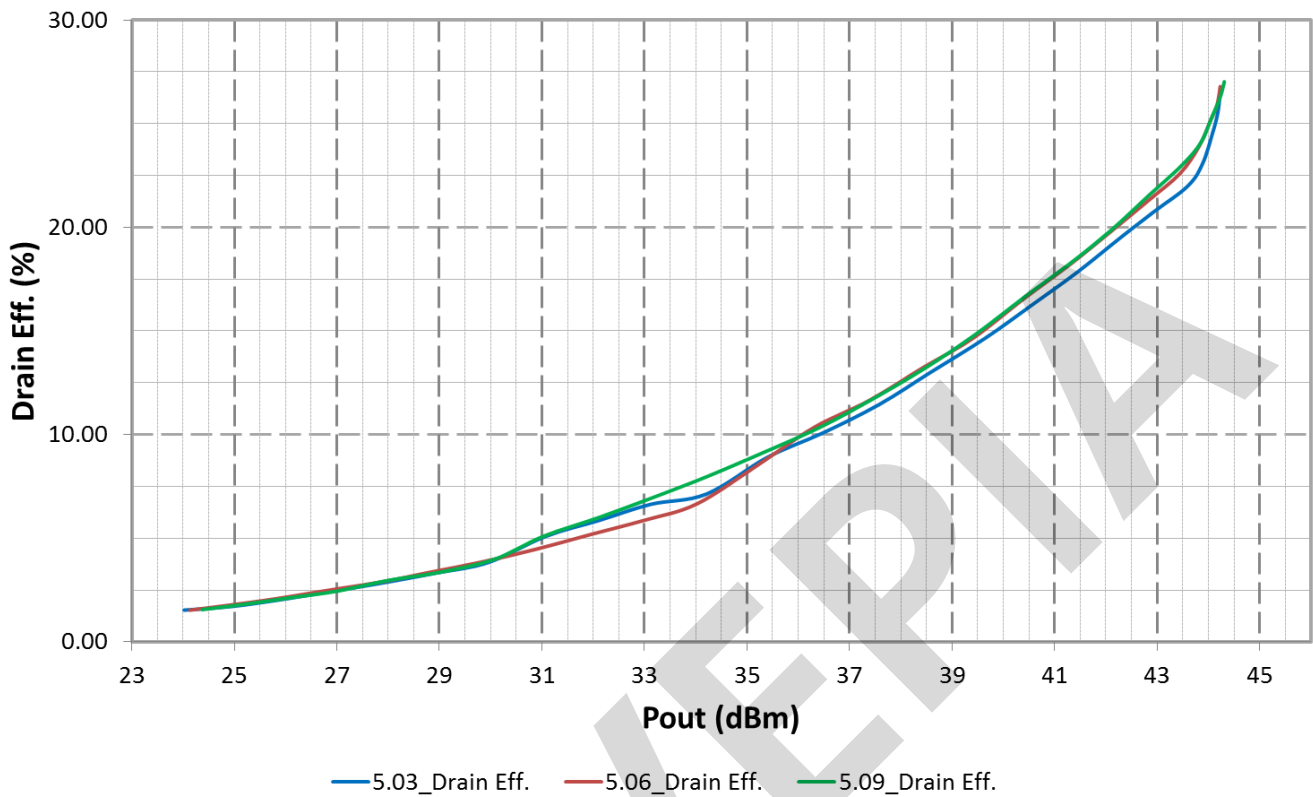
Note:

1. Drain Efficiency = P_{OUT}/P_{DC}

CW Signal Performance (Tc=25°C, Measured in the test board amplifier circuit)

VDD = 48V, IDQ = 300 mA,

Drain Efficiency vs. Pout

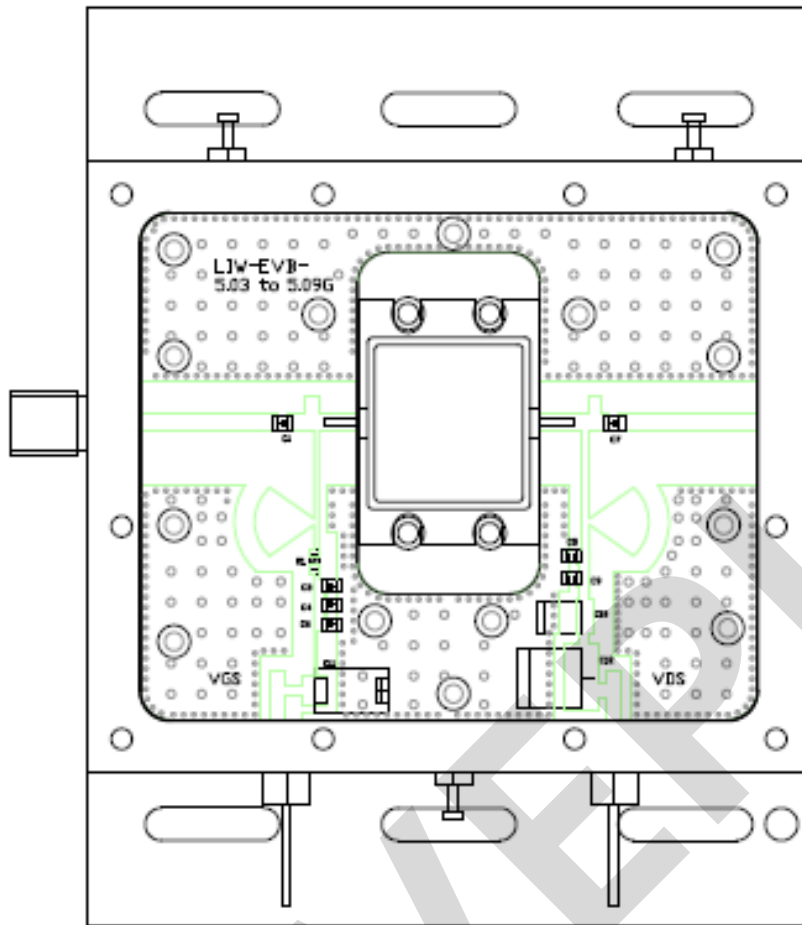


Small Signal Performance (Tc=25°C, Measured in the test board amplifier circuit)

VDD = 48V, IDQ = 300 mA



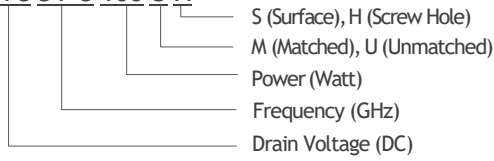
Demonstration board



Reference	Value	Description	Package	Manufacturer
C1,C7	3.0pF	High Q Capacitor	CHA	TEMEX
C3,C8	5.6pF	High Q Capacitor	CHA	TEMEX
C4	100pF	Ceramic Capacitor	2010	Murata
C5	100nF	Ceramic Capacitor	2010	Murata
C11	22uF/16V	Tantalum Capacitor	-	-
C9	100pF	High Q Capacitor	CHA	TEMEX
C10	10pF	High Q Capacitor	CHA	TEMEX
C11	470nF	High V Capacitor	3528	Johanson Dielectrics
C12	47uF/100V	High V Tantalum Capacitor	-	-
R1	50Ω	Chip Resistor	2010	Walsin

Part number code

WP483P5100UH



Package Dimensions

