

Description

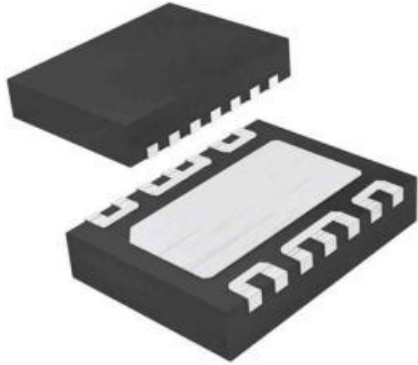
The HTN9G49S007P is an unmatched discrete LDMOS Power Amplifier with 7W saturated output power covering frequency range from 4800 - 4900 MHz.


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

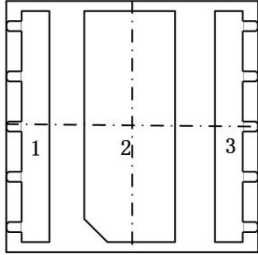
Applications

- 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 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
Cases 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



HTN9G49S007P

7W, 4800 - 4900 MHz LDMOS Amplifier

Product datasheet

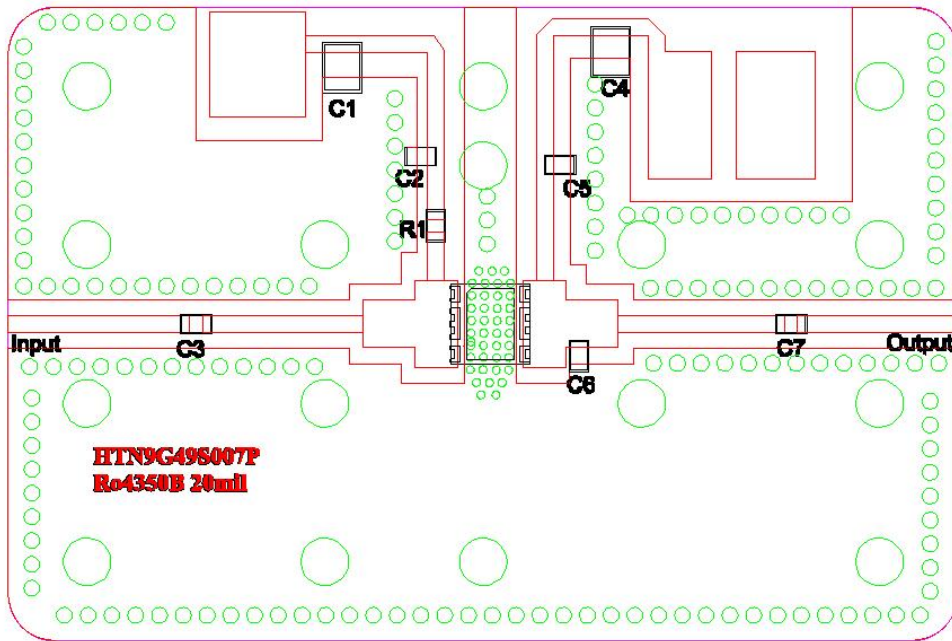
Load Mismatch Test

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

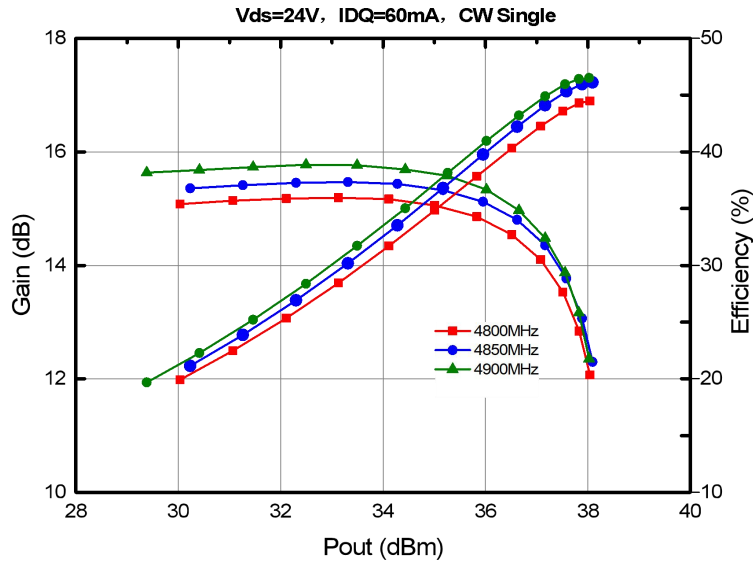


