

Description

The HTH8G02P800H(B) is an unmatched discrete LDMOS Power Amplifier with 800W saturated output power covering frequency range from 1.8 - 200 MHz.

Features

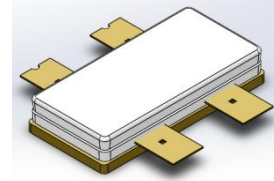
- Operating Frequency Range: 1.8 - 200 MHz
- Operating Drain Voltage: 50 V
- Saturation Output Power: 800W
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design
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Applications

- HF VHF band high-power power amplifier
- Broadcasting transmitter
- Industrial, scientific research, and medical power amplifiers

Ordering Information

Part Number	Description
HTH8G02P800H(B)	Tray Package
HTH8G02P800H(B) EVB	160 MHz EVB

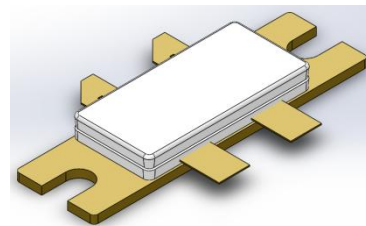


ACC2110S-4L

Earless Flanged balanced

Air Cavity Ceramic Package; 4 Leads

HTH8G02P800H

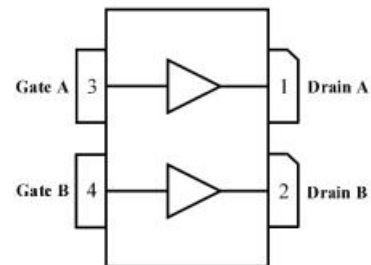


ACC2110B-4L

Flanged balanced

Air Cavity Ceramic Package; 4 Leads,
2 Mounting holes

HTH8G02P800HB



(Top View)

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

Pin Connections

Typical Performance

RF Characteristics (Pulsed CW)

Freq (MHz)	Gain (dB)	Pout(dBm)	Pout(W)	Eff(%)
160	20.25	59.10	810	66.15

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ= 200mA, PW = 100us, DC= 10% test on WATECH Application Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V _{DSS})	-0.5 to +135	V
Gate voltage (V _{GS})	-5.0 to +10	V
Drain voltage (V _{DD})	0 to +50	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} =380uA	-	135	-	V
Gate-Source Threshold Voltage V _{GS(th)}	V _{DS} =10V, I _{ds} =380uA	1.5	2.25	2.9	V
Drain Leakage Current I _{DSS}	V _{gs} =0V, V _{ds} =50V	-	1	10	uA
Gate Leakage Current I _{GSS}	V _{gs} =5V, V _{ds} =0V	-	0.1	1	uA

