

Description

The HTH8G06P600H(B) is an unmatched discrete LDMOS Power Amplifier with 600W saturated output power covering frequency range from 1.8 - 600 MHz.

Features

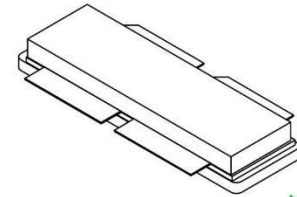
- Operating Frequency Range: 1.8 - 600 MHz
- Operating Drain Voltage: 50V
- Saturation Output Power: 600W
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

Applications

- Analog and Digital Broadcasting
- Meteorological and Aviation Radar
- Private Network Communication Base Station
- Industrial Scientific Medical (ISM)
 - Laser generation
 - Plasma generation
 - Particle accelerators
 - MRI, RF ablation and skin treatment
 - Industrial heating, welding and drying systems

Ordering Information

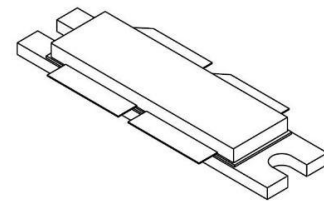
Part Number	Description
HTH8G06P600H(B)	Tray Package
HTH8G06P600H(B) EVB	100 MHz EVB



ACC3210S-4L



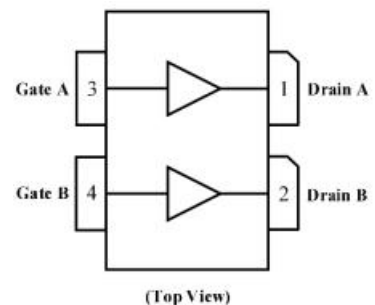
Earless Flanged Balanced
Air Cavity Ceramic Package; 4 Leads
HTH8G06P600H



ACC3210B-4L



Flanged Balanced
Air Cavity Ceramic Package; 4 Leads,
2 Mounting holes
HTH8G06P600HB



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

Pin Connections

Typical Performance

RF Characteristics (Pulsed CW)

Freq (MHz)	P1dB (dBm)	Eff (%)@P1dB	Gain (dB)	P3dB (dBm)	Eff(%)@P3dB
100	57.21	71.89	25.2	58.6	83.3

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ = 100mA, Pulse Width = 100us, Duty Cycle= 10% test on WATECH Application Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V _{DSS})	-0.5 to +125	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

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage V _{(BR)DSS}	V _{gs} =0V, I _{ds} =300uA	115	-	-	V
Gate-Source Threshold Voltage V _{GS(th)}	V _{gs} =V _{ds} , I _{ds} =300uA	-	2.3	-	V
Drain Leakage Current I _{DSS}	V _{gs} =0V, V _{ds} =50V	-	0.010	0.10	uA
Gate Leakage Current I _{GSS}	V _{gs} =5V, V _{ds} =0V	-	0.005	0.10	uA

