JUDD WIRE, INC.

Flexible Flat Cable

SUMITOMO ELECTRIC GROUP

SUMI-CARD®

RoHS Directive
Lead Free | Hg Free | Cd Free | Cr^{6+} Free | PBB Free | PBDE Free

Constructions

Item		Detail		
Symbol name		SMCD	SML2CD	SML2XCD
Conductor	Standard	Tinned copper (Thickness of tin plating : Min.1 μm)		
	SNT2	Anti-Whisker tinned copper (Thickness of tin plating : 0.4+0.2/-0.1 μm, pure tin plating : 0.1±0.1 μm)		
Insulation	Insulation layer	Polyester		
	Adhesive layer	Flame-retardant PVC	Flame-retardant polyester	Irradiated flame-retardant polyolefin
	Color	White		
Supporting tape	Material	Polyester		
	Color	Blue		

Properties (Example)

Symbol name		SMCD	SML2CD	SML2XCD
Conductor	Nominal dimension	0.1×0.8mm	0.035×0.8mm	0.035×0.8mm
	Pitch	1.25mm	1.25mm	1.25mm
Flame Test		VW-1 Pass		
Conductor resistance		Max. 260Ω/km	Max. 750Ω/km	Max. 750Ω/km
Insulation resistance		Min. 1,000MΩ-m		
Dielectric strength (Between adjacent conductors)		AC500V-1min No Dielectric Breakdown	AC500V-1min No Dielectric Breakdown	AC2,500V-1min No Dielectric Breakdown
Flexing test	Sliding test	15mmR Min. 100,000 cycles	15mmR Min.15 million cycles	5mmR Min. 500,000 cycles
	180° Folding test	Min. 20 cycles	Min. 100 cycles	Min. 50 cycles
Abrasion test (φ0.5mm, 600g)		Min. 10,000 cycles		

UL Style No. and Products

Symbol name	UL style No.	UL rating	Conductor thickness (B) (mm)	Cable thickness (T) (mm)	Pitch (mm)		
					1.25	1.0	0.5
SMCD	2896	80℃, 30 V	0.10	0.30	○	○	×
			0.05	0.25	○	○	×
	2896 Thin type	80℃, 30 V	0.05	0.17	○	○	×
	20624	80℃, 60 V	0.10	0.30	○	○	×
			0.05	0.25	○	○	×
SML2CD	2896	80℃, 30 V	0.05	0.20	○	○	△
			0.035	0.18	○	○	△
	2896 Thin type	80℃, 30 V	0.035	0.11	○	○	○
	20624	80℃, 60 V	0.05	0.20	○	○	△
			0.035	0.18	○	○	○
	20861	105℃, 60 V	0.05	0.16	○	○	△
			0.035	0.14	○	○	○
	21147 Halogen Free	80℃, 60 V	0.05	0.14	○	○	○
			0.035	0.12	○	○	○
SML2XCD	20783	105℃, 300 V	0.05	0.20	○	○	×
			0.035	0.18	○	○	×
	20941	105℃, 90 V	0.05	0.18	△	△	○
			0.035	0.16	△	△	○

○ : Sumitomo standard △ : Special specification × : Unavailable

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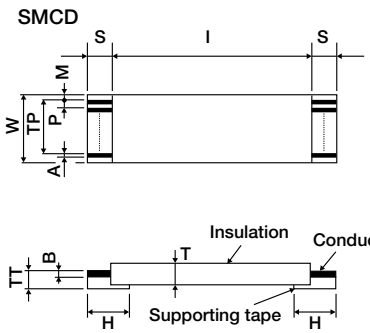
Nominal Dimension

