

## ➤ Features

- 16Vdc max voltage
- RoHS compliant, lead-free and halogen-free
- Resettable feature
- Ideal for a broad range of general electronics using a low voltage power supply

## ➤ Applications

- Load protection on wide range of low voltage power supplies
- Computers, Computers peripherals
- General electronics

## ➤ Electrical Characteristics (25°C)

| Part Number | I <sub>hold</sub> | I <sub>trip</sub> | V <sub>max</sub>   | I <sub>max</sub> | P <sub>d typ</sub> | Time to trip |       | R <sub>i min</sub> | R <sub>1 max</sub> |
|-------------|-------------------|-------------------|--------------------|------------------|--------------------|--------------|-------|--------------------|--------------------|
|             | (A)               | (A)               | (V <sub>dc</sub> ) | (A)              | (W)                | (A)          | (Sec) | (Ω)                | (Ω)                |
| BH16-030    | 0.30              | 0.60              | 16                 | 40               | 1.0                | 1.50         | 5.0   | 0.300              | 0.900              |
| BH16-050    | 0.50              | 1.00              | 16                 | 40               | 1.0                | 2.50         | 5.0   | 0.200              | 0.750              |
| BH16-065    | 0.65              | 1.30              | 16                 | 40               | 1.0                | 3.25         | 5.0   | 0.120              | 0.270              |
| BH16-075    | 0.75              | 1.50              | 16                 | 40               | 1.0                | 3.75         | 5.0   | 0.100              | 0.255              |
| BH16-090    | 0.90              | 1.80              | 16                 | 40               | 1.0                | 4.50         | 5.0   | 0.090              | 0.240              |
| BH16-100    | 1.00              | 2.00              | 16                 | 40               | 1.0                | 5.00         | 5.0   | 0.070              | 0.225              |
| BH16-110    | 1.10              | 2.20              | 16                 | 40               | 1.0                | 5.50         | 5.0   | 0.080              | 0.225              |
| BH16-120    | 1.20              | 2.40              | 16                 | 40               | 1.0                | 6.00         | 5.0   | 0.070              | 0.225              |
| BH16-135    | 1.35              | 2.70              | 16                 | 40               | 1.3                | 6.75         | 5.0   | 0.040              | 0.180              |
| BH16-160    | 1.60              | 3.20              | 16                 | 40               | 1.5                | 8.00         | 10.0  | 0.030              | 0.105              |
| BH16-185    | 1.85              | 3.70              | 16                 | 40               | 2.0                | 9.25         | 10.0  | 0.030              | 0.135              |
| BH16-200    | 2.00              | 4.00              | 16                 | 40               | 2.0                | 10.0         | 10.0  | 0.030              | 0.075              |
| BH16-250    | 2.50              | 5.00              | 16                 | 40               | 2.5                | 12.5         | 5.0   | 0.020              | 0.075              |
| BH16-300    | 3.00              | 6.00              | 16                 | 100              | 2.5                | 15.0         | 2.0   | 0.038              | 0.105              |
| BH16-400    | 4.00              | 8.00              | 16                 | 100              | 2.8                | 20.0         | 3.5   | 0.021              | 0.060              |
| BH16-500    | 5.00              | 10.0              | 16                 | 100              | 3.0                | 25.0         | 3.6   | 0.015              | 0.038              |
| BH16-600    | 6.00              | 12.0              | 16                 | 100              | 3.2                | 30.0         | 5.8   | 0.010              | 0.030              |
| BH16-700    | 7.00              | 14.0              | 16                 | 100              | 3.5                | 35.0         | 8.0   | 0.008              | 0.023              |
| BH16-800    | 8.00              | 16.0              | 16                 | 100              | 3.5                | 40.0         | 9.0   | 0.006              | 0.018              |
| BH16-900    | 9.00              | 18.0              | 16                 | 100              | 3.8                | 45.0         | 12.0  | 0.005              | 0.017              |
| BH16-1000   | 10.0              | 20.0              | 16                 | 100              | 4.0                | 50.0         | 12.5  | 0.004              | 0.014              |
| BH16-1100   | 11.0              | 22.0              | 16                 | 100              | 4.0                | 55.0         | 13.5  | 0.004              | 0.012              |

