HTN8G15P200H(B)

200W, 1.8 - 1500 MHz LDMOS Amplifier

Product datasheet

Description

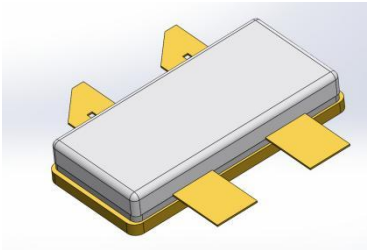
The HTN8G15P200H(B) is an unmatched discrete LDMOS Power Amplifier with 200W saturated output power covering frequency range from 1.8 - 1500 MHz, which can be used for common transmitter and ISM application with excellent ruggedness and broadband performance.

Features

- Operating Frequency Range: 1.8 - 1500 MHz
- Operating Drain Voltage: 28V
- Saturation Output Power: 200W
- 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
- Private network communication base station
- Communication transmitter applications
- ISM application

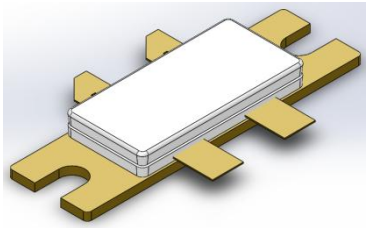


ACC2110S-4L

Earless Flanged Balanced

Air Cavity Ceramic Package; 4 Leads

HTN8G15P200H



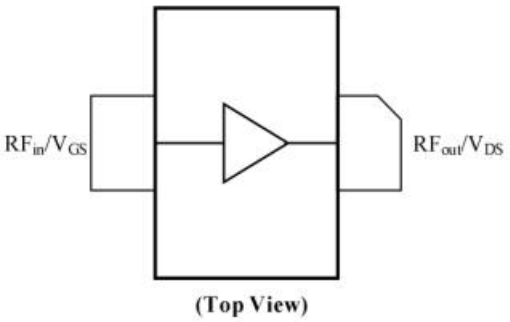
ACC2110B-4L

Flanged Balanced

Air Cavity Ceramic Package; 4 Leads,

2 Mounting holes

HTN8G15P200HB



(Top View)

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

Pin Connections

Ordering Information

Part Number	Description
HTN8G15P200H(B)	Tray Package
HTN8G15P200H(B) EVB1	30-678 MHz EVB
HTN8G15P200H(B) EVB2	1300 MHz EVB

Typical Performance

RF Characteristics (CW)

Freq (MHz)	Gain (dB)	Pout (dBm)	Pout（W)	Eff(%)
1300	18.24	53.34	216	69.58

Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ = 300mA ,Vgs=1.98V CW test on HOLTOA pplication Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V_{DSS})	-0.5 to +65	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 (Carrier)

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage $V_{(BR)DSS}$	Vgs=0V, Ids=108uA	65	-	-	V
Gate-Source Threshold Voltage $V_{GS(th)}$	Vgs=Vds, Ids=108uA	1.1	1.5	1.9	V
Drain Leakage Current I_{DSS}	Vgs=0V, Vds=28V	-	-	0.5	uA
Gate Leakage Current I_{GSS}	Vgs=5V, Vds=0V	-	-	0.5	uA

DC Characteristics (Peak)

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage $V_{(BR)DSS}$	Vgs=0V, Ids=108uA	65	-	-	V
Gate-Source Threshold Voltage $V_{GS(th)}$	Vgs=Vds, Ids=108uA	1.1	1.5	1.9	V
Drain Leakage Current I_{DSS}	Vgs=0V, Vds=28V	-	-	0.5	uA
Gate Leakage Current I_{GSS}	Vgs=5V, Vds=0V	-	-	0.5	uA

Load Mismatch Test

Condition	Test Result
VSWR=10:1, at all Phase Angles, VDD = +28Vdc, IDQ= 300mA, CW P_{OUT} =200W, Frequency1300MHz test on H O L T O Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R_{TH})	Tj=80℃,measured under DC condition	0.2	℃ /W

Load Pull Performance (Carrier/peak)

