

... assuring mission success since 1973

HIGH VOLTAGE CABLE ASSEMBLIES

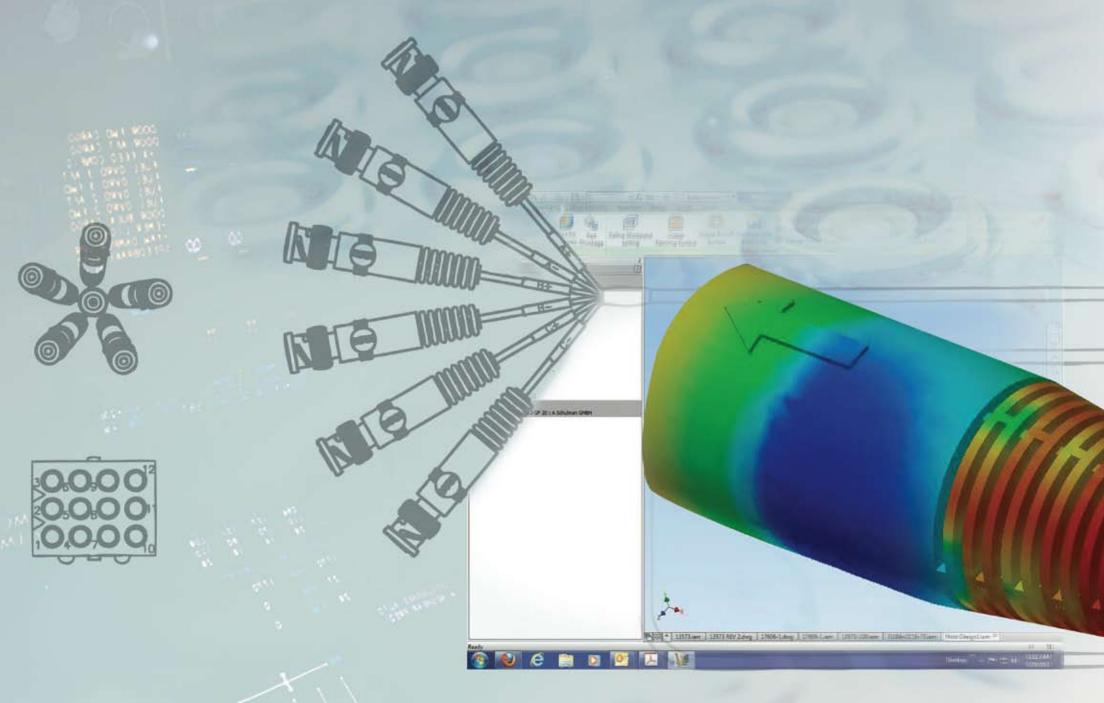


MILITARY AND DEFENSE SYSTEMS

SEMI-CONDUCTOR **INDUSTRY**

MEDICAL INDUSTRY

UTILITY SYSTEMS



Many of Caton's high voltage connector designs are capable of operating up to 70,000 ft while exposed to temperatures of -55c to +125c. Not all designs in this catalog are designed to operate at these extremes, but all will perform with a high degree of reliability. Please consult Caton to discuss your specific requirements.

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Turning Ideas into Reality

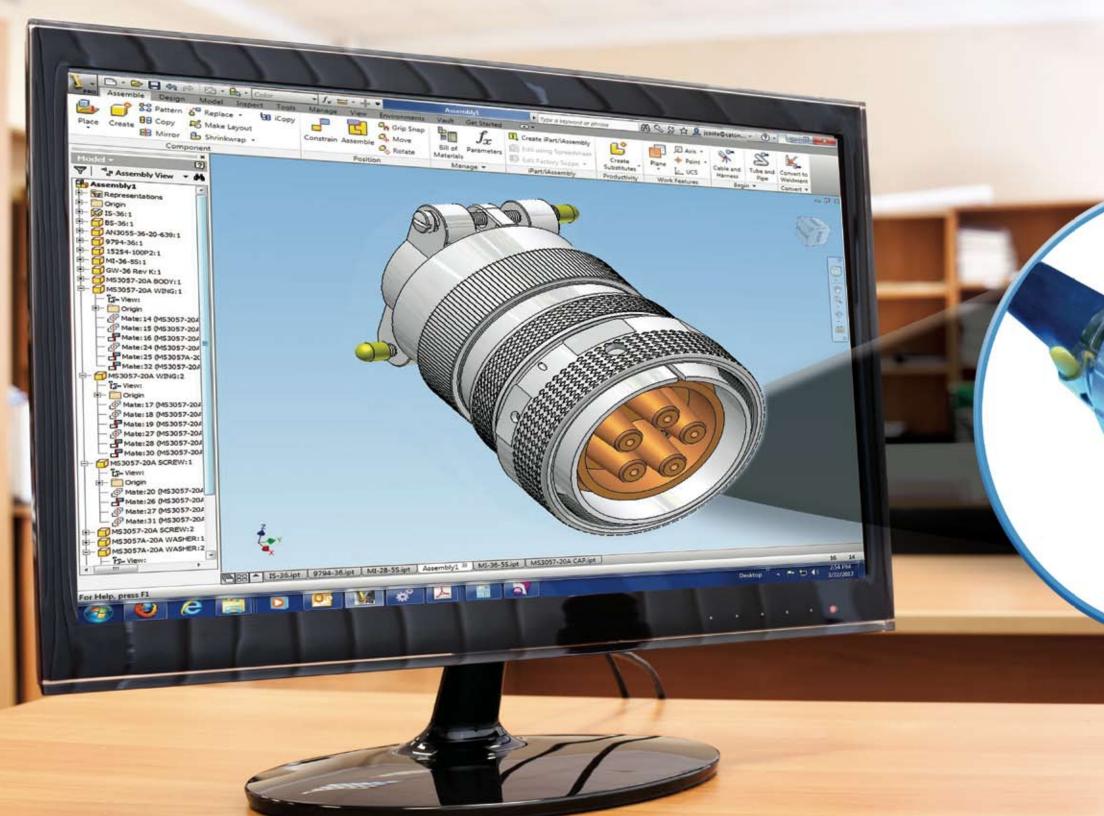
Since 1973 Caton has provided assembly solutions that operate at voltages up to 100 kVDC and have partial discharge levels as low as 2 pC at voltages up to 40 kVRMS and 60 kVDC. Our connector insert configurations have up to 19 conductors, multi-shields and use single, double and triple extruded silicone cable and are built to lengths of up to 300 feet.

