

### Description

The HTH8G02P350H(B) is an unmatched discrete LDMOS Power Amplifier with 350W saturated output power covering frequency range from 1.8 - 200 MHz.

### Features

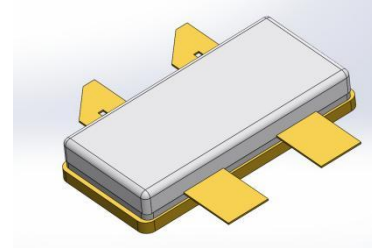
- Operating Frequency Range: 1.8 - 200 MHz
- Operating Drain Voltage: 50V
- Saturation Output Power: 350W
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

### Applications

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

### Ordering Information

| Part Number         | Description  |
|---------------------|--------------|
| HTH8G02P350H(B)     | Tray package |
| HTH8G02P350H(B) EVB | 100 MHz EVB  |

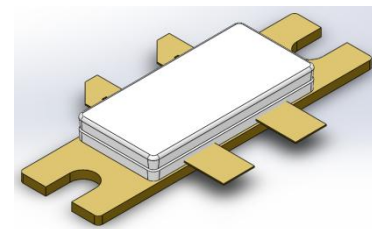


**ACC2110S-4L**

Earless Flanged balanced

Air Cavity Ceramic Package; 4 Leads

**HTH8G02P350H**

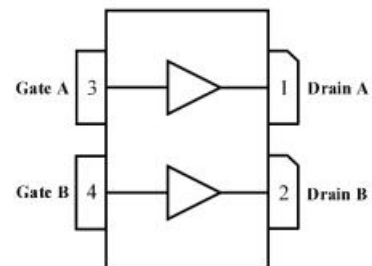


**ACC2110B-4L**

Flanged balanced

Air Cavity Ceramic Package; 4 Leads,  
2 Mounting holes

**HTH8G02P350HB**



(Top View)

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

**Pin Connections**

### Typical Performance

#### RF Characteristics (CW)

| VDD(V) | Freq (MHz) | Gain (dB) | Pout(dBm) | Pout(W) | Eff(%) |
|--------|------------|-----------|-----------|---------|--------|
| 50     | 100        | 25.58     | 55.54     | 358     | 69.24  |

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

#### RF Characteristics (Pulsed CW)

| VDD(V) | Freq (MHz) | Gain (dB) | Pout(dBm) | Pout(W) | Eff(%) |
|--------|------------|-----------|-----------|---------|--------|
| 50     | 100        | 25.62     | 55.82     | 380     | 72.63  |

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

### Absolute Maximum Ratings

| Parameter                               | Range/Value  | Unit |
|-----------------------------------------|--------------|------|
| Drain voltage (V <sub>DSS</sub> )       | -0.5 to +135 | V    |
| Gate voltage (V <sub>GS</sub> )         | -5.0 to +10  | V    |
| Drain voltage (V <sub>DD</sub> )        | 0 to +50     | V    |
| Storage Temperature (T <sub>STG</sub> ) | -55 to +150  | °C   |
| Junction Temperature (T <sub>J</sub> )  | -40 to +225  | °C   |

### Electrical Specification

#### DC Characteristics

| Parameter                                         | Conditions         | Min | Typ  | Max | Unit |
|---------------------------------------------------|--------------------|-----|------|-----|------|
| Breakdown Voltage V <sub>(BR)DSS</sub>            | Vgs=0V, Ids=200uA  | -   | 135  | -   | V    |
| Gate-Source Threshold Voltage V <sub>GS(th)</sub> | Vds=10V, Ids=200uA | 1.5 | 2.25 | 2.9 | V    |
| Drain Leakage Current I <sub>DSS</sub>            | Vgs=0V, Vds=50V    | -   | 1    | 10  | uA   |
| Gate Leakage Current I <sub>GSS</sub>             | Vgs=5V, Vds=0V     | -   | 0.1  | 1   | uA   |