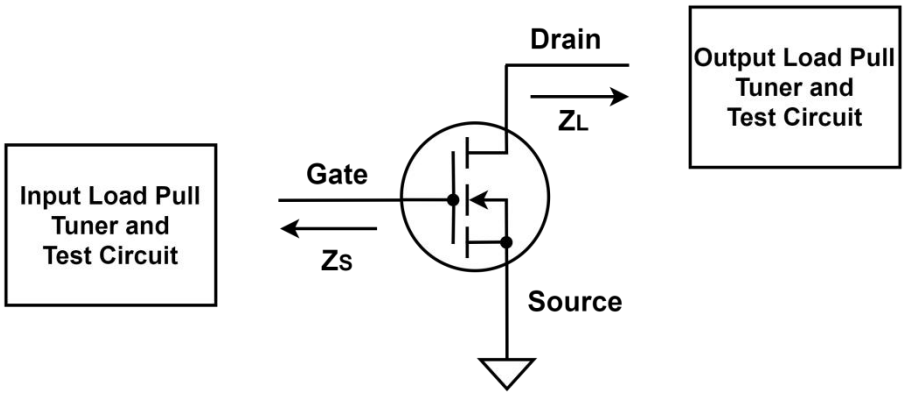
Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 100mA, PW = 40us, DC= 4%

Max Output Power						
Freq (MHz)	Z_source (Ω)	Z_load [1] (Ω)	Gain (dB)	P3dB (dBm)	P3dB (W)	Eff (%)
760	0.9-j*0.7	1.85-j*2.7	21.2	52.42	174	60.9
1300	1.3-j*3.2	1.63-j*4.1	17.61	52.26	168	62.17
1800	2-j*7.5	1.64-j*7.3	14.9	52.24	167	62.4

[1] Load impedance for optimum P3dB pout

Max Drain Efficiency						
Freq (MHz)	Z_source (Ω)	Z_load [2] (Ω)	Gain (dB)	P3dB (dBm)	P3dB (W)	Eff (%)
760	0.9-j*0.7	2.2+j*0.4	24.7	49.5	89	80.87
1300	1.3-j*3.2	1.06+j*2.9	18.78	50.25	104	74.91
1800	2-j*7.5	1.4+j*6.3	17.27	51.14	130	68.52

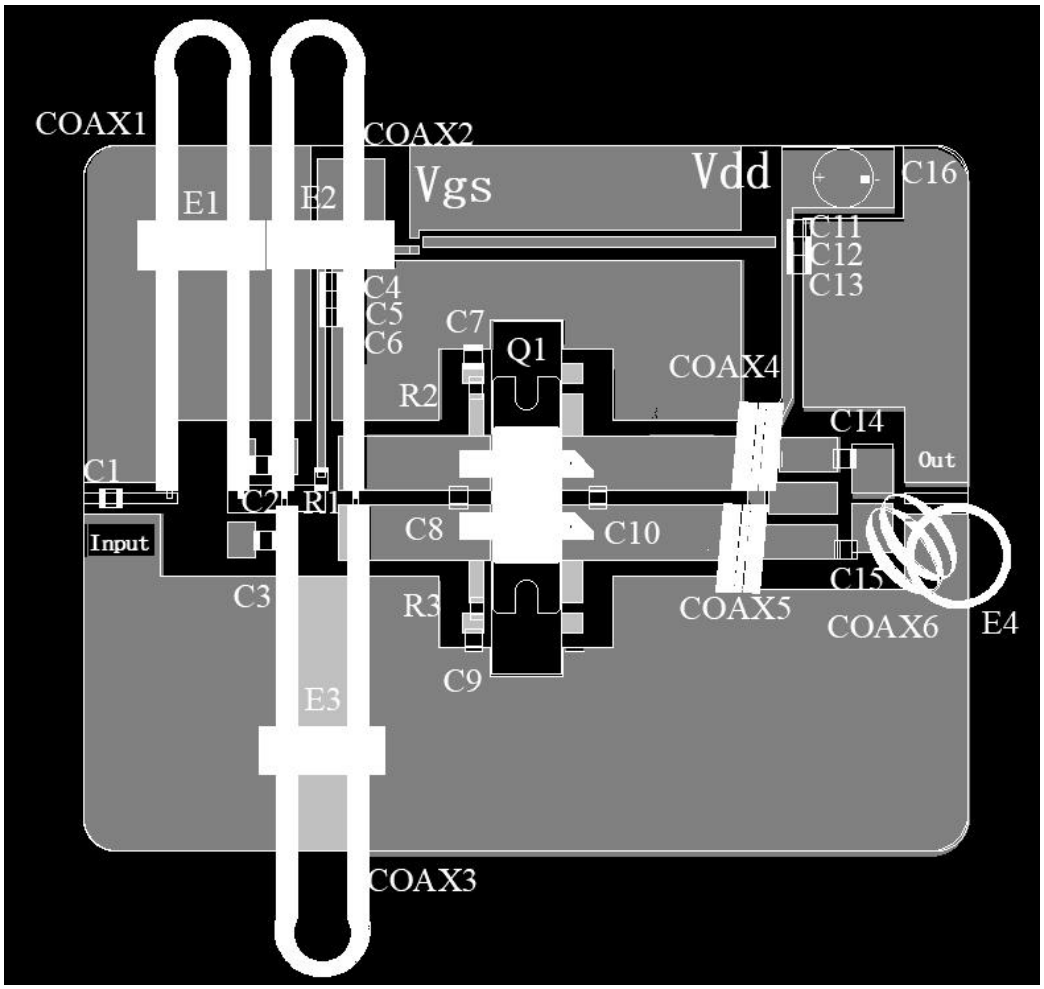
[2] Load impedance for optimum P3dB efficiency