Unit : mm

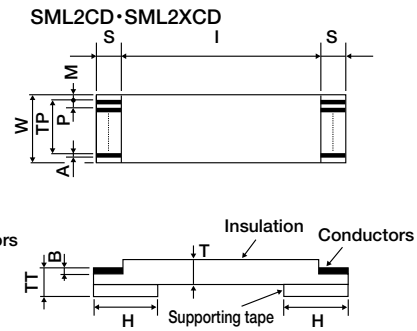
Item	Dimension			
Pitch (P)	1.25	1.0		0.5
Conductor width (A)	0.80	0.70	0.60	0.30
Margin width (M)	0.85	0.65	0.70	0.35
Total pitch (TP)	P×(n-1)			
Cable width (W)	P×(n+1)			
Insulation length (I)	Min. 20 (P1.25, P1.0 AD type ： Min. 30)			
Terminal thickness (TT)	0.30			
Strip length (S)	4, 5, 6			
Supporting tape length (H)	6, 8, 10, 15, 20			

n=number of conductors

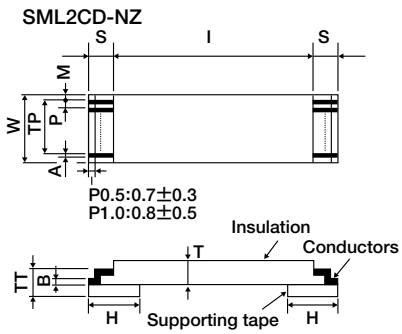
SMCD



SML2CD・SML2XCD



SML2CD-NZ



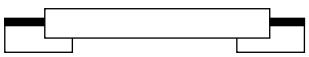
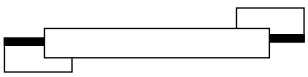
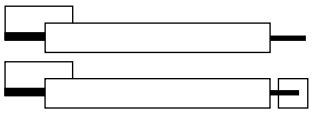
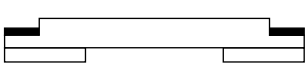
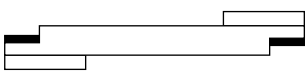
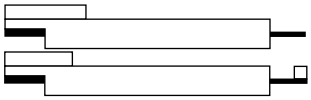
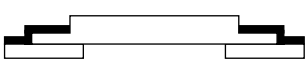
NomenClature

□ — n × I — □ × □ (BL) — P □ — S □ — □ UL □

- Symbol name
- Number of conductors
- Insulation length
- Processing
- Supporting tape length
- Supporting tape color
- Pitch
- Strip length
- Special processing form
- UL Style No.

①Processing	K	：Special processing
②Insulation	M	：UL marking
	B	：Black color
	F	：Thin type
	HF	：Halogen Free
③Conductor	T	：Conductor width 0.8mm
	T(0.6)	：Conductor width 0.6mm
	N	：Conductor thickness 0.05mm
	N(35)	：Conductor thickness 0.035mm
	SNT2	：Anti-Whisker
④Other	NZ	：NON-ZIF connector type

Processing Form

	BD Supporting tapes at both ends are on the same side	AD Supporting tapes at both ends are on the opposite side	ES Supporting tapes at one end, and the other end is stripped for soldering(including semi-strip type)
SMCD			
SML2CD SML2XCD			
SML2CD-NZ			

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Au-PLATING SUMI-CARD®

RoHS Directive

Lead Free | Hg Free | Cd Free | Cr^{6+} Free | PBB Free | PBDE Free

Constructions

Item		Detail
Symbol name		SML2CD
Conductor	Material	Annealed copper
	Plating (Whole)	Nickle (Thickness ：Min. 0.3 μm)
	Plating (Terminal)	Au (Thickness ：Min. 0.05 μm)
Insulation	Insulation layer	Polyester
	Adhesive layer	Flame-retardant polyester
	Color	White
Supporting tape	Material	Polyester
	Color	Blue

Properties

		Detail	
Conductor nominal dimension		0.035×0.3mm	0.05×0.7mm
Pitch		0.5mm	1.0mm
Flame test		VW-1 Pass	
Conductor resistance		Max. 2,200Ω/km	Max. 600Ω/km
Insulation resistance		Min. 1,000MΩ-m	
Dielectric strength(Between adjacent conductors)		AC500V-1min No Dielectric Breakdown	
Flexing test	Sliding test	5mmR Min. 10,000 cycles	10mmR Min. 10,000 cycles
	180° Folding test	Min. 30 cycles	Min. 100 cycles
Abrasion test (φ0.5mm, 600g)		Min. 10,000 cycles	

