

# FR 1,27/ 80-MH - SMD male connectors



1377305

<https://www.phoenixcontact.com/us/products/1377305>

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SMD male connector, nominal current: 2 A, test voltage: 500 V AC, number of positions: 80, pitch: 1.27 mm, color: black, contact surface: Au, contact connection type: Pin, mounting: SMD soldering



## Your advantages

- The first high-speed data transmission at up to 28 Gbps using the established market standard, opens up new design possibilities.
- Robust 6-pos. to 100-pos. board-to-board and wire-to-board connectors ensure greater flexibility with regard to component options.
- Time savings during the development process with customer-specific simulations for data integrity
- Gold-plated contact points enable long-term stable signal transmission and currents of up to 2.3 A.
- Design-in support during device development using MCAD/ECAD data and a free sample service

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1377305       |
| Packing unit                         | 560 pc        |
| Minimum order quantity               | 560 pc        |
| Sales key                            | AA24          |
| Product key                          | AAXGAA        |
| GTIN                                 | 4063151743536 |
| Weight per piece (including packing) | 3.598 g       |
| Weight per piece (excluding packing) | 2.59 g        |
| Customs tariff number                | 85366930      |
| Country of origin                    | CN            |

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## Technical data

### Product properties

|                     |                     |
|---------------------|---------------------|
| Product type        | SMD male connector  |
| Product family      | FR 1,27/...-MH      |
| Number of positions | 80                  |
| Pitch               | 1.27 mm             |
| Number of rows      | 2                   |
| Pin layout          | Linear pad geometry |

### Electrical properties

#### Properties

|                       |  |
|-----------------------|--|
| Nominal current $I_N$ | 2 A IEC 60512-5-2:2002-02 (at 20°C 100-pos.) |
| Contact resistance    | 10 mΩ  |
| Test voltage          | 500 V AC IEC 60512-4-1:2003-05               |

#### Data transmission

|                        |         |
|------------------------|---------|
| Data transmission rate | 12 Gbps |
|------------------------|---------|

### Mounting

|               |                     |
|---------------|---------------------|
| Mounting type | SMD soldering       |
| Pin layout    | Linear pad geometry |

#### Processing notes

|                                  |                  |
|----------------------------------|------------------|
| Process                          | Reflow soldering |
| Moisture Sensitive Level         | MSL 1            |
| Classification temperature $T_C$ | 260 °C           |
| Solder cycles in the reflow      | 3                |

### Material specifications

#### Material data - contact

|   |  |
|---|--|
| Note  | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material                            | Cu alloy   |
| Surface characteristics                     | Selective coating  |
| Metal surface contact area (top layer)      | Gold (min. 0.5 μm Au)  |
| Metal surface contact area (middle layer)   | Nickel (1.27 μm - 4 μm Ni)   |
| Metal surface soldering area (top layer)    | Tin (3 μm - 6 μm Sn)   |
| Metal surface soldering area (middle layer) | Nickel (1.27 μm - 4 μm Ni)   |

#### Material data - housing

|                           |              |
|---------------------------|--------------|
| Color (Housing)           | black (9005) |
| Insulating material       | LCP          |
| Insulating material group | IIIb         |

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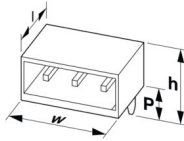
<https://www.phoenixcontact.com/us/products/1377305>

|  |     |
|--|-----|
| CTI according to IEC 60112             | 150 |
| Flammability rating according to UL 94 | V0  |

## Notes

|                    |  |
|--------------------|--|
| Notes on operation | The permissible voltage during operation depends on the application, taking into consideration the air clearances and creepage distances within the scope of insulation requirements in accordance with IEC 60664-1. |
|--------------------|--|

## Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Pitch               | 1.27 mm  |
| Width [w]           | 55.89 mm   |
| Height [h]          | 4.95 mm  |
| Length [l]          | 10.05 mm   |
| Installed height    | 4.25 mm  |

## Application

|                   |   |
|-------------------|---|
| Contact cover     | 0.9 mm  |
| Center offset     | ± 0.7 mm in longitudinal and transverse direction |
| Wipe length       | 1.5 mm  |
| Angular tolerance | ± 5 ° in longitudinal and transverse direction    |

## PCB design

|              |              |
|--------------|--------------|
| Pad geometry | 0.8 x 0.8 mm |
|--------------|--------------|

