

Description

The HTH8G06P1K4H(B) is high ruggedness device designed for use in high VSWR ISM, Broadcast and Mobile Radio applications. Their unmatched Input/Output design supports frequency use from 1.8 to 230 MHz.

Features

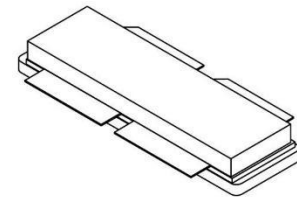
- Saturated output power > 1400W
- Operating Drain Voltage: 50V
- Efficiency > 70%
- Device can be used on a single-ended or in a push-pull configuration
- Integrated ESD protection
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation

Applications

- Industrial Scientific Medical (ISM)
 - Laser generation
 - Plasma generation
 - Particle accelerators
 - MRI, RF ablation and skin treatment
 - Industrial heating, welding and drying systems

Ordering Information

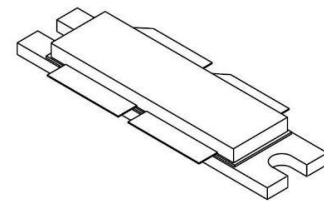
Part Number	Description
HTH8G06P1K4H(B)	Tray Package
HTH8G06P1K4H(B) EVB	108 MHz EVB



ACC3210S-4L



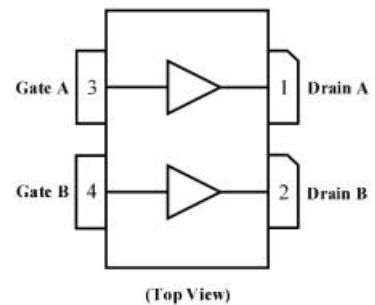
Earless Flanged Balanced
Air Cavity Ceramic Package; 4 Leads
HTH8G06P1K4H



ACC3210B-4L



Flanged balanced
Air Cavity Ceramic Package; 4Leads
,2 Mounting holes
HTH8G06P1K4HB



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

Pin Connections



HTH8G06P1K4H(B)

1400W, 1.8 - 230 MHz LDMOS Amplifier

Product datasheet

Typical Performance

RF Characteristics (Pulsed-CW)

Vdd (V)	Gain (dB)	Pout(dBm)	Pout(W)	Eff (%)
50	22.9	61.5	1412	73.1

Test conditions unless otherwise noted: 25 °C, Freq@108 MHz, IDQ= 100mA, PW = 100us, DC = 10% test on WATECH Application Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V _{DSS})	-0.5 to +115	V
Gate voltage (V _{GS})	-5 to +10	V
Storage Temperature (T _{STG})	-55 to +150	°C
Junction Temperature (T _J)	-40 to +225	°C

Electrical Specification

DC Characteristics (Way A/B)

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage V _{(BR)DSS}	V _{gs} =0V, I _{ds} =255uA	115	-	-	V
Gate-Source Threshold Voltage V _{GS(th)}	V _{ds} =10V, I _{ds} =255uA	1.8	2.3	2.8	V
Drain Leakage Current I _{DSS}	V _{ds} =50V, V _{gs} =0V	-	-	0.5	uA
Gate Leakage Current I _{GSS}	V _{ds} =0V, V _{gs} =5V	-	-	0.5	uA