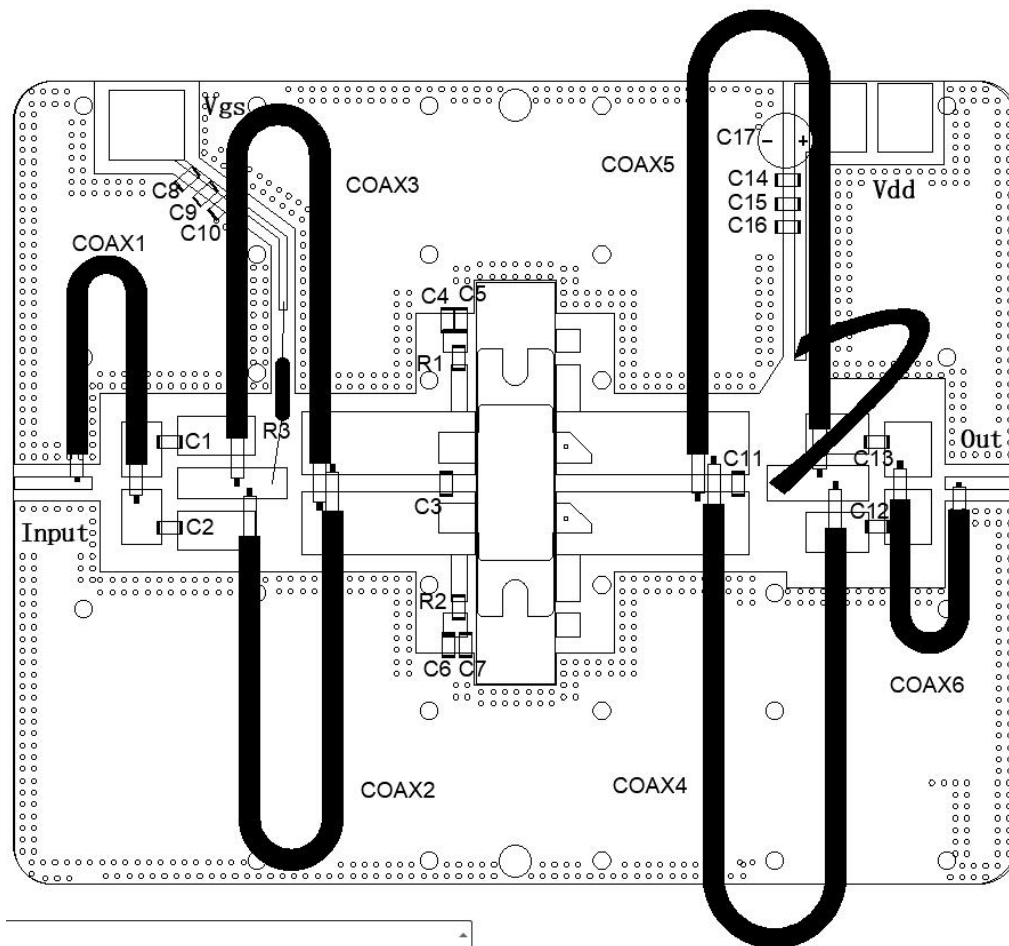
#### Load Mismatch Test

| Condition                                                                                                                                        | Test Result           |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| VSWR=65:1 at all Phase Angles ,Pulsed: VDD=50V, IDQ=300mA, Freq=100MHz, Pout=350W, 200usec Pulse Width, 20% Duty test on HOTLO Application Board | No Device Degradation |

### Thermal Information

| Parameter                                           | Condition                                                                                      | Value (Typ) | Unit            |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------|-------------|-----------------|
| Thermal Resistance<br>Junction to Case ( $R_{TH}$ ) | $T_{CASE} = 45^{\circ}C$ , $V_{DD} = +48Vdc$ , $I_{DQ} = 100mA$ ,<br>$PAVG = 350W$ , CW signal | 0.3         | $^{\circ}C / W$ |