UL Style No. and Products

Symbol name	UL style No.	UL rating	Conductor thickness (B) (mm)	Cable thickness (T) (mm)	Pitch (mm)	
					1.0	0.5
SML2CD	2896 Thin type	80℃, 30 V	0.035	0.11	×	○
	20861	105℃, 60 V	0.05	0.16	○	×
			0.035	0.14	△	○

○：Sumitomo standard △：Special specification ×：Unavailable

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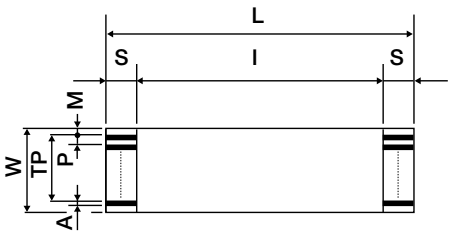
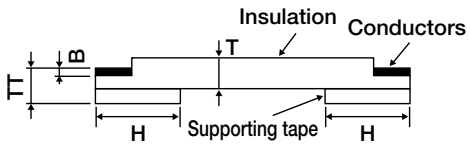
Nominal Dimension

Unit : mm

Item	Dimension	
Pitch (P)	1.0	0.5
Conductor width (A)	0.70	0.30
Margin width (M)	0.65	0.35
Total pitch (TP)	P×(n-1)	
Cable width (W)	P×(n+1)	
Insulation length (I)	Min. 30	Min. 20
Cable length (L)	Max. 650mm	
Terminal thickness (TT)	0.30	
Strip length (S)	4, 5	3, 4, 5
Supporting tape length (H)	6, 8, 10	5, 6, 8

n=number of conductors





NomenClature

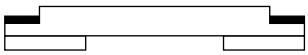
SML2CD — n × I — □ × □ (BL) — P □ — S □ — □ — AUP UL □

- Symbol name
- Number of conductors
- Insulation length
- Processing
- Supporting tape length
- Supporting tape color
- Pitch
- Strip length
- Special processing form
- Au-plating
- UL Style No.

①Processing	K	: Special processing
②Insulation	M F	: UL marking : Thin type
③Conductor	N N(35)	: Conductor thickness 0.05mm : Conductor thickness 0.035mm

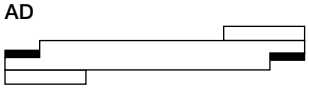
Processing Form

BD



Supporting tapes at both ends are on the same side

AD



Supporting tapes at both ends are on the opposite side

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SHIELDED SUMI-CARD®

RoHS Directive

Lead Free | Hg Free | Cd Free | Cr^{6+} Free | PBB Free | PBDE Free

Constructions

Item		Detail
Symbol name		SML2SC
Conductor		Tinned copper (Thickness of tin plating : Min.1 μm)
Insulation	Insulation layer	Polyester
	Adhesive layer	Flame-retardant polyester
	Color	White
Supporting tape	Material	Polyester
	Color	Blue
Shield tape	Material	PET (Outer) + Metalic layer + Copper coated with Silver (Inner)
Reinforcing tape	Material	Polyimide (outside) +Adhesive (inside)

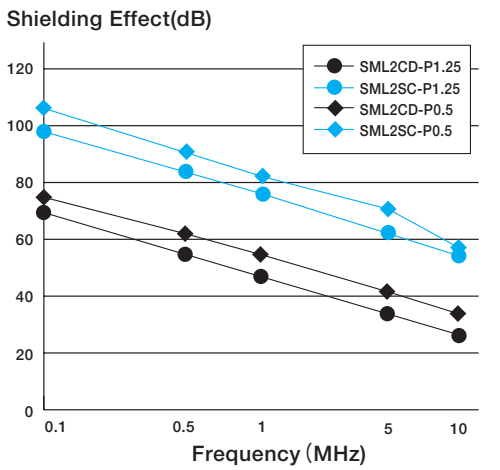
Properties (Example)

