

## Features

- Toroid core for high coupling and low radiation
- Complies with IEC 60950-1, IEC 62368-1 and IEC 60664-1
- UL 62368-1 recognized, File No. [E515965](#) (six models)
- Reinforced insulation for working voltage of 800 Vrms, 1000 Vpeak

- Designed for isolation power supplies using TI SN6501, SN6505B and Nexperia NXF6501-Q100
- AEC-Q200 compliant
- RoHS compliant\*

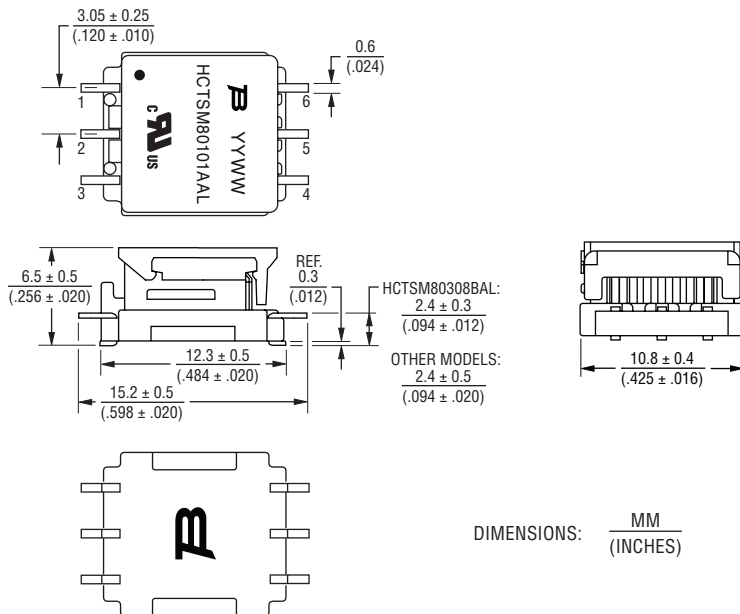
## HCTSM8 Series – High Clearance and Creepage Distance Transformers

### Electrical Specifications @ 25 °C

| Bourns Part Number** | Primary Inductance @ 100 kHz / 1 V | Leakage Inductance @ 100 kHz / 0.1 V (All Sec. Pins Shorted) | Turns Ratio P(1-3) : S(6-4) | Pri. (1-3) DCR (Ω) Max. | Sec. (6-4) DCR (Ω) Max. | UL Recognition |
|----------------------|------------------------------------|--|-----------------------------|-------------------------|-------------------------|----------------|
|                      | L 1-3 (μH) Min.                    | Lk 1-3 (μH) Max.   |                             |                         |                         |                |
| HCTSM80101AAL        | 250                                | 0.8  | 1 : 1                       | 0.30                    | 0.20                    | ✓              |
| HCTSM80102AAL        | 250                                | 0.6  | 1 : 2                       | 0.30                    | 0.35                    | ✓              |
| HCTSM80201AAL        | 250                                | 1.2  | 2 : 1                       | 0.30                    | 0.15                    | ✓              |
| HCTSM80304BAL        | 300                                | 0.6  | 3 : 4                       | 0.30                    | 0.30                    |                |
| HCTSM80305BAL        | 300                                | 0.6  | 3 : 5                       | 0.30                    | 0.30                    |                |
| HCTSM80308BAL        | 300                                | 0.7  | 3 : 8                       | 0.50                    | 0.85                    |                |
| HCTSM80403AAL        | 250                                | 0.8  | 4 : 3                       | 0.30                    | 0.20                    | ✓              |
| HCTSM80803AAL        | 250                                | 1.8  | 8 : 3                       | 0.30                    | 0.15                    | ✓              |
| HCTSM80809AAL        | 250                                | 0.6  | 8 : 9                       | 0.30                    | 0.25                    | ✓              |
| HCTSM80910BAL        | 300                                | 0.9  | 9 : 10                      | 0.30                    | 0.25                    |                |
| HCTSM81017CAL        | 350                                | 0.9  | 10 : 17                     | 0.42                    | 0.48                    |                |

\*\*Add -E part number suffix - See How to Order.