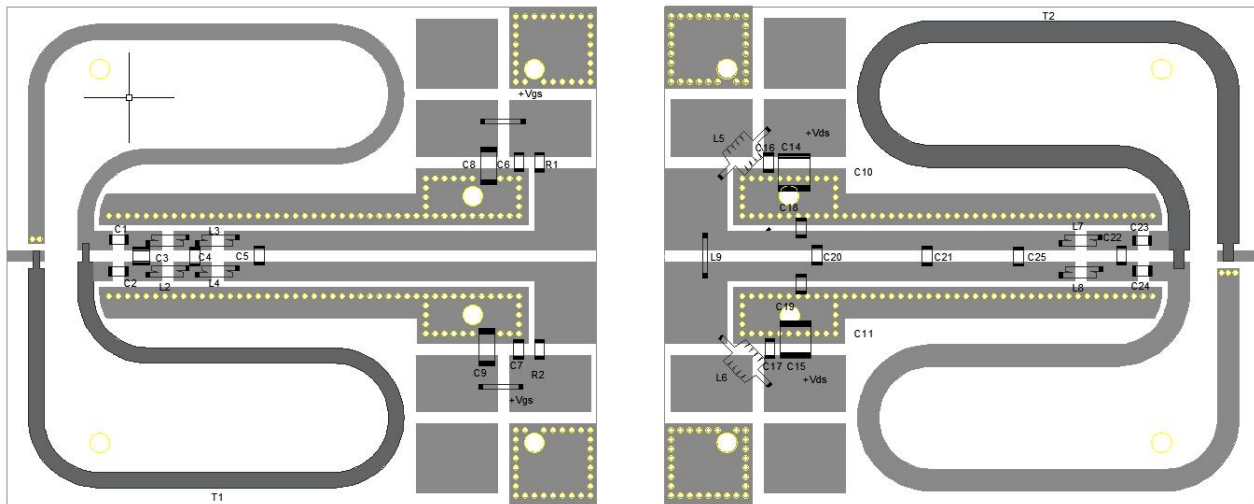
Load Mismatch Test

Condition	Test Result
VSWR=65:1 at all Phase Angles, V _{DD} =+50Vdc, I _{DQ} = 100 mA, @Freq = 108MHz, PW = 100 us, DC = 10%, P _{out} = 1400W test on WATECH Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R _{TH})	T _j = 60°C, measured under DC condition	0.13	°C /W

HTH8G06P1K4H(B) 108 MHz Reference Design



EVB Layout @108 MHz

Bill of Materials (BoM) - HTH8G06P1K4H(B) 108 MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	1400W, 1.8-230 MHz LDMOS Power Transistor	Watech	HTH8G06P1K4H(B)
C1, C2, C6, C7, C12, C13	1000pF	MLCC	Murata	GRM21A5C2E680FW01
C3	47pF	MLCC	Dalicap	DLC70B470JW501XT
C4	39pF	MLCC	Dalicap	DLC70B390JW501XT
C5	200pF	MLCC	Dalicap	DLC70B201JW301XT
C8, C9, C10, C11	4.7uF	MLCC	YAGEO	CC1210KKX5R9BB475
C14, C15	150pF	MLCC	Dalicap	DLC70B151JW301XT
C16, C17	82pF	MLCC	Dalicap	DLC70B820JW501XT
C18	10pF	MLCC	Dalicap	DLC70B100JW501XT
C19	56pF	MLCC	Dalicap	DLC70B560JW501XT
C20, C21	820pF	MLCC	Dalicap	DLC70B821JW301XT
L1, L2, L3, L4	D = 6 mm, length = 1.6 mm	1.5 turn 0.8 mm copper wire	-	-
L5, L6	D = 3.0 mm, length = 4 mm	5.0 turn 0.8 mm copper wire	-	-
L7, L8	D = 4.0 mm,	2.5 turn 0.8 mm	-	-