#### HTH8G02P350H(B) 100 MHz Reference Design



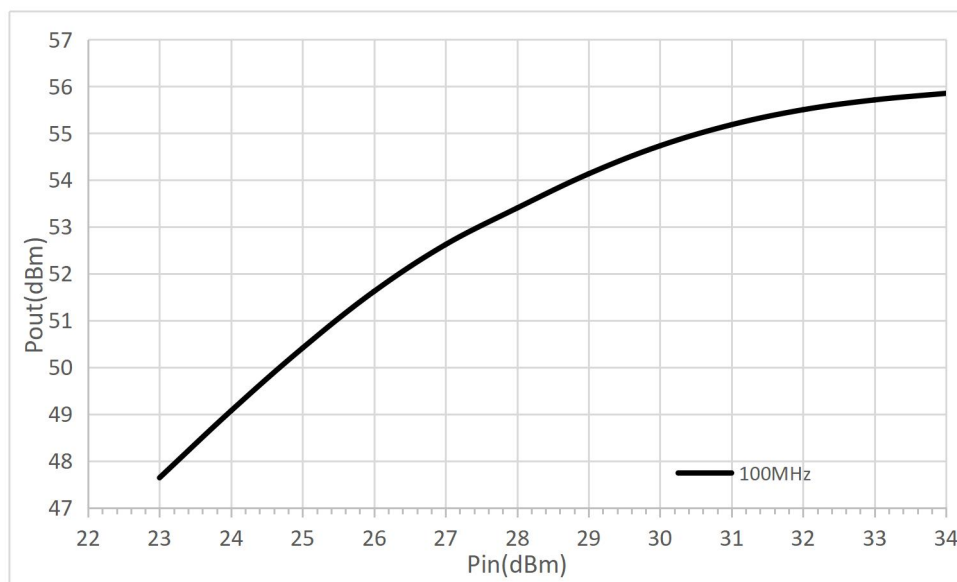
EVB Layout

#### Bill of Materials (Bom) - HTH8G02P350H(B) 100 MHz Reference Design

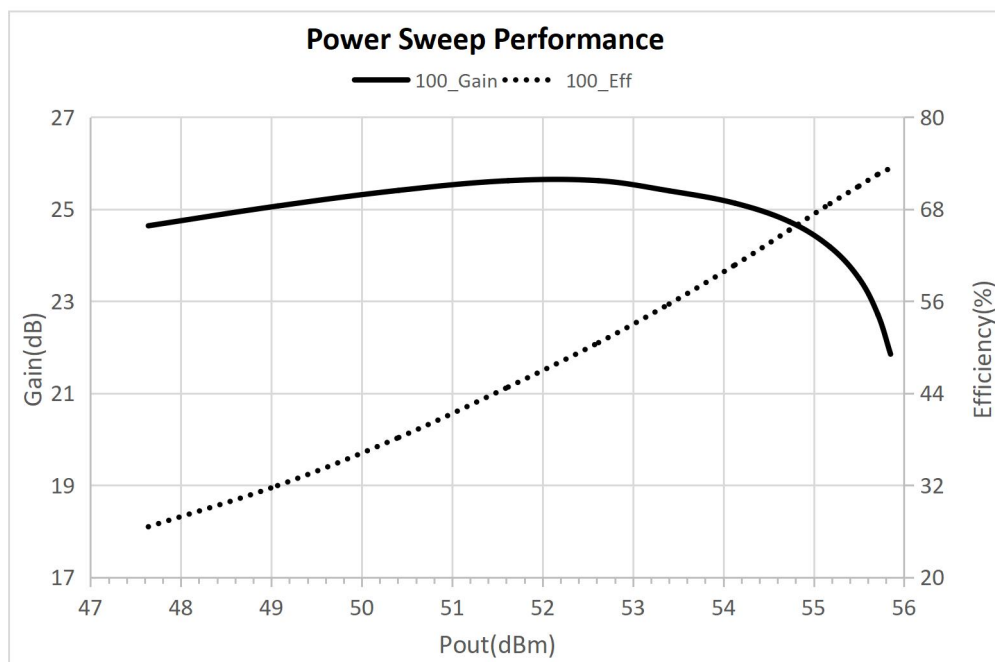
| Reference     | Value | Description                     | Manufacturer | P/N                |
|---------------|-------|---------------------------------|--------------|--------------------|
| Q1            | -     | 350W, 1.8 - 200 MHz<br>LDMOS PA | Holto        | HTH8G02P350H(B)    |
| C8,C9,C14,C15 | 4.7uF | 4.7uF Chip Capacitor            | Murata       | GRM31CR71H475KA12L |
| C1,C2         | 680   | 680 Chip Capacitors             | ATC          | ATC100B681JT       |
| C3,C11        | 68pF  | 68pF Chip Capacitors            | ATC          | ATC100B680JT       |
| C4,C6,        | 100pF | 100pF Chip                      | ATC          | ATC100B101JT       |

