



## Description:

Belden's .050" pitch gray ribbon cable was designed for general purpose electronic interconnect applications. The cable provides reliable mass-termination to standard IDC connectors.

## Physical Characteristics (Overall)

### Conductor

#### AWG:

| # Conductors | AWG | Stranding | Conductor Material |
|--------------|-----|-----------|--------------------|
| 50           | 28  | 7x36      | TC - Tinned Copper |

Conductor Spacing Center to Center: .050 +/- .002

Conductor Spacing Outside Center to Outside Center: 2.45 +/- .012

### Insulation

#### Insulation Material:

| Insulation Material      | Wall Thickness (in.) |
|--------------------------|----------------------|
| PVC - Polyvinyl Chloride | .010                 |

Insulation Resistance: >10,000 Megaohms

### Outer Shield

#### Outer Shield Material:

| Outer Shield Material |
|-----------------------|
| Unshielded            |

### Overall Cabling

Overall Nominal Thickness: .035 +/- .003

Overall Nominal Width: 2.50 +/- .012

## Mechanical Characteristics (Overall)

Operating Temperature Range: -40°C To +105°C

## Applicable Specifications and Agency Compliance (Overall)

### Applicable Standards & Environmental Programs

|                                       |                         |
|---------------------------------------|-------------------------|
| UL AWM Style:                         | 2651                    |
| UL Rating:                            | 105°C, 300 V RMS, VW-1  |
| CSA Specification:                    | AWM I A 105°C 300 V FT1 |
| CSA Rating:                           | 105°C, 300 V RMS, FT1   |
| EU CE Mark:                           | Yes                     |
| EU Directive 2000/53/EC (ELV):        | Yes                     |
| EU Directive 2002/95/EC (RoHS):       | Yes                     |
| EU RoHS Compliance Date (mm/dd/yyyy): | 07/01/2005              |
| EU Directive 2002/96/EC (WEEE):       | Yes                     |
| EU Directive 2003/11/EC (BFR):        | Yes                     |

CA Prop 65 (CJ for Wire & Cable): Yes

MII Order #39 (China RoHS): Yes

### Flame Test

UL Flame Test: VW-1

CSA Flame Test: FT1

### Plenum/Non-Plenum

Plenum (Y/N): No

### Surface Printing (Overall)

Surface Printing: BELDEN-T 28 AWG CSA AWM I A 105°C 300 V FT1 LL7874 (UL LOGO)  
AWM STYLE 2651 VW-1 E12683

### Electrical Characteristics (Overall)

#### Nom. Characteristic Impedance:

| Description | Impedance (Ohm) |
|-------------|-----------------|
| (GS)        | 150             |
| (GSG)       | 105             |

#### Nom. Inductance:

| Description   | Inductance (µH/ft) |
|---------------|--------------------|
| @ 1 MHz (GS)  | .29                |
| @ 1 MHz (GSG) | .20                |

#### Nom. Capacitance Conductor to Conductor:

| Description   | Capacitance (pF/ft) |
|---------------|---------------------|
| @ 1 kHz (GSG) | 18                  |
| @ 1 MHz (GS)  | 10                  |
| @ 1 MHz (GSG) | 15                  |

#### Nominal Velocity of Propagation:

| Description | VP (%) |
|-------------|--------|
|             | 72     |

#### Nominal Delay:

| Delay (ns/ft)     |
|-------------------|
| 1.40 NS/FT. (GSG) |

#### Nom. Conductor DC Resistance:

| DCR @ 20°C (Ohm/1000 ft) |
|--------------------------|
| 68.2 OHMS/1000 FT. MAX.  |

#### Nom. Attenuation:

| Freq. (MHz) | Attenuation (dB/100 ft.) |
|-------------|--------------------------|
| 10          | 2.8                      |
| 20          | 4.8                      |
| 30          | 6.5                      |
| 40          | 8.3                      |
| 50          | 9.8                      |
| 60          | 12                       |
| 70          | 13                       |
| 80          | 14                       |
| 90          | 15.8                     |
| 100         | 17                       |

#### Max. Operating Voltage - UL:

| Voltage   |
|-----------|
| 300 V RMS |

#### Max. Recommended Current:

| Current                    |
|----------------------------|
| 1 Amp per conductor @ 20°C |

## 9L28050 Flat - Gray Ribbon 9L280XX Series

**Dielectric Withstand Voltage:** 2,000 V RMS

### Typical Unbalanced Crosstalk:

| Description          | Pulse Rise Time (NS) (MHz) | Near End % (MHz) | Far End % (MHz) |
|----------------------|----------------------------|------------------|-----------------|
| 10 ft. sample length | 3                          | 4.8              | 7               |
| 10 ft. sample length | 5                          | 3.5              | 4.7             |
| 10 ft. sample length | 7                          | 3                | 3               |

### Notes (Overall)

**Notes:** GS=Ground-Signal Mode; GSG=Ground-Signal-Ground Mode

### Polarity Identification (Overall)

**Polarity Identification:** RED POLARITY STRIPE ON #1 CONDUCTOR

### Put Ups and Colors:

| Item #          | Putup  | Ship Weight | Color | Notes | Item Desc             |
|-----------------|--------|-------------|-------|-------|-----------------------|
| 9L28050 008H100 | 100 FT | 6.500 LB    | GRAY  |       | 50 #28 STR PVC RIBBON |

# Gray Ribbon 9L280XX Series

.050" Pitch, 28 AWG, PVC

## Product Description

Belden's (9L280XX Series) .050" pitch extruded gray ribbon cable was designed for general purpose electronic interconnect applications. The cable provides reliable mass-termination to standard .100" contact IDC connectors, flexibility, consistent electricals and break-outs can be made easily with the tear feature design. The cable is constructed of stranded 28 AWG (7x36) tinned copper conductors. Insulation material consists of Gray PVC, with a Red polarity stripe for proper circuit alignment. Various conductor counts are standard; other sizes are available upon request. The cable is UL approved and CSA certified, and passes the VW-1 Vertical Wire Flame Test.

