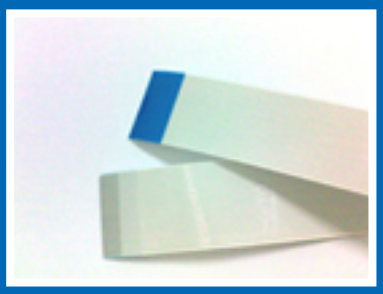
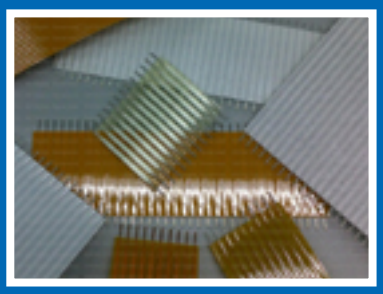
WENNMACHER
ELECTRONIC

FFC / JUMPER CATALOGUE

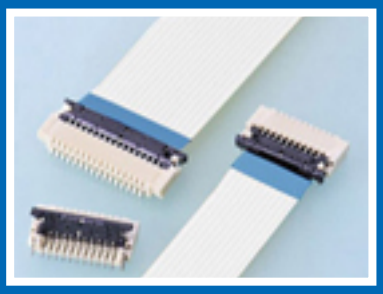
Product series



Simple FFC cable

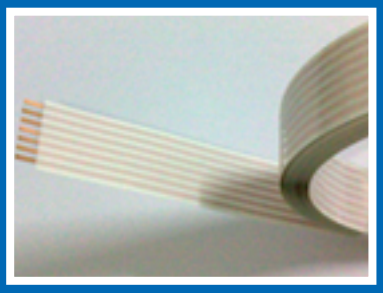


Flexible jumper cable

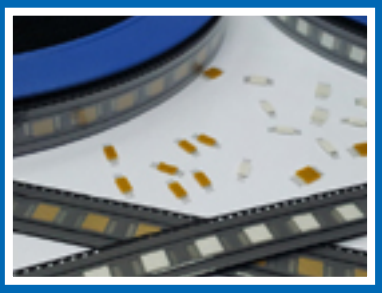


0.3mm pitch FFC cable

Flexible jumper cable with terminal

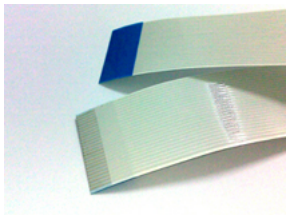
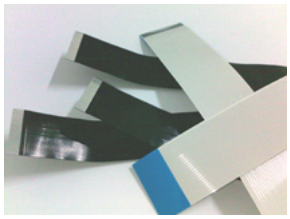
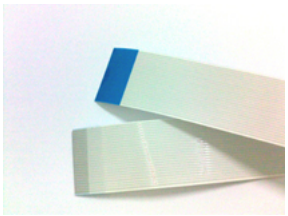


FFC cable of clock spring



SMD jumper cable

1. Product picture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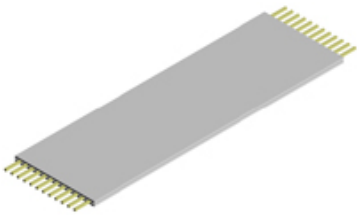
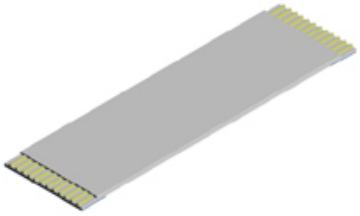
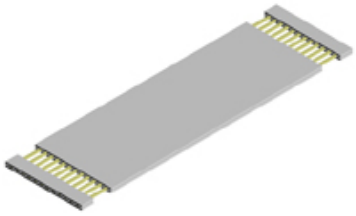
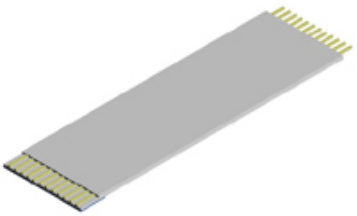
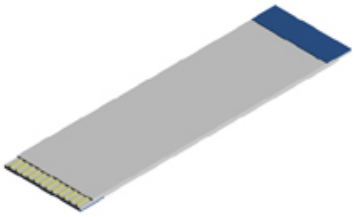
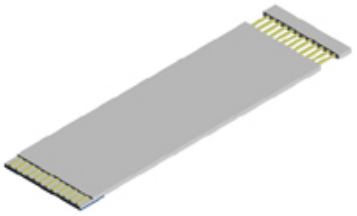
A TYPE	
C TYPE	
AG TYPE	
B TYPE	
D TYPE	
BG TYPE	