| Part Number | $I_{hold}$ | $I_{trip}$ | $V_{max}$          | $I_{max}$ | $P_{d\ typ}$ | Time to trip |       | $R_{i\ min}$ | $R_{1\ max}$ |
|-------------|------------|------------|--------------------|-----------|--------------|--------------|-------|--------------|--------------|
|             | (A)        | (A)        | (V <sub>dc</sub> ) | (A)       | (W)          | (A)          | (Sec) | (Ω)          | (Ω)          |
| BH16-1200   | 12.0       | 24.0       | 16                 | 100       | 4.2          | 60.0         | 16.0  | 0.004        | 0.011        |
| BH16-1400   | 14.0       | 28.0       | 16                 | 100       | 4.8          | 70.0         | 20.0  | 0.003        | 0.008        |
| BH16-1500   | 15.0       | 30.0       | 16                 | 100       | 5.0          | 75.0         | 20.0  | 0.003        | 0.008        |

## ➤ Vocabulary

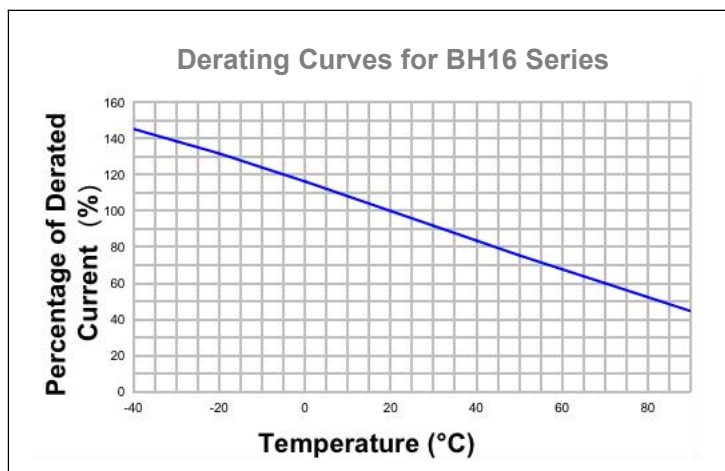
- $I_{hold}$  = Hold current: maximum current device will pass without tripping in 25°C still air.
- $I_{trip}$  = Trip current: minimum current at which the device will trip in 25°C still air.
- $V_{max}$  = Maximum voltage device can withstand without damage at rated current ( $I_{max}$ ).
- $I_{max}$  = Maximum fault current device can withstand without damage at rated voltage ( $V_{max}$ ).
- $P_{d\ typ.}$  = Typical power dissipated from device when in the tripped state at 25°C still air.
- $R_{min}$  = Minimum resistance of device in initial (un-soldered) state.
- $R_{1\ max}$  = Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

