



LOW OHM  
POWER RESISTORS

**HTE**  
SERIES

Size 2512 / 1206

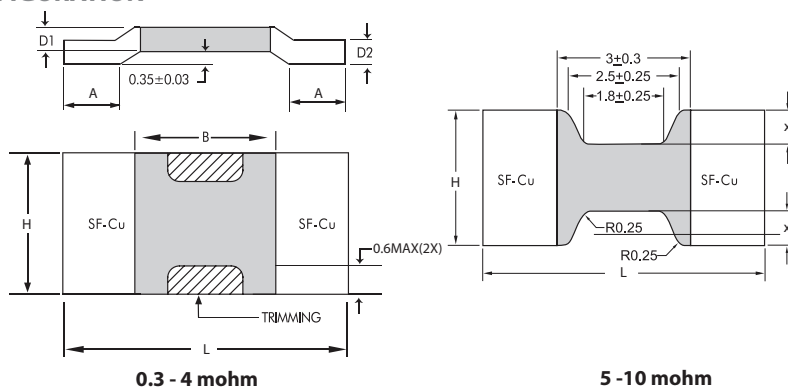
- Open frame electron beam welded punched out type.
  - Power Rating at 100°C - upto 3W
  - Power Rating at 70°C - upto 6W
- R0003 to R01





LOW OHM  
POWER  
RESISTORS  
**HTE**  
SERIES  
Size 2512/ 1206

## PHYSICAL CONFIGURATION



0.3 - 4 mohm

5 - 10 mohm

## DIMENSION TABLE

'x' dimension will vary depending on resistance value

| SR NO. | HI-TECH PART NAME    | WATTAGE AT 100°C        | WATTAGE AT 70°C | H           | L           | A            | B (MM)        | D1 (MM)     | D2 (MM)     | INTERNAL HEAT RESISTANCE (Rthi) | TCR (ppm) | TYPICAL WT. PER PC. (Gms) |
|--------|----------------------|-------------------------|-----------------|-------------|-------------|--------------|---------------|-------------|-------------|---------------------------------|-----------|---------------------------|
| 1      | HTE3W R0003 F        | 3W                      | 6W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.95 ± 0.10 | 0.95 ± 0.10 | 4°K/W                           | < 175     | 0.16                      |
| 2      | HTE3W R0005 F        | 3W                      | 6W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.80 ± 0.10 | 0.80 ± 0.10 | 7°K/W                           | < 115     | 0.14                      |
| 3      | HTE3W R001 F         | 3W                      | 5W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.42 ± 0.10 | 0.42 ± 0.10 | 14°K/W                          | < 100     | 0.07                      |
| 4      | HTE3W R0013 F        | 3W                      | 5W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.33 ± 0.10 | 0.33 ± 0.10 | 16°K/W                          | < 100     | 0.06                      |
| 5      | HTE3W R002 F         | 3W                      | 5W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.67 ± 0.10 | 0.67 ± 0.10 | 20°K/W                          | < 50      | 0.11                      |
| 6      | HTE2W R003 F         | 2W                      | 4W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.45 ± 0.10 | 0.45 ± 0.10 | 30°K/W                          | < 50      | 0.08                      |
| 7      | HTE2W R004 F         | 2W                      | 3W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.33 ± 0.10 | 0.33 ± 0.10 | 40°K/W                          | < 50      | 0.08                      |
| 8      | HTE1.5W R005F        | 1.5W                    | 2.5W            | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.33 ± 0.10 | 0.33 ± 0.10 | 50°K/W                          | < 50      | 0.08                      |
| 9      | HTE1.5W R0068 F      | 1.5W                    | 2W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.33 ± 0.10 | 0.33 ± 0.10 | 60°K/W                          | < 50      | 0.07                      |
| 10     | HTE1W R01 F          | 1W                      | 2W              | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 3 ± 0.3       | 0.33 ± 0.10 | 0.33 ± 0.10 | 70°K/W                          | < 50      | 0.07                      |
| 11     | HTE R000             | I <sub>max</sub> = 100A |                 | 3.05 ± 0.20 | 6.35 ± 0.15 | 1.14+0.0-0.4 | 0.42mm copper |             |             |                                 |           | 0.07                      |
| 12     | HTE2W R0003 F (1206) | 2W                      | 3.5W            | 1.65 ± 0.20 | 3.2 ± 0.20  | 0.80 ± 0.20  | 1.6+0.3       | 0.95 ± 0.15 | 1.25 ± 0.15 | 4°K/W                           | < 175     | 0.07                      |
| 13     | HTE2W R0005 F (1206) | 2W                      | 3.5W            | 1.65 ± 0.20 | 3.2 ± 0.20  | 0.80 ± 0.20  | 1.6+0.3       | 0.58 ± 0.15 | 0.90 ± 0.15 | 7°K/W                           | < 115     | 0.07                      |
| 14     | HTE2W R001 F (1206)  | 2W                      | 3.5W            | 1.65 ± 0.20 | 3.2 ± 0.20  | 0.80 ± 0.20  | 1.6+0.3       | 0.40 ± 0.15 | 0.80 ± 0.15 | 14°K/W                          | < 100     | 0.07                      |