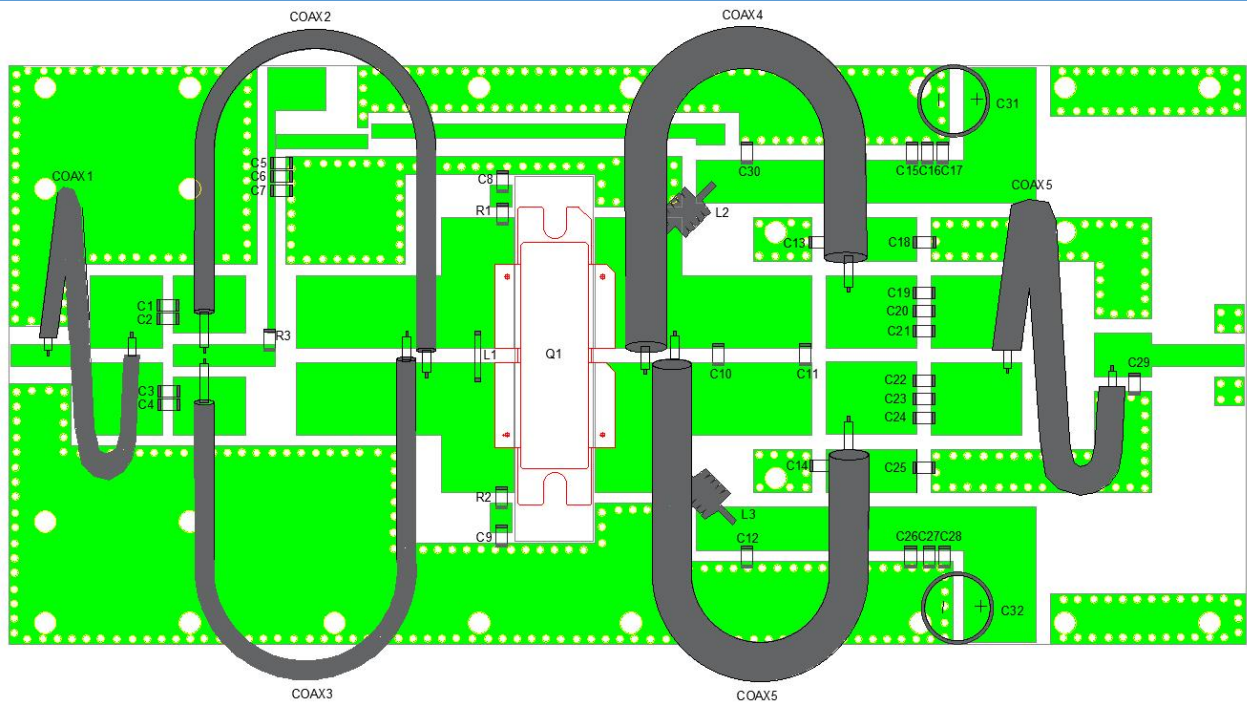
Load Mismatch Test

Condition	Test Result
VSWR=65:1, at all Phase Angles, V _{DD} = +50Vdc, I _{DQ} = 100mA, 20% Pulse, P _{AVG} = 600W, Frequency 100MHz test on WATECH Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R _{TH})	T _{CASE} = 74°C, V _{DD} = +50Vdc, I _{DQ} = 100mA, P _{AVG} = 58.15 dBm (653W), CW signal	0.07	°C /W

HTH8G06P600H(B) 100MHz Reference Design



EVB Layout

Bill of Materials (BoM) - HTH8G06P600H(B) 100MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	LDMOS transistor	WATECH	HTH8G06P600HB
C1 C3 C19 C22	510pF	MLCC	Dalicap	DLC70B511JW501XT
C5 C8 C9 C13 C14 C16 C17 C27 C28	4.7 μ F	MLCC	YAGEO	CC1210KKX5R9BB475
C2 C4	150 pF	MLCC	Dalicap	DLC70B151JW501XT
C7	820 pF	MLCC	Dalicap	DLC70B821JW501XT
C10 C11	10 pF	MLCC	Dalicap	DLC70B100JW501XT
C12 C30	580 pF	MLCC	Dalicap	DLC70B581JW501XT
C20 C23	200 pF	MLCC	Dalicap	DLC70B201JW501XT
C21 C24	300 pF	MLCC	Dalicap	DLC70B301JW501XT
C29	18 pF	MLCC	Dalicap	DLC70B180JW501XT