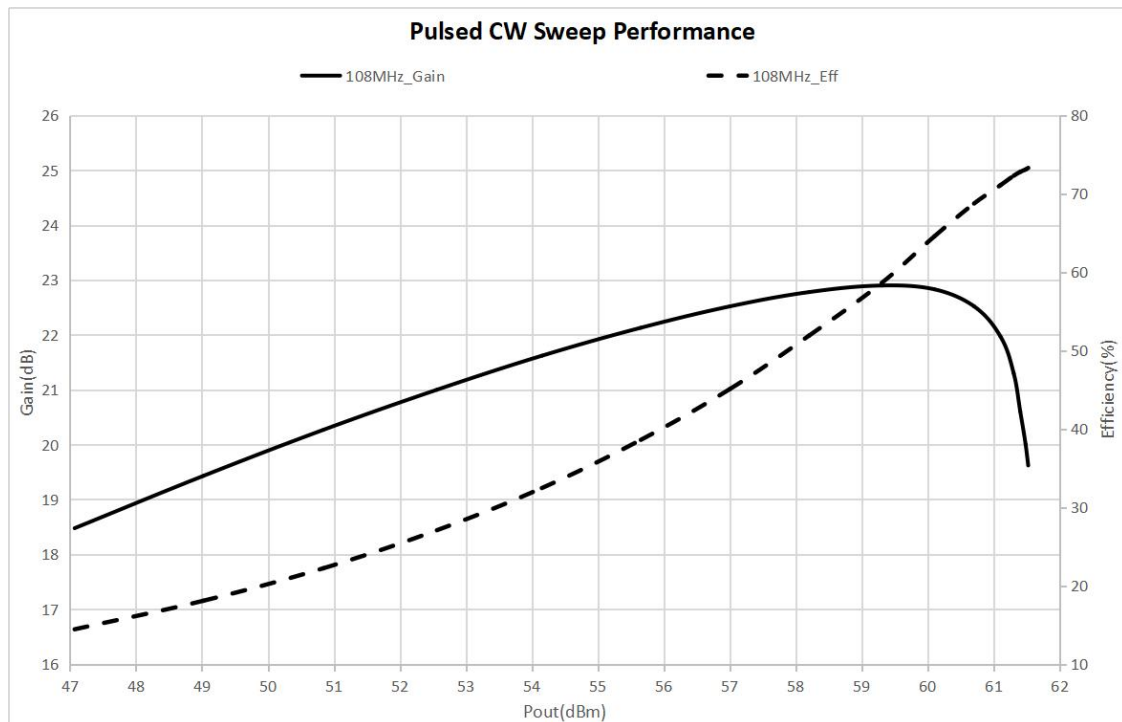
HTH8G06P1K4H(B)

1400W, 1.8 - 230 MHz LDMOS Amplifier

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	length = 2.4 mm	copper wire		
L9	R:1.5,W:13,H:4.8	Enameled wire	-	-
T1	25Ω, length = 160 mm	semi rigid coax		
T2	25Ω, length = 160 mm	semi rigid coax		
PCB	RF35 (er = 3.5), 30 mil (0.762 mm), 35 μm (1oz)			

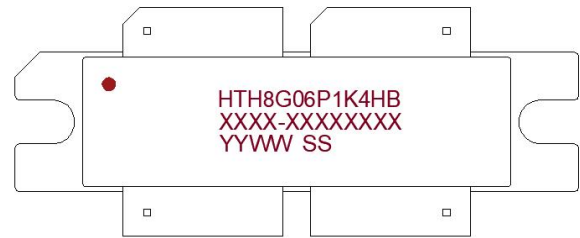
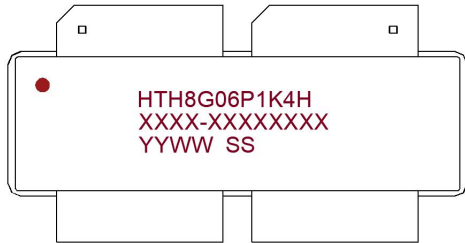
Performance Plots HTH8G06P1K4H(B) 108 MHz



Pulsed CW, Gain and Eff vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ = 100 mA, PW = 100us, DC = 10% tested on WATECH Application Board