## APPLICATIONS

- Sensor of current for power hybrid applications.
- Automotive sector for high current applications.
- Frequency converters / Power modules.

## FEATURES

- Ideal for mounting on DCB / IMS substrates.
- High temperature application due to nature of design.
- Excellent long term stability

| PARAMETER / PERFORMANCE TEST & TEST METHOD                                                                          | PERFORMANCE REQUIREMENTS                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Rating</b>                                                                                                 | For FeCrAl - Full power dissipation at 70° C and linearly derated to zero at +170° C.<br>For Manganin (< 0.5% Improved Stability) - Full power dissipation at 120° C & linearly derated to zero at +140° C.<br>For Manganin (< 1% Stability) - Full power dissipation at 150° C and linearly derated to zero at +170° C. |
| <b>Inductance</b>                                                                                                   | < 2nH                                                                                                                                                                                                                                                                                                                    |
| <b>Resistance Tolerance</b>                                                                                         | ± 1% (0.5% and other tolerance available on request)                                                                                                                                                                                                                                                                     |
| <b>Temperature Range</b>                                                                                            | - 55° C to +170° C (Suitably derated as per derating curve provided)                                                                                                                                                                                                                                                     |
| <b>Voltage Rating / Limiting Voltage / Max. Working Voltage</b><br>(Subject to max. Terminal Temperature of 120° C) | $\sqrt{P \times R}$                                                                                                                                                                                                                                                                                                      |
| <b>Low Temperature Storage and Operation [-65° C for 24 h]</b>                                                      | ΔR ± 0.1% - Average                                                                                                                                                                                                                                                                                                      |
| <b>Temperature Coefficient of Resistance</b><br>(Ambient Temperature Range 20° C - 60° C)                           | From 50 ppm (Depending on Resistance Value)                                                                                                                                                                                                                                                                              |
| <b>Temperature Cycling -2000 cycles (-55° C to 150° C)</b>                                                          | ΔR ± 0.5% - Average                                                                                                                                                                                                                                                                                                      |
| <b>Life Test / Operational Life - 2000 h rated power with Temperature limitation on Terminal kept at 120° C</b>     | ΔR ± 1% - Average                                                                                                                                                                                                                                                                                                        |
| <b>Moisture Resistance [MIL-STD-202 method106]</b>                                                                  | ΔR ± 0.2% - Average                                                                                                                                                                                                                                                                                                      |
| <b>Mechanical Shock [100 g. 6 ms half sine]</b>                                                                     | ΔR ± 0.2% - Typical                                                                                                                                                                                                                                                                                                      |
| <b>Vibration, High Frequency [20 g. 10-2000 Hz]</b>                                                                 | ΔR ± 0.2% - Typical                                                                                                                                                                                                                                                                                                      |
| <b>Bias Humidity [+85° C, 85% RH, 1000h]</b>                                                                        | ΔR ± 0.5% - Typical                                                                                                                                                                                                                                                                                                      |