Caton has the experience and ingenuity to provide a comprehensive solution for your cable and connector needs, no matter the size or complexity of your project.

Caton can custom design or modify existing designs to suit individual needs. To offer the best value, we will first look into modifying an existing design to fulfill your project requirements. This may be as simple as a change in length or as complex as a total reconfiguration, involving additional breakouts, moldings and wiring.

Whether you come to Caton with your design or have us custom design to fit your needs; you can trust Caton to determine the best solution for your cable and connector needs.







Conquering High Voltage Challenges

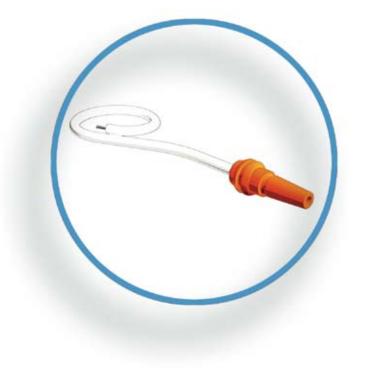
Caton's skilled team of engineers understands the challenges manufacturers face when designing high voltage cable assemblies. With decades of engineering experience, we will provide the most innovative and cost effective solutions for your system.

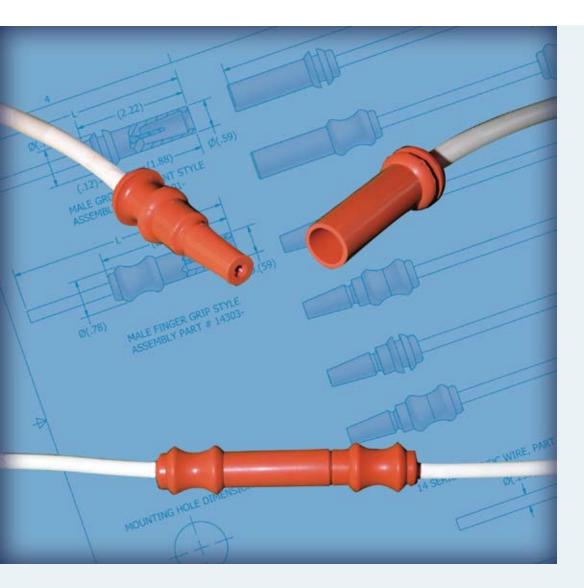
Emphasizing cost efficiency, ease of manufacturability and reliability, our engineering team provides affordable customized solutions for any application. Utilizing creative manufacturing techniques, our design engineers provide an outstanding and reliable product that exceeds design specifications every time.

Caton's team is fully prepared to collaborate closely with our customers to ensure rewarding and successful outcome to every project. Based on electrical, mechanical and environmental design specifications, our experienced engineering team will work with you to develop state of the art detailed custom product drawings. Caton will develop your product from a design concept to a fully manufactured product.

14 Series 10-45 kVDC PANEL MOUNT & IN-LINE ASSEMBLIES

The 14 series assemblies are single conductor, inline assemblies designed for high voltage applications where high performance and a "steady-state" voltage is required at a lower cost than conventional shell type connectors. The connectors utilize Caton's proven tapered conical interface design making the 14 series ideal for applications subject to high vibrations, shock and humidity. The silicone body is bonded directly to the wire for maximum dielectric strength which makes it ideal for quick connect and disconnect applications. The 14 series is offered in a panel mount and finger grip design and is available in a wide range of voltages.





GENERAL SPECIFICATIONS

1.0 Electrical (When Properly Mated)

1.1 Operating Voltage:10-45 kVDC1.2 Current:4-10 AMPS

2.0 Mechanical

2.1 Style:Panel Mount & Finger Grip2.2 Plug Termination:Bonded directly to the Cable

3.0 Environmental

3.1 Operating Temperature Range: -55°C to +125°C

4.0 Materials

4.1 Connector Body:	Silicone Rubber per A-A-59588, Class 2B (ZZ-R-765)
4.1.1 Male Connector:	Color Red, Durometer, 70 Shore A
4.1.2 Female Connector:	Color Red, Durometer, 50 Shore A
4.2 Pin Contact:	Hard Brass per QQ-B-626
4.3 Socket Contact:	Beryllium Copper Alloy, Grade M33-25 or M173
4.4. Pin and Socket:	Gold Plated per MIL-G-45204, Class 1, Type II
4.5 Wire:	Tin or Silver Plated Copper, Silicone Insulation
	10 kVDC, 20 AWG, 0.100 Diameter
	30 kVDC, 18 AWG, 0.200 Diameter
	40 kVDC, 16 AWG, 0.295 Diameter