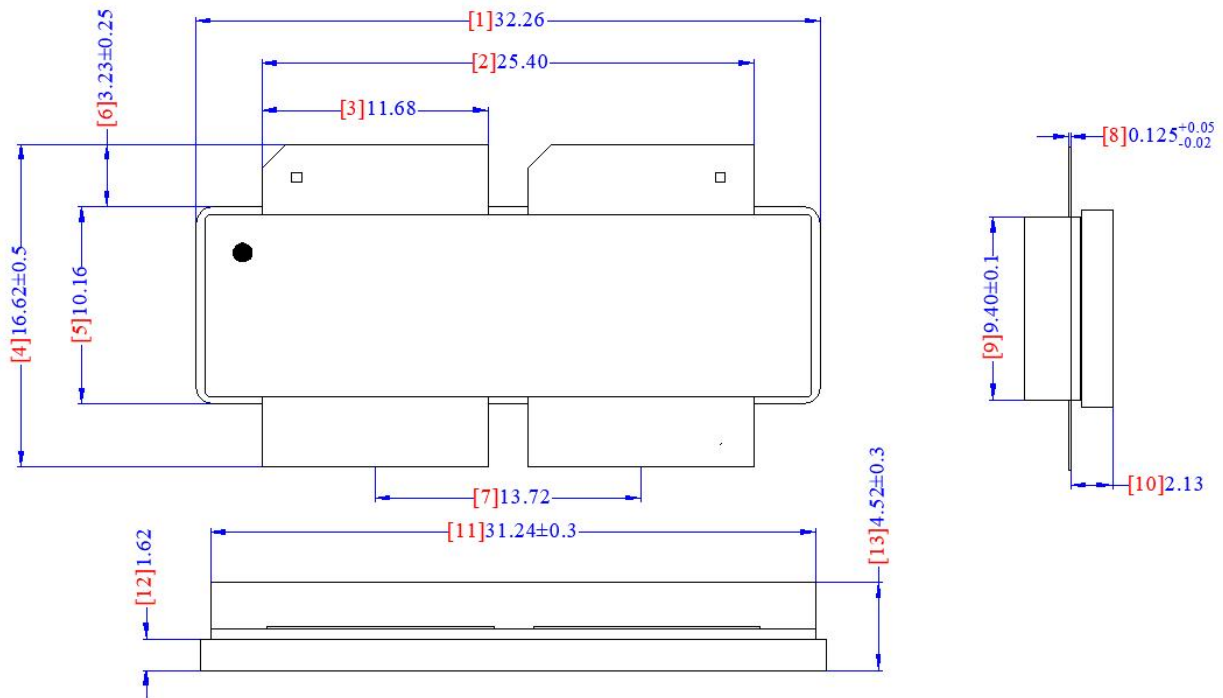
Package Marking and Dimensions



- Line1 (fixed): Device name in work order
- Line2 (unfixed): Mark Lot number in work order (Sample: E596-20140001)
- Line3 (unfixed): Date Code + "SS"(The last two digits of sub lot Number)