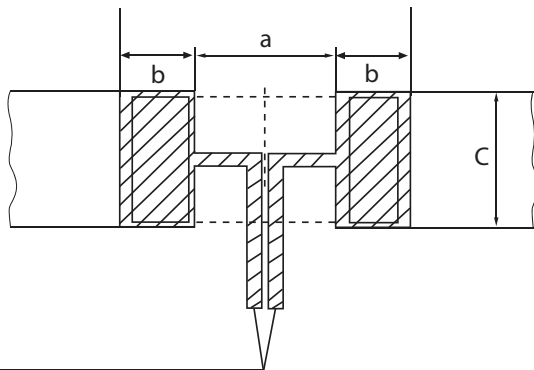
LOW OHM  
POWER  
RESISTORS  
**HTE**  
SERIES  
Size 2512/ 1206

### RECOMMENDED SOLDER PROFILE

| Reflow and IR Soldering |      |     |     |
|-------------------------|------|-----|-----|
| Temperature (°C)        | 260  | 255 | 217 |
| Time (Sec)              | Peak | 40  | 90  |

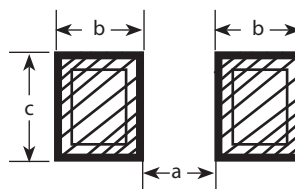
### RECOMMENDED PCB - LAYOUT

Recommended PCB layout for high precision applications



Sense Terminals

Recommended PCB layout for normal application



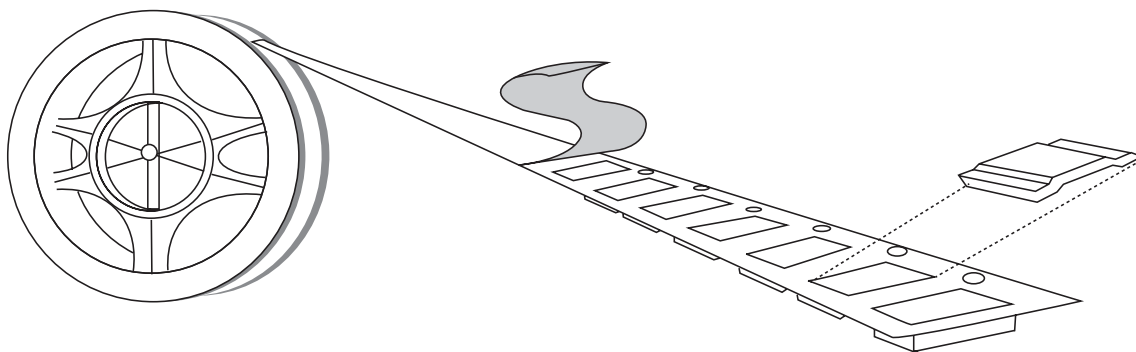
| Size | a    | b    | c    |
|------|------|------|------|
| 1206 | 1.40 | 2.10 | 1.80 |
| 2512 | 3.4  | 1.8  | 3.4  |

### PACKAGING

#### A. BULK

Resistors shall be packed in plastic Box-K22 of approximate size 108X66X25mm- 3000pcs/box & this box will be vacuum sealed with polythene of 100 micron. With enclose silica gel.

#### B. TAPE & REEL PACKING



| SPECIFICATION | SIZE | TAPEWIDTH | PARTS PER REEL |
|---------------|------|-----------|----------------|
| EIA-481-D     | 2512 | 12mm      | 7000 pcs       |
|               | 1206 | 8mm       | 7000 pcs       |

Storage Condition (Packed) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Shelf life-12 months

Floor Life (Unpacked) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Floor life-15 days

### ORDERING INFORMATION AS AN EXAMPLE

| SERIES | TYPE  | PACKING                               | RESISTANCE VALUE | TOLERANCE |
|--------|-------|---------------------------------------|------------------|-----------|
| HTE    | HTE3W | Bulk - HTE3W<br>Tape & Reel - HTE3WTR | R001             | ± 1%      |