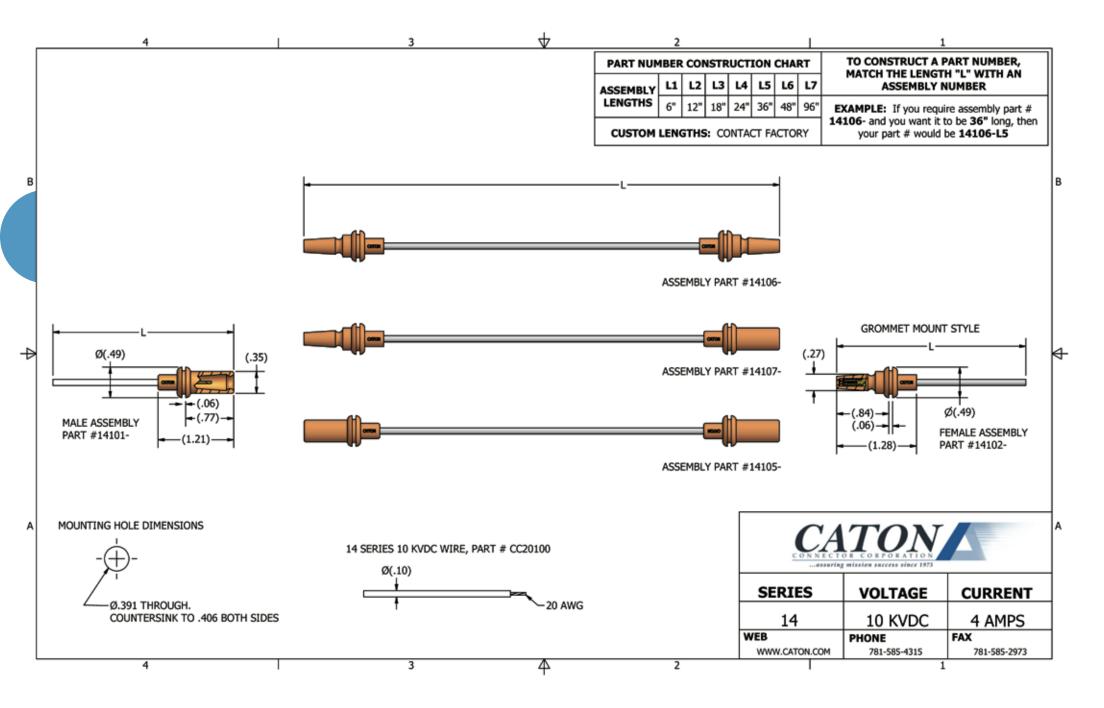
TECHNICAL FEATURES

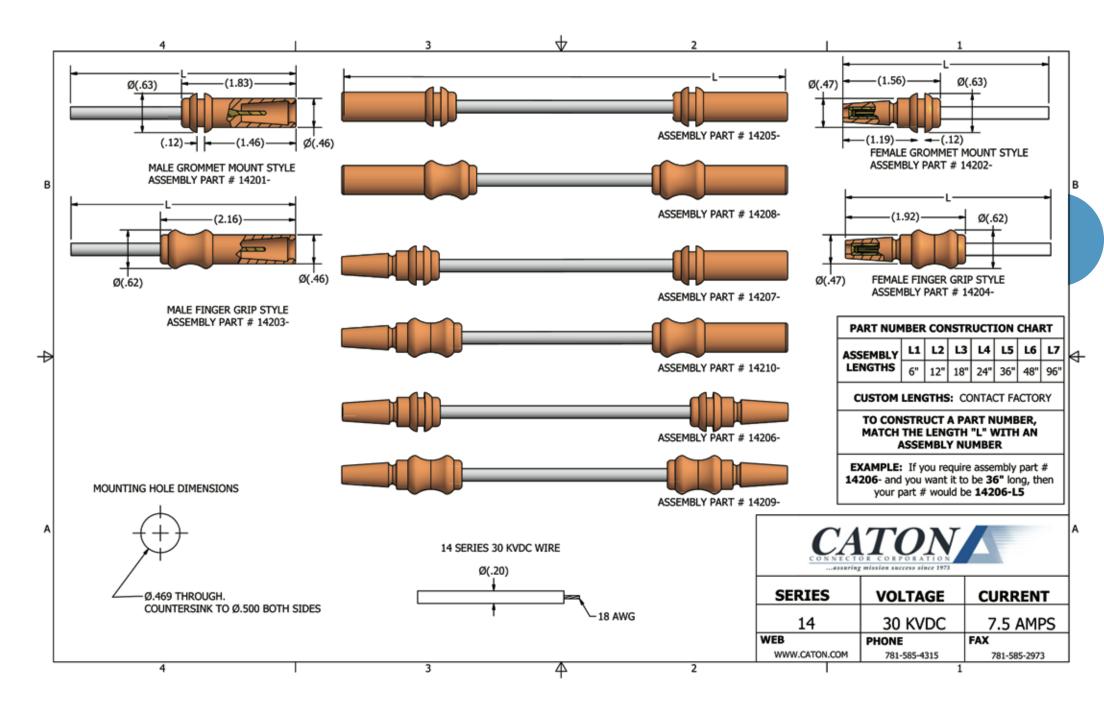
No-shell design Quick connect & disconnect Voltage ratings of 10-45 kVDC Amperage ranges from 4-10A Tapered conical interface Panel mount & finger grip Styles available in all voltage configurations Double ended designs available

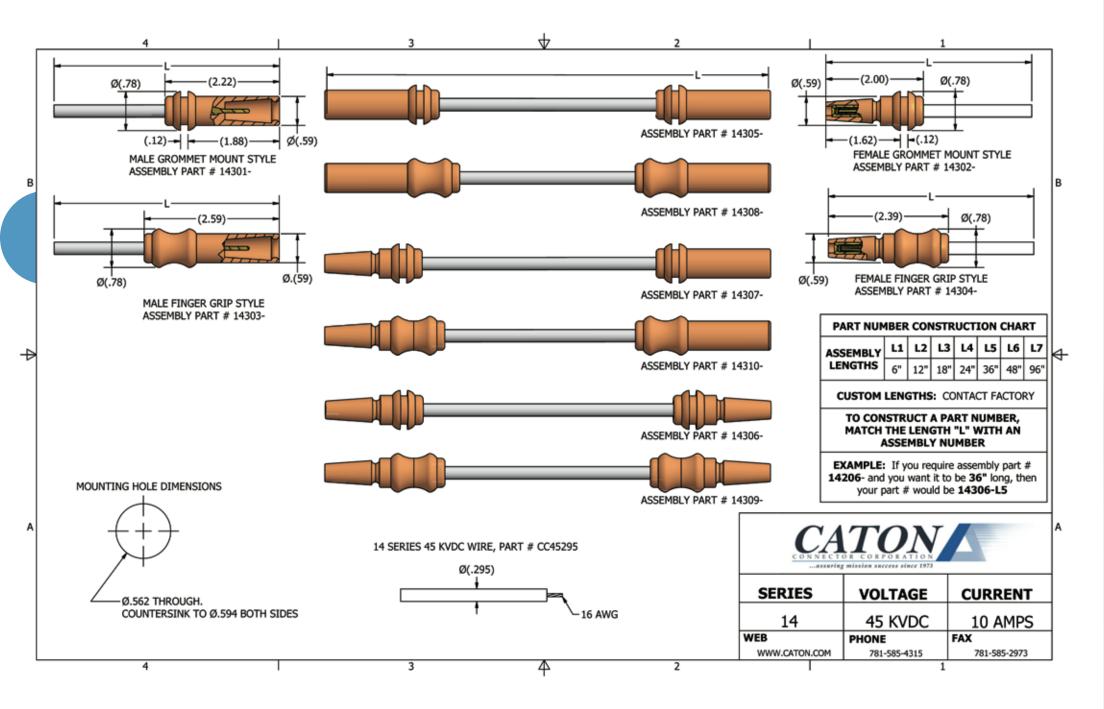


TYPICAL APPLICATIONS

Land & airborne radar systems CRT & heads-up cockpit video display Harsh environments High-vibration applications