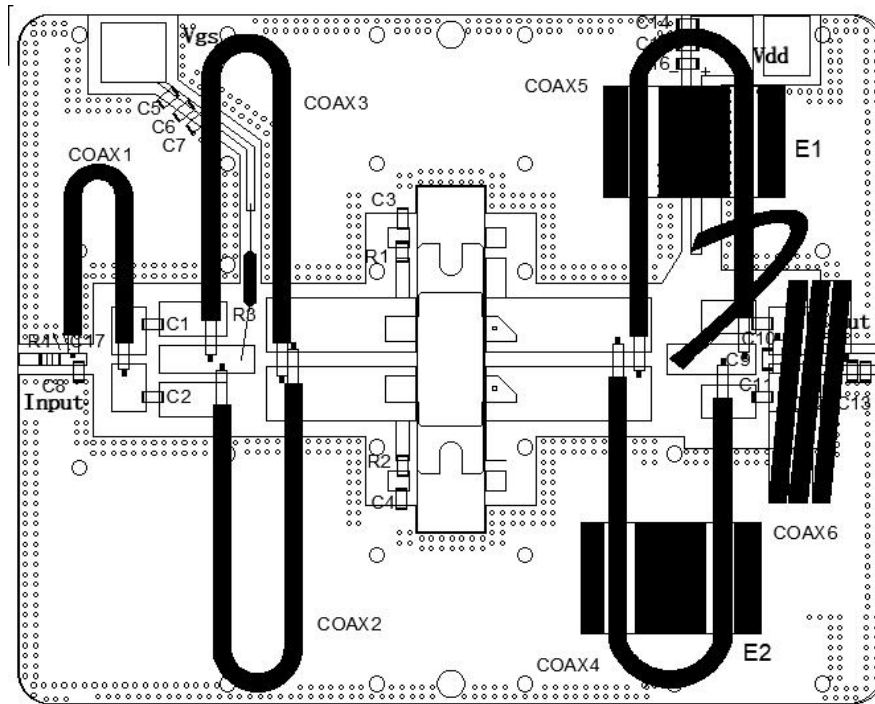
Load Mismatch Test

Condition	Test Result
VSWR=65:1 at all Phase Angles Pulsed: V _{DD} =50V, I _{DQ} =200mA, Freq=160MHz, Pout=800W, 200usec Pulse Width, 20% Duty test on WATECH Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R _{TH})	T _{CASE} = 45°C, V _{DD} = +50Vdc, I _{DQ} = 200mA, P _{AVG} = 59.1dBm, PW = 100us, DC= 10%	0.11	°C /W

HTH8G02P800H(B) 160 MHz Reference Design



EVB Layout

Bill of Materials (Bom) - HTH8G02P800H(B) 160 MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	800W, 1.8 - 200 MHz LDMOS PA	Watech	HTH8G02P800H(B)
C5,C14	4.7uF	4.7uF Chip Capacitor	Murata	GRM31CR71H475KA12L
C1,C2,C10,C11	1000pF	1000pF Chip Capacitors	ATC	ATC100B102JT
C8	10pF	10pF Chip Capacitors	ATC	ATC100B100JT
C9	27pF	27pF Chip Capacitors	ATC	ATC100B270JT
C12	3.3pF	3.3pF Chip Capacitors	ATC	ATC100B3R3JT
C13	3.9pF	3.9pF Chip Capacitors	ATC	ATC100B3R9JT
C17	100pF	100pF Chip Capacitors	ATC	ATC100B101JT
C3,C4,C6,C15	1nF	1nF Chip Capacitors	Murata	GR321AD72E102KW01D



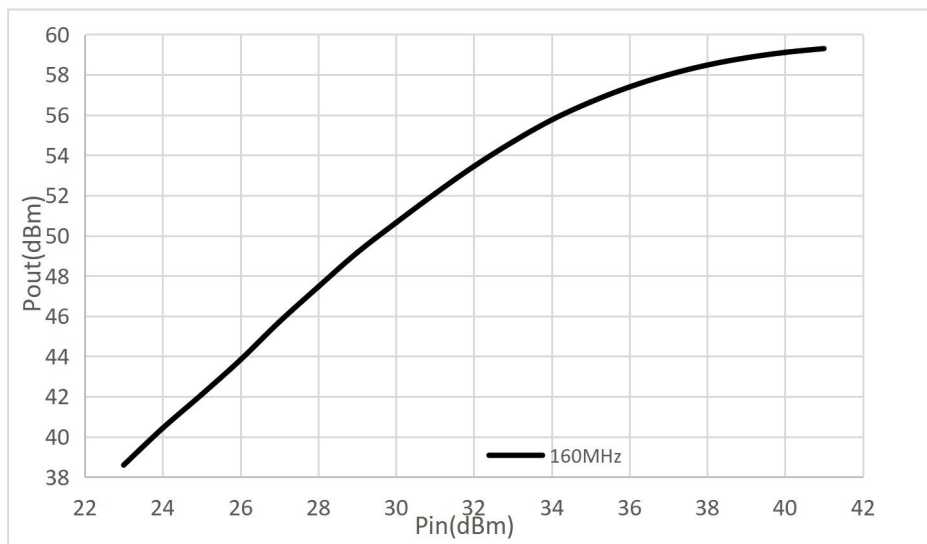
HTH8G02P800H(B)