**Caution: Operation beyond the specified ratings may result in damage and possible arcing and flame.**

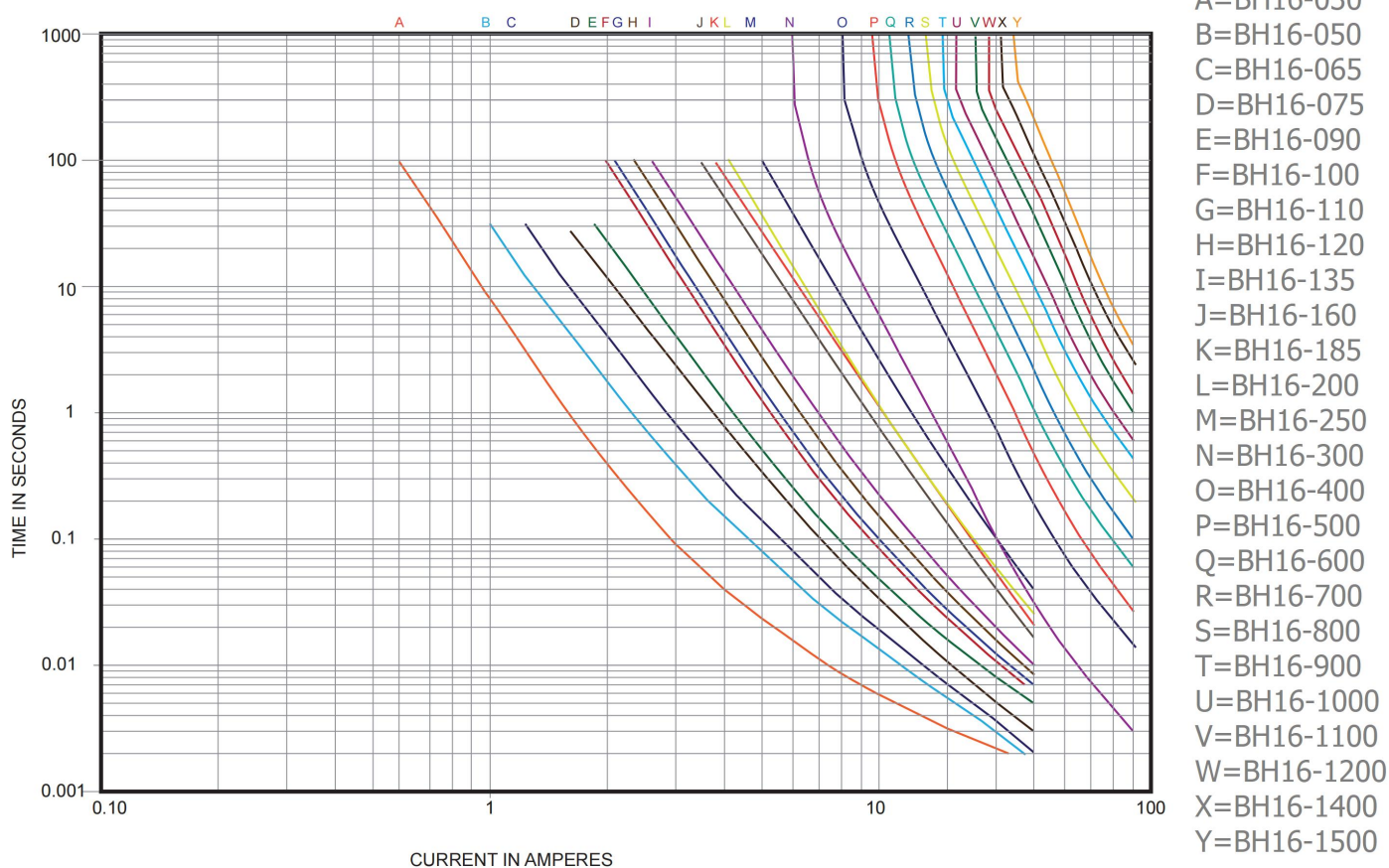
## ➤ Warning

- Users shall independently assess the suitability of these devices for each of their applications.
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire.
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration.
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the prolonged of these PPTC devices.
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses.
- Circuits with inductance may generate a voltage ( $L\ di/dt$ ) above the rated voltage of the PPTC device.

