



**Product:** [9R28020](#) 

Rainbow Ribbon Cable .050" Pitch, 9R280XX Series, #28-20c, PVC Ins

### Product Description

Rainbow Ribbon Cable .050" Pitch, 9R280XX Series, 20 Conductor, 28 AWG (7x36) Tinned Copper, PVC Insulated Conductors on PVC Substrate

### Technical Specifications

#### Product Overview

Suitable Applications:	Internal interconnection, internal wiring of electronic equipment, color-coded for quick identification & circuit tracing, easy breakouts for circuit routing, designed for mass-termination with standard IDC connectors
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#### Physical Characteristics (Overall)

##### Conductor

AWG	Stranding	Material
28	7x36	TC - Tinned Copper

Conductor Count:	20
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##### Insulation

Material	Nominal Wall Thickness
PVC - Polyvinyl Chloride	0.010 in

##### Color Chart

Number	Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Purple
8	Gray
9	White
10	Black
Over 10 conductors	Repeat as required

#### Construction and Dimensions

Conductor Spacing Center-Center:	.050 +/- .003 in
Conductor Spacing Center-Center Outside:	.950 +/- .008 in
Substrate Thickness and Material:	.010 in, Clear PVC
OuterJacket1, Nominal Width:	1.000 +/- .008 in
OuterJacket1, Nom Thick Flat Section:	0.036 in

#### Electrical Characteristics

##### Conductor DCR

Nominal Conductor DCR
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68.2 Ohm/1000ft

#### Capacitance

Element	Nom. Capacitance Conductor to Conductor
@ 1 kHz (GSG)	18 pF/ft
@ 1 MHz (GS)	10 pF/ft
@ 1 MHz (GSG)	15 pF/ft

Min Insulation Resistance: 10,000 MOhm

#### Inductance

Element	Nominal Inductance
@ 1 MHz (GS)	0.29 $\mu$ H/ft
@ 1 MHz (GSG)	0.2 $\mu$ H/ft

#### Impedance

Nominal Balanced Characteristic Impedance Description	Nominal Characteristic Impedance	Nominal Characteristic Impedance Description
(GS)	150 Ohm	(GS)
(GSG)	105 Ohm	(GSG)

#### High Frequency (Nominal/Typical)

Frequency [MHz]	Nom. Insertion Loss
10 MHz	2.8 dB/100ft
20 MHz	4.8 dB/100ft
30 MHz	6.5 dB/100ft
40 MHz	8.3 dB/100ft
50 MHz	9.8 dB/100ft
60 MHz	12 dB/100ft
70 MHz	13 dB/100ft
80 MHz	14 dB/100ft
90 MHz	15.8 dB/100ft
100 MHz	17 dB/100ft

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

#### Delay

Nominal Delay	Nominal Velocity of Propagation (VP) [%]
1.40 ns/ft	72%

#### Unbalanced Crosstalk

Element	Typical Unbalanced NEXT %	Typical Unbalanced FEXT %	Typical Cross Talk Pulse Rise Time (ns)
10 ft. sample length	4.8	7	3 ns
10 ft. sample length	3.5	4.7	5 ns
10 ft. sample length	3	3	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 Temp Range: -20°C to +105°C

#### Mechanical Characteristics

Bulk Cable Weight: 24 lbs/1000ft

Min. Bend Radius/Minor Axis: 0.5 in

#### Standards

UL AWM Style Compliance: 20932

#### 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
MII Order #39 (China RoHS):	Yes

## Suitability

Suitability - Indoor:	Yes
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## Flammability, LSOH, Toxicity Testing

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

## Plenum/Non-Plenum

Plenum (Y/N):	No
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## Part Number

### Variants

Item #	Color	Put-Up Type	Length	UPC
9R28020 000100	None	Reel	100 ft	612825221876

## History

Update and Revision:	Revision Number: 0.323 Revision Date: 12-15-2021
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