Z_source : Measured impedance presented to the input of the device at the package reference plane

Z_load : Measured impedance presented to the output of the device at the package reference plane

HTN8G15P200H(B) 30MHz -678MHz Reference Design



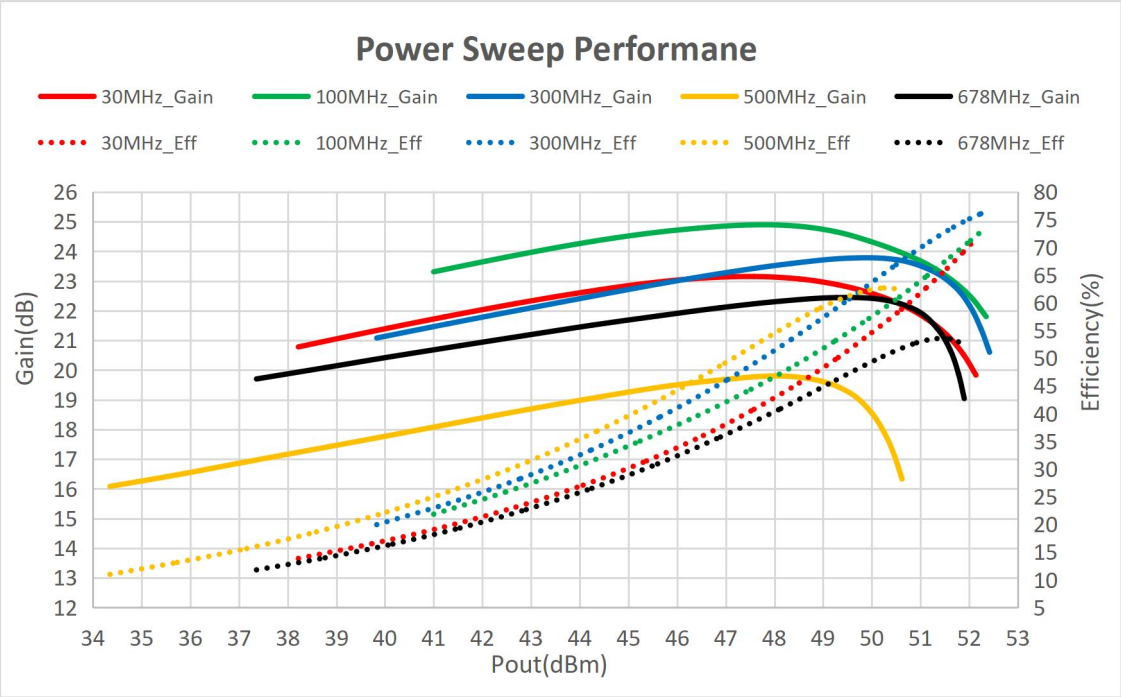
EVB Layout

Bill of Materials (BoM) - HTN8G15P200H(B) 30MHz -678MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	200W, 30- 678MHz LDMOS PA	HOLTO	HTN8G15P200H(B)
C1	47pF	MLCC and thick film	Murata	ATC100B470JT500XT
R1	51Ω	resistor	YAGEO	RC0603FR-0751RL
C2 ,C3,C14 ,C15	820pF	ATC	MLCC	ATC100B821KT
C4 ,C11,C12	4u7F	MLCC	Murata	GRM31CR71H475KA12L
C5	1nF	MLCC	ATC	ATC800B102JT50XT