## ➤ Thermal Derating Curve



## ➤ Average Time-Current Curve



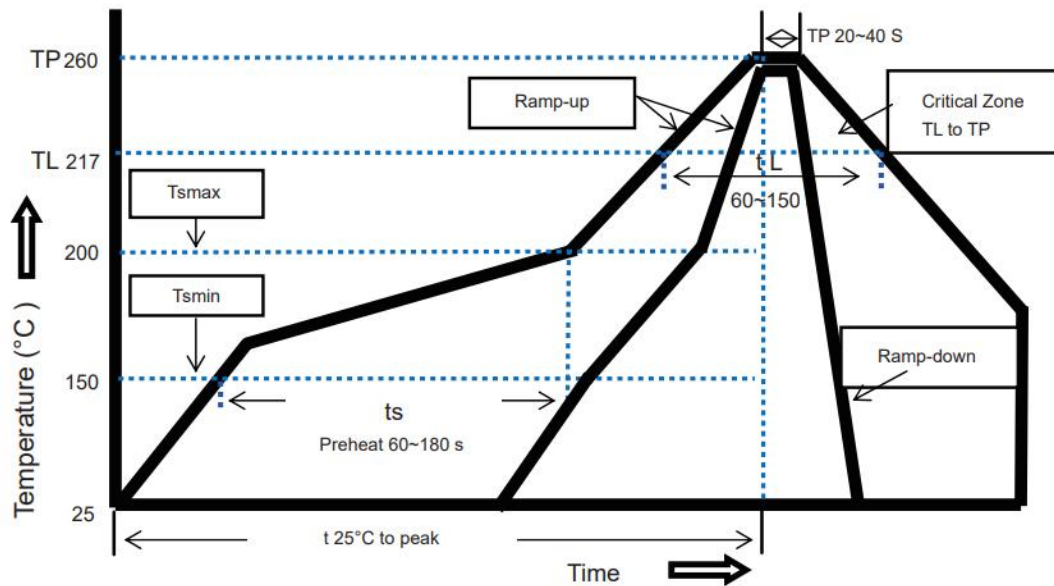
## ➤ Thermal Derating Chart

| Part Number | Ambient operating temperature hold current( $I_{hold}$ ) |       |       |       |       |       |       |       |       |
|-------------|----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|             | -40°C                                                    | -20°C | 0°C   | 25°C  | 40°C  | 50°C  | 60°C  | 70°C  | 85°C  |
| BH16-030    | 0.444                                                    | 0.396 | 0.348 | 0.300 | 0.252 | 0.228 | 0.207 | 0.183 | 0.144 |
| BH16-050    | 0.740                                                    | 0.660 | 0.580 | 0.500 | 0.420 | 0.380 | 0.345 | 0.300 | 0.240 |
| BH16-065    | 0.962                                                    | 0.858 | 0.754 | 0.650 | 0.546 | 0.494 | 0.449 | 0.390 | 0.312 |
| BH16-075    | 1.110                                                    | 0.990 | 0.870 | 0.750 | 0.630 | 0.570 | 0.518 | 0.450 | 0.360 |
| BH16-090    | 1.332                                                    | 1.188 | 1.044 | 0.900 | 0.756 | 0.684 | 0.621 | 0.540 | 0.432 |
| BH16-100    | 1.480                                                    | 1.320 | 1.160 | 1.000 | 0.840 | 0.760 | 0.690 | 0.600 | 0.480 |
| BH16-110    | 1.628                                                    | 1.452 | 1.276 | 1.100 | 0.924 | 0.836 | 0.759 | 0.660 | 0.528 |
| BH16-120    | 1.776                                                    | 1.584 | 1.392 | 1.200 | 1.008 | 0.912 | 0.828 | 0.720 | 0.576 |
| BH16-135    | 1.998                                                    | 1.782 | 1.566 | 1.350 | 1.134 | 1.026 | 0.932 | 0.810 | 0.648 |
| BH16-160    | 2.368                                                    | 2.112 | 1.856 | 1.600 | 1.344 | 1.216 | 1.104 | 0.960 | 0.768 |
| BH16-185    | 2.738                                                    | 2.442 | 2.146 | 1.850 | 1.554 | 1.406 | 1.277 | 1.110 | 0.888 |
| BH16-200    | 2.960                                                    | 2.640 | 2.320 | 2.000 | 1.680 | 1.520 | 1.380 | 1.200 | 0.960 |
| BH16-250    | 3.700                                                    | 3.300 | 2.900 | 2.500 | 2.100 | 1.900 | 1.725 | 1.500 | 1.200 |
| BH16-300    | 4.440                                                    | 3.960 | 3.480 | 3.000 | 2.520 | 2.280 | 2.070 | 1.800 | 1.440 |
| BH16-400    | 5.920                                                    | 5.280 | 4.640 | 4.000 | 3.360 | 3.040 | 2.760 | 2.400 | 1.920 |
| BH16-500    | 7.400                                                    | 6.600 | 5.800 | 5.000 | 4.200 | 3.800 | 3.450 | 3.000 | 2.400 |
| BH16-600    | 8.880                                                    | 7.920 | 6.960 | 6.000 | 5.040 | 4.560 | 4.140 | 3.600 | 2.880 |
| BH16-700    | 10.36                                                    | 9.240 | 8.120 | 7.000 | 5.880 | 5.320 | 4.830 | 4.200 | 3.360 |
| BH16-800    | 11.84                                                    | 10.56 | 9.280 | 8.000 | 6.720 | 6.080 | 5.520 | 4.800 | 3.840 |
| BH16-900    | 13.32                                                    | 11.88 | 10.44 | 9.000 | 7.560 | 6.840 | 6.210 | 5.400 | 4.320 |
| BH16-1000   | 14.80                                                    | 13.20 | 11.60 | 10.00 | 8.400 | 7.600 | 6.900 | 6.000 | 4.800 |
| BH16-1100   | 16.28                                                    | 14.52 | 12.76 | 11.00 | 9.240 | 8.360 | 7.590 | 6.600 | 5.280 |
| BH16-1200   | 17.76                                                    | 15.84 | 13.92 | 12.00 | 10.08 | 9.120 | 8.280 | 7.200 | 5.760 |
| BH16-1400   | 20.72                                                    | 18.48 | 16.24 | 14.00 | 11.76 | 10.64 | 9.660 | 8.400 | 6.720 |
| BH16-1500   | 22.20                                                    | 19.80 | 17.40 | 15.00 | 12.60 | 11.40 | 10.35 | 9.000 | 7.500 |