3. Specification

Pitch(mm)	0.5	1.0	1.25	2.54
Number of conductors(Pins)	6 to 100	3 to 100	2 to 79	2 to 38
Total pitch(mm)	0.5×(Pin+1)±0.08	1.0×(Pin+1)±0.1	1.25×(Pin+1)±0.15	2.54×(Pin+1)±0.20
Total width(mm)	0.5×(Pin-1)±0.08	1.0×(Pin-1)±0.1	1.25×(Pin-1)±0.15	2.54×(Pin-1)±0.20
Total length(mm)	20 to 50,000	20 to 50,000	20 to 50,000	20 to 50,000
Length of contact terminal(mm)	2 to 8	2 to 8	2 to 8	2 to 8
Length of supporting tape(mm)	4 to 15	4 to 15	4 to 15	4 to 15
Conductor size(mm) (Thickness × width)	0.035×0.3; 0.05×0.3; 0.1×0.3	0.035×0.65mm; 0.05×0.65; 0.1×0.65mm	0.035×0.8; 0.05×0.8; 0.1×0.8	0.076×1.27; 0.076×1.57 0.1×1.27;

4. Technical characteristics

ITEM	Test methods and results
Conductor Material	Flat copper wire of tin plated or gold plated
Insulation Material	Polyester film(PET)
Insulation Resistance	>1000MΩ (DC 500V at 20°C)
Dielectric withstanding voltage between conductors	No breakdown(DC500V for 1min)
Rated voltage/temperature	60V/80°C or 105°C
Humidity Resistance	Insulation resistance and dielectric strength pass(at 40°C,95%RH,96 hrs)
Flexing	>20cycles(180°folding test);>100,000cycles(15mmR,1000cycles/min 25mm stroke)
Abrasion Test	>10,000cycles(φ0.5mm,600g,60cycles./min)
Insulation Elongation	>60%(JIS-K-6732 test method)
Tensile strength	>3.5kg(JIS-K-6732 test method)
Flammability	UL Sub. 758 VW - 1

5. Applications

Notebook

Scanner

Printer

CD-ROM

CD player

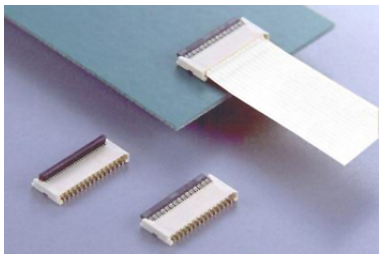
Digital STB

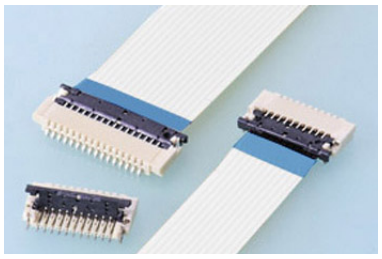
1. Application Scope

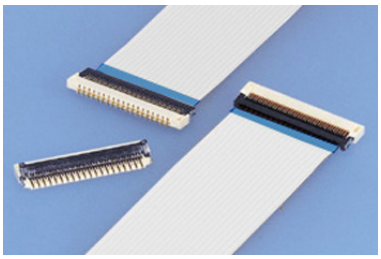
These 0.3mm pitch FFC cable can replace 0.3mm pitch FPC(flexible printed circuit), used to connect the following of 0.3mm pitch FPC connector.