C6 ,C13	390pF	MLCC	ATC	ATC100B391JT

C7 ,C9	10uF	MLCC	Murata	GRM32EC72A106KE05
C8	27pF	MLCC	ATC	ATC100B270JT
C10	15pF	MLCC	ATC	CBR08C150FAGAC
C16	470uF	Electrolytic Capacitor	Vishay	MAL203859471E3
R1	18Ω	Thick Film Resistor	YAGEO	RC0603FR-0718RL
R2,R3	51Ω	Thick Film Resistor	YAGEO	RC0603FR-0751RL
Coax1	50Ω	50 ohm 2:1,140mm	Arbitrary	Arbitrary
Coax2,3	16.7Ω	16.7 ohm 1:4,150mm	Arbitrary	Arbitrary
Coax4,5	16.7Ω	16.7 ohm 9:1,140mm	Arbitrary	Arbitrary
E1, E2, E3	43#	Multi-Aperture COAR	Fair-Rite	2843000302
E4	NOX20	Multi-Aperture COAR	Fair-Rite	2820000302
PCB	FR4 (er = 4.2), 0.8 mm, 35 µm (1oz)			

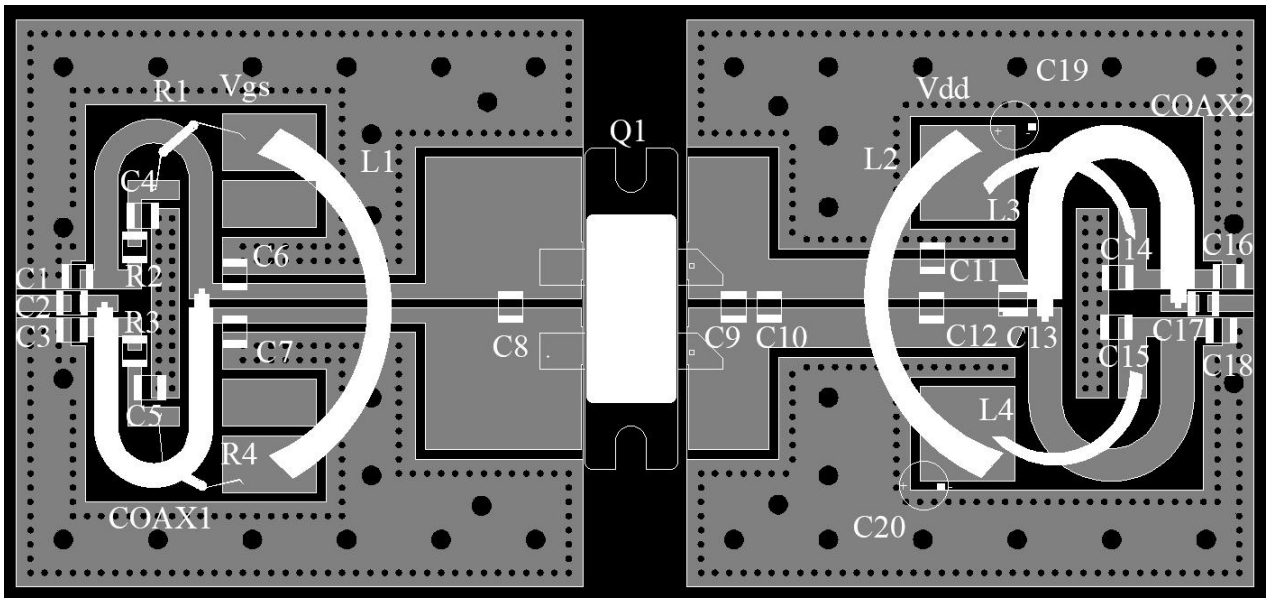
Performance Plots HTN8G15P200H(B) 30-678MHz