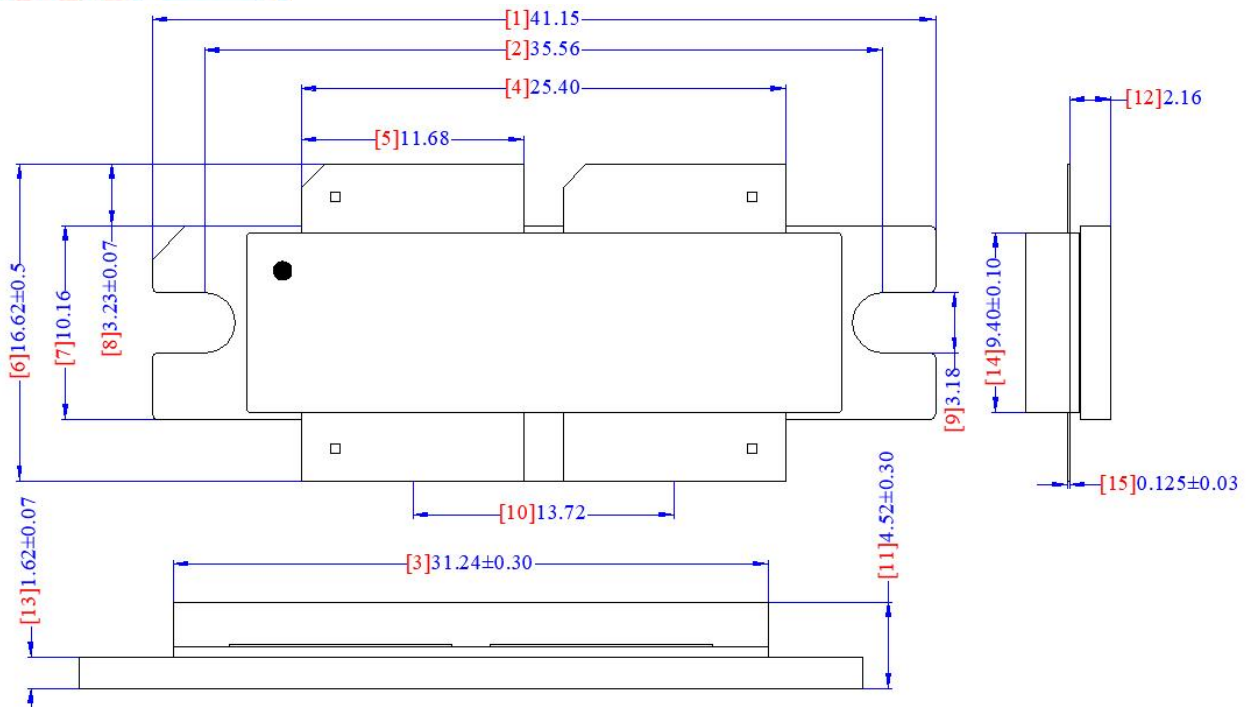
This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of "Watech Product Printing Specification"

Marking



Remark: 1.Unit: mm; 2.Unlabeled tolerance is ±0.13mm.

ACC3210S-4L; Earless Flanged Balanced Air Cavity Ceramic Package; 4 Leads



Remark: 1.Unit: mm; 2.Unlabeled tolerance is ± 0.13 mm.

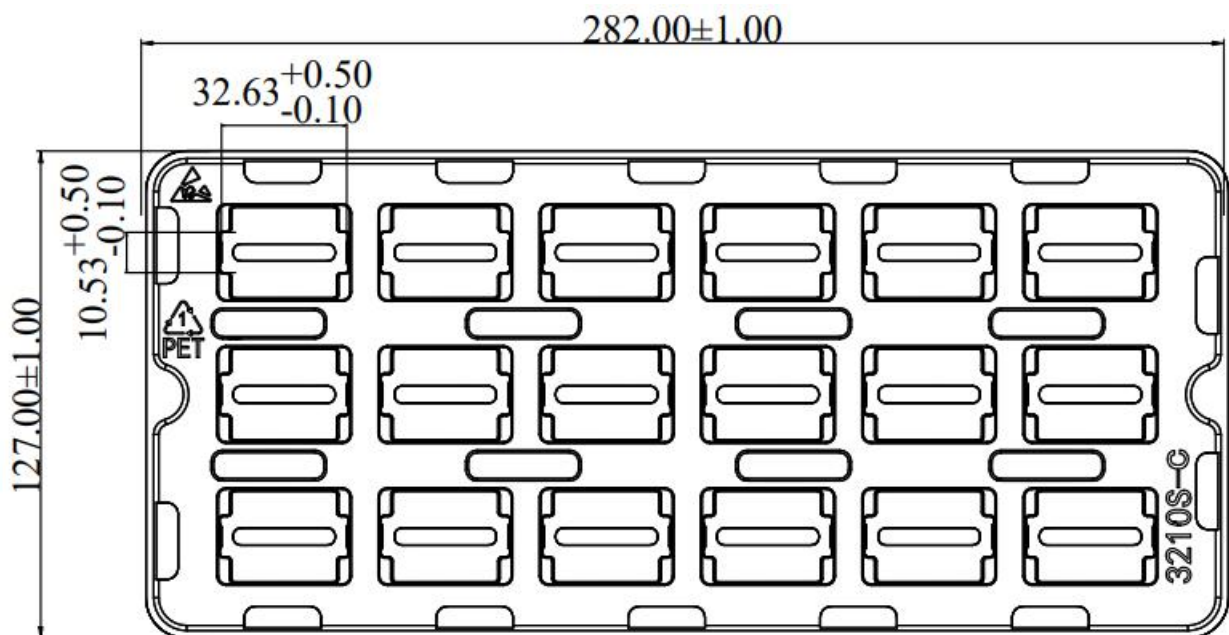
ACC3210B-4L; Flanged Balanced Air Cavity Ceramic Package; 2 Mounting holes, 4 Leads