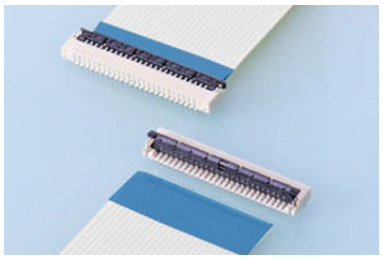
Manufacturer	Product series
Tyco electronics	1746237,1827360,1827674
Molex incorporated	54393,54809,500797,501616,501912,502350
FCI france	1006112
Hirose electronic	FH26,FH35
JAE technology	FB3,FB6,FB8,FL2
Kyocera Elco	6281,6283,6293,6296,6841
SMK corporation	FP-03L,FP-03U
J.S.T Mfg	FXL,FXR,FXS,FXZ,FXZT

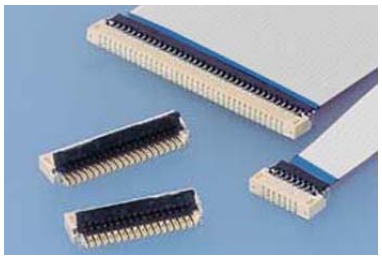
Hirose FH35 series

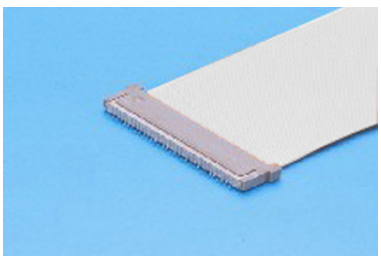

JAE-FB8 series

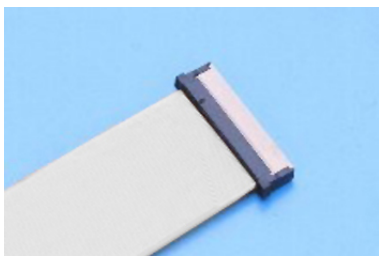

JST FXL series


JST FXR series

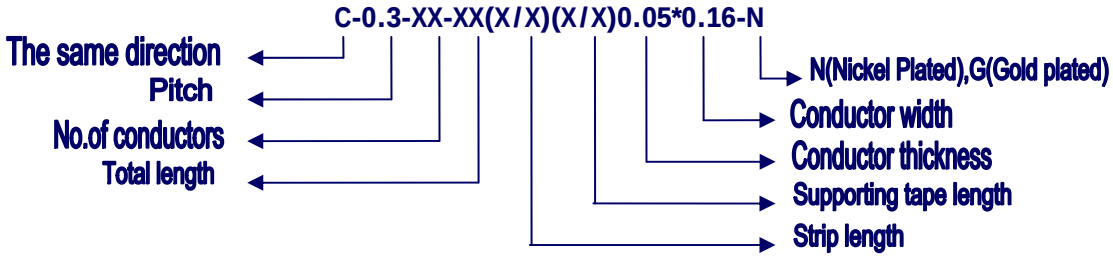

JST FXS series


JST FXZ series


SMK-FP-03L series


SMK-FP-03U series

2. Order code



3. Material construction

Conductor: Nickel plated copper,Gold plated copper.

Insulation: Polyester (White)

Supporting tape: Polyester (Blue)

