



**Product:** [9V28010](#)

Flat Vari-Twist Cable .050" Pitch, 9V280XX Series, #28-10c, PVC Ins on PVC Substrate

### Product Description

Flat Vari-Twist Cable .050" Pitch, 9V280XX Series, 10 Conductors, 28 AWG (7x36) Tinned Copper, PVC Insulated Conductors on PVC Substrate

### Technical Specifications

#### Product Overview

|                        |                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable Applications: | Internal interconnection, internal wiring of electronic equipment, reduced crosstalk in balanced mode, can be mass-terminatable in flat sections with standard IDC connectors |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Physical Characteristics (Overall)

##### Conductor

| AWG | Stranding | Material           | No. of Pairs |
|-----|-----------|--------------------|--------------|
| 28  | 7x36      | TC - Tinned Copper | 5            |

|                  |    |
|------------------|----|
| Conductor Count: | 10 |
|------------------|----|

##### Insulation

| Material                 | Nominal Wall Thickness |
|--------------------------|------------------------|
| PVC - Polyvinyl Chloride | 0.010 in               |

##### Color Chart

| Number | Color      |
|--------|------------|
| 1      | Brown/Tan  |
| 2      | Red/Tan    |
| 3      | Orange/Tan |
| 4      | Yellow/Tan |
| 5      | Green/Tan  |

#### Construction and Dimensions

|                                               |                    |
|-----------------------------------------------|--------------------|
| Conductor Spacing Center-Center Flat Section: | .050 +/- .005 in   |
| Conductor Spacing Center-Center Outside:      | .450 +/- .015 in   |
| Substrate Thickness and Material:             | .010 in, Clear PVC |
| Twisted Pair Spacing Center-Center:           | 0.100 in           |
| Overall Flat Section Length:                  | 2.0 +.50 - 0 in    |
| Overall Twisted Length:                       | 18 in              |
| OuterJacket1, Nominal Width:                  | 0.526 in           |
| OuterJacket1, Nom Thick Flat Section:         | 0.042 in           |
| OuterJacket1, Nom Thick Twisted Section:      | 0.084 in           |

#### Electrical Characteristics

##### Conductor DCR

| Nominal Conductor DCR |
|-----------------------|
| 68.2 Ohm/1000ft       |

## Capacitance

| Element | Nom. Capacitance Conductor to Conductor |
|---------|-----------------------------------------|
| @ 1 kHz | 20 pF/ft                                |
| @ 1 MHz | 16 pF/ft                                |

Min Insulation Resistance: 10,000 MOhm

## Inductance

| Element | Nominal Inductance |
|---------|--------------------|
| @ 1 MHz | 0.24 $\mu$ H/ft    |

## Impedance

| Nominal Balanced Characteristic Impedance | Nominal Characteristic Impedance | Nominal Characteristic Impedance Description | Nominal Unbalanced Characteristic Impedance |
|-------------------------------------------|----------------------------------|----------------------------------------------|---------------------------------------------|
| 115 Ohm                                   | 115 Ohm                          | Balanced                                     | 100 Ohm                                     |
|                                           | 100 Ohm                          | Unbalanced                                   |                                             |

## High Frequency (Nominal/Typical)

| Frequency [MHz] | Nom. Insertion Loss |
|-----------------|---------------------|
| 10 MHz          | 3.5 dB/100ft        |
| 20 MHz          | 5.5 dB/100ft        |
| 30 MHz          | 7.2 dB/100ft        |
| 40 MHz          | 8.8 dB/100ft        |
| 50 MHz          | 10.2 dB/100ft       |
| 60 MHz          | 12 dB/100ft         |
| 70 MHz          | 13 dB/100ft         |
| 80 MHz          | 14.2 dB/100ft       |
| 90 MHz          | 15 dB/100ft         |
| 100 MHz         | 16 dB/100ft         |

Table Notes: 18" of twisted pairs and 2" of flat section. The transition area is included in the twisted length to assure a full 2 inches of flat termination area.