Pulsed CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 300mA , Vgs= 2.00V, PW = 100us, DC= 10% test on H O L T O Application Board

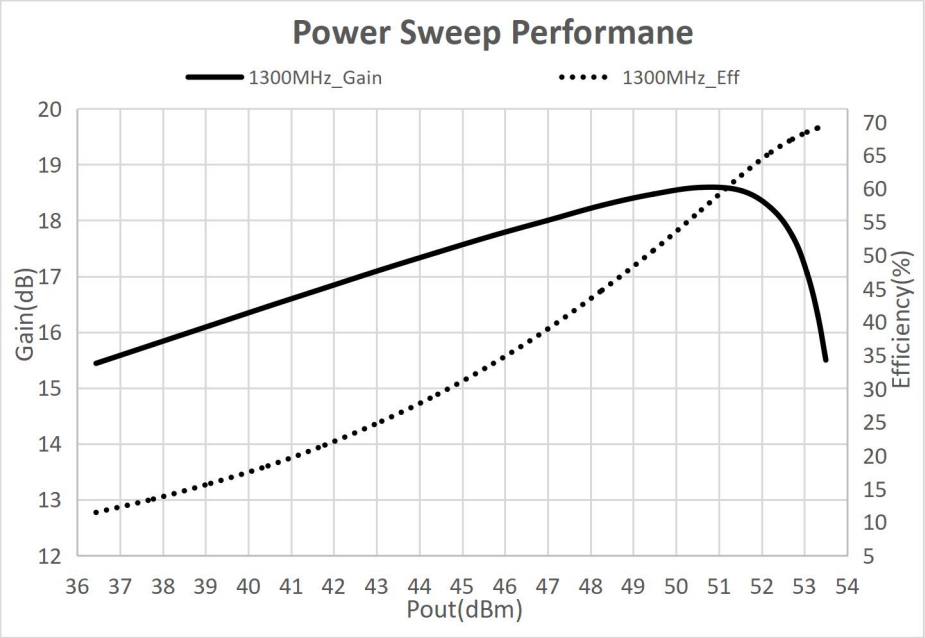
HTN8G15P200H(B) 1300MHz Reference Design



Bill of Materials (BoM) - HTN8G15P200H(B) 1300MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
Q1	-	200W, 1300MHz LDMOS PA	HOLTO	HTN8G15P200H(B)
C1 ,C2 ,C3	68pF	MLCC	ATC	ATC100B471JT
C4 ,C5,C14 ,C15	4u7F	MLCC	Murata	GRM31CR71H475KA12L
C6 ,C7	4p7F	MLCC	ATC	ATC100B4R7CT
C8 ,C10	2p4F	MLCC	ATC	ATC100B2R4T
C9 ,C11 ,C12	3p3F	MLCC	ATC	ATC100B3R3JT
C13	1p2F	MLCC	ATC	ATC100B1R2JT
C16 ,C17 ,C18	220pF	MLCC	ATC	ATC100B221JT
C19 ,C20	470uF	Electrolytic Capacitor	Vishay	MAL203859471E3
R1,R2	100Ω	0805 1/4W Chip Resisto	Arbitrary	Arbitrary
Coax1,2	25Ω	25 ohm 2:1,140mm	Arbitrary	Arbitrary
L1,L2	AWG16	Cable D=1.29mm	Arbitrary	Arbitrary
L3,L3	AWG16	Cable D=1.29mm	Arbitrary	Arbitrary
PCB	FR4 (er = 4.2), 0.8 mm, 35 μm (1oz)			