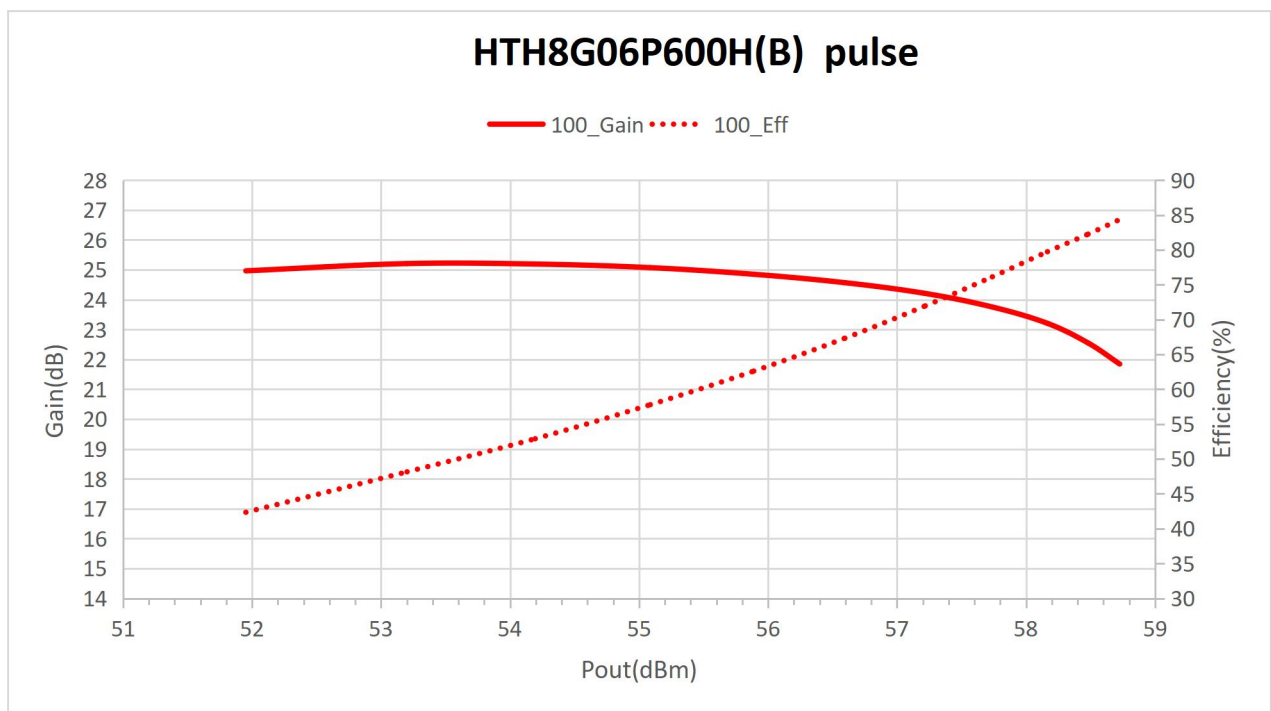
HTH8G06P600H(B)

600W, 1.8 - 600 MHz LDMOS Amplifier

Product datasheet

C6 C16 C26	10 nF	MLCC	ATC	ATC100B103JW500XT
R1,R2,R3	47Ω	Resistor	KOA	SMD 1206
C31,C32	1000uF	AEC	Chongx VEHT	100V 18*35mm
L1	D = 5 mm	1 turn 0.8 mm copper wire	Arbitrary	Arbitrary
L2 ,L3	D = 5 mm	6 turn 0.8 mm copper wire	Arbitrary	Arbitrary
COAX1	50Ω 2:1,d=1.5mm,L=170 mm		Arbitrary	Arbitrary
COAX2 COAX3	16.7Ω 4:1,d=1.5mm,L=120 mm		Arbitrary	Arbitrary
COAX4 COAX5	16.7Ω 4:1,d=3mm,L=200 mm		Arbitrary	Arbitrary
COAX6	50Ω 2:1,d=3mm,L=145 mm		Arbitrary	Arbitrary
PCB	Rogers TC350 (er = 3.5), thickness = 30 mil (0.762 mm); thickness copper plating = 35 μm , gold plated.			

