

Description

The HTH8G02P550S(B)-T is an unmatched discrete LDMOS Power Amplifier with 550W saturated output power covering frequency range from 1.8 - 200 MHz.

Features

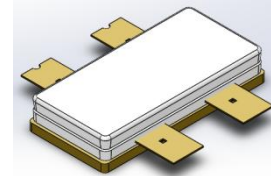
- Operating Frequency Range: 1.8 - 200 MHz
- Operating Drain Voltage: 28-50V
- Saturation Output Power: 550W
- Internally Unmatched device
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

Applications

- HF VHF band High Power Amplifier
- Broadcasting transmitter
- 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
HTH8G02P550S(B)-T	Tray Package
HTH8G02P550S(B)-T EVB	100 MHz EVB

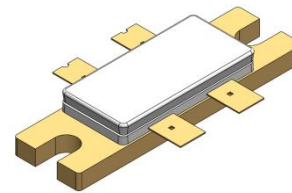


ACS2110S-4L-T

Earless Flanged Balanced

Air Cavity Spliced Package; 4 Leads

HTH8G02P550S-T

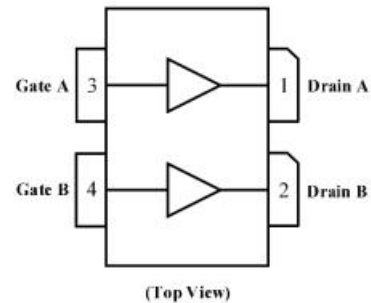


ACS2110B-4L-T

Flanged Balanced

Air Cavity Spliced Package; 4 Leads,
2 Mounting holes

HTH8G02P550SB-T



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

Pin Connections

Typical Performance

RF Characteristics (CW)

Freq (MHz)	P3dB (dBm)	P3dB (W)	Gain (dB)	Eff(%)@P3dB
100	57.54	558	25.28	70

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ =300mA test on WATECH Application Board

RF Characteristics (Pulsed-CW)

Freq (MHz)	P3dB (dBm)	P3dB (W)	Gain (dB)	Eff(%)@P3dB
100	57.82	580	25.32	75

Test conditions unless otherwise noted: 25 °C, VDD = +50Vdc, IDQ =300mA, 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 to +10	V
Operating Voltage (V _{DS})	0 to +50	
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