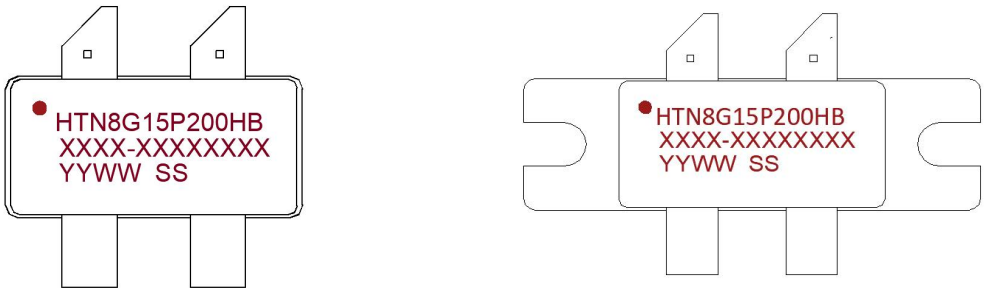
Performance Plots HTN8G15P200H(B) 1300MHz



Pulsed CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +28Vdc, IDQ= 300mA , Vgs 1.98V, CW test on HOLTOA pplication Board

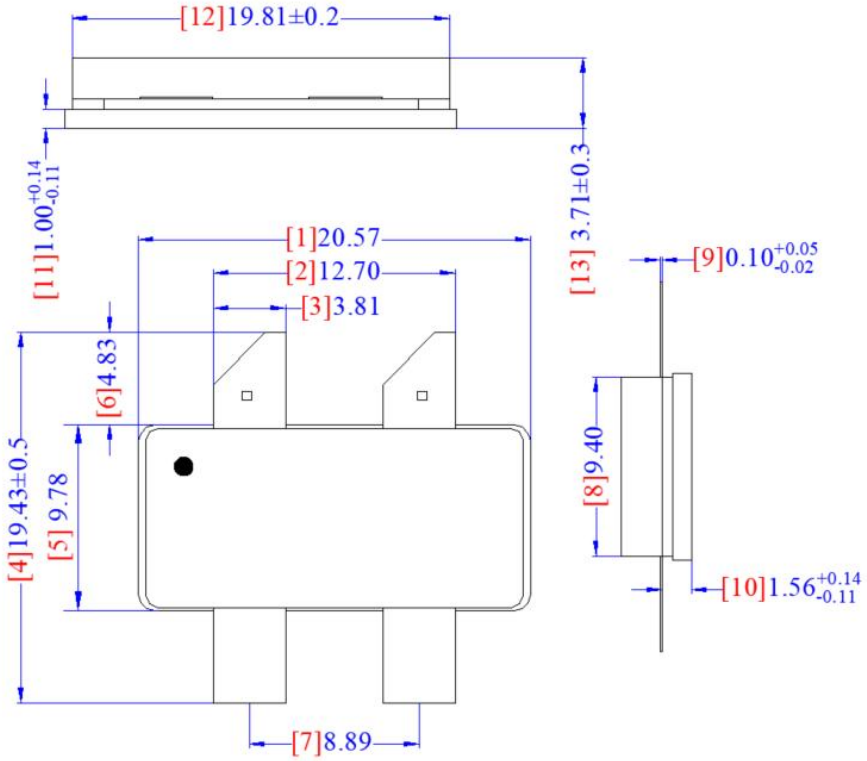
Package Marking and Dimensions



- Line1 (fixed): Device name in work order
- Line2 (unfixed): Mark Lot number in work order (Sample: E596-EERA0001)
- Line3 (unfixed): Date Code + “SS”(The last two digits of sub lot Number)