Item		Detail
Conductor nominal dimension		0.035×0.3mm
Pitch		0.5mm
Flame test		VW-1 Pass
Conductor resistance		Max. 2,200Ω/km
Insulation resistance		Min. 1,000MΩ-m
Dielectric strength	Between adjacent conductors	AC500V-1min No Dielectric Breakdown
	Conductors / Shield	AC250V-1min No Dielectric Breakdown
Capacitance		624 pF/m (ref.)
Flexing test	Sliding test	15mmR Min. 1,500 cycles
	180° Folding test	Min. 30 cycles
Abrasion test (φ0.5mm, 600g)		Min. 200 cycles

Shielding Effect

	0.1MHz	0.5MHz	1MHz	5MHz	10MHz
SML2CD-P1.25	69.4	55.2	48.7	34.4	28.2
SML2SC-P1.25	96.5	82.2	76.4	61.4	55.6
SML2CD-P0.5	75.2	60.8	55.7	40.6	34.9
SML2SC-P0.5	104.2	90.3	81.7	70.4	56.5

(dB)



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UL Style No. and Products

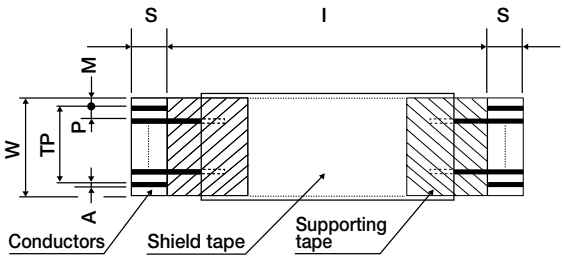
Symbol name	UL style No.	UL rating	Conductor Thickness (B) (mm)	Cable Thickness (T) (mm)
SML2SC	2896	80℃, 30 V	0.035	0.26
	2896 Thin type	80℃, 30 V		0.20
	20861	105℃, 60 V		0.24
	21147 Halogen Free	80℃, 60 V		0.22

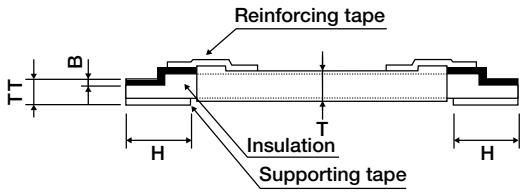
Nominal Dimension

Unit : mm

Item	Dimension		
Pitch (P)	1.25	1.0	0.5
Conductor width (A)	0.80	0.70	0.30
Margin width (M)	0.85	0.65	0.35
Total pitch (TP)	P×(n-1)		
Cable width (W)	P×(n+1)		
Insulation length (I)	Min. 20		
Terminal thickness (TT)	0.30		
Strip length (S)	4, 5, 6		3, 4
Supporting tape length (H)	Strip length + Max. 2mm		

n=number of conductors





※Because there is limitation on specifications, please talk about a combination of strip length and supporting tape length with our sales office.

NomenClature

SML2SC — n (n1) × I — □ × □ (BL) — P □ — S □ — □ — CUP UL □

- Number of conductors
- Number of ground conductors
- Insulation length
- Processing
- Supporting tape length
- Supporting tape color
- Pitch
- Strip length
- Special processing form
- Kind of Shield tape
- UL Style No.

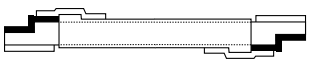
①Processing	K	: Special processing
②Insulation	M	: UL marking
	F	: Thin type
	HF	: Halogen Free
③Conductor	N(35)	: Conductor thickness 0.035mm