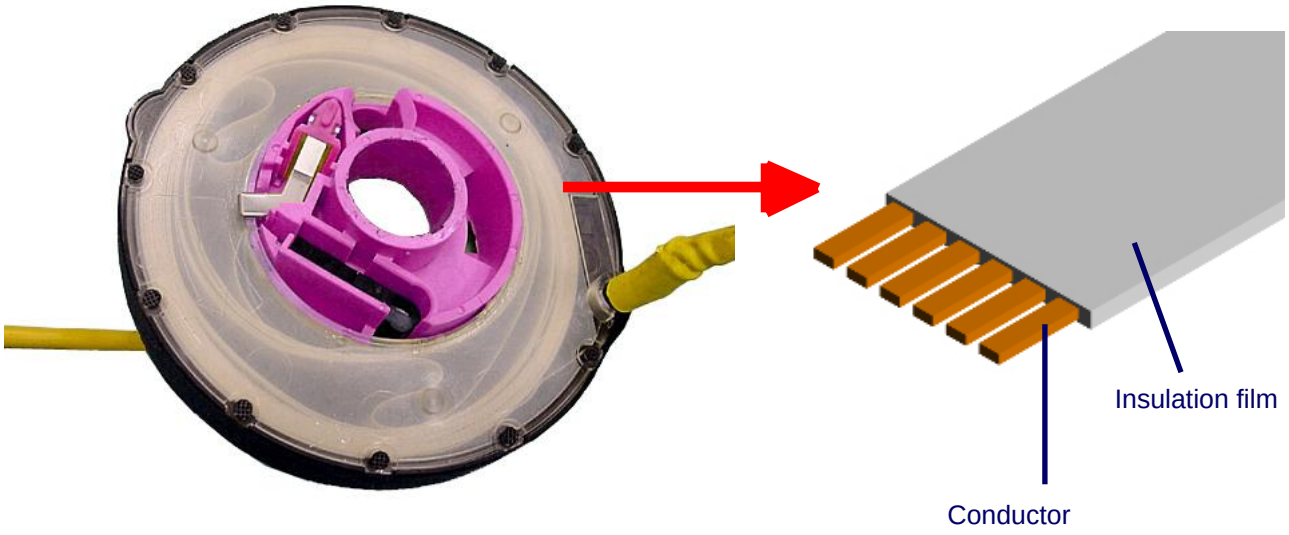
4. Technical characteristics

ITEM	TEST METHOD	SPECIFICATION
Conductor Resistance	JIS C-3102 at 20℃	2164Ω/Km
Insulation Resistance	DC250V at 20℃	Max.100MΩ.p
Dielectric withstanding Voltage between conductors	AC250V for 1min	No breakdown
Rated voltage/temperature		60V/80℃
Operation temperature		-40℃～+80℃
Continuity	Continuity tester DC5.0V	No open/short circuit
Heat Resistance	85℃, 96hrs	Insulation resistance and Dielectric strength pass
Temperature cycling	-40℃ for 4 hrs→ 85℃ for 4 hrs→ 25℃ for 1hr(5cyc.)	Insulation resistance and Dielectric strength pass
Humidity	40℃,95%RH,96 hrs	Insulation resistance and Dielectric strength pass
Flexing	180°folding test 180°	＞20cycles
	R10×25mm stroke×70cycles/min	＞1000000cycles
Flammability	UL VW-1	

1. APPLICATION SCOPE

The FFC cable is used in the clock spring of car-airbag.

CLOCK SPRING FFC CABLE



2. SPECIFICATION

2-1. Number of conductor : 2 to 16

2-2. length : 0.5m to 4m

2-3. Abrasion Test : >10,000cycles at 0.5R,600g,60 cycles/min.

2-4. Insulation resistance : >1000M Ohm at DC 500V after 1 min.

2-5. Insulation film

2-5-1. Material : PET(white)

2-5-2. Thickness range: 0.043mm,0.06mm,0.08mm,0.10mm

2-5-3. Elongation : >60% at JIS K6732

2-5-4. Tensile strength : >34.3N/mm^2 at JIS K6732

2-6. Conductor

2-6-1. Material : Bare copper wire(red)