800W, 1.8 - 200 MHz LDMOS Amplifier

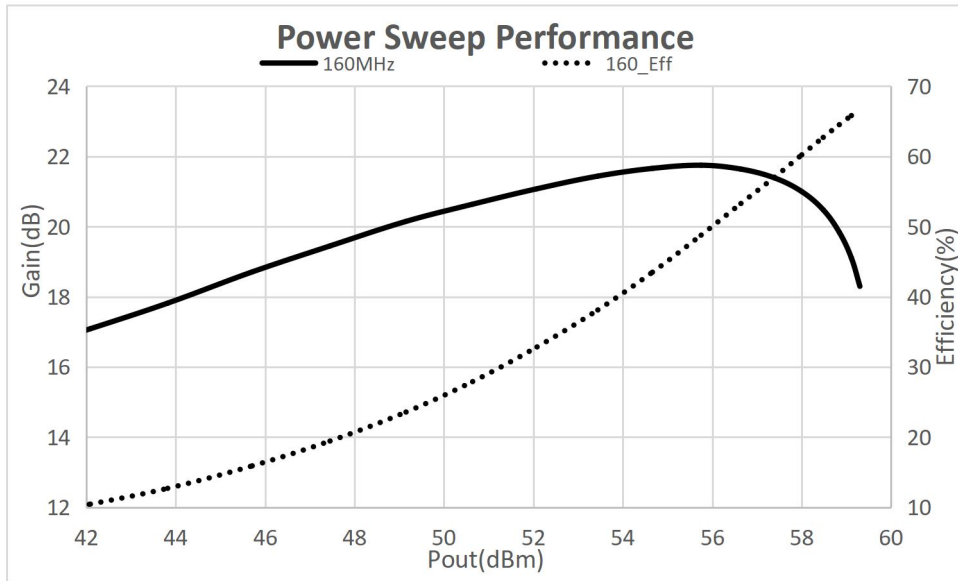
Product datasheet

C7,C16	270pF	270pF Chip Capacitors	ATC	ATC100B271JT
R1, R2	510hm	510hm, 0805 1/4W Chip Resistors	Arbitrary	Arbitrary
R3	2000hm	2000hm, 0805 1/4W Chip Resistors	Arbitrary	Arbitrary
R4	3900hm	3900hm, 0805 1/4W Chip Resistors	Arbitrary	Arbitrary
Coax2,3		16.70hm 4:1,100 mm	Arbitrary	Arbitrary
Coax4,5		16.70hm 4:1, 105 mm	Arbitrary	Arbitrary
E1,E2		#43 Multi-Aperture Core	Fair-Rite	2861000202
Coax1		500hm 2:1,100 mm	Arbitrary	Arbitrary
Coax6		500hm 2:1,230mm	Arbitrary	Arbitrary
PCB	FR4 (er = 4.2), 0.8 mm, 35 μ m (1oz)			

Performance Plots



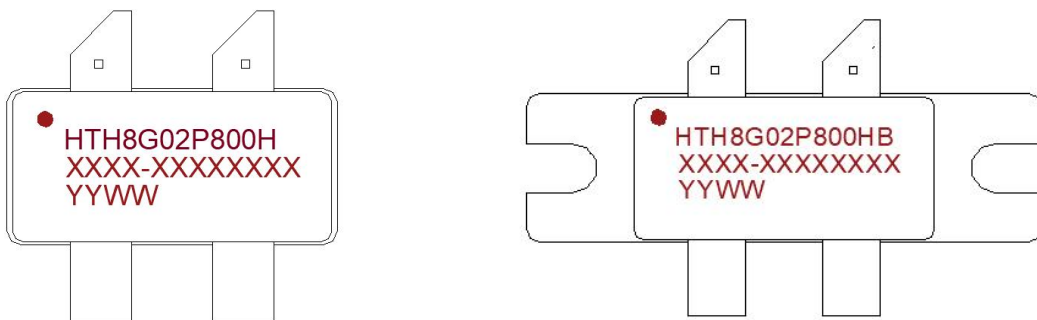
Pulsed CW, Pout vs Pin



Pulsed CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ= 200mA , PW = 100us, DC= 10% test on WATECH Application Board