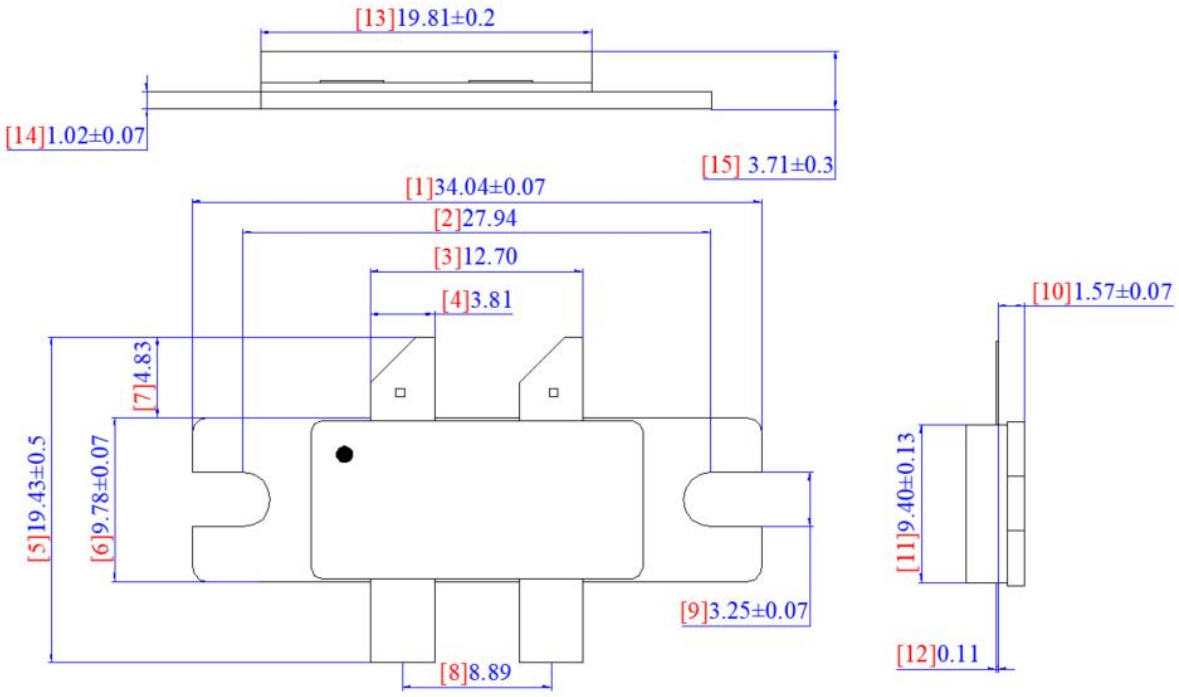
This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of “H O L T O Product Printing Specification”

Marking



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

ACC2110S-4L;Earless Flanged Balanced Air Cavity Ceramic Package; 4 Leads



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

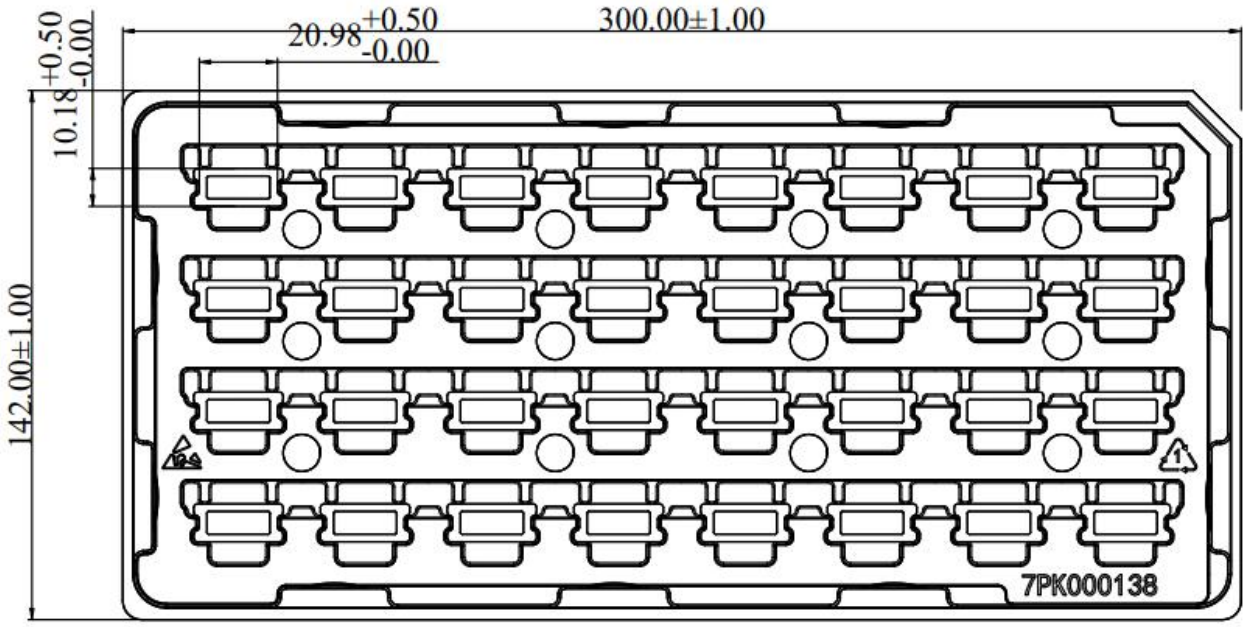
ACC2110B-4L; Flanged Balanced Air Cavity Ceramic Package; 2 Mounting holes, 4 Leads