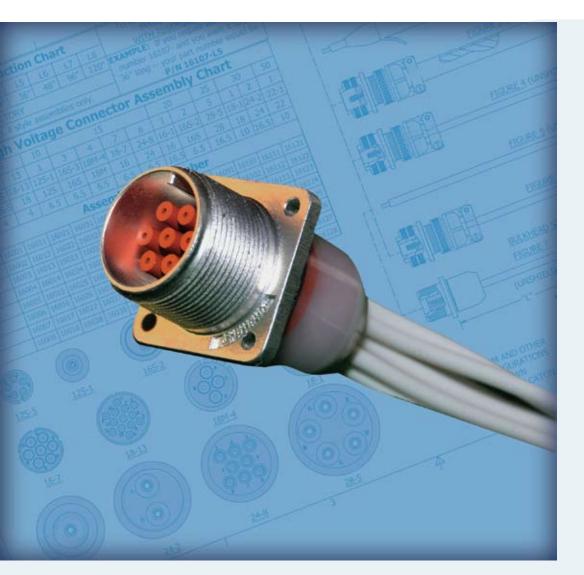
Custom 14 Series Design 25 kVDC, 10 Amps



16 Series 5-50 kVDC MULTI-CONDUCTOR CABLE ASSEMBLIES

The 16 series cable assemblies are offered in multiple shell sizes, and multiple insert configurations. This series is designed for high voltage applications where high reliability is required in a wide range of temperature, altitude, and environment conditions. Termination of the connectors to the cable is a unique Caton technique utilizing vacuum degassed two part silicone RTV. This process together with the Caton designed silicone rubber tapered inserts, provide a termination impervious to the surrounding environment. The shell design is the proven MIL-C-5015 die cast aluminum available in a variety of sizes, finishes and plating options.





TECHNICAL FEATURES

19 Insert Arrangements 10 Shell Sizes Voltage Capability 5-50 kVDC Amperage ranges from 4 -85A

Corona-Resistant Designs Low Micro-Discharge Designs MIL-C-5015 Aluminum shells available in a variety of finishes and plating's

TYPICAL APPLICATIONS

Power Supplies Ship Board and Ground Radar Laser Equipment

Satellite NAV Systems Land and Airborne Radar Systems



GENERAL SPECIFICATIONS

1.0 Electrical

1.1 Operating Voltage:	5-50 kVDC
1.2 Current:	4-85 AMPS
1.3 Corona Resistant:	Tapered Interfacial Seals

2.0 Mechanical

2.1 Style:	Bulkhead and Inline Screw Coupling
2.2 Termination:	Resilient Silicone Rubber Inserts, Encapsulation
	Bonded Directly to the Wire
3.0 Environmental	
3.1 Altitude:	Sea Level to 70,000 feet*

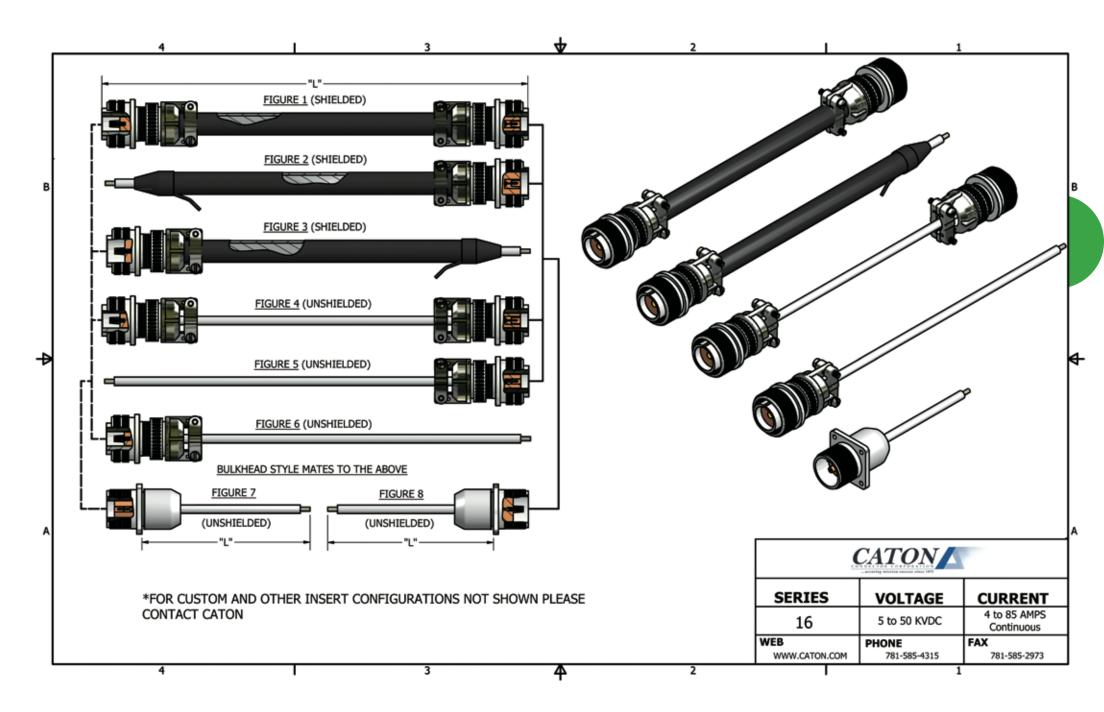
3.2 Operating Temperature Range: -55°C to +125°C

4.0 Materials

4.1 Connector Body:	Die Cast Aluminum Per QQ-A-591
4.1 Connector Body.	Die Gast Aluminum i ei QQ-A-551
4.2 Shell Plating:	Bright Cadmium Per QQ-P-416, Class 2, Type II**
4.3 Connector Inserts:	Molded Silicone Rubber Per A-A-59588 (ZZ-R-765),
	Class 2B
4.3.1 Male Insert Molding:	Color Red, Durometer 50 Shore A
4.3.2 Female Insert Molding:	Color Red, Durometer 70 Shore A
4.4 Pin Contact:	Per MIL-C-39029 or 1/2 Hard Brass Per QQ-B-62
4.5 Socket Contact:	Per MIL-C-39029, QQ-B-626 or ASTM-B196
4.6 Contact Plating:	Gold Plated Per MIL-G-45204, Class 1, Type II
4.7 Wire:	Tin or Silver Plated Copper, Silicone Insulation
4.8 Cable Shielding:	Braided, Tinned Copper Per A-A-59569 (QQ-B-575)
4.9 Cable Jacket:	Silicone Rubber Per A-A-59588 (ZZ-R-765), Class 2B,
	Color Black

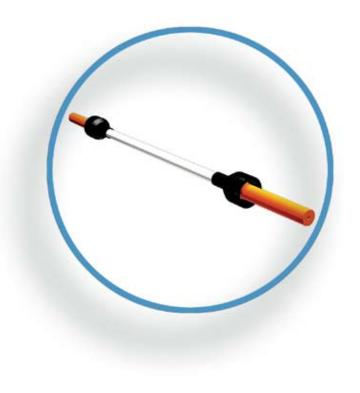
* Rated altitude values vary by assembly. Contact Caton for assembly specific values. ** All 16 series assemblies are available in a Rohs compliant version. The cadmium plating is replaced by an electroless nickel plating.