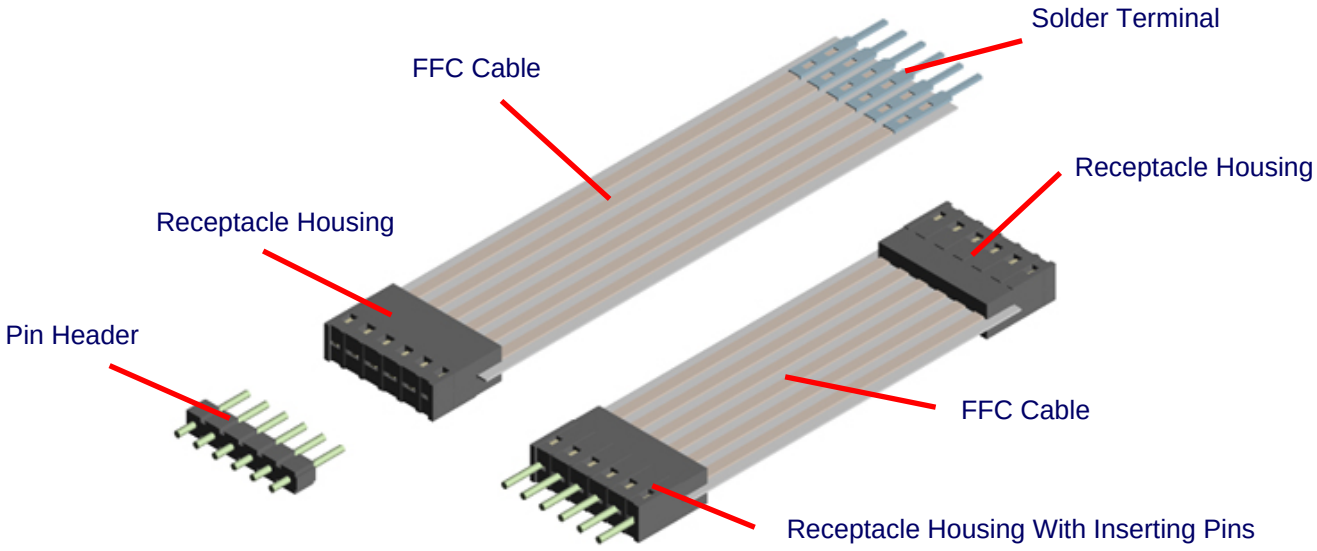
2-6-2. Size range : Can provide customized according to client requirement

thickness×width(mm)

0.035×0.7,0.035×1.0,0.035×1.4,0.035×1.6,0.035×1.8,
0.04×0.7,0.04×1.0,0.04×1.4,0.04×1.6,0.06×1.27,0.08×1.0,
0.14×0.9,0.14×1.5, 0.18×0.7,0.18×1.0,0.18×1.1,0.18×1.5

1. APPLICATION SCOPE

The flexible jumper cable is used to connect in between board to board for more firmly and tightly, Such as:industrial control system,car wiring system,led-lighting realm etc.



2. THE SPECIFICATION OF FLEXIBLE JUMPER CABLE

2-1. Number of conductor : 2 to 36

2-2. Pitch : 1.27mm,2.54mm

2-3. Insulation material : Polyester(white)

2-4. Conductor material : Bare copper wire(red)

2-5. Operating temperature : -40°C to +105°C

3. THE SPECIFICATION OF RECEPTACLE HOUSING

3-1. Material : Thermoplastic filled with glass fiber(black)

3-2. Operating temperature : -55°C to +150°C

3-3. Flammability rating : UL 94V-0

3-4. Insulation resistance : 5,000M Ohm

3-5. Dielectric withstanding voltage : 300V

4. THE SPECIFICATION OF SOLDER TERMINAL

4-1. Material : Phosphor copper

4-2. Plating specification : Base,50u" by nickel;surface,80-120u" by pure tin

4-3. Contact resistance : 10M Ohm max.

4-4. Insulation resistance : 5E+05M Ohm at 500V

4-5. Withstanding voltage : 1000V

4-6. Capacitance between two contacts : 4 pF max.

4-7. DC rated current : 3A

4-8. AC rated current : 5A

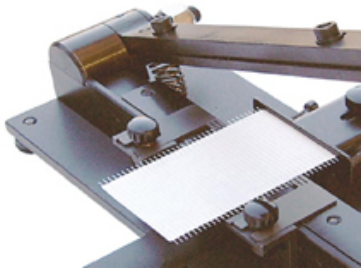
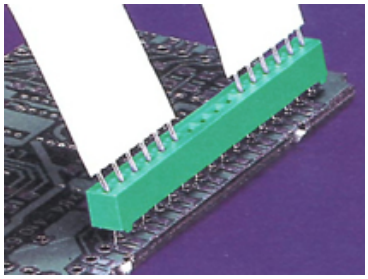
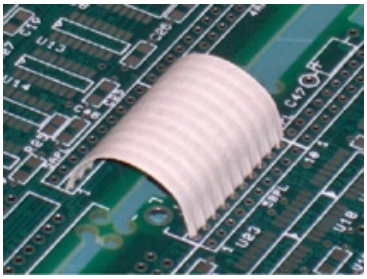
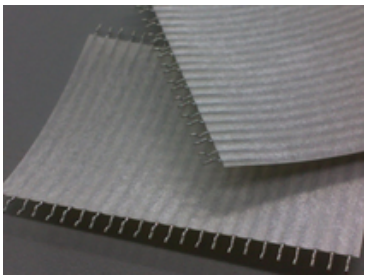
5.THE FINISHED PRODUCT CHARACTERISTIC