## ➤ Environmental Specifications

| Test                                                                     | Conditions                  | Resistance change |
|--------------------------------------------------------------------------|-----------------------------|-------------------|
| Passive aging                                                            | +85°C, 1000 hours           | ±5% typical       |
| Humidity aging                                                           | +85°C, 85% R.H. , 168 hours | ±5% typical       |
| Thermal shock                                                            | +85°C to -40°C, 20 times    | ±33% typical      |
| Resistance to solvent                                                    | MIL-STD-202,Method 215      | No change         |
| Vibration                                                                | MIL-STD-202,Method 201      | No change         |
| Ambient operating conditions : - 40 °C to +85 °C                         |                             |                   |
| Maximum surface temperature of the device in the tripped state is 125 °C |                             |                   |

## ➤ Soldering Parameters



| Profile Feature                             | Pb-Free Assembly    |
|---------------------------------------------|---------------------|
| Average Ramp-Up Rate( $T_{smax}$ to $T_p$ ) | 3°C/second max      |
| Preheat                                     |                     |
| -Temperature Min( $T_{smin}$ )              | 150°C               |
| -Temperature Max( $T_{smax}$ )              | 200°C               |
| -Time( $T_{smin}$ to $T_{smax}$ )           | 60~180 seconds      |
| Time maintained above:                      |                     |
| -Temperature( $T_L$ )                       | 217°C               |
| -Time( $t_L$ )                              | 60~150 seconds      |
| Peak Temperature( $T_p$ )                   | 260°C               |
| Ramp-Down Rate                              | 6°C/second max      |
| Time 25°C to Peak Temperature               | 8 minutes max       |
| Storage Condition                           | 0°C~30°C, 30%-60%RH |

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N<sub>2</sub> environment for lead-free.
- Recommended maximum paste thickness is 0.25mm.
- Devices can be cleaned using standard industry methods and solvents.