## Delay

| Nominal Delay | Nominal Velocity of Propagation (VP) [%] |
|---------------|------------------------------------------|
| 1.6 ns/ft     | 64%                                      |

## Balanced Crosstalk

| Description          | Start Frequency [MHz] | Start Frequency [MHz] | dB Suppression |
|----------------------|-----------------------|-----------------------|----------------|
| 10 ft. sample length | 10 MHz                | 100 MHz               | 35 dB          |

## Unbalanced Crosstalk

| Element                                              | Typical Unbalanced NEXT % | Typical Unbalanced FEXT % | Typical Cross Talk Pulse Rise Time (ns) |
|------------------------------------------------------|---------------------------|---------------------------|-----------------------------------------|
| 10 ft. sample length all grounds connected together. | 5.8                       | 5.2                       | 3 ns                                    |
| 10 ft. sample length all grounds connected together. | 4                         | 3.2                       | 5 ns                                    |
| 10 ft. sample length all grounds connected together. | 2.5                       | 2.8                       | 7 ns                                    |

## Current

| Max. Recommended Current [A] |
|------------------------------|
| 1 Amp per Conductor at 20°C  |

## Voltage

| Dielectric Withstand Voltage | UL Voltage Rating |
|------------------------------|-------------------|
| 2000 V                       | 300 V             |

## Temperature Range

Operating Temperature Range: -20°C to +105°C

## Mechanical Characteristics

|                                       |               |
|---------------------------------------|---------------|
| Bulk Cable Weight:                    | 25 lbs/1000ft |
| Min. Bend Radius During Installation: | 4.5 in        |
| Min. Bend Radius/Minor Axis:          | 1.25 in       |

## Standards

UL AWM Style Compliance: AWM 2693, AWM 2697

## Applicable Environmental and Other Programs

|                                              |     |
|----------------------------------------------|-----|
| EU Directive 2000/53/EC (ELV):               | Yes |
| EU Directive 2003/11/EC (BFR):               | Yes |
| EU Directive 2011/65/EU (RoHS 2):            | Yes |
| EU Directive 2012/19/EU (WEEE):              | Yes |
| EU Directive 2015/863/EU (RoHS 2 amendment): | Yes |
| EU Directive Compliance:                     | Yes |
| EU CE Mark:                                  | Yes |
| CA Prop 65 (CJ for Wire and Cable):          | Yes |
| MII Order #39 (China RoHS):                  | Yes |

## Suitability

|                       |     |
|-----------------------|-----|
| Suitability - Indoor: | Yes |
|-----------------------|-----|

## Flammability, LS0H, Toxicity Testing

|                    |       |
|--------------------|-------|
| UL Flammability:   | VW-1  |
| UL voltage rating: | 300 V |

## Plenum/Non-Plenum

|               |    |
|---------------|----|
| Plenum (Y/N): | No |
|---------------|----|

## Related Part Numbers

### Variants

| Item #          | Color | Length | UPC          |
|-----------------|-------|--------|--------------|
| 9V28010 000H100 | None  | 100 ft | 612825222118 |

|           |                                                                            |
|-----------|----------------------------------------------------------------------------|
| Footnote: | E - MAY CONTAIN MORE THAN 1 PIECE. MINIMUM LENGTH OF ANY ONE PIECE IS 25'. |
|-----------|----------------------------------------------------------------------------|

## History

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Update and Revision: | Revision Number: 0.290 Revision Date: 05-05-2023 |
|----------------------|--------------------------------------------------|

© 2023 Belden, Inc

All Rights Reserved.

Although Belden makes every reasonable effort to ensure their accuracy at the time of this publication, information and specifications described here in are subject to error or omission and to change without notice, and the listing of such information and specifications does not ensure product availability.

Belden provides the information and specifications herein on an "ASIS" basis, with no representations or warranties, whether express, statutory or implied. In no event will Belden be liable for any damages (including consequential, indirect, incidental, special, punitive, or exemplary damages) whatsoever, even if Belden has been advised of the possibility of such damages, whether in an action under contract, negligence or any other theory, arising out of or in connection with the use, or inability to use, the information or specifications described herein.

All sales of Belden products are subject to Belden's standard terms and conditions of sale.

Belden believes this product to be in compliance with all applicable environmental programs as listed in the data sheet. The information provided is correct to the best of Belden's knowledge, information and belief at the date of its publication. This information is designed only as a general guide for the safe handling, storage, and any other operation of the product itself or the one that it becomes a part of. The Product Disclosure is not to be considered a warranty or quality specification. Regulatory information is for guidance purposes only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product.