EVB Layout

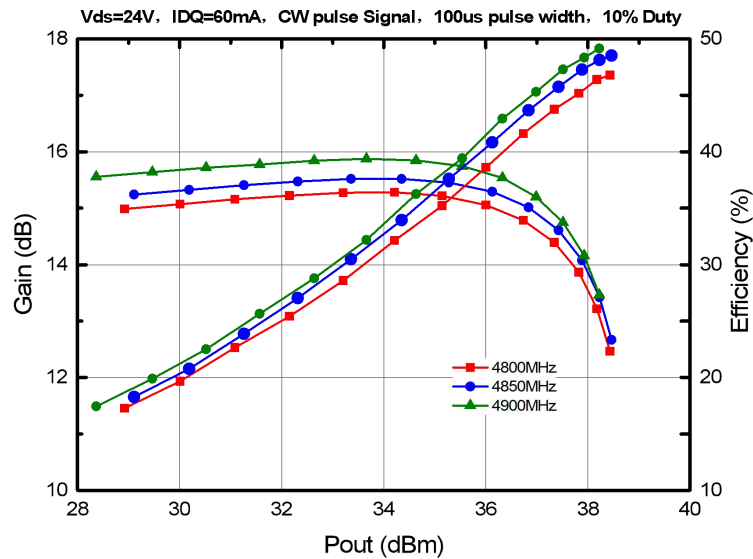
Bill of Materials (BoM) - HTN9G49S007P 4800 - 4900 MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	20W, 4800 - 4900 MHz LDMOS PA	Watech	HTN9G49S007P
C1, C4	4u7F	MLCC	Murata	GCM32DC72A475KE02L
C2, C7	3p9F	MLCC	Murata	GQM2195G2E3R9BB12
C3	10pF	MLCC	Murata	GQM2195C2E100JB12
C5	6p8F	MLCC	Murata	GQM2195G2E6R8BB12
C6	0p6F	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



Pulsed CW, Gain and Efficiency vs Pout

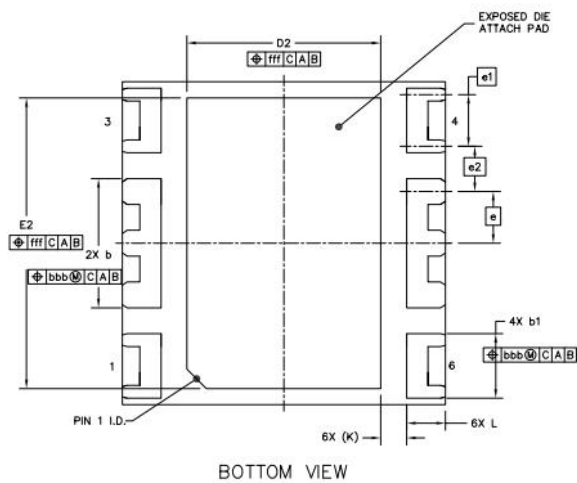
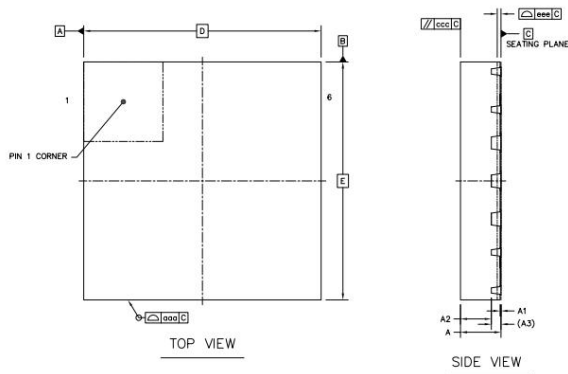
Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 60mA, PW = 100us, DC= 10% test on WATECH Application Board