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ASSEMBLY LENGTHS	L1 6"	L2 12"	L3 18"	L4 24"	L:	-	L6 48"	L7 96"	L8			lf you requ nber would			mber 1610	7- and yo	u want it to	o be 36" lo	ong		
	U				_		-	90	120			-									
		005	TOM LE	NGINS:				ltage Co	onnector	Assemi	ly Char	•									
Voltage, kVDC		5		10		1	-			20		•	25				30		50		
Number of Circuits	5	13	19	1	3	4	7	8	1	2	6	5	6	7	1	2	2	5	1		
Insert Configuration	12S-5	18-13	20-19	12S-1	16S-3	18M-4	16-7	24-8	16-1	16S-2	24-6	28-5	32-6	24-7	18-1	24-2	-	36-5			
Shell Size	12S	18	20	12S	16S	18	16	24	16	16S	24	28	32	24	18	24	32	36	22		
Maximum Current Rating	4	4	4	6.5	6.5	6.5	6.5	6.5	16.5	6.5	10		6.5 / 85		10	16.5	-	26	10		
Figure Number									Assem	bly Part	Number	s									
1	16001	16011	16171	16021	16031	16041	16051	16061	16071	16081	16131	16091	16181	16161	16101	16111	16141	16151	16121		
2	16002	16012	16172	16022	16032	16042	16052	16062	16072	16082	16132	16092	16182	16162	16102	16112	16142	16152	16122		
3	16003	16013	16173	16023	16033	16043	16053	16063	16073	16083	16133	16093	16183	16163	16103	16113	16143	16153	16123		
4	16004	16014	16174	16024	16034	16044	16054	16064	16074	16084	16134	16094	16184	16164	16104	16114	16144	16154	16124		
5	16005	16015	16175	16025	16035	16045	16055	16065	16075	16085	16135	16095	16185	16165	16105	16115	16145	16155	16125		
6	16006	16016	16176	16026	16036	16046	16056	16066	16076	16086	16136	16096	16186	16166	16106	16116	16146	16156	16126		
7	16007	16017	16177	16027	16037	16047	16057	16067	16077	16087	16137	16097	16187	16167	16107	16117	16147	16157	16127		
8	16008	16018	16178	16028	16038	16048	16058	16068	16078	16088	16138	16098	16188	16168	16108	16118	16148	16158	16128		
25-1 125-5 16-1 Image: Constraint of the second		<u>165-2</u>	<u>10</u>	55-3		<u>32-2</u>		<u>8-1</u>	11 (***********************************			18-13	36-5	<u>20-1</u>			22-1)	<u>24-2</u>		
0 9 0		3 2 2		55-3				~												1979	
0 9 0		3 2 2	<u>8-5</u>			32-2		~	32				36-5			SEI				GE	



17 Series 10-40 kVDC LGG TYPE ASSEMBLIES

The 17 series is offered in 3 voltage ranges. These assemblies feature a single conductor and are designed for high voltage applications where a "steady state" voltage is required. The cable assembly consists of a silicone rubber tapered conical interface, which is molded directly onto the wire to insure a high dielectric strength and maximum performance. The cable assemblies are offered with shielded or unshielded cable. The low profile mating receptacles are offered in several mounting styles and utilize Diallyl Phthalate as an insulator.





TECHNICAL FEATURES

Reliable and cost effective Quick connect & disconnect Voltage Ratings of 10-40 kVDC

TYPICAL APPLICATIONS

Power Supplies Laser Equipment Satellite NAV systems Land and Airborne Radar Systems Medical Scanning Equipment

Amperage ranges from 6.5-10A Exclusive Caton Tapered Conical Interface



GENERAL SPECIFICATIONS

1.0 Electrical	
1.1 Operating Voltage:	15-40 kVDC
1.2 Current Range:	6.5-10 AMPS
1.3. Corona Resistant:	Tapered Interfacial Seals
2.0 Mechanical	

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20	Mec	han	IC:
2.0	10100	nun	10

2.1 Style: Bulkhead and In-Line Screw Coupling 2.2 Plug Termination: Resilient Silicone Plugs Molded Directly to the Cable