### Product Dimensions



### Additional Information

Click these links for more information:



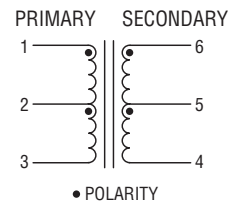
### General Specifications

Primary (1-3) E\*T Constant..11 V-μS min.  
 Rated Current.....350 mA AC  
 Hi-Pot: Primary/Secondary  
 .....5K Vdc, 60 seconds  
 Operating Temperature  
 .....-40 °C to +125 °C  
 (Temperature rise included)  
 Storage Temperature (Component)  
 .....-25 °C to +85 °C  
 Clearance/Creepage Distance  
 of Primary to Secondary ..... 8 mm min.  
 Level of Insulation..... Reinforced for a  
 working voltage of 800 Vrms,  
 1000 Vpeak, Material Group 1,  
 Overvoltage Category II, Pollution  
 degree 2, Altitude 2000 m  
 Moisture Sensivity Level ..... 1  
 ESD Classification (HBM)..... N/A

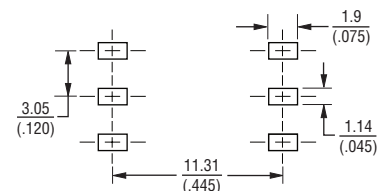
### Materials

Core.....Ferrite  
 Wire ... Enameled/triple-insulated copper  
 Terminal Finish .....Sn  
 Packaging..... 500 pcs. per 13-inch reel

### Electrical Schematic



### Recommended Layout



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

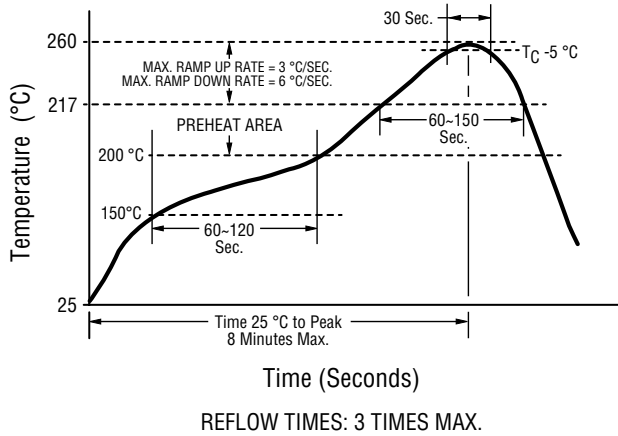
Users should verify actual device performance in their specific applications.

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# HCTSM8 Series - High Clearance and Creepage Distance Transformers

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## Solder Profile



| Profile Feature                                       | Pb Free Assembly                 |
|---|----------------------------------|
| Preheat   |                                  |
| - Temperature Min. ( $T_{smin}$ )                     | 150 °C                           |
| - Temperature Max. ( $T_{smax}$ )                     | 200 °C                           |
| - Time( $t_s$ ) from $T_{smin}$ to $T_{smax}$         | 60-120 seconds                   |
| Ramp-up Rate ( $T_L$ to $T_P$ )                       | 3 °C/second max.                 |
| Liquidous temperature ( $T_L$ )                       | 217 °C                           |
| Time ( $t_L$ ) maintained above $T_L$                 | 60-150 seconds                   |
| Peak package body temperature ( $T_P$ )               | $T_P \leq T_C$ (see table below) |
| Time within 5 °C of Actual Peak Temperature ( $t_p$ ) | 30 seconds                       |
| Ramp-Down Rate ( $T_P$ to $T_L$ )                     | 6 °C/second max.                 |
| Time 25 °C to Peak Temperature                        | 8 minutes max.                   |

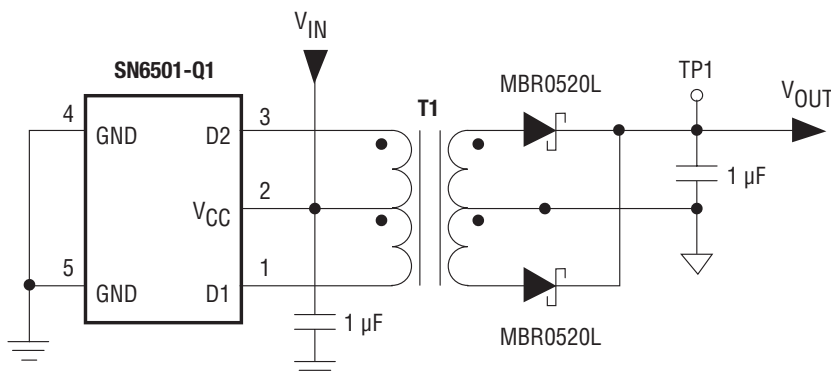
### Pb-free Process Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350~2000 | Volume mm <sup>3</sup> >2000 |
|-------------------|-----------------------------|---------------------------------|------------------------------|
| <1.6 mm           | 260 °C                      | 260 °C                          | 260 °C                       |
| 1.6 ~ 2.5 mm      | 260 °C                      | 250 °C                          | 245 °C                       |
| >2.5 mm           | 250 °C                      | 245 °C                          | 245 °C                       |

Refer to IPC/JEDEC J-STD-020

This product has been tested under this reflow condition. Deviations from this, especially higher temperature or longer durations, could impact performance.