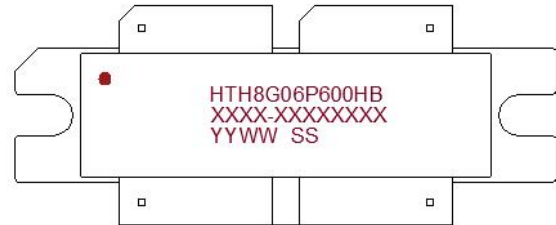
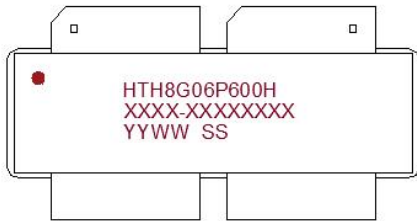
Performance Plots



Pulsed CW, Gain and Efficiency vs Pout

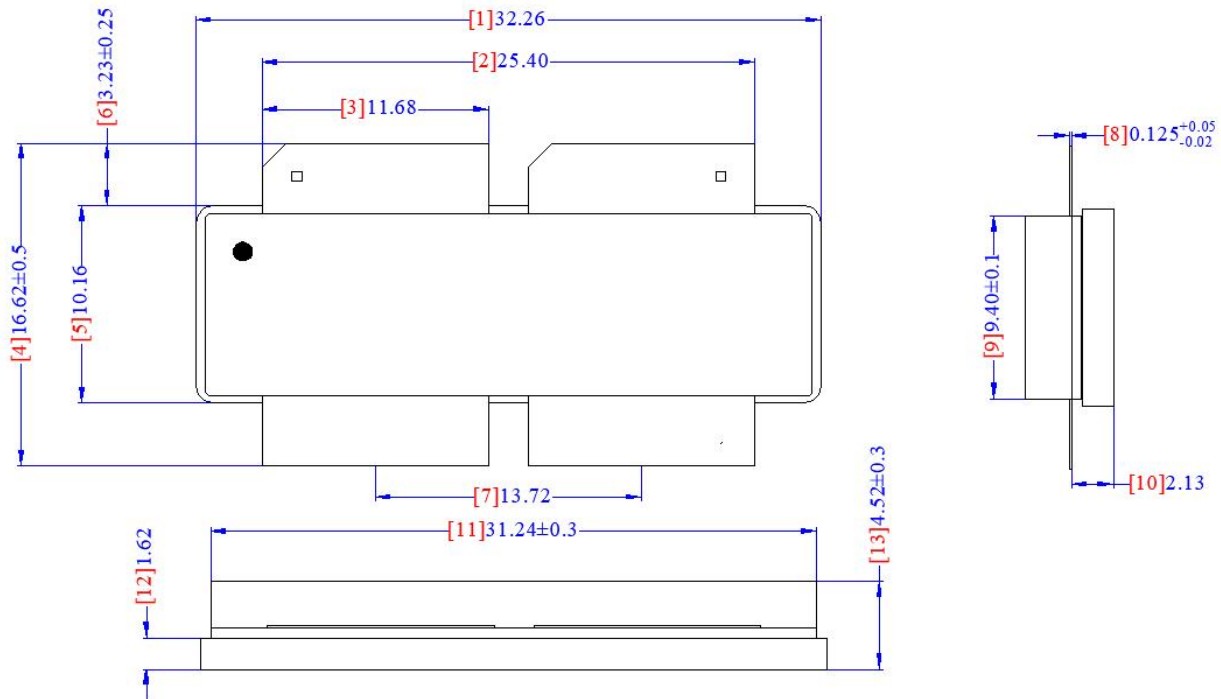
Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ= 100mA , Pulse Width = 100us, Duty Cycle= 10%
test on WATECH Application Board

