

Description

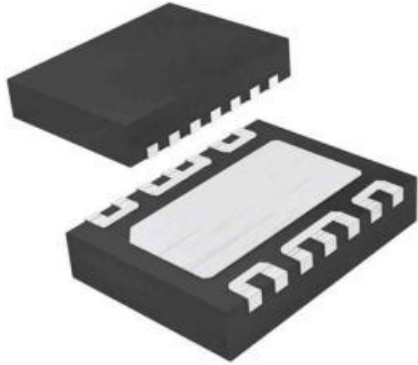
The HTN9G49S007P is an unmatched discrete LDMOS Power Amplifier with 7W saturated output power covering frequency range from 4800 - 4900 MHz.


Features

- Operating Frequency Range: 4800 - 4900 MHz
- Operating Drain Voltage: +24V
- Saturation Output Power: 7W
- Power Average: 0.76W
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

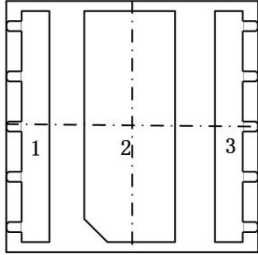
Applications

- CDMA
- W-CDMA
- GSM EDGE
- MC-GSM
- TDD/FDD LTE
- WiMAX



DFN5X5 

Dual Flat pack No Lead



Bottom View
Terminal No.
1: Gate
2: Source
3: Drain

Note: Exposed backside of the package is the source terminal for the transistor

Pin Connections

Ordering Information

Part Number	Description
HTN9G49S007P	Reel Package
HTN9G49S007PEVB	4800 - 4900 MHz EVB

Typical Performance

RF Characteristics (CW)

Freq (MHz)	Gain (dB)	P1dB (dBm)	Eff (%)@ P1dB (dBm)	P3dB (dBm)	Eff (%)@ P3dB (dBm)
4800	15.18	36.97	41.90	38.01	44.51
4850	15.46	37.02	43.59	38.04	46.09
4900	15.75	36.87	43.92	37.93	46.48

Test conditions unless otherwise noted: 25 °C, VDD = +24Vdc, IDQ= 60mA CW test on WATECH Application Board

RF Characteristics (Pulsed CW)

Freq (MHz)	Gain (dB)	P1dB (dBm)	Eff (%)@ P1dB (dBm)	P3dB (dBm)	Eff (%)@ P3dB (dBm)
4800	15.28	37.44	44.05	37.47	46.78
4850	15.52	37.50	45.99	38.50	48.55
4900	15.87	37.37	46.74	38.38	49.39

Test conditions unless otherwise noted: 25 °C, VDD = +24Vdc, IDQ=60mA, PW = 100us, DC= 10% test on WATECH Application Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V _{DSS})	-0.5, +65	V
Gate voltage (V _{GS})	-5 to +10	V
Operation voltage (V _{DD})	+0 to +24	V
Storage Temperature (T _{STG})	-55 to +150	°C
Case Temperature (T _C)	-40 to +150	°C
Junction Temperature (T _J)	-40 to +225	°C

Electrical Specification

DC Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage V _{(BR)DSS}	Vgs=0V, Ids=7.2uA	65	-	-	V
Gate-Source Threshold Voltage V _{GS(th)}	Vds=Vgs, Ids=7.2uA	-	1.5	-	V
Drain Leakage Current I _{DSS}	Vgs=0V, Vds=65V	-	-	1.0	uA
Gate Leakage Current I _{GSS}	Vgs=5V, Vds=0V	-	-	100	nA