## Typical Application



## How to Order

**HCTSM80101A A L - E**

Model \_\_\_\_\_

AEC-Q200 Compliancy Designator \_\_\_\_\_

RoHS Compliancy Designator \_\_\_\_\_

Tape & Reel Packaging \_\_\_\_\_

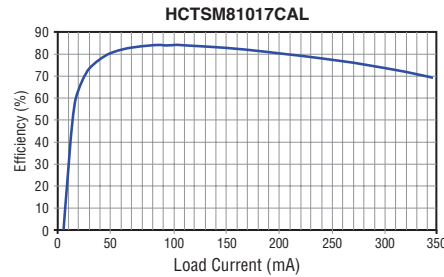
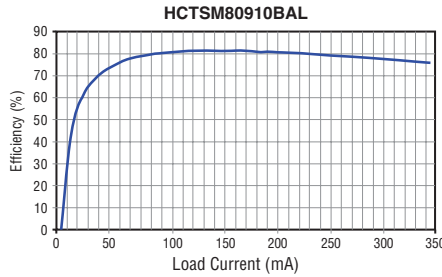
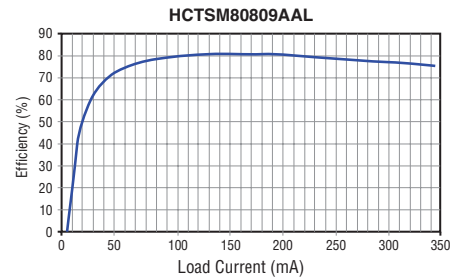
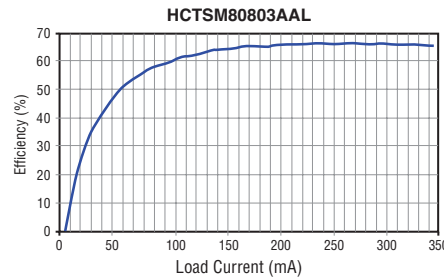
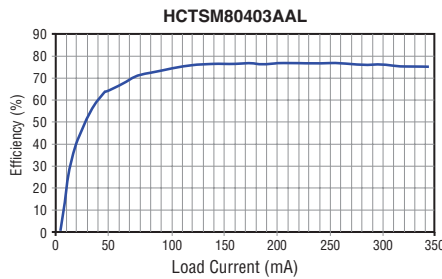
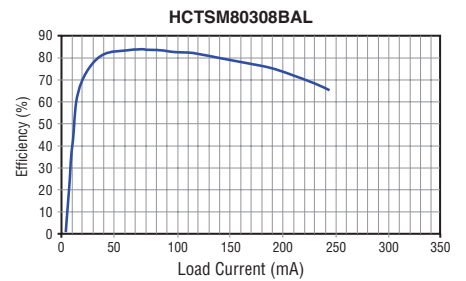
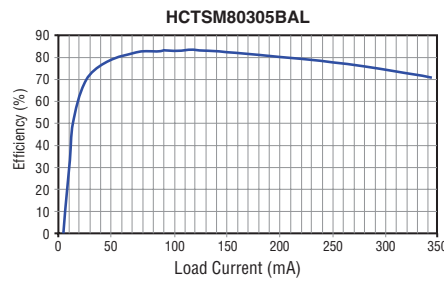
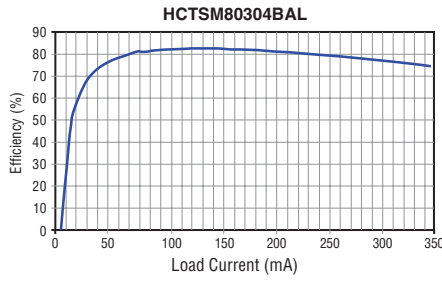
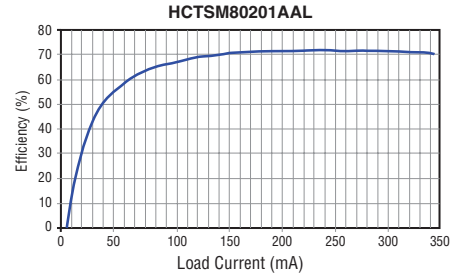
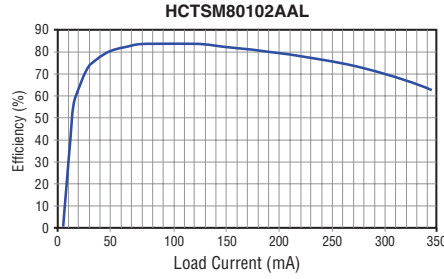
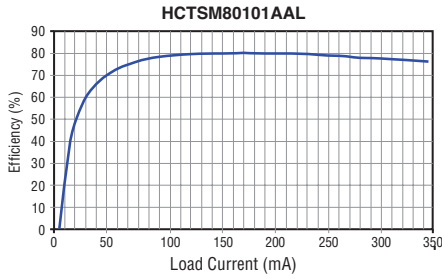
E = 500 pcs. per 13-inch Reel,  
5 Reels per Box,  
MOQ/Mult: 2500 pcs./2500 pcs.