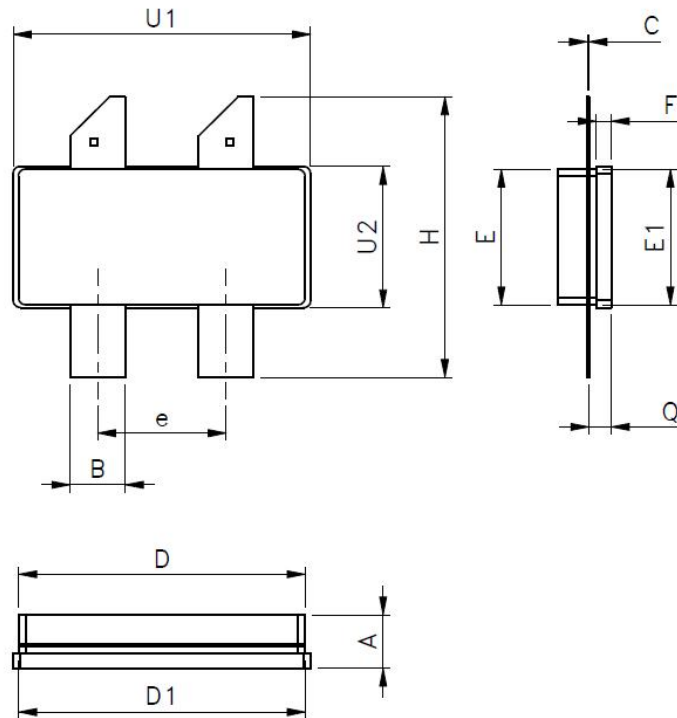
Package Marking and Dimensions



- Line1 (fixed): Device name in W/O
- Line2 (unfixed): Marking Lot No in W/O (Sample: E596-EERA0001)
- Line3 (unfixed): Date Code

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”