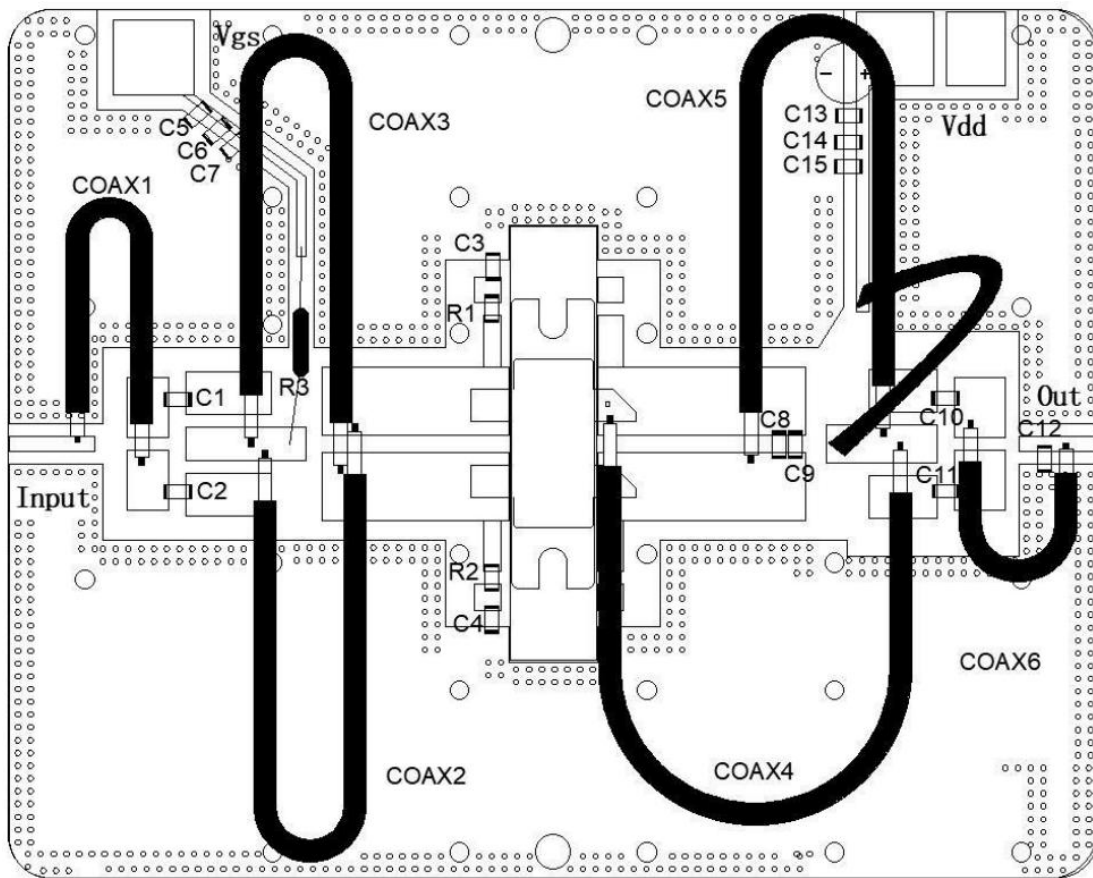
Load Mismatch Test

Condition	Test Result
VSWR=65:1 at all Phase Angles, V _{DD} = +50Vdc, I _{DQ} =300mA, P _{out} = 550W, PW = 200us, DC= 20%, freq@100 MHz	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R_{TH})	$T_{FLANGE} = 45^{\circ}\text{C}$, $V_{DD} = +50\text{Vdc}$, $I_{DQ} = 300\text{mA}$, CW, $P_{AVG} = 57.4\text{ dBm}$ (550W), Freq@100 MHz	0.12	$^{\circ}\text{C} / \text{W}$

HTH8G02P550S(B)-T 100 MHz Reference Design



EVB Layout

Bill of Materials (BoM) - HTH8G02P550S(B)-T 100 MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	550W, 1.8 - 200 MHz LDMOS PA	Watech	HTH8G02P550S(B)-T
C5,C13	4u7F	MLCC	Murata	GRM31CR71H475KA12L
C1,C2,C10,C11	300pF	MLCC	ATC	ATC100B301JT
C8	10pF	MLCC	ATC	ATC100B100JT