Processing Form

BD

Supporting tapes at both ends are on the same side

AD



Supporting tapes at both ends are on the opposite side

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JUMPER LEAD WIRE

RoHS Directive

Lead Free | Hg Free | Cd Free | Cr^{6+} Free | PBB Free | PBDE Free

Constructions

UL Style No.		2651		2896	4478 Halogen Free	20731	
UL rating		105℃, 300V		80℃, 30V	105℃, 300V	80℃, 60V	
Symbol name		SMV2J	SMV2RJ	SML2VJ	SMV2RJ-HF	SMV2J-U	
Conductor		7/0.16 (OM-1S) 7/0.16 (OM-CP)		0.1×0.5 (TPBR) 0.1×0.3 (TPBR)	7/0.16 (OM-1S) 7/0.16 (OM-CP)	7/0.16 (OM-1S)	0.1×0.5 (TPBR) 0.1×0.3 (TPBR)
Insulation	Material	FRPVC	FRXLPVC	Polyester(Outer) +FRPVC(inner)	FRXL polyethylene	FRPVC+PET	
	Color	Sky blue	Ivory white	White	White	Transparent	

Properties

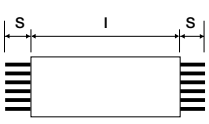
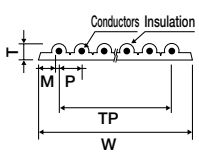
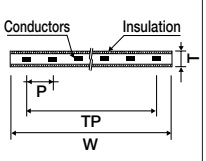
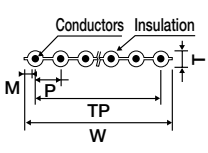
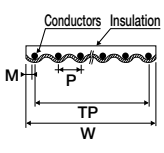
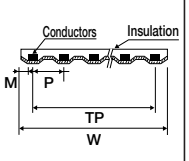
UL Style No.	2651	2896	4478 Halogen Free	20731	
Flame test	VW-1 Pass				
Conductor resistance	Max. 175Ω/km (OM-1S) Max. 286Ω/km (OM-CP)	Max. 3,000Ω/km (0.1×0.5) Max. 5,000Ω/km (0.1×0.3)	Max. 175Ω/km (OM-1S) Max. 286Ω/km (OM-CP)	Max. 175Ω/km	Max. 3,000Ω/km (0.1×0.5) Max. 5,000Ω/km (0.1×0.3)
Insulation resistance	Min. 1,000MΩ-m				
Dielectric strength (Conductors / Water)	AC2,000V-1min No Dielectric Breakdown	AC500V-1min No Dielectric Breakdown	AC2,000V-1min No Dielectric Breakdown	AC1,000V-1min No Dielectric Breakdown	

Nominal Dimension

Unit : mm

UL Style No.	2651	2896	4478 Halogen Free	20731
Pitch (P)	1.25, 1.5, 2.0, 2.5, 2.54	0.8, 1.0, 1.25, 2.0, 2.5, 2.54	1.5, 2.0, 2.5, 2.54	0.8, 1.0, 1.25, 2.0, 2.5, 2.54
Total pitch (TP)	P×(n-1)			
Cable width (W)	P×n	P×n (P≦1.5 : P×(n+1))	P×n	P×n (P≦1.5 : P×(n+1))
Cable thickness (T)	0.95	0.31	0.95	Round conductor : 0.65 Square conductor : 0.45
Insulation length (I)	Min. 20	Min. 15	Min. 20	4～20
Strip length (S)	Standard : 3, 3.5, 4, 4.5, 5 Semi-strip(4.5)			Standard : 3, 3.5
	Forming 3.5F～5F	–	Forming 3.5F～5F	–