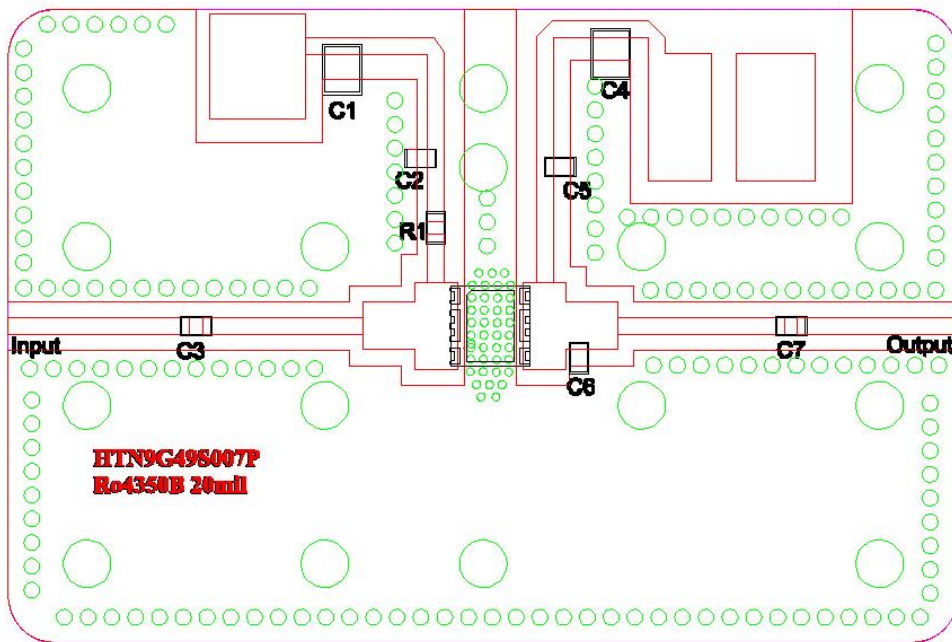
Load Mismatch Test

Condition	Test Result
VSWR=10:1, at all Phase Angles, VDD = +24Vdc, IDQ= 60mA, CW signal Pout = 38 dBm (3dB input Overdrive from P3dB) @4850 MHz test on WATECH Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R _{TH})	T _{CASE} = 50°C, CW signal 7W	3.0	°C /W

HTN9G49S007P 4800 - 4900 MHz Reference Design



EVB Layout

Bill of Materials (BoM) - HTN9G49S007P 4800 - 4900 MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	7W, 4800 - 4900 MHz LDMOS PA	Watech	HTN9G49S007P
C1, C4	4.7uF	MLCC	Murata	GCM32DC72A475KE02L
C2, C7	3.9pF	MLCC	Murata	GQM2195G2E3R9BB12