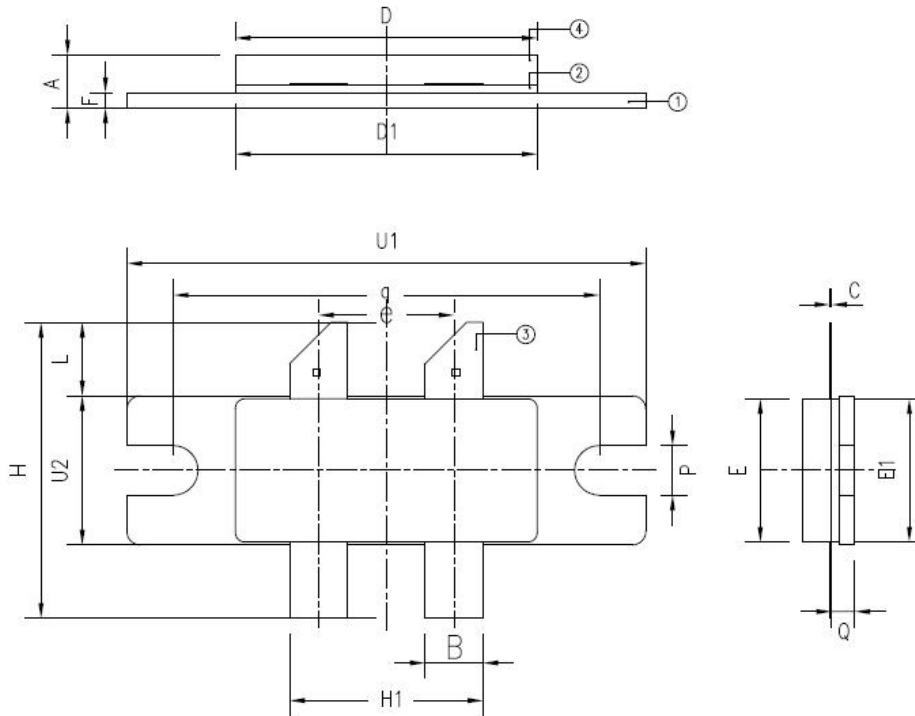
Marking



Symbol	Dimesions in Milimeters			Dimesions in Inches		
	Min.	Mon.	Max.	Min.	Mon.	Max.
A	3.12	3.69	4.26	0.123	0.145	0.168
B	3.69	3.81	3.93	0.145	0.150	0.155
C	-	0.11	-	-	0.004	-
D	19.61	19.81	20.01	0.772	0.780	0.788
D1	19.66	19.81	19.96	0.774	0.780	0.786
E	9.273	9.4	9.527	0.365	0.370	0.375
E1	9.28	9.4	9.52	0.365	0.370	0.375
F	0.95	1.02	1.09	0.037	0.040	0.043
H	19.38	19.43	19.48	0.763	0.765	0.767
Q	1.46	1.53	1.6	0.057	0.060	0.063
U1	20.51	20.58	20.65	0.807	0.810	0.813
U2	9.71	9.78	9.85	0.382	0.385	0.388
e	8.77	8.89	9.01	0.345	0.350	0.355

Package Dimensions

ACC2110S-4L Earless Flanged Ceramic Package; 4 leads



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Mon.	Max.	Min.	Mon.	Max.
A	3.55	3.71	3.86	0.140	0.146	0.152
B	3.68	3.81	3.94	0.145	0.150	0.155
C	0.04	0.11	0.18	0.002	0.004	0.007
D	19.61	19.81	20.01	0.772	0.780	0.788
D1	19.61	19.81	20.01	0.772	0.780	0.788
E	9.28	9.40	9.52	0.365	0.370	0.375
E1	9.28	9.40	9.52	0.365	0.370	0.375
F	0.95	1.02	1.09	0.037	0.040	0.043
H	18.93	19.43	19.93	0.745	0.765	0.785
H1	12.57	12.70	12.83	0.495	0.500	0.505
L	4.71	4.83	4.95	0.185	0.190	0.195
P	3.12	3.25	3.38	0.123	0.128	0.133
Q	1.43	1.53	1.63	0.056	0.060	0.064
q	-	27.94	-	-	1.10	-
U1	33.91	34.04	34.16	1.335	1.340	1.345
U2	9.71	9.78	9.85	0.382	0.385	0.388
e	-	8.89	-	-	0.35	-

