

# FR 1,27/ 32-MH - SMD male connectors



1377301

<https://www.phoenixcontact.com/us/products/1377301>

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SMD male connector, nominal current: 2 A, test voltage: 500 V AC, number of positions: 32, 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                          | 1377301       |
| Packing unit                         | 560 pc        |
| Minimum order quantity               | 560 pc        |
| Sales key                            | AA24          |
| Product key                          | AAXGAA        |
| GTIN                                 | 4063151744205 |
| Weight per piece (including packing) | 2.004 g       |
| Weight per piece (excluding packing) | 1.16 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 | 32                  |
| 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 (Au)                                                                        |
| Metal surface contact area (middle layer)   | Nickel (Ni)                                                                      |
| Metal surface soldering area (top layer)    | Tin (Sn)                                                                         |
| Metal surface soldering area (middle layer) | Nickel (Ni)                                                                      |

#### Material data - housing

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

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|                                        |     |
|----------------------------------------|-----|
| 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]           | 25.41 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

### Vibration test

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60068-2-6:2007-12 |
|---------------|-----------------------|

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|                        |                                          |
|------------------------|------------------------------------------|
| 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                        |

## Durability test

|                                              |                                   |
|----------------------------------------------|-----------------------------------|
| Specification                                | IEC 60512-9-1:2010-03 (following) |
| Contact resistance R <sub>1</sub>            | 10 mΩ                             |
| Contact resistance R <sub>2</sub>            | 15 mΩ                             |
| Insertion/withdrawal cycles                  | 500                               |
| Insulation resistance, neighboring positions | ≥ 5 GΩ                            |

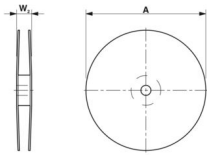
## Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| 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.) |

## Ambient conditions

|                                         |                   |
|-----------------------------------------|-------------------|
| Ambient temperature (operation)         | -55 °C ... 125 °C |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C  |
| Relative humidity (storage/transport)   | 30 % ... 70 %     |
| Ambient temperature (assembly)          | -5 °C ... 100 °C  |

## Packaging specifications

|                             |                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing         |  |
| Type of packaging           | 44 mm wide tape                                                                      |
| [W] tape width              | 44 mm                                                                                |
| [W2] coil overall dimension | ≤ 50.4 mm                                                                            |
| [A] coil diameter           | ≤ 330 mm                                                                             |
| Outer packaging type        | Transparent-Bag                                                                      |

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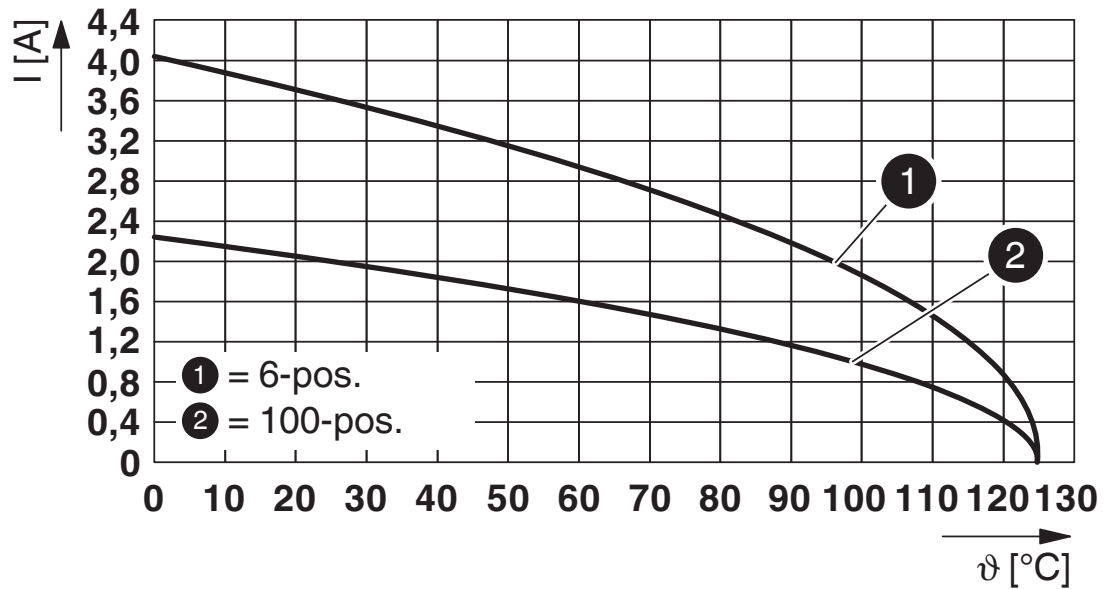


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## Drawings

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/1377301>

|  <b>cUL Recognized</b><br>Approval ID: E118976-20230317 |                                |                                |                   |                               |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|                                                                                                                                          | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                                    |                                |                                |                   |                               |
|                                                                                                                                          | 29.9 V                         | 1.4 A                          | -                 | -                             |

|  <b>UL Recognized</b><br>Approval ID: E118976-20230317 |                                |                                |                   |                               |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|                                                                                                                                         | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                                   |                                |                                |                   |                               |
|                                                                                                                                         | 29.9 V                         | 2 A                            | -                 | -                             |

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## Classifications

### ECLASS

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

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | 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% |
|-------------------------------------|----------------------------|

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