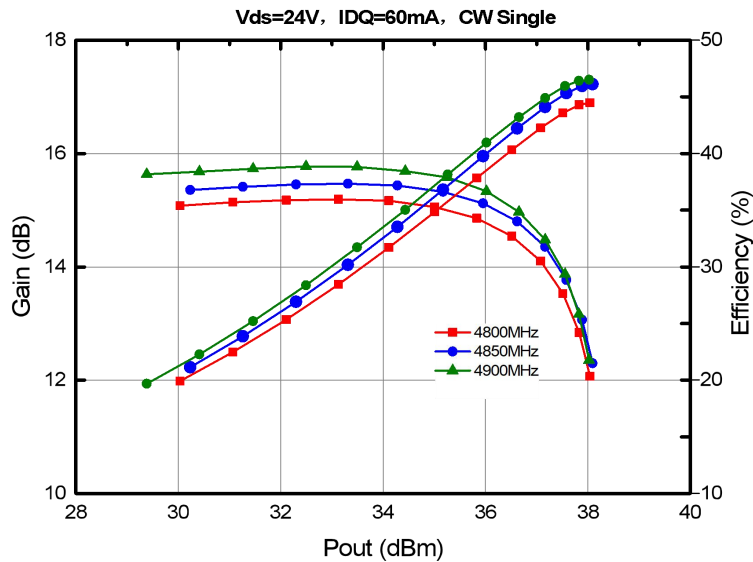
HTN9G49S007P

7W, 4800 - 4900 MHz LDMOS Amplifier

Product datasheet

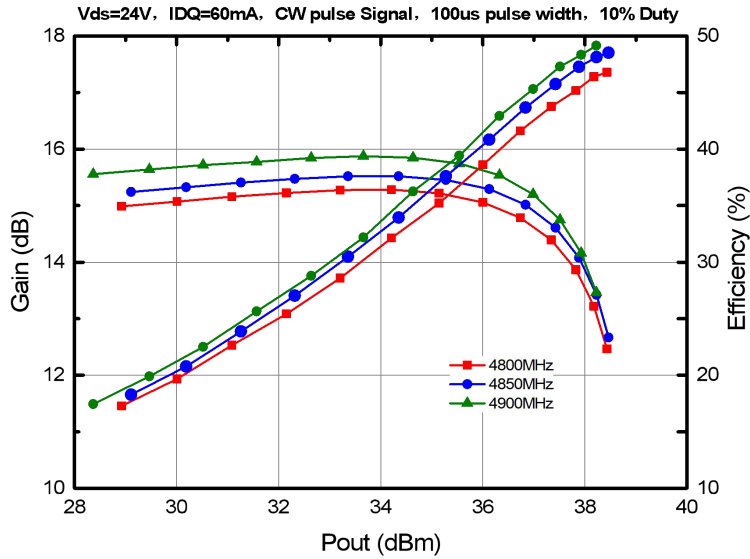
C3	10pF	MLCC	Murata	GQM2195C2E100JB12
C5	6.8pF	MLCC	Murata	GQM2195G2E6R8BB12
C6	0.6pF	MLCC	Murata	GQM2195G2ER60BB12
R1	10Ω	Thick Film Resistor	-	0603
PCB	Rogers4350B (er = 3.66), 20 mil (0.508 mm), 35 μm (1oz)			

Performance Plots 4800 - 4900 MHz Reference Design



CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 60mA, CW test on WATECH Application Board



Pulsed CW, Gain and Efficiency vs Pout

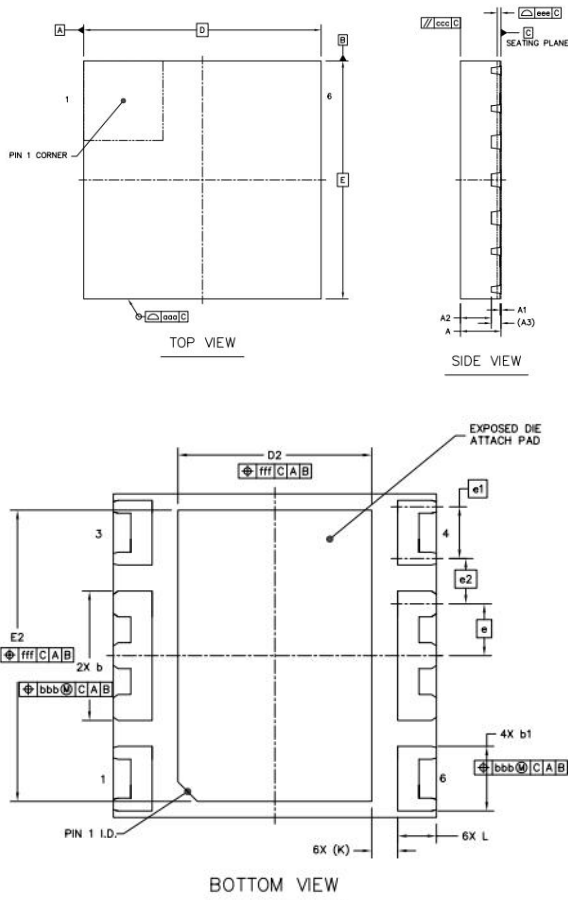
Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 60mA, PW = 100us, DC= 10% test on WATECH Application Board

Package Marking and Dimensions



- Line1 (fixed): Device name in W/O
 - Line2 (unfixed): Take the last 8 digits of Marking Lot No in W/O
(Sample: E596-20140001, just take "20140001")
 - Line3 (unfixed): Date Code + JY
- This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of "Watech Product Printing Specification"