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

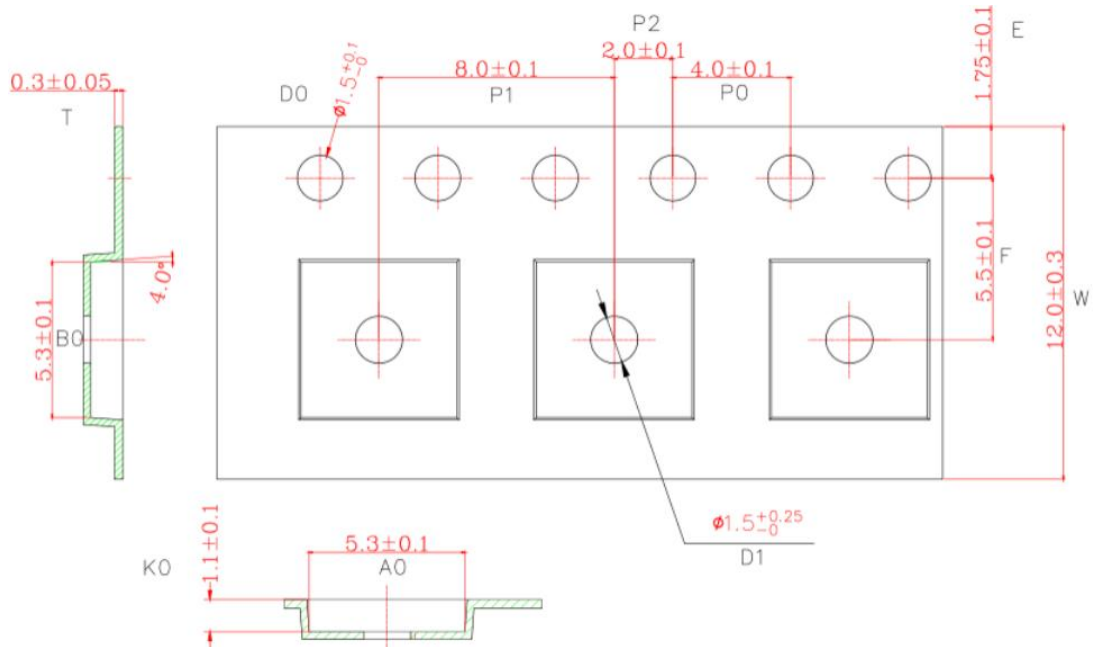


	SYMBOL	MIN	NOM	MAX	
TOTAL THICKNESS	A	0.8	0.85	0.9	
STAND OFF	A1	0	0.02	0.05	
MOLD THICKNESS	A2	---	0.65	---	
L/F THICKNESS	A3	0.203 REF			
LEAD WIDTH	b	1.95	2	2.05	
	b1	0.95	1	1.05	
BODY SIZE	X	5 BSC			
	Y	5 BSC			
LEAD PITCH	e	0.8 BSC			
	e2	0.7 BSC			
EP SIZE	X	D2	2.9	3	3.1
	Y	E2	4.4	4.5	4.6
LEAD 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



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
- Email: MKT@huatai-elec.com

For technical questions and application information:

- Email: MKT@huatai-elec.com

Important Notice

Information in this document is believed to be accurate and reliable. However, WATECH does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

“Typical” parameters are the average values expected by WATECH in large quantities and are provided for information purposes only. All information and specifications contained herein are subject to change without notice and customers should obtain and verify the latest relevant information before placing orders for WATECH products.

The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

Applications that are described herein for any of these products are for illustrative purposes only. WATECH makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification. Customers are responsible for the design and operation of their applications and products using WATECH products, and WATECH accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the WATECH product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third-party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

WATECH products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety- critical systems or equipment, nor in applications where failure or malfunction of a WATECH product can reasonably be expected to result in personal injury, death or severe property or environmental damage. This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.