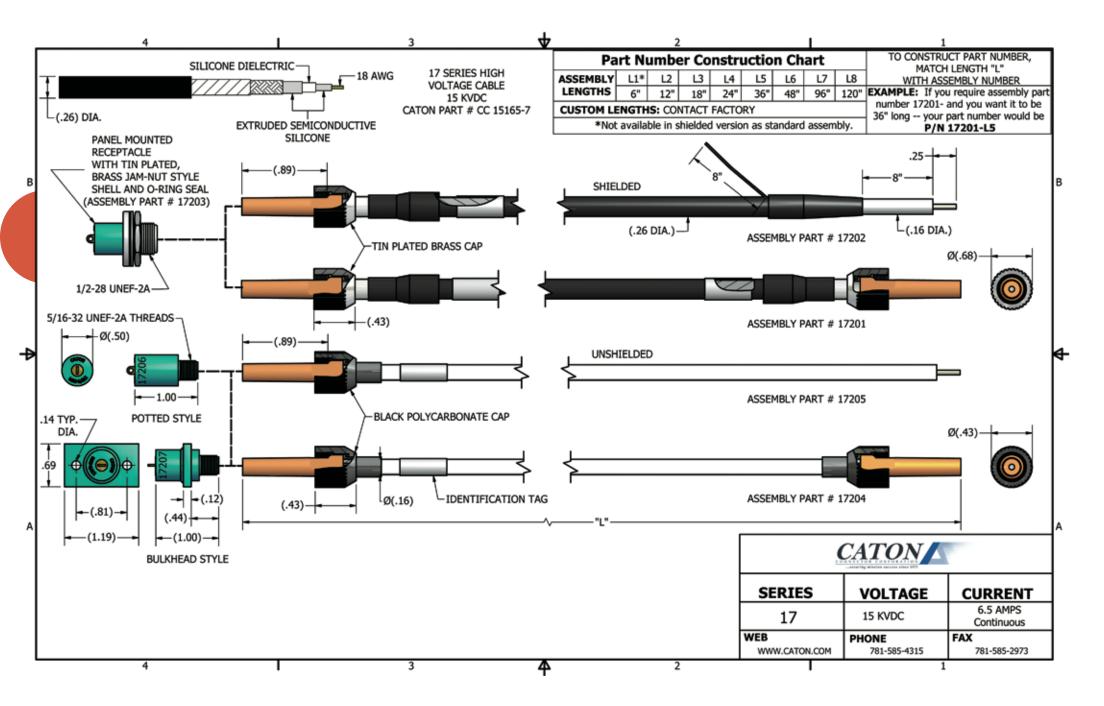
3.0 Environmental

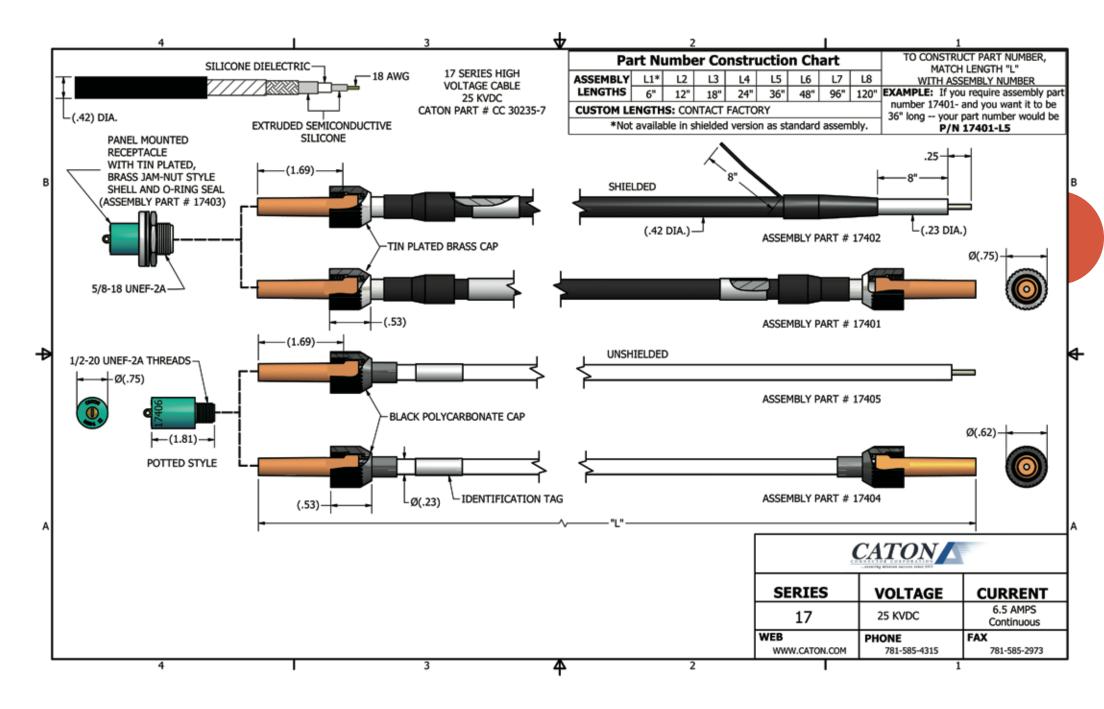
3.1 Altitude: 3.2 Operating Temperature Range: Sea Level to 70,000 feet * -55°C to +125°C