Package Dimensions

Tape and Reel Information

HTN8G15P200H:

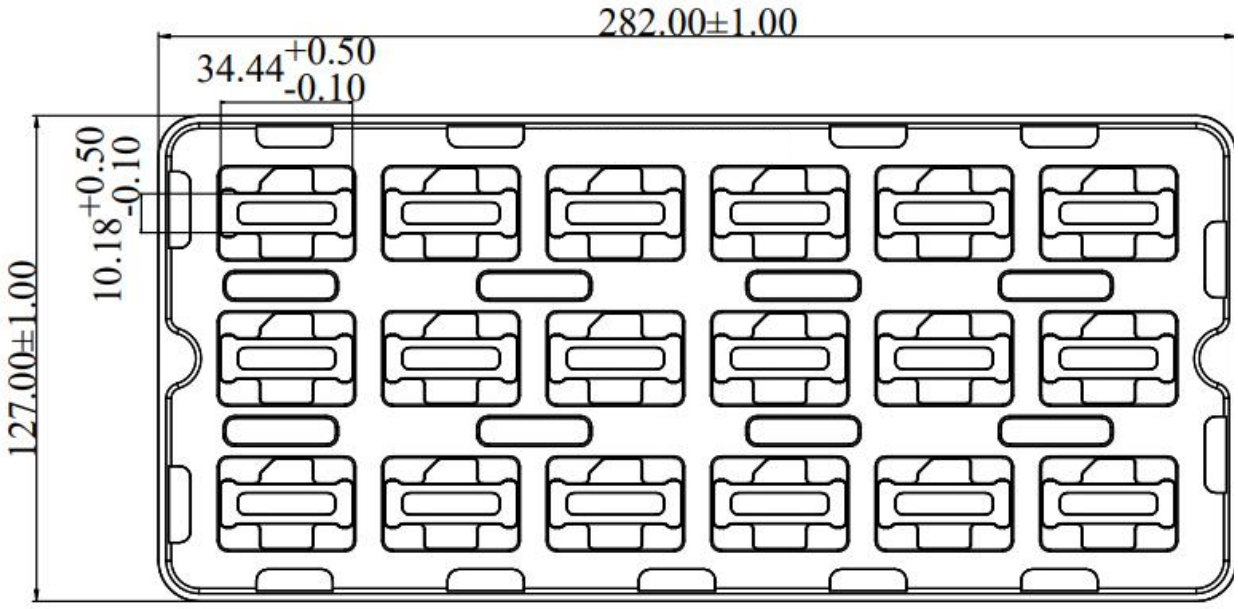
Package Type	Qty/Tray(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
ACC2110S-4L	32	160	960



Packaging Descriptions

HTN8G15P200HB:

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



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	Apr. 2024	New product revision

Contact Information

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

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For technical questions and application information:

- Email: andetech@andesource.com

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