## Electrical tests

### Thermal test | Test group C

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-5-2:2002-02 |
|---------------|-----------------------|

### Insulation resistance

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | ≥ 5 GΩ                |

### Air clearances and creepage distances |

|   |         |
|---|---------|
| Insulating material group                         | IIIb    |
| Minimum value for clearance and creepage distance | 0.42 mm |

## Environmental and real-life conditions

### Durability test

|               |                                   |
|---------------|-----------------------------------|
| Specification | IEC 60512-9-1:2010-03 (following) |
|---------------|-----------------------------------|

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|  |                          |
|--|--------------------------|
| Contact resistance $R_1$                     | 10 m $\Omega$            |
| Contact resistance $R_2$                     | 15 m $\Omega$            |
| Insertion/withdrawal cycles                  | 500                      |
| Insulation resistance, neighboring positions | $\geq 5 \text{ G}\Omega$ |

## Vibration test

|                        |  |
|------------------------|--|
| Specification          | IEC 60068-2-6:2007-12                    |
| Frequency              | 10 - 2000 - 10 Hz                        |
| Sweep speed            | 1 octave/min                             |
| Amplitude              | 1.5 mm (10 Hz ... 58 Hz)                 |
| Acceleration           | 200 m/s <sup>2</sup> (58 Hz ... 2000 Hz) |
| Test duration per axis | 2.5 h                                    |
| Test directions        | X-, Y- and Z-axis                        |

## Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Specification   | IEC 60068-2-27:2008-02            |
| Pulse shape     | Semi-sinusoidal                   |
| Acceleration    | 490 m/s <sup>2</sup>              |
| Shock duration  | 11 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

## Railway application: Oscillation/broadband noise

|                        |  |
|------------------------|--|
| Specification          | DIN EN 50155 (VDE 0115-200):2022-06            |
|                        | IEC 61373:2010-05                              |
| Spectrum               | Long life test category 2, bogie-mounted       |
| Frequency              | $f_1 = 5 \text{ Hz}$ to $f_2 = 250 \text{ Hz}$ |
| ASD level              | 6.12 (m/s <sup>2</sup> ) <sup>2</sup> /Hz      |
| Acceleration           | 30.6 m/s <sup>2</sup>                          |
| Test duration per axis | 5 h  |
| Test directions        | X-, Y- and Z-axis                              |
| Contact interruption   | < 1 $\mu\text{s}$                              |
| Result                 | Test passed                                    |

## Railway application: Shocks

|                                |                                     |
|--------------------------------|-------------------------------------|
| Specification                  | DIN EN 50155 (VDE 0115-200):2022-06 |
|                                | IEC 61373:2010-05                   |
| Pulse shape                    | Semi-sinusoidal                     |
| Acceleration                   | 490 m/s <sup>2</sup>                |
| Shock duration                 | 11 ms                               |
| Number of shocks per direction | 3                                   |
| Test directions                | X-, Y- and Z-axis (pos. and neg.)   |
| Contact interruption           | < 1 $\mu\text{s}$                   |
| Result                         | Test passed                         |

## Ambient conditions

|   |                  |
|---|------------------|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
|---|------------------|

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|                                       |                   |
|---------------------------------------|-------------------|
| Relative humidity (storage/transport) | 30 % ... 70 %     |
| Ambient temperature (assembly)        | -5 °C ... 100 °C  |
| Ambient temperature (operation)       | -55 °C ... 125 °C |

## Packaging specifications

|                             |                 |
|-----------------------------|-----------------|
| Dimensional drawing         |                 |
| Type of packaging           | 16 mm wide tape |
| [W] tape width              | 16 mm           |
| [W2] coil overall dimension | ≤ 22.4 mm       |
| [A] coil diameter           | ≤ 330 mm        |
| Outer packaging type        | Transparent-Bag |

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## Drawings

Diagram



Type: FR 1,27/...-FH with FR 1,27/...-MH

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1377305>

|  <b>cUL Recognized</b><br>Approval ID: E118976-20230317 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  |                       |                       |                   |                             |
|  | 29.9 V                | 1.4 A                 | -                 | -                           |

|  <b>UL Recognized</b><br>Approval ID: E118976-20230317 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine   |                       |                       |                   |                             |
|   | 29.9 V                | 2 A                   | -                 | -                           |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460201 |
| ECLASS-15.0 | 27460201 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002637 |
|-----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|   |                    |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

### China RoHS

|  |  |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|  | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.725 kg CO2e |
|---------|---------------|

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