Shape

UL Style No.	2651	2896	4478 Halogen Free	20731	
					

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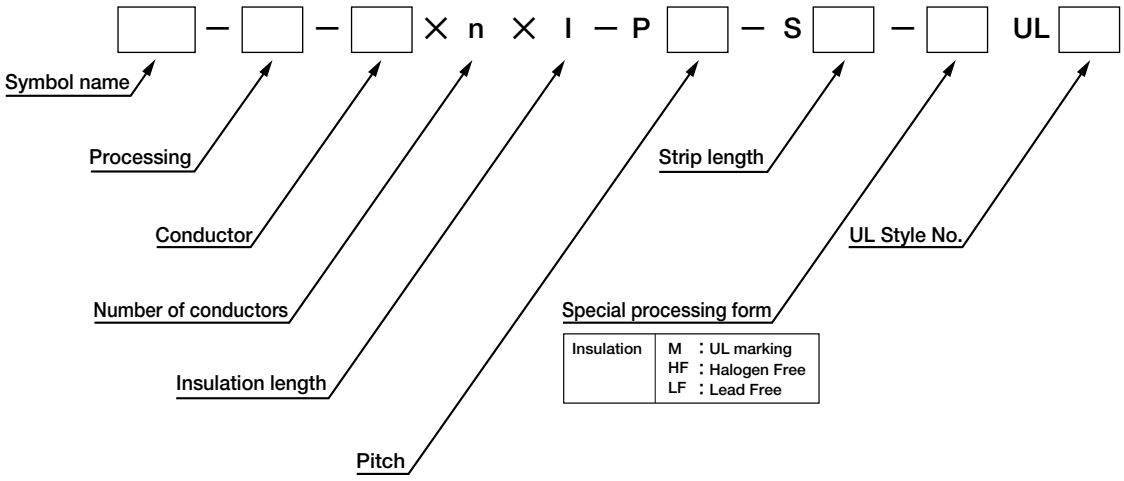
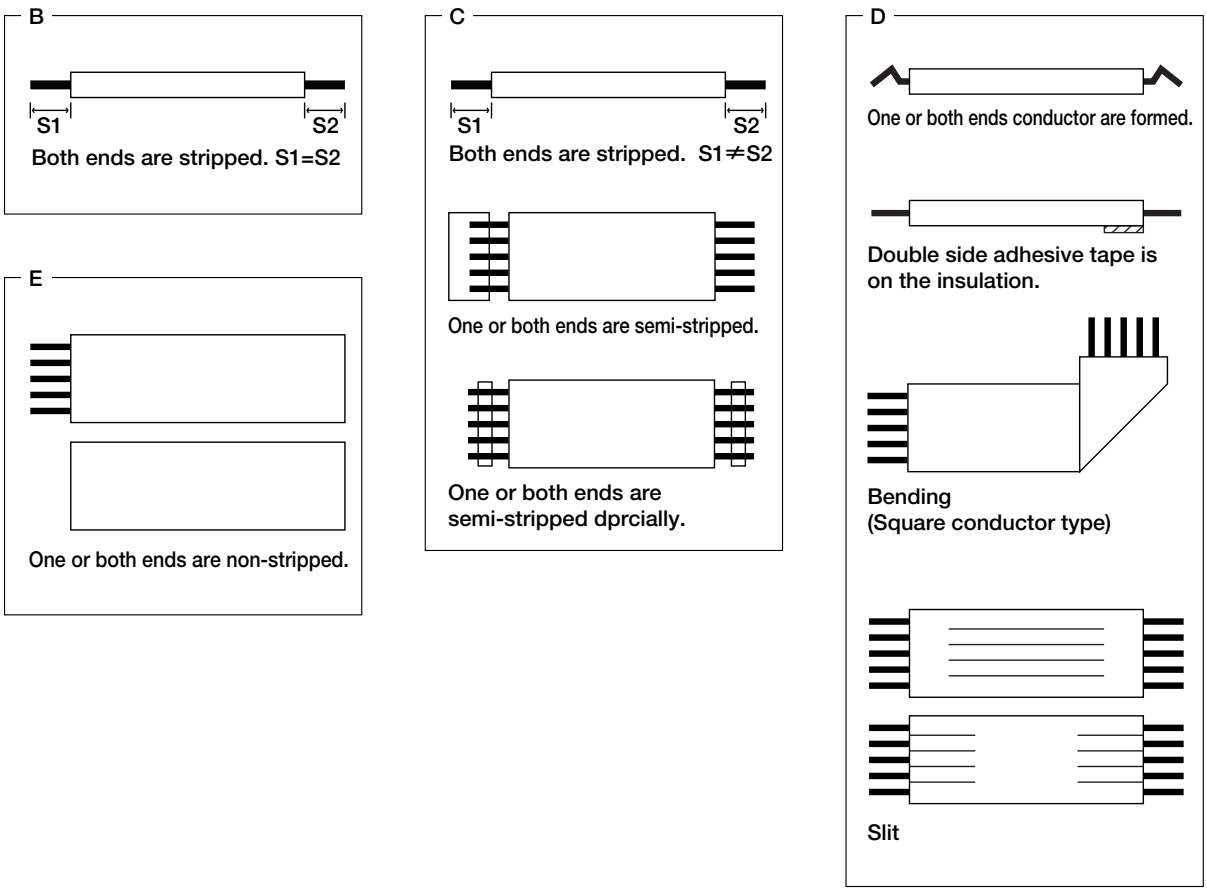
NomenClature