Package Marking and Dimensions



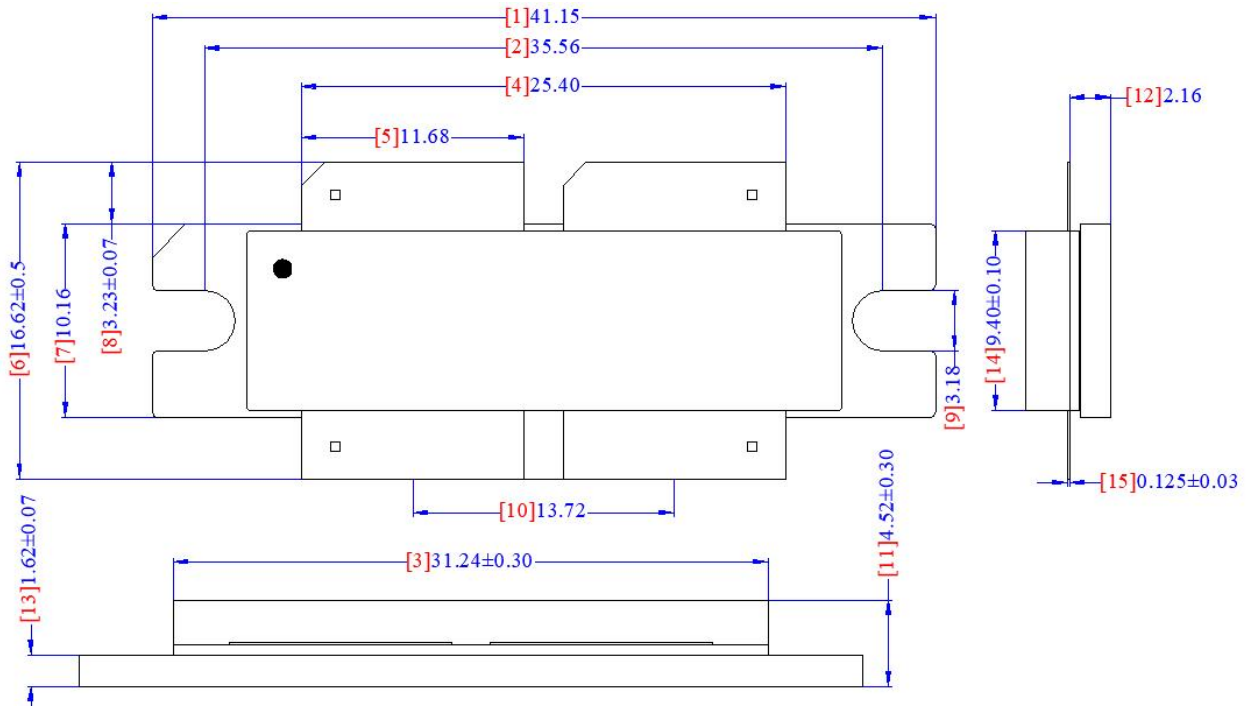
- Line1 (fixed): Device name in work order
- Line2 (unfixed): Mark Lot number in work order (Sample: E596-20140001)
- Line3 (unfixed): Date Code + “SS”(The last two digits of sub lot Number)

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”



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 ±0.13mm.

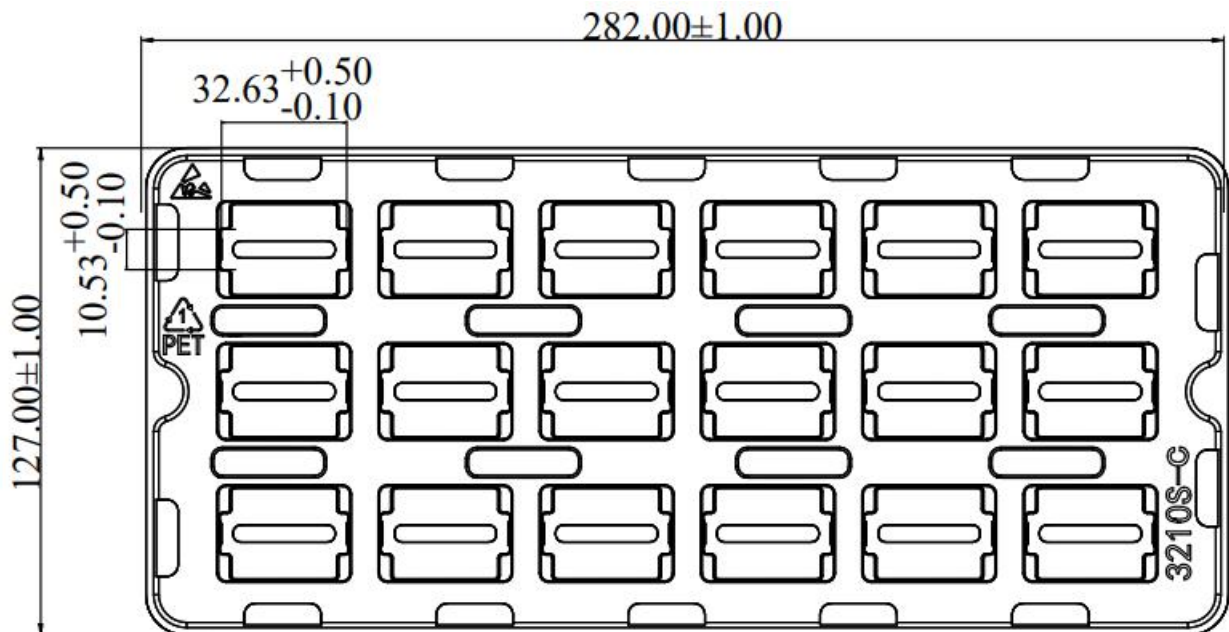
ACC3210B-4L; Flanged Balanced Air Cavity Ceramic Package; 2 Mounting holes, 4 Leads