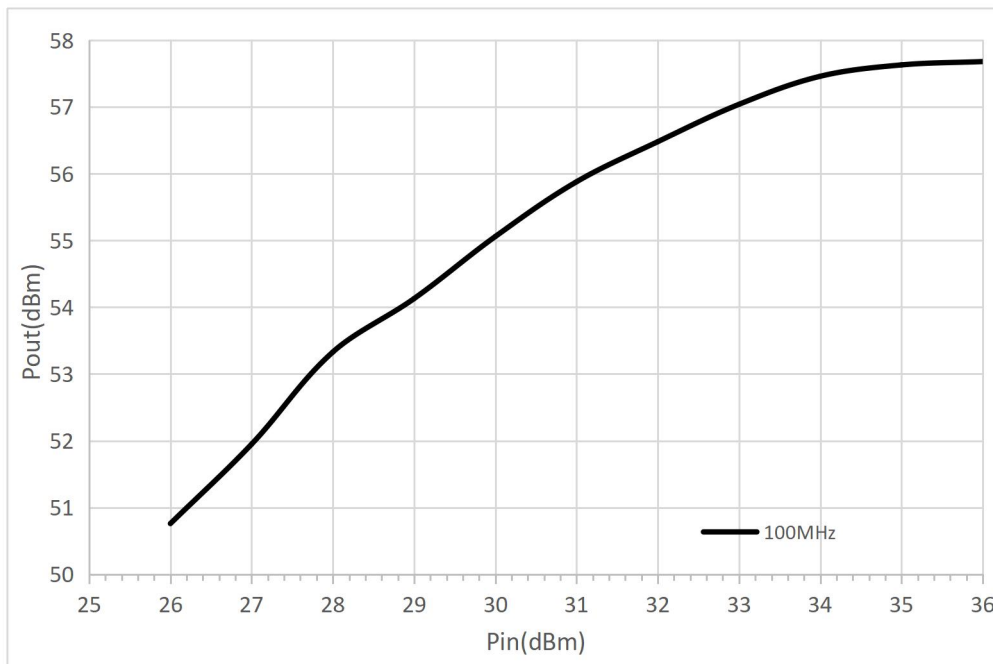
HTH8G02P550S(B)-T

550W, 1.8 - 200 MHz LDMOS Amplifier

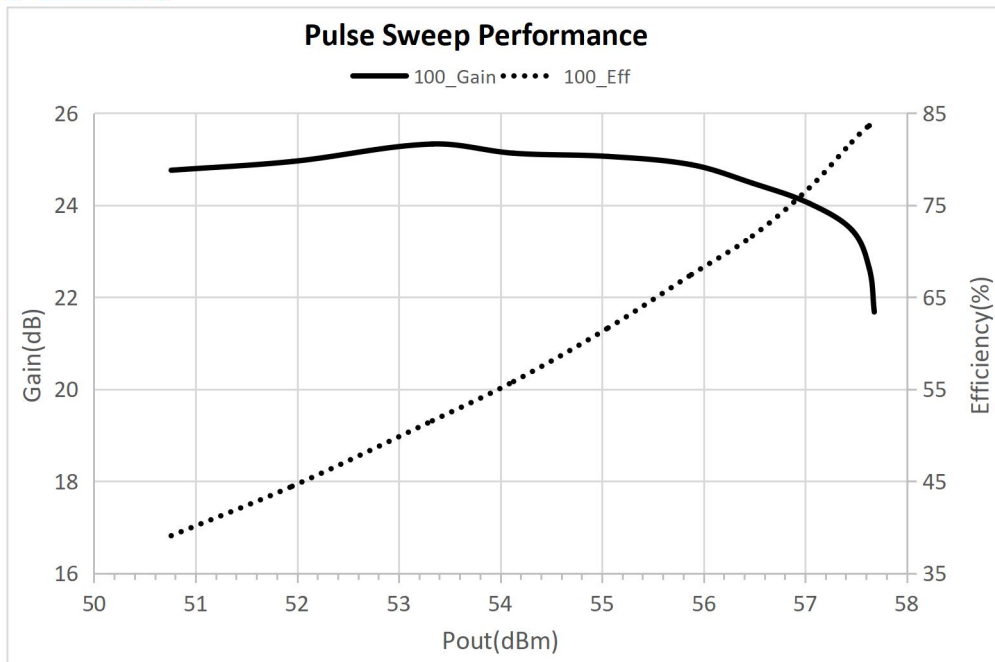
Product datasheet

C9,C12	4p7F	MLCC	ATC	ATC100B4R7JT
C3,C4,C6,C14	1nF	MLCC	Murata	GR321AD72E102KW01D
C7,C15	100pF	MLCC	Murata	GRM1885C1H101JA01
R3	820Ω	Wire Resistor	-	-
Coax 2,3	16.7Ω 4:1,110 mm		-	-
Coax 4,5	16.7Ω 4:1, 100 mm		-	-
Coax 1	50Ω 2:1,100 mm		-	-
Coax 6	50Ω 2:1, 40mm		-	-
PCB	RF35 (er = 3.5), 30 mil (0.762 mm), 35 μm (1oz)			

Performance Plots



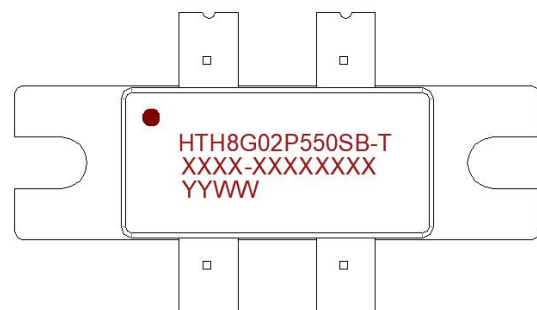
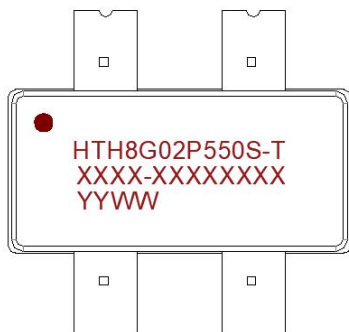
Pulsed CW, Pout vs Pin



Pulsed CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +50dc, IDQ= 300mA, PW = 100us, DC= 10% test on WATECH Application Board