Processing Form



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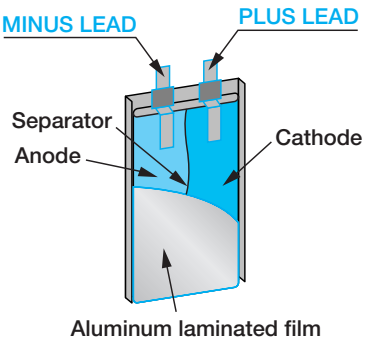
TAB-LEAD

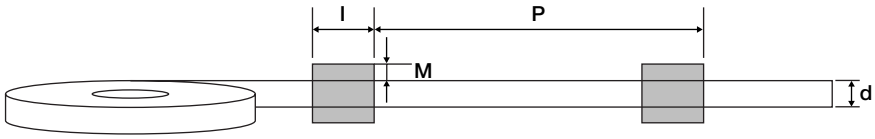
RoHS Directive

Lead Free | Hg Free | Cd Free | Cr^{6+} Free | PBB Free | PBDE Free | PVC Free | Halogen Free

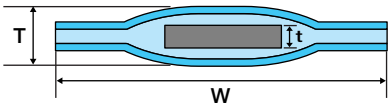
Constructions

Item		PLUS LEAD	MINUS LEAD
Conductor		Aluminum (Surface treatment non-Cr)	Nickel
			Nickel (Surface treatment non-Cr)
			Nickel plated copper (Surface treatment Cr^{3+})
Insulation	Heat resistance layer	Heat resistant PP (Gray)	
	Adhesive layer	Modified PP (Melting point ： PP=140℃)	
Shipment form		Reel・・・hole diameter for the shaft：100mm, outer diameter：400mm	





Section of TAB LEAD



Nominal Dimension

Unit : mm

Item		Dimension					
Conductor width (d)		2.0	3.0	4.0	5.0	7.0	10.0
Conductor thickness (t)		0.1	0.08, 0.1				
Margin width (M)		1.0, 1.5, 2.0			2.0		
Total thickness (T)	Standard	t＋0.2					
	F type	t＋0.14					
	SF type	t＋0.12					
Insulation pitch on the conductor		Min. 20					
Insulation length (l)		4.0～15.0					
Insulation width (W)		d＋(M×2)					

NomenClature

Example)
PLUS LEAD-0.08×4.0(ALF-O)×1×50-P8.0-PP(7.5)-COIL
MINUS LEAD-0.08×4.0(N I - O)×1×50-P8.0-PP(7.5)-COIL

□ − □ × □ (□) × n × □ − P □ − □ − COIL

- Symbol name: PLUS LEAD / MINUS LEAD
- Conductor thickness
- Conductor width
- Kind of conductor
- Number of conductors
- Insulation pitch on the conductor
- Insulation width
- Insulation (Insulation length)

Kind of conductor	
ALF-O	：Aluminum (Surface treatment non-Cr)
NI-O	：Nickel
NIF-O	：Nickel (Surface treatment non-Cr)
NICU-O	：Nickel plated copper (Surface treatment Cr^{3+})

Insulation ( ) means insulation length	
PP( )	：Standard
PP( )F	：F type
PP( )SF	：SF type

※This product is not suitable for automobile application in some cases. Please contact our sales office before you use this product.
※This specification is subject to change without a prior announcement.