Package Dimensions

Tape and Reel Information

HTH8G06P600H:

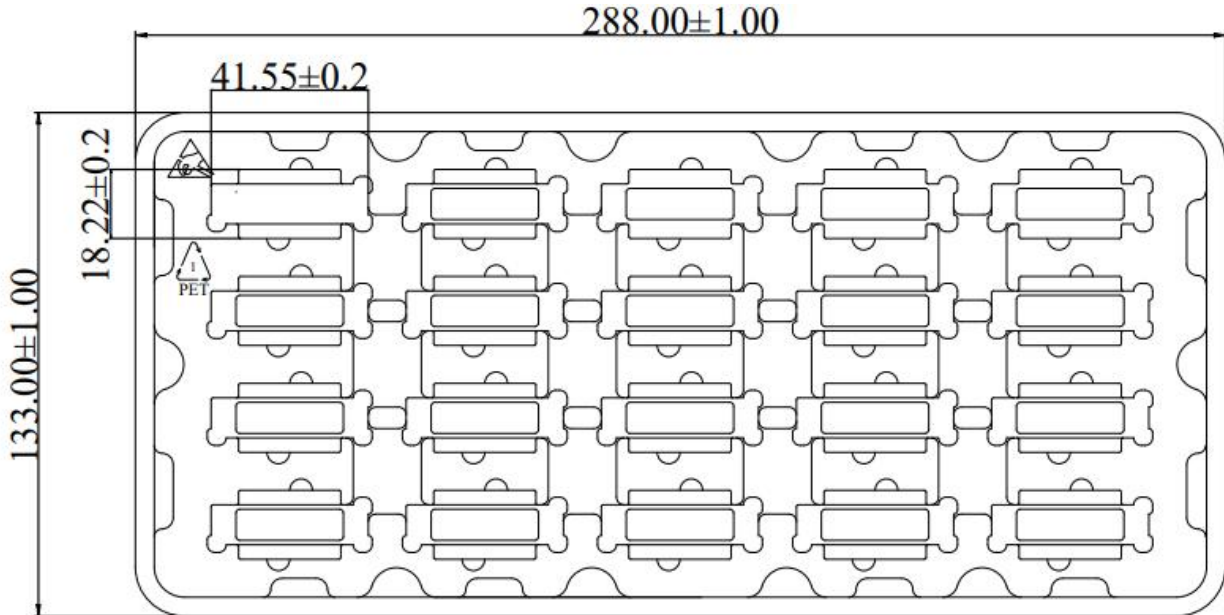
Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC3210S-4L	18	90	540



Packaging Descriptions

HTH8G06P600HB:

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



Packaging Descriptions

Handling Precautions

Parameter	Grade
Moisture Sensitivity Level MSL	3

Parameter	Rating	Standard	
ESD – Human Body Model (HBM)	Class 1B	JESD22-A114	
ESD – Me 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	Product	March 2024	Product Version



HTH8G06P600H(B) 600W, 1.8 - 600 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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