Note:Only applicable to 2.54mm Pitch,Conductor Size=0.10× 1.27 or 0.076× 1.57

Item	Test method	Specification
Conductor resistance	JIS-C-3102 at 20°C	0.16Ω/M
Insulation resistance	DC1000V after 1 min	= 100MΩ
Dielectric withstanding voltage between conductors	AC1000V for 1min.	No breakdown
Rated voltage/temperature	--	300V/105°C
Conductor current	--	3A
Heat Resistance	105℃,96hrs	Insulation resistance and dielectric withstanding voltage pass
Temperature cycling	-40℃—85℃—105℃—8 5℃	Insulation resistance and dielectric withstanding voltage pass
Humidity	40℃ 95% RH,96hrs	Insulation resistance and dielectric withstanding voltage pass
Abrasion Test	0.5R/mm,600g,60cycle/min	= 10,000cycles
Flexing Test	25R/mm,300mm,60cycle/min	= 1,000,000cycles
UL Flame Rating	--	UL VW-1

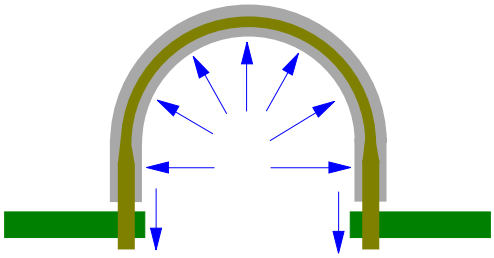
1. APPLICATION SCOPE

The flexible jumper cable is used to connect in between board to board,It may be repeatedly flexed without failure,Round-to-flat conductor design and one-piece construction give vibration-proof reliability and longer life than conventional wiring systems.It has been using widely in electrical appliances,telecommunications systems,industrial electronics,electrical equipmen,military,aerospace realm etc.

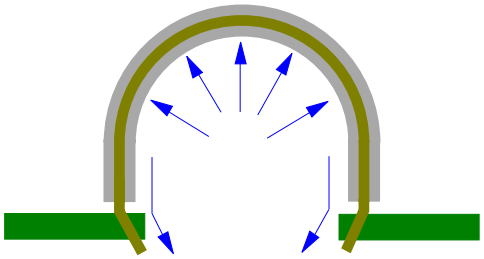

2. DESIGN FEATURES(Assembly Picture)

Flexible jumper



Stress is evenly distributed over the entire flexing area and the two solder ends has been strengthened

Conventional jumper



Easily fracture and bend at the two solder ends

3. THE SPECIFICATION OF FLEXIBLE JUMPER CABLE

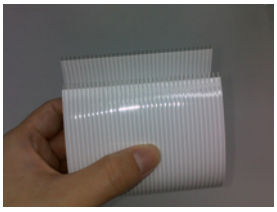
3-1. Number of conductor : 1 to 80(1.27mm pitch),1 to 50(2.0mm pitch),1 to 40(2.54mm pitch), 1 to 10(3.50mm pitch)

3-2. Pitch : 1.27mm,2.0mm,2.54mm,3.50mm(For other Pitch,can be customized)

3-3. Insulation materials : Polyester,Nomex,Teflon,Kapton,Pen,these insulation material are derived from USA Dupont Inc.