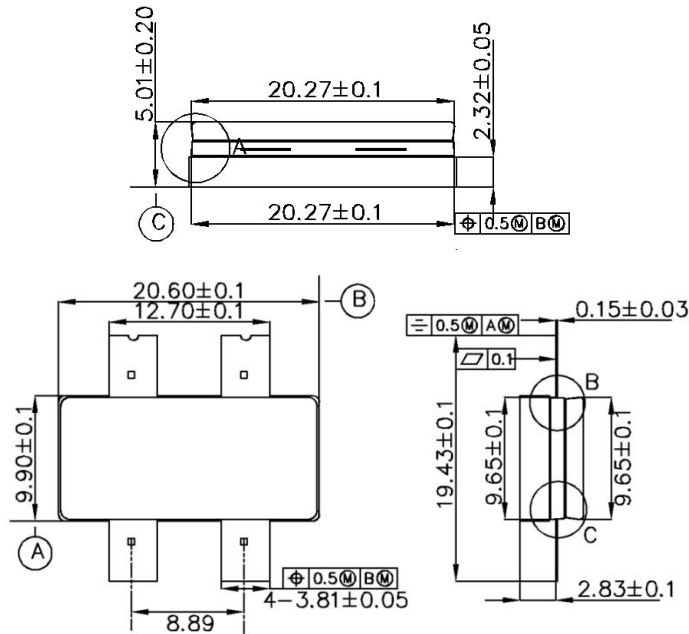
Package Marking and Dimensions



- Line1 (fixed): Device name in work order
- Line2 (unfixed): Mark Lot Number in work order (Sample: E596-EERA0001)
- Line3 (unfixed): Date Code

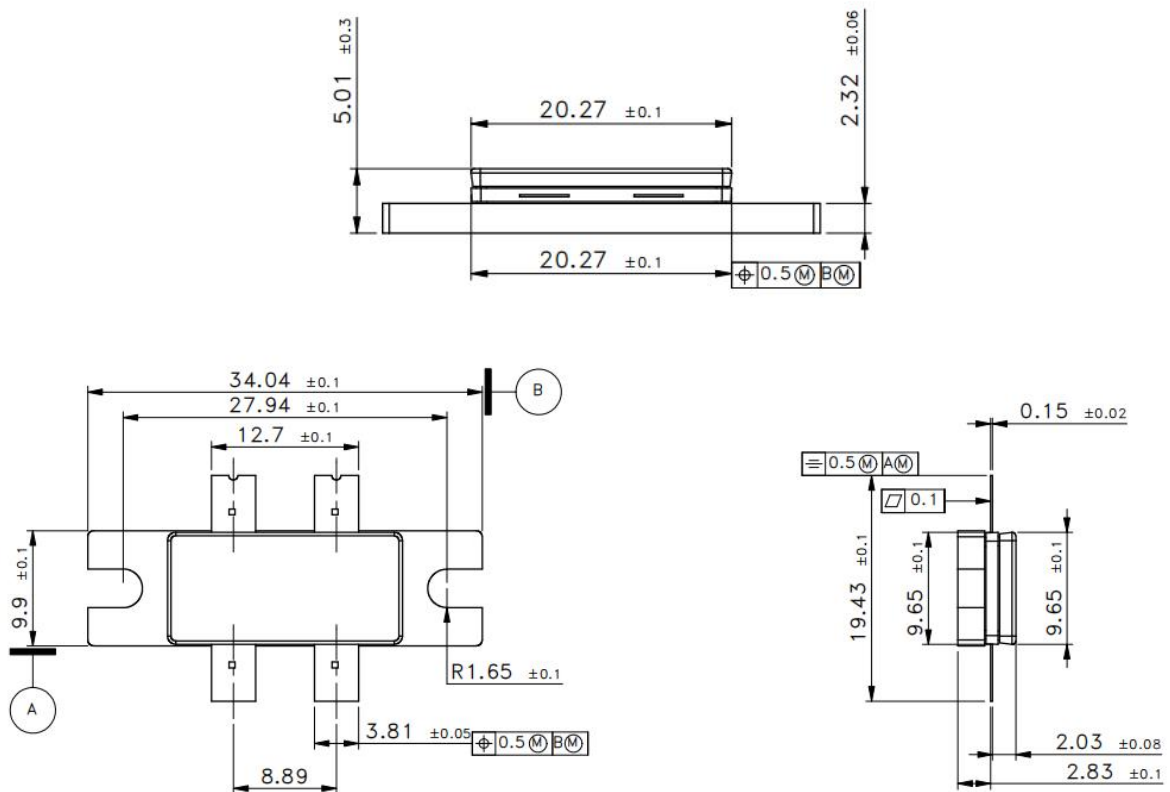
This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of “Watech Product Printing Specification”

Marking



Remark: 1.Unit: mm;

ACS2110S-4L-T; Earless Flanged Balanced Air Cavity Spliced Package; 4 Leads



Remark: 1.Unit: mm;