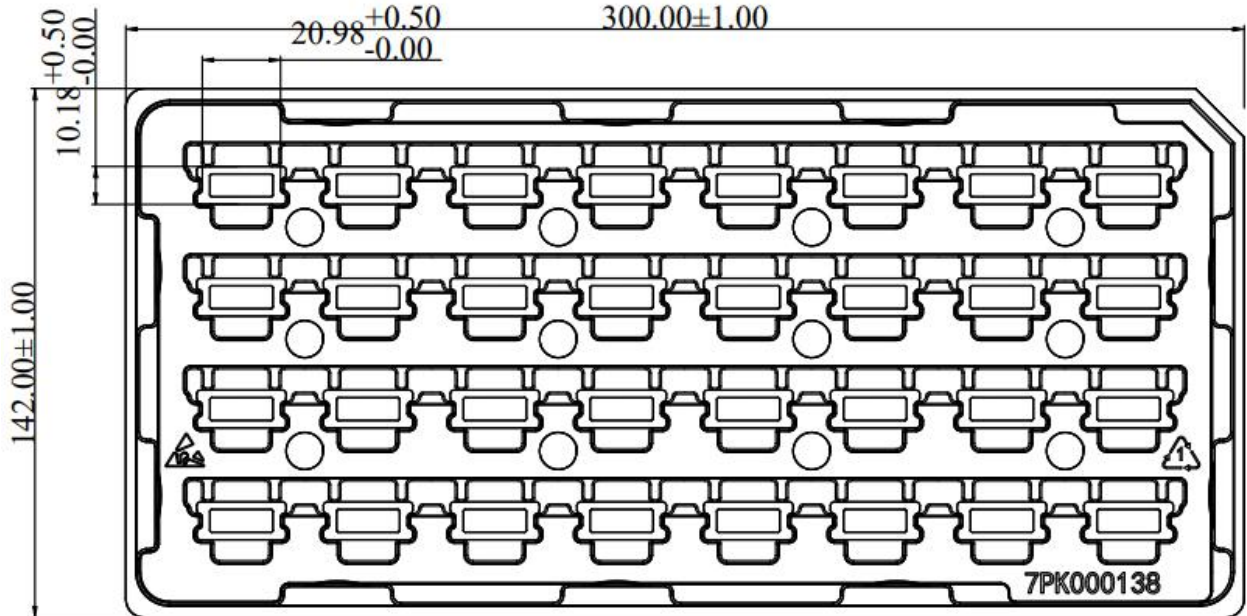
Package Dimensions

ACC2110B-4L Flanged Ceramic Package; 2 mounting holes; 4 leads

Packing Information

HTH8G02P800H:

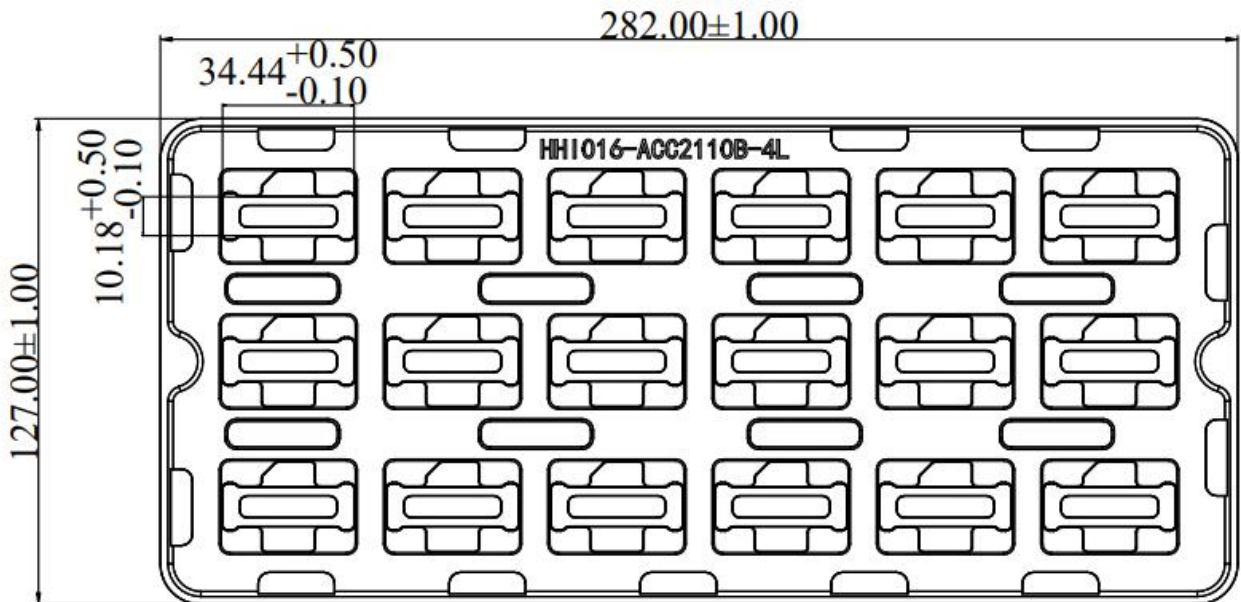
Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC2110S-4L	32	160	960



Tray Packaging Descriptions

HTH8G02P800HB:


Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC2110B-4L	18	90	540



Tray 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 1.4	Objective	March 2023	New format based on English version datasheet
Rev 2.0	Product	Sept. 2023	Update TBD information
Rev 2.1	Product	March 2024	Version released after re review



HTH8G02P800H(B) 800W, 1.8 - 200 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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