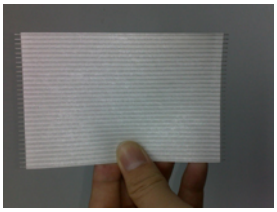
3-4. Conductor material : Copper wire(Tin plated or Gold plated)

4. PRODUCT OVERVIEW



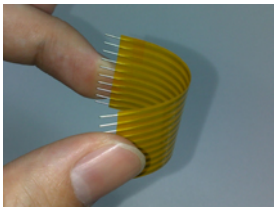
Polyester jumper cable

1. Low cost
2. Inherent dielectric strength
3. Mechanical toughness
4. Thermal stability
5. Non-toxic/flame resistance



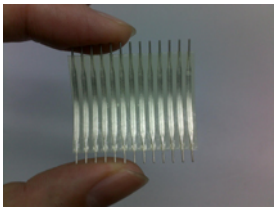
Nomex jumper cable

1. Inherent dielectric strength
2. Mechanical toughness
3. Thermal stability
4. High soldering-temperature resistance,resist 300°C or higher,the time duration more than 60 seconds
5. Chemical resistance/acid & alkali resistant
6. Low-temperature resistant
7. Moisture insensitivity
8. Radiation resistance
9. Non-toxic/flame resistance



Kapton jumper cable

1. Inherent dielectric strength
2. Mechanical toughness
3. Thermal stability
4. High soldering-temperature resistance,resist 300°C or higher,the time duration more than 60 seconds
5. Chemical resistance/acid & alkali resistant
6. Extremely high & low temperature resistance
7. Radiation resistance
8. Non-toxic/flame resistance



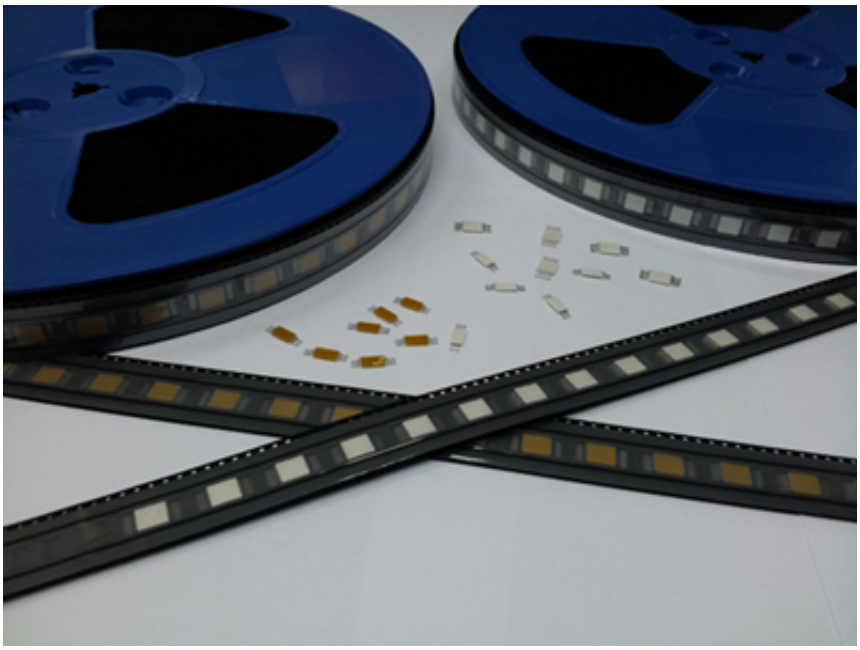
Teflon jumper cable

1. Electrical Reliability
   High dielectric strength, over 6500 V/mil for 1 mil film (260 kV/mm for 0.025 mm film)
   Very low power factor and dielectric constant, only slight change over wide ranges of temperature and frequency.
2. Mechanical toughness
   Superior anti-stick and low frictional properties,High resistance to impact and tearing
   Useful physical properties at cryogenic temperatures
3. High soldering-temperature resistance,resist 300°C or higher,the time duration more than 60 seconds
4. Chemical compatibility
   Inert and resistant to virtually all chemicals
   Low permeability to liquids, gases, moisture, and organic vapors
5. Long Time Weatherability
   Inert to outdoor exposure; no measurable change after 20 years in Florida
   High transmittance of ultraviolet and all but far infrared radiation