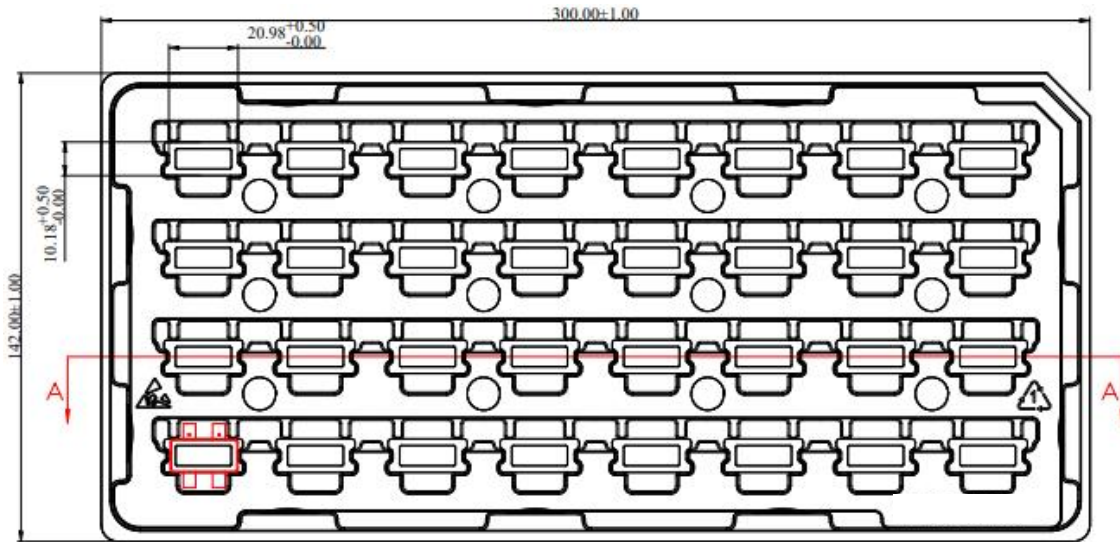
ACS2110B-4L-T; Flanged Balanced Air Cavity Spliced Package; 2 mounting holes; 4 leads

Package Dimensions

Packing Information

HTH8G02P550S-T:

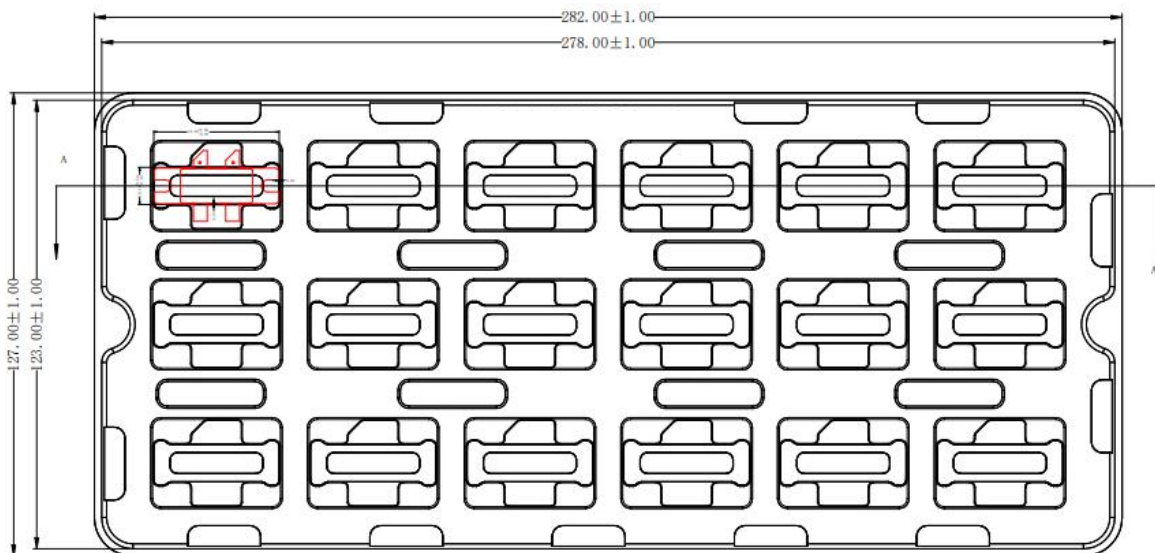
Package Type	Qty/Tray(pcs)	Qty/Box(pcs)
ACS2110S-4L-T	32	160



HTH8G02P550S-T Packaging Descriptions


HTH8G02P550SB-T:

Package Type	Qty/Tray(pcs)	Qty/Box(pcs)
ACS2110B-4L-T	18	90



HTH8G02P550SB-T 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

Revision history

Document ID	Datasheet Status	Release Date	Revision Version
Rev 1.0	Preliminary	Dec. 2021	Preliminary
Rev 1.1	Product	March 2023	New format based on English version datasheet
Rev 2.0	Product	Sept.2023	Update TBD information
Rev 2.1	Product	Apr.2023	Update package information



HTH8G02P550S(B)-T

550W, 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:

- Web: www.watechelectronics.com
- Email: MKT@huatai-elec.com

For technical questions and application information:

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