**Note 1:** All temperature refer to topside of the package, measured on the package body surface.

**Note 2:** If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

## ➤ Physical Dimensions & Recommended Pad Layout (mm)

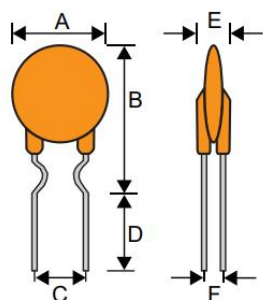


FIG 1

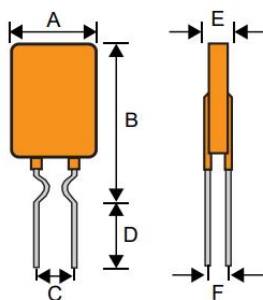


FIG 2

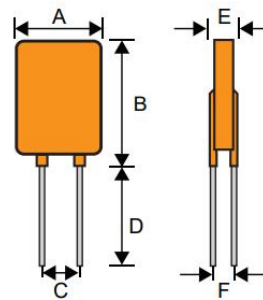


FIG 3

| Part Number | Quantity | A    | B    | C        | D   | E   | F   | Lead |     |
|-------------|----------|------|------|----------|-----|-----|-----|------|-----|
|             |          | Max  | Max  | Typ      | Min | Max | Typ | φ    | FIG |
| BH16-030    | 500      | 7.4  | 13.0 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 1   |
| BH16-050    | 500      | 7.4  | 13.0 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 1   |
| BH16-065    | 500      | 7.4  | 13.0 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 1   |
| BH16-075    | 500      | 7.4  | 13.0 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 1   |
| BH16-090    | 500      | 7.4  | 14.4 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 2   |
| BH16-100    | 500      | 7.4  | 13.0 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 1   |
| BH16-110    | 500      | 7.4  | 14.4 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 2   |
| BH16-120    | 500      | 7.4  | 14.4 | 5.1±0.5  | 7.6 | 3.0 | 0.8 | 0.5  | 2   |
| BH16-135    | 500      | 8.9  | 15.9 | 5.1±0.5  | 7.6 | 3.0 | 0.9 | 0.6  | 2   |
| BH16-160    | 500      | 8.9  | 19.0 | 5.1±0.5  | 7.6 | 3.0 | 0.9 | 0.6  | 2   |
| BH16-185    | 500      | 10.7 | 19.0 | 5.1±0.5  | 7.6 | 3.0 | 0.9 | 0.6  | 2   |
| BH16-200    | 500      | 11.2 | 17.0 | 5.1±0.5  | 7.6 | 3.0 | 0.9 | 0.6  | 1   |
| BH16-250    | 500      | 8.9  | 19.0 | 5.1±0.5  | 7.6 | 3.0 | 0.9 | 0.6  | 2   |
| BH16-300    | 500      | 7.1  | 11.5 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-400    | 500      | 8.9  | 13.5 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-500    | 500      | 10.5 | 15.1 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-600    | 500      | 11.0 | 17.8 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-700    | 500      | 11.2 | 20.2 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-800    | 500      | 14.0 | 22.5 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-900    | 500      | 14.0 | 22.5 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-1000   | 500      | 16.5 | 26.7 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-1100   | 500      | 18.0 | 28.0 | 5.1±0.5  | 7.6 | 3.0 | 1.2 | 0.8  | 3   |
| BH16-1200   | 500      | 18.0 | 28.0 | 5.1±0.5  | 7.6 | 3.5 | 1.4 | 0.8  | 3   |
| BH16-1400   | 500      | 25.0 | 30.5 | 10.2±0.5 | 7.6 | 3.5 | 1.4 | 0.8  | 3   |
| BH16-1500   | 500      | 25.0 | 30.5 | 10.2±0.5 | 7.6 | 3.5 | 1.4 | 0.8  | 3   |

➤ **Contact information**

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