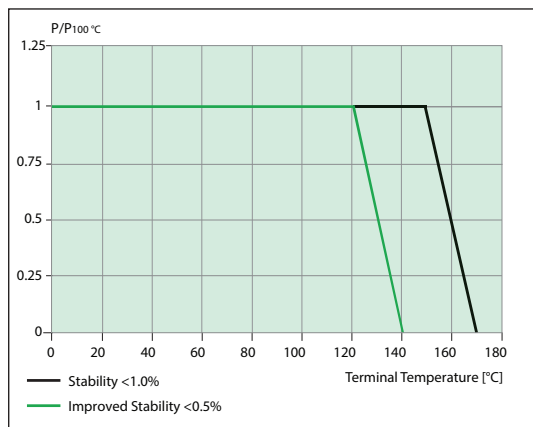
Part no of HTE3W, Tape and reel with resistance value R001 and 1% tolerance, will be HTE3WTR R001 ±1%

Marketing : "HTR"

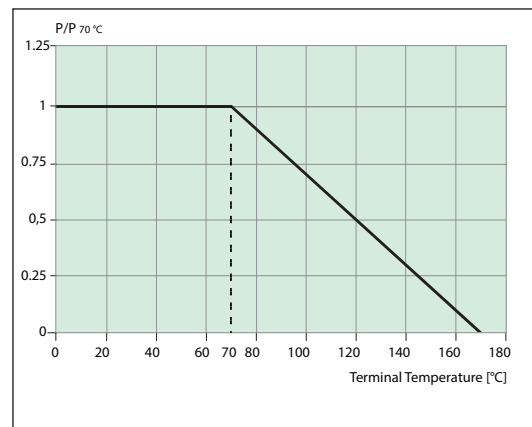


LOW OHM  
POWER  
RESISTORS  
**HTE**  
SERIES  
Size 2512/ 1206

### TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 120°C & 150°C

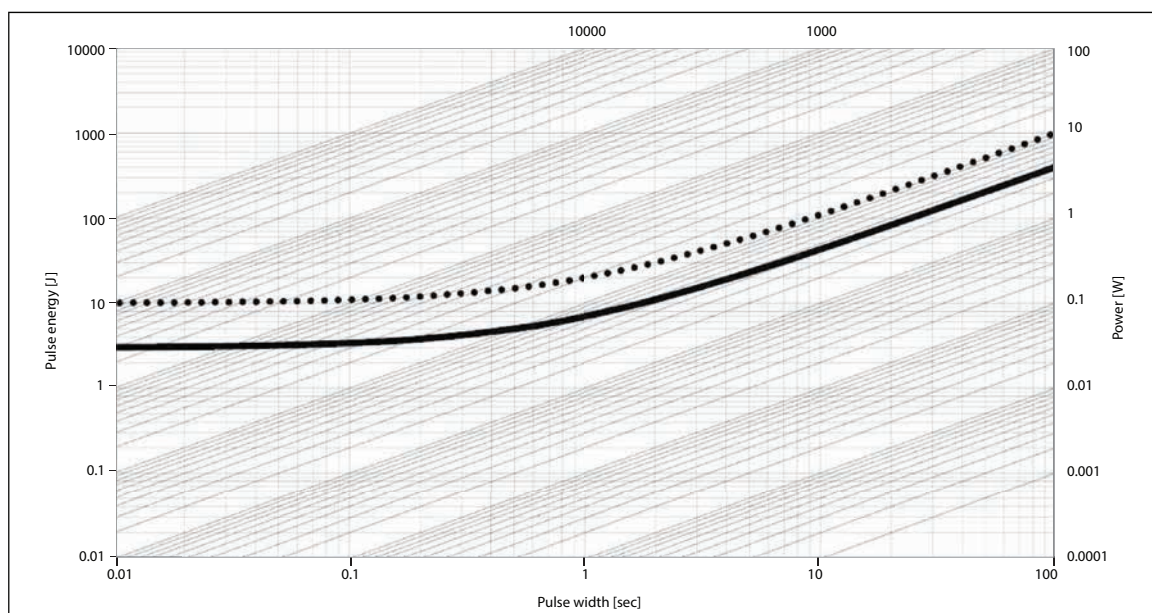


### TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C



In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

### MAXIMUM PULSE ENERGY WITH RESPECT TO PULSE POWER FOR PERMANANT OPERATION



In this graph the max. & min. curve are shown as ●●● and — for all resistance values, the area between the max. & min. curve is applicable. In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

### TYPICAL TEMPERATURE DEPENDANCE OF THE ELECTRICAL RESISTANCE