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Users should verify actual device performance in their specific applications.

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## Efficiency vs. Load Curves\*



\*Measured with circuit in Typical Application, 5 VDC input, 0-350 mA DC load,  $T_a = 20\text{ }^\circ\text{C}$

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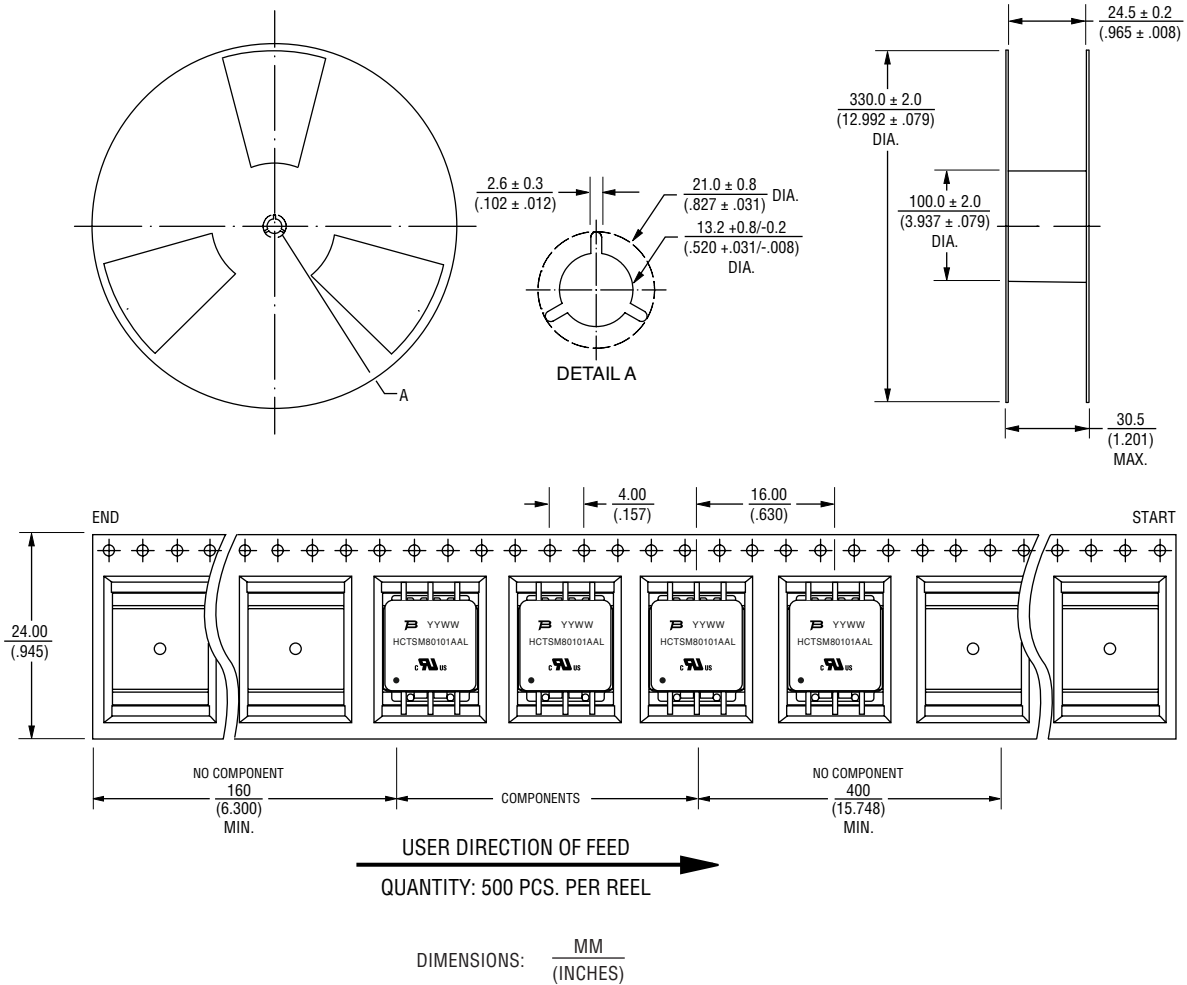
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# HCTSM8 Series - High Clearance and Creepage Distance Transformers

**BOURNS®**

## Packaging Specifications



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