5. THE FINISHED PRODUCT CHARACTERISTIC

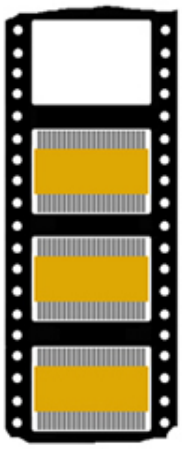
Conductor Pitch		1.27mm(0.050")	2.0mm(0.07874")	2.54mm(0.100")	3.50mm(0.1378")
Wire Gauge		28AWG	26AWG	24AWG	19AWG
Wire Diameter		0.32mm(0.0126")	0.40mm(0.0159")	0.51mm(0.0201")	0.91mm(0.0359")
Min. Bend Radius		3.18mm	3.18mm	3.18mm	3.18mm
Current Rating		1.6A	2.0A	3.0A	7.0A
Voltage Rating		300V	300V	300V	300V
Min. Breakdown Voltage at 1 min.		2000V	2000V	2000V	2000V
Application Temperature Range(°C) (For Soldering)	Polyester	200/4sec	200/4sec	250/4sec	250/4sec
	Nomex	300/60sec	300/60sec	300/60sec	300/60sec
	Teflon	300/60sec	300/60sec	300/60sec	300/60sec
	Kapton	300/60sec	300/60sec	300/60sec	300/60sec
Operating Temperature(°C)	Polyester	-40 to +105	-40 to +105	-40 to +105	-40 to +105
	Nomex	-40 to +125	-40 to +125	-40 to +125	-40 to +125
	Teflon	-40 to +150	-40 to +150	-40 to +150	-40 to +150
	Kapton	-40 to +150	-40 to +150	-40 to +150	-40 to +150

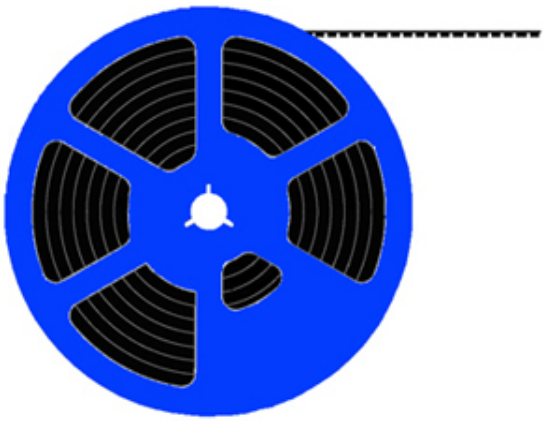
1. APPLICATION SCOPE



The SMD jumper cable is used to connect in between board to board,It is packaged in tape-reel,all pick and place processes by SMD automatic placement machine,apply to the reflow soldering for surface mount interconnect(SMI);small size,vibration-proof reliability,excellent flexibility and high temperature resistance.

2. TAPE-REEL PACKING

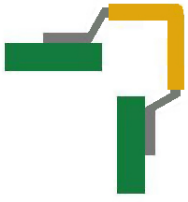




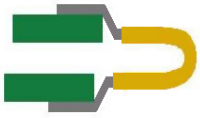
3. ASSEMBLY PICTURE

board to board interconnection

90 degrees board to board interconnection



180 degrees board to board interconnection



4. THE SPECIFICATION OF SMD JUMPER CABLE

4-1.Pitch:0.5mm,0.93mm(For other Pitch,can be customized)

4-2.Number of conductor:8 to 50pins(0.5mm pitch),4 to 50pins(0.93mm pitch)

4-3.The total length of SMD jumper cable:12mm,15.2mm,25.4mm(For other length,can be customized)

4-4.Insulation materials:Nomex,Kapton(Polyimide),these insulation materials are derived from USA Dupont Inc.

4-5.Conductor material:Tin plated copper wire

5. THE CHARACTERISTIC OF FINISHED PRODUCT

Pitch		0.5mm	0.93mm
Wire Gauge		30AWG	28AWG
Min. Bend Radius		5mm	5mm
Current Rating		1.0A	1.5A
Voltage Rating		200V	200V
Min. Breakdown Voltage at 1 min.		1000V	1000V
Insulation Resistance (at DC500V)	Nomex	2×10^{12} Ohm	2×10^{12} Ohm
	Kapton	2×10^{12} Ohm	2×10^{12} Ohm
Application Temperature Range(°C) (For Reflow Soldering)	Nomex	300/60sec	300/60sec
	Kapton	300/60sec	300/60sec
Operating Temperature (°C)	Nomex	-40 to 125	-40 to 125
	Kapton	-40 to 150	-40 to 150

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