Marking

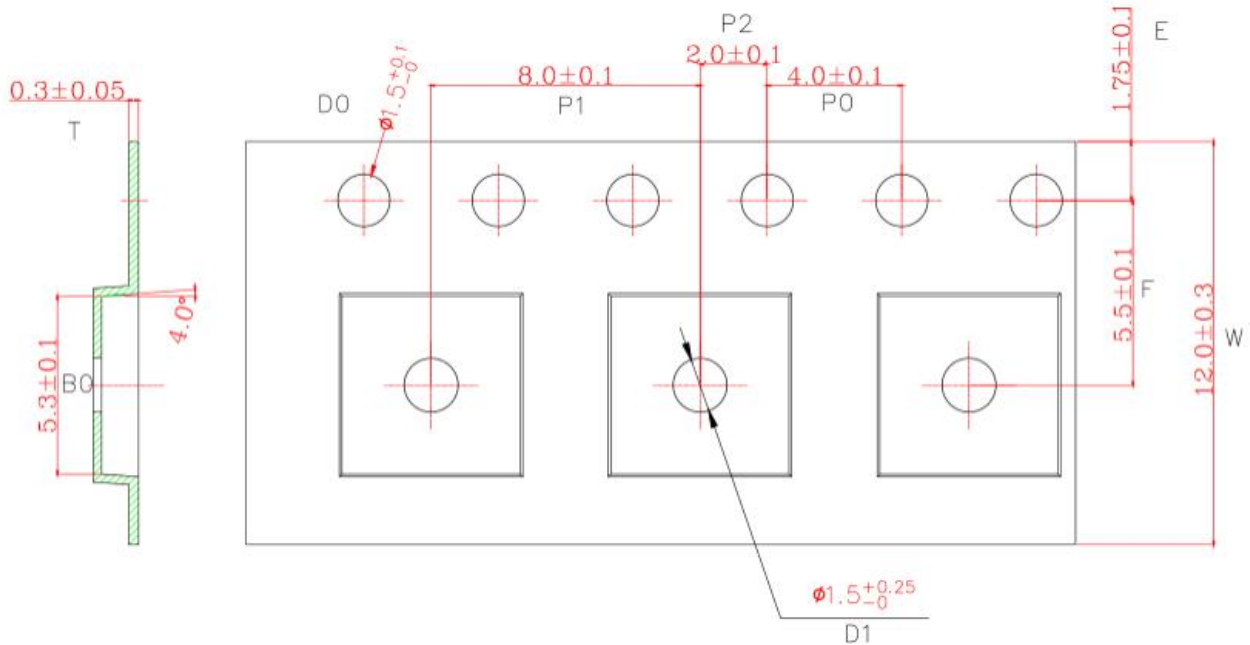


	SYMBOL	MIN	NOM	MAX
TOTAL THICKNESS	A	0.8	0.85	0.9
STAND OFF	A1	0	0.02	0.05
MOLD THICKNESS	A2	---	0.65	---
L/F THICKNESS	A3	0.203 REF		
LEAD WIDTH	b	1.95	2	2.05
	b1	0.95	1	1.05
BODY SIZE	X	D		
	Y	E		
LEAD PITCH	e	0.8 BSC		
	e1	0.8 BSC		
	e2	0.7 BSC		
EP SIZE	X	D2	2.9	3
	Y	E2	4.4	4.5
LEAD LENGTH	L	0.5	0.6	0.7
LEAD TIP TO EXPOSED PAD EDGE	K	0.4 REF		
PACKAGE EDGE TOLERANCE	aaa	0.1		
MOLD FLATNESS	ccc	0.1		
COPLANARITY	eee	0.08		
LEAD OFFSET	bbb	0.1		
EXPOSED PAD OFFSET	fff	0.1		

Package Dimensions

Tape and Reel Information

Package Type	Reel Size(inch)	Qty/Reel(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
DFN5*5	7	1000	8000	32000



Tape & Reel Packaging Descriptions

Handling Precautions

Parameter	Grade
Moisture Sensitivity Level MSL	3

Parameter	Rating	Standard	
ESD – Human Body Model (HBM)	Class 1B	JESD22-A114	
ESD – Human Body Model (MM)	Class A	EIA/JESD22-A115	
ESD – Charged Device Model (CDM)	Class III	JESD22-C101	

RoHS Compliance

This product is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

Datasheet Status

Document status	Product status	Definition
Objective Datasheet	Design simulation	Product objective specification
Preliminary Datasheet	Customer sample	Engineering samples and first test results
Product Datasheet	Mass production	Final product specification

Abbreviations

Acronym	Definition
LDMOS	Laterally-Diffused Metal-Oxide Semiconductor
CW	Continuous Waveform

Revision history

Document ID	Datasheet Status	Release Date	Revision Version
Rev 1.0	Preliminary	Dec. 2021	Initial
Rev 1.1	Preliminary	April 2022	Update logo and name of Watech
Rev 1.2	Product	Oct. 2022	Update test data
Rev 1.3	Product	March 2023	New format based on English version datasheet
Rev 1.4	Product	Jan.2024	Update Package size table and TBD information
Rev 1.5	Product	March 2024	Version released after re review



HTN9G49S007P

7W, 4800 - 4900 MHz LDMOS Amplifier

Product datasheet

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations and information about WATECH:

- Web: www.watechelectronics.com
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