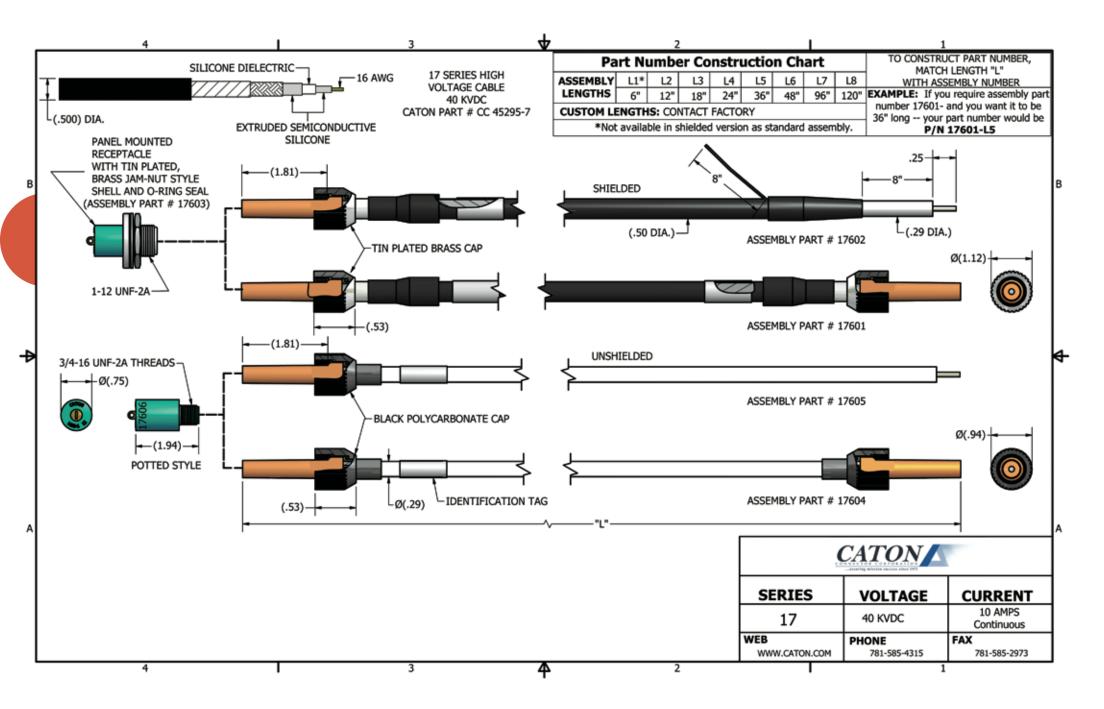
4.0 Materials

4.1 Connector Body Plug: Silicone Rubber per A-A-59588 (ZZ-R-765), Class 2B, Color; Red, Durometer; 70 Shore A Thermoset Diallyl Phthalate Per ASTM D 5948-96 4.2 Connector Body Receptacle: (MIL-M-14), Color; Green 4.3 Unshielded Assemblies: 4.3.1 Coupling Rings and Ferrules: Polycarbonate Per ASTM-D3935 (L-P-393) 4.4 Shielded Assemblies: 4.4.1 Coupling Rings and Ferrules: Hard Brass Per QQ-B-626, Tin Plated Per ASTM B 545 (MIL-T-10727) Hard Brass Per QQ-B-626. Tin Plated Per ASTM B 4.5 Jam Nut Receptacles: 545 (MIL-T-10727) 4.6 Cable: Tin or Silver Plated Copper, Silicone Insulation 4.7 Cable Shielding: Braided Tinned Copper Per A-A-59569 (QQ-B-575) 4.8. Cable Jacket (Shielded Assemblies Only): Silicone Rubber Per A-A-59588 (ZZ-R-765), Class 2B, Color Black

* Rated altitude values vary by assembly. Contact Caton for assembly specific values.







Custom 17 Series Design 10 kVDC, 2.5 Amps

KVD

19 Series 60 kVDC CORONA-FREE CABLE ASSEMBLIES

The 19 Series is our foremost, standard, assembly designed for high pulse applications where Corona-Free high voltage and high reliability are required. All standard assemblies utilize Caton's proven silicone rubber tapered interface. Our low profile receptacles commonly use silicone inserts as an insulator. In oil to air applications, Diallyl Phthalate is used as a dielectric because of its exceptional resistance to most common insulation oils.





GENERAL SPECIFICATIONS

1.0 Electrical

1.1 Operating Voltage:	60 kVDC, 20 kVRMS
1.2 Current:	26 AMPS
1.3 Corona Resistant:	Tapered Interfacial Seal

2.0 Mechanical

sulator
е

3.0 Environmental

3.2 Operating Temperature Range: -55°C to +125°C

3.1 Altitude: Sea Level to 70,000 feet

4.0 Materials

4.1 Connector Body Plug:	Silicone Rubber per A-A-59588 (ZZ-R-765), Class
	2B, Color; Red, Durometer; 70 Shore A
4.2 Connector Body Receptacle:	Thermoset Diallyl Phthalate Per ASTM D 5948-96
	(MIL-M-14), Color; Green
4.3 Cable:	Silver Plated Copper, Triple Extruded Silicone
	Insulation
4.4 Cable Shielding:	Braided Tinned Copper Per A-A-59569 (QQ-B-575)
e Jacket (Shielded Assemblies Only):	Silicone Rubber Per A-A-59588 (ZZ-R-765), Class
	2B, Color Black

TECHNICAL FEATURES

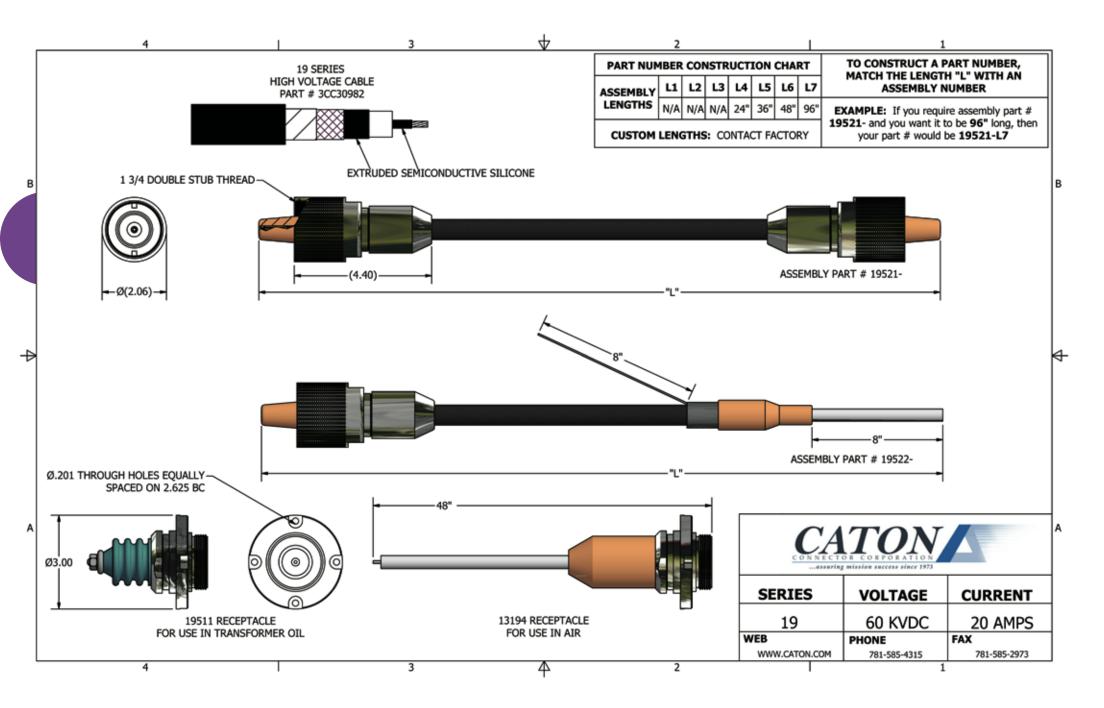
Corona Free Operation High Pulse Applications High Temperature

High Altitude Applications Operating Voltage to 60 kVDC Exclusive Caton Tapered Conical Interface

TYPICAL APPLICATIONS

Power Supplies Ground Radar Installations Shipboard Power Systems

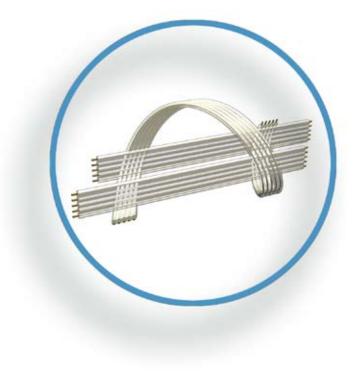
Electron Microscopes & Accelerators Electron Beam Scanning Equipment



Custom 19 Series Design 60 kVDC, 20 kVRMS, 26Amps

Flat Flexible Cable 100V-80 kVDC SILICONE MULTI-CONDUCTOR CABLE

Caton's line of Hi-Flex Shielded and Unshielded Cables provides the advantages of all Caton flexible silicone cables in a standard, low-cost package. Ultra-flexible, finely stranded wire conductors are used for maximum flexibility and long life in dynamic flexing applications. The exclusive extrusion process encapsulates the wire conductors in crystal clear, flexible, yet extremely durable silicone insulation, making it ideal in diverse applications, including aerospace, festoon systems, food & beverage, forestry, industrial automation, medical, packaging, printing, pulp & paper, and semiconductor manufacturing.