Package Dimensions

Packaging Information

HTH8G06P1K4H:

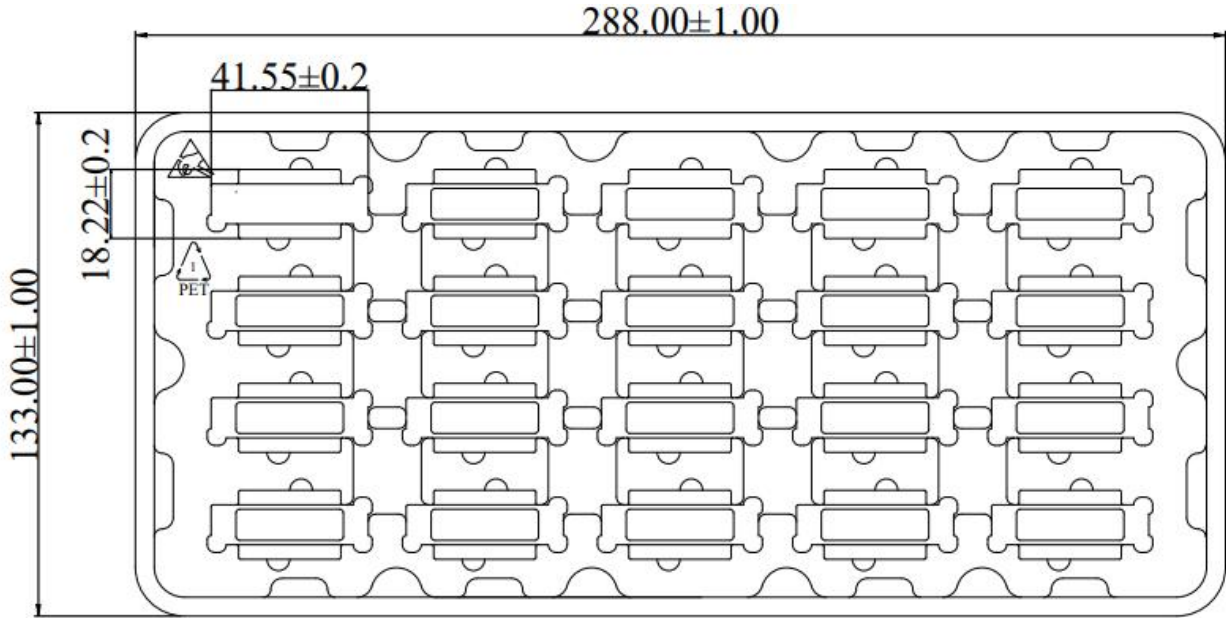
Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC3210S-4L	18	90	540



Packaging Descriptions

HTH8G06P1K4HB:

Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC3210B-4L	20	100	600



Packaging Descriptions

Handling Precautions

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
VSWR	Voltage Standing Wave Ratio

Revision history

Document ID	Datasheet Status	Release Date	Revision Version
Rev 1.0	Preliminary	Sept. 2023	Preliminary
Rev 1.1	Product	May. 2024	Product version



HTH8G06P1K4H(B) 1400W, 1.8 - 230 MHz LDMOS Amplifier

Product datasheet

Contact Information

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

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- Email: MKT@huatai-elec.com

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