|               |                                          |                                     |           |                         |
|---------------|------------------------------------------|-------------------------------------|-----------|-------------------------|
|               |                                          | Capacitors                          |           |                         |
| C5,C7,C10,C16 | 1nF                                      | 1nF Chip Capacitors                 | Murata    | GR321AD72E102KW01D      |
| C12,C13       | 240pF                                    | 240pF Chip Capacitors               | ATC       | ATC100B241JT            |
| C17           | 470uF                                    | 470uF, 100V Electrolytic Capacitors | Arbitrary | Electrolytic Capacitors |
| R1, R2        | 500hm                                    | 500hm, 0805 1/4W Chip Resistors     | Arbitrary | Arbitrary               |
| R3            | 1KOhm                                    | 1KOhm, Wire Resistors               | Arbitrary | Arbitrary               |
| Coax2,3       |                                          | 250hm 4:1,100 mm                    | Arbitrary | Arbitrary               |
| Coax4,5       |                                          | 250hm 4:1, 130 mm                   | Arbitrary | Arbitrary               |
| Coax1         |                                          | 500hm 2:1,60 mm                     | Arbitrary | Arbitrary               |
| Coax6         |                                          | 500hm 2:1, 45 mm                    | Arbitrary | Arbitrary               |
| PCB           | FR4 (er = 4.2), 0.8 mm, 35 $\mu$ m (1oz) |                                     |           |                         |

## Performance Plots



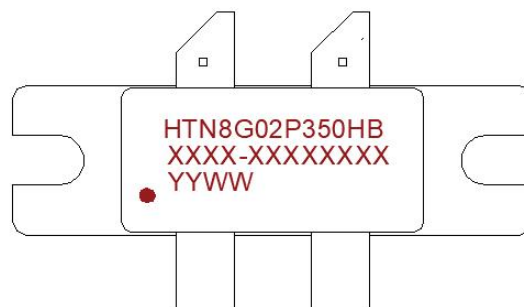
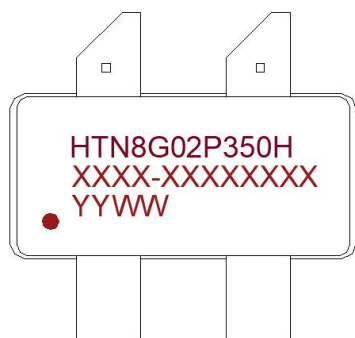
Pulsed CW, Pout vs Pin