GENERAL SPECIFICATIONS

1.0 Electrical

1.1 Insulation Resistance: 200meg Ω @ 500Vdc
1.2 Dielectric Strength: 450 Volts/mil (17.7kV/mm)
1.3 Dielectric Constant: 2.8 (nominal)

2.0 Environmental

2.1 Temperature Rating: -65°C to 260°C 2.2 Moisture Rating: Submersible 2.3 Vacuum Rating: 5 x 10-5 torr 0.24 %TML, 0.02 %CVCM 2.4 Outgassing: 107 Roentgens (exposure) 2.5 Radiation: 2.6 Acid resistance: Good 2.7 Oil Resistance: Good 2.8 Ozone Resistance: Outstanding 2.9 Flame Resistance: Good 2.10 Water/Steam Resistance: Excellent 2.11 Alcohol Resistance: Good 2.12 Toxins: Halogen-Free

3.0 Mechanical

3.1 Life Expectancy:10,000,03.2 Minimum Bend Radius (Flexing):10x Cabl3.3 Durometer Rating:Shore A,3.4Tensile Strength:6.5 Mpa3.5 Tear Strength:18 kN/m

10,000,000 cycles 10x Cable thickness Shore A, 65 6.5 Mpa (psi) 18 kN/m

TECHNICAL FEATURES

Extremely Flexible Extreme environment resistance Low Voltage, High Voltage, RF, Fiber Up to 12 conductors Conductors are encapsulated in silicone Life expectancy of 10,000,000 Cycles RoHS Compliant UL Recognized – File #E324413, CE Fire resistant

TYPICAL APPLICATIONS

Aerospace Ship Board and Ground radar Laser Equipment Satellite Systems Robotics Medical Equipment Remote Operated Vehicles

Voltage (kVDC)	Number of Conductors	AWG	Current Rating (Amps)	Cable Thickness (inches)	Cable Width (in)	Part Number
10	1	30	3	0.21 Diameter	N/A	969M101-30-1
12	1	26	6	0.22 Diameter	N/A	969M101-26-1
12	1	28	5	.021 Diameter	N/A	969M101-28-1
12	1	24	7	0.22 Diameter	N/A	969M101-24-1
31	1	20	10	0.24 Diameter	N/A	969M101-20-1
31	1	22	8	0.23 Diameter	N/A	969M101-22-1
42	1	4	125	0.50 Diameter	N/A	969M101-4-1
42	1	6	95	.044 Diameter	N/A	969M101-6-1
42	1	8	65	0.39 Diameter	N/A	969M101-8-1
42	1	10	47	0.33 Diameter	N/A	969M101-10-1
42	1	12	36	0.30 Diameter	N/A	969M101-12-1
42	1	14	27	0.28 Diameter	N/A	969M101-14-1
42	1	16	19	0.26 Diameter	N/A	969M101-16-1
42	1	18	15	0.25 Diameter	N/A	969M101-18-1
12	2	26	6	0.09	0.14	969M101-26-2
12	2	28	5	0.08	0.13	969M101-28-2
18	2	22	8	0.11	0.18	969M101-22-2
12	3	28	5	0.08	0.18	969M101-28-3
18	3	20	10	0.12	0.28	969M101-20-3
20	3	16	19	0.15	0.37	969M101-16-3
20	3	18	15	0.14	0.33	969M101-18-3
20	4	16	19	0.15	0.48	969M101-16-4
20	4	18	15	0.14	0.43	969M101-18-4
20	8	16	19	0.15	0.92	969M101-16-8



High Voltage Silicone Wire UL STYLE 3239 HIGH VOLTAGE SILICONE WIRE

These designs have earned the UL approval only after successfully meeting stringent performance and manufacturing acceptance criteria. The silicone dielectric maintains excellent flexibility over an extreme temperature range and is resistant against radiation, moisture, and weathering. Being compatible with most silicone encapsulation material has proven to make this wire an excellent choice for most high or low voltage terminations.



Part Number	Operation Voltage	Condu	ctor		O.D.In[mm]	lbs./10001
	kVdc	AWG	Stranding (TC)	Dimensions Inches(mm)		apx. net
33163	15	20	19/32	0.040[1.02]	0.134[3.42]	10.5
36225	25	16	19/28	0.058[1.47]	0.181[4.60]	21.2
36220	25	14	41/30	0.078[1.98]	0.201[5.11]	28.3
36219	50	12	65/30	0.101 [2.57]	0.307[7.80]	56.8

Note:

1. Standard dielectric color is white. Custom colors are available. Please contact Caton for details.

2. Operating temperature range is -55 to +150°C



When applications require extremely low loss of power and low electrical noise, i.e. partial discharge, a layer of semi-conductive silicone is extruded around the stranded center conductor thereby bringing air inside the stranding to zero electrical stress. Dual extruded wire is ideal for AC powered systems.

Part Number	Operation Voltage		Conductor				Semi-Conductive Layer in[mm]	O.D.In[mm]	lbs./10001 apx. net
	kVac	kVdc	AWG	Stranding	Plating	Dimensions Inches(mm)	- 3 - 6 - 4		
005639	10	30	22	19/34	Silver	0.032[0.81]	0.067[1.70]	0.180[4.57]	12.4
0A2841	15	40	18	19/30	Silver	0.051[1.30]	0.086[2.18]	0.236[5.99]	27.6
002841	18	50	14	19/27	Silver	0.071[1.80]	0.100[2.54]	0.300[7.62]	47.1
005640	20	60	12	19/25	Silver	0.092[2.34]	0.134[3.40]	0.360[9.14]	68.3
005641	30	80	8	133/29	Silver	0.150[3.81]	0.240[6.10]	0.650[16.51]	209.5

Note:

1. Standard dielectric color is white. Custom colors are available. Please contact Caton for details.

2. Operating temperature range is -55 to +150°C

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