**Color Code:** Gray with Red polarity stripe (standard).

**Application:** Internal interconnection or internal wiring of electronic equipment.

## Physical Specifications

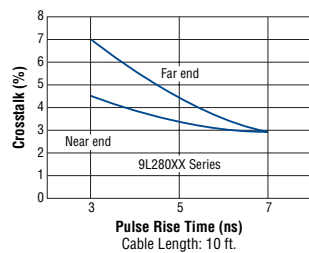
|                            |   |
|----------------------------|---|
| <b>Conductor</b>           | 28 AWG (7x36) Tinned Copper                 |
| <b>Insulation</b>          | .010" Nom. Wall Gray PVC                    |
| <b>Pitch</b>               | .050" ± .002"                               |
| <b>Temperature Rating</b>  | -40 to +105°C                               |
| <b>Flammability Rating</b> | UL: VW-1; CSA: FT1                          |
| <b>UL Approval</b>         | File #E12683, Style 2651                    |
| <b>CSA Approval</b>        | File #LL7874, CSA AWM I A<br>105°C 300V FT1 |
| <b>Packaging</b>           | H100, H300, R300                            |

## Electrical Specifications

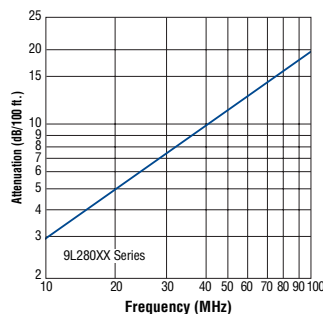
|                               |                                       |
|-------------------------------|---------------------------------------|
| <b>Voltage Rating</b>         | 300V RMS                              |
| <b>Current Rating</b>         | 1A                                    |
| <b>Conductor Resistance</b>   | 68.2Ω/1000 ft.                        |
| <b>Insulation Resistance</b>  | >1 x 10 <sup>10</sup> Ω • 10 ft. (3m) |
| <b>Impedance*</b>             | 105Ω                                  |
| <b>Capacitance* (@ 1 MHz)</b> | 15 pF/ft. (49 pF/m)                   |
| <b>Inductance* (@ 1 MHz)</b>  | .20 μH/ft. (.66 μH/m)                 |
| <b>Propagation Delay*</b>     | 1.40 ns/ft. (4.6 ns/m)                |

\*Test Configuration: G-S-G (ground-signal-ground).

## Unbalanced Crosstalk\*



## Attenuation\*



| Part No. Standard [UL & CSA] | No. of Cond. | Dimensions |            |            |            |
|------------------------------|--------------|------------|------------|------------|------------|
|                              |              | Width "A"  |            | Span "B"   |            |
|                              |              | Inch       | mm         | Inch       | mm         |
| 9L28009                      | 9            | .45 ±.008  | 11.43 ±.20 | .40 ±.008  | 10.16 ±.20 |
| 9L28010                      | 10           | .50 ±.008  | 12.70 ±.20 | .45 ±.008  | 11.43 ±.20 |
| 9L28014 <sup>†</sup>         | 14           | .70 ±.008  | 17.78 ±.20 | .65 ±.008  | 16.51 ±.20 |
| 9L28015**                    | 15           | .75 ±.008  | 19.05 ±.20 | .70 ±.008  | 17.78 ±.20 |
| 9L28016                      | 16           | .80 ±.008  | 20.32 ±.20 | .75 ±.008  | 19.05 ±.20 |
| 9L28020                      | 20           | 1.00 ±.008 | 25.40 ±.20 | .95 ±.008  | 24.13 ±.20 |
| 9L28024 <sup>†</sup>         | 24           | 1.20 ±.008 | 30.48 ±.20 | 1.15 ±.008 | 29.21 ±.20 |
| 9L28025                      | 25           | 1.25 ±.008 | 31.75 ±.20 | 1.20 ±.008 | 30.48 ±.20 |
| 9L28026                      | 26           | 1.30 ±.008 | 33.02 ±.20 | 1.25 ±.008 | 31.75 ±.20 |
| 9L28034                      | 34           | 1.70 ±.008 | 43.18 ±.20 | 1.65 ±.008 | 41.91 ±.20 |
| 9L28036**                    | 36           | 1.80 ±.012 | 45.72 ±.30 | 1.75 ±.012 | 44.45 ±.30 |
| 9L28037**                    | 37           | 1.85 ±.012 | 46.99 ±.30 | 1.80 ±.012 | 45.72 ±.30 |
| 9L28040                      | 40           | 2.00 ±.012 | 50.80 ±.30 | 1.95 ±.012 | 49.53 ±.30 |
| 9L28050                      | 50           | 2.50 ±.012 | 63.50 ±.30 | 2.45 ±.012 | 62.23 ±.30 |
| 9L28060                      | 60           | 3.00 ±.012 | 76.20 ±.30 | 2.95 ±.012 | 74.93 ±.30 |
| 9L28064                      | 64           | 3.20 ±.012 | 81.28 ±.30 | 3.15 ±.012 | 80.01 ±.30 |

\*\* Available in H100 packaging only.  
<sup>†</sup> Not available in R300 packaging.

## Dimensions