**Pulsed CW, Gain and Efficiency vs Pout**

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

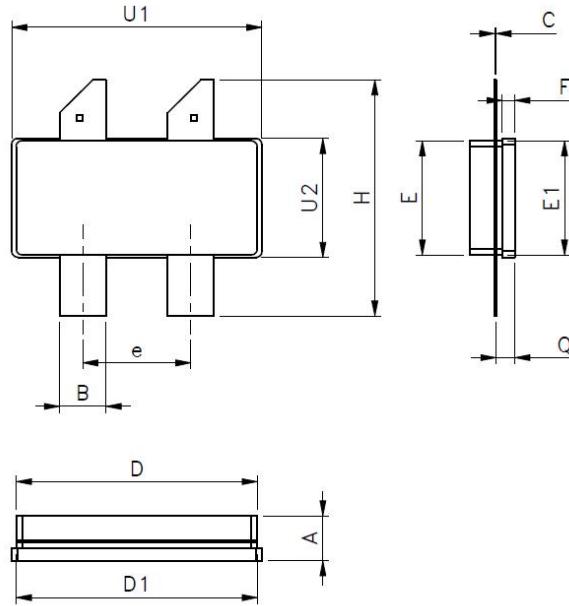
## Package Marking and Dimensions



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

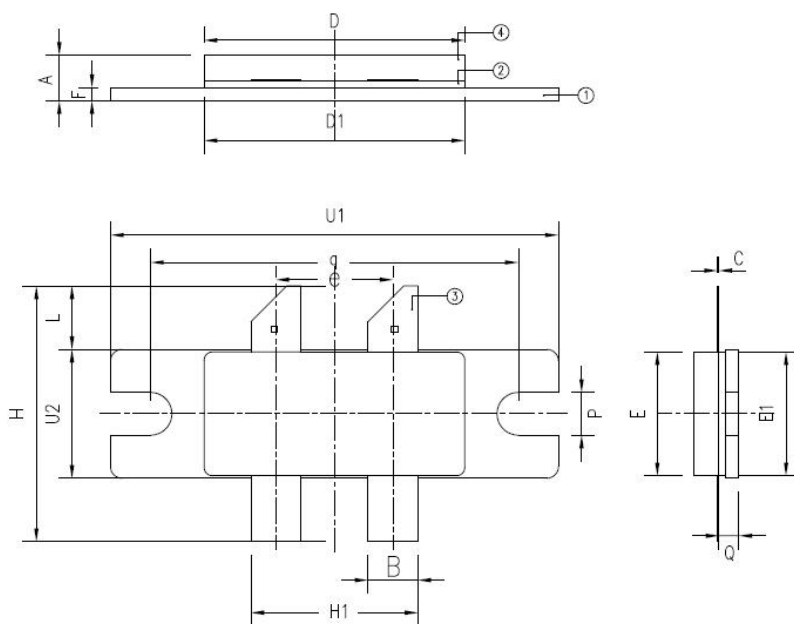
This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of "Holto Product Printing Specification"

### 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 | Dimesions in Milimeters |       |       | Dimesions 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  | -     |

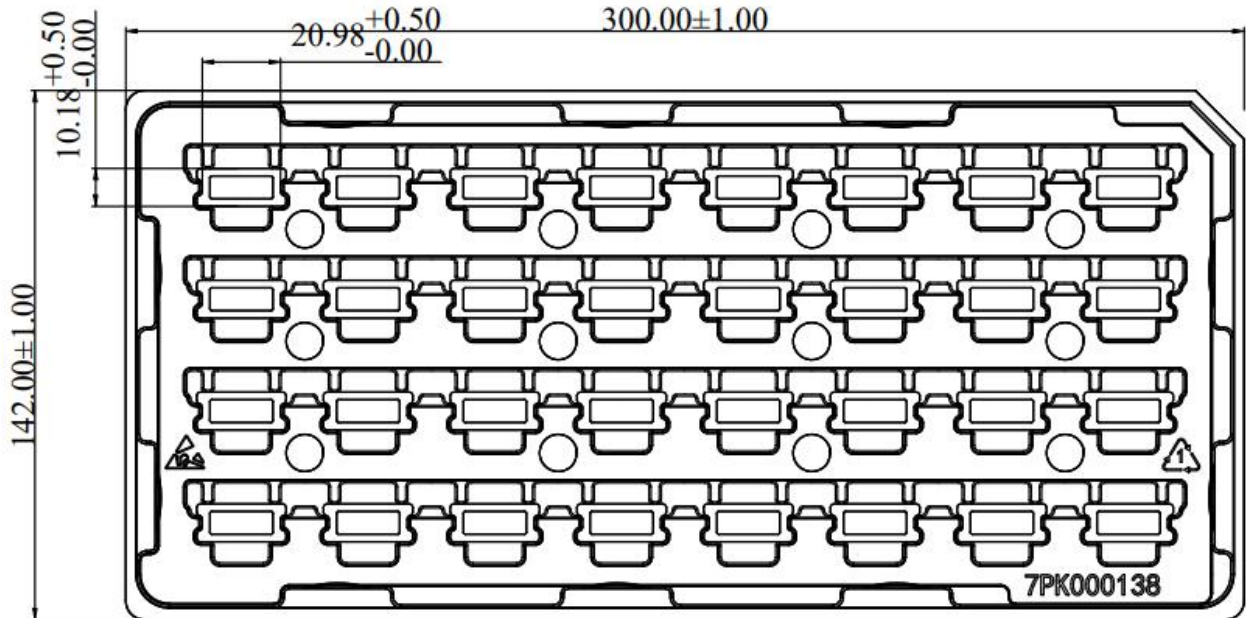
#### Package Dimensions

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

#### Packing Information

##### HTH8G02P350H:

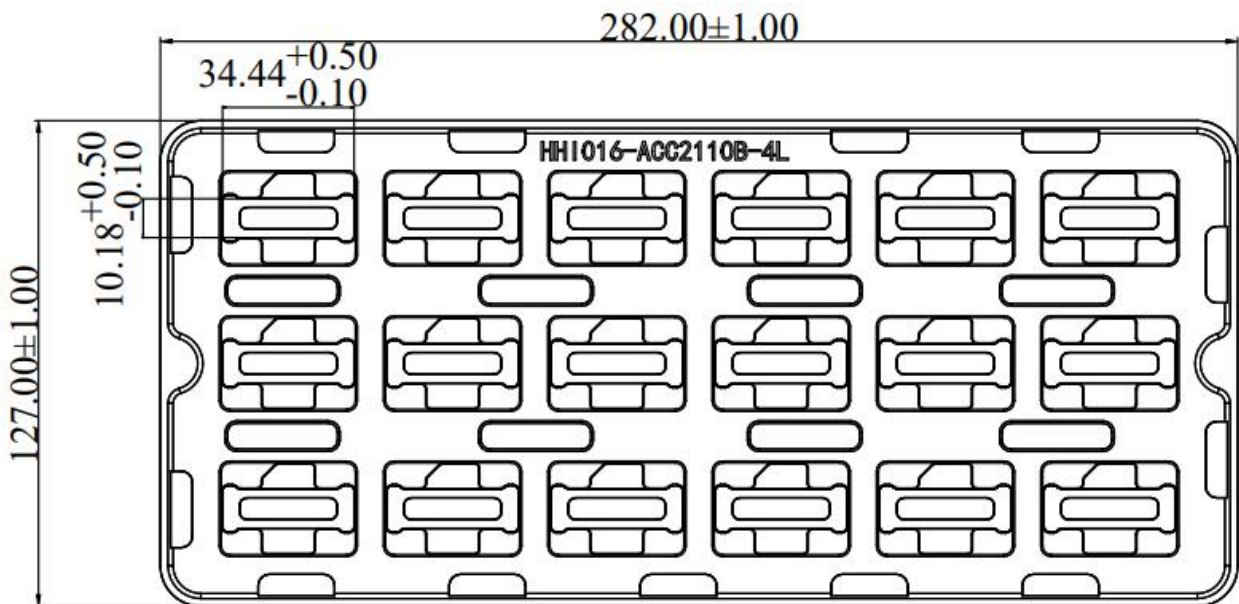
| Package Type | Qty/Tray(pcs) | Qty/Box(pcs) | Qty/Carton(pcs) |
|--------------|---------------|--------------|-----------------|
| ACC2110S-4L  | 32            | 160          | 960             |



##### Tray Packaging Descriptions

##### HTH8G02P350HB:

| 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              |
| Rev 2.2     | Product          | August 2024  | Update package information                    |

## Contact Information

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

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- Email: [andehk@andesource.com](mailto:andehk@andesource.com)

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