

Automotive Cables



Caleb Cable provides a wide range of automotive wires and cables, and cable assembly. Our range includes single core wires and multi-core cables, as well as the car antenna cable of RG58, RG174 and RTK 031, 1.5DS/QFB etc.

Our RTK-031 cable, together with the Fakra connectors, can provide one cable solution for GPS navigation system, AM/FM radio, and mobile phone applications in car.

Our end users include Ford and BMW.

Automotive Cables

Description	Page
Standards.....	9.3
Certificate.....	9.4
Germany Standard	
FLY.....	9.5
FLYY	9.6
Japanese Standard	
AV.....	9.7
CAVS.....	9.8
American Standard	
TWP.....	9.9
GPT	9.10
RG58 C/U.....	9.11
RG174 A/U.....	9.11
RTK031.....	9.12

Standards

Global Standards

ISO 6722

SAE J 1128 Engineering Society for Advancing Mobility Land, Sea Air and Space

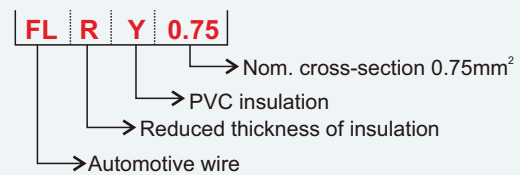
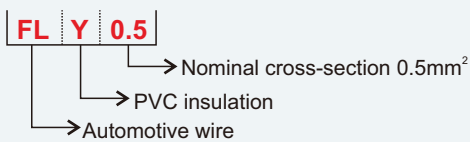
TWP	Thin wall, thermoplastic insulated
GPT	General purpose, thermoplastic insulated
HDT	Heavy duty, thermoplastic insulated
TXL	Thin wall, cross-linked polyolefin insulated
GXL	General purpose, cross-linked polyolefin insulated
SXL	Special purpose, cross-linked polyolefin insulated
TWE	Thin wall, thermoplastic elastomer insulated
GTE	General purpose, thermoplastic elastomer insulated
HTE	Heavy duty, thermoplastic elastomer insulated

JASO D 609-90 Japanese Automobile Standard

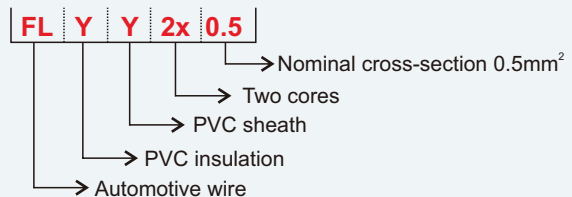
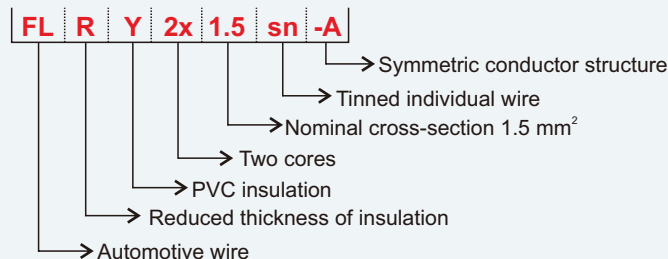
AV	Vinyl insulated low tension electric cable for automobiles
AVS	Low tension cable with reduced outside diameter for automobiles; general wall thickness
AVSS	Low tension cable with reduced outside diameter for automobiles; thin wall thickness
AVSSf	Low tension cable with reduced outside diameter for automobiles; thin wall thickness; high flexibility
CAVS	Construction of conductors pressed in circular shape; low tension cable with reduced outside diameter for automobiles; general wall thickness
AVX	Cross-linked vinyl heat-resistant low-tension cable for automobiles
AEX	Cross-linked polyethylene heat-resistant low-tension cable for automobiles

Name Designation for German Type

1. Single core wires



2. Multi-core cables



Certificate



Germany Standard



single core cable

FLY



Technical data

- Temperature range: -25 °C to +105 °C

Cable structure

- Conductors: bare copper
- Insulation: PVC

Special properties

- Conductors >6 mm² are suitable for use as battery cables
- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- Excellent electrical characteristics

Standard

- ISO 6722 Class B

Application

FLY single core wire is used for the wiring of the automotive application.

NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Resistance at 20°C Ω/km	Outer Diameter Min. mm	Outer Diameter Max. mm	Cable Weight kg/km
1 x 0.50	1.00	37.10	2.00	2.30	8
1 x 0.75	1.20	24.70	2.20	2.50	12
1 x 1.00	1.35	18.50	2.40	2.70	15
1 x 1.50	1.70	12.70	2.70	3.00	20
1 x 2.00	2.00	9.42	2.90	3.20	26
1 x 2.50	2.20	7.60	3.30	3.70	32
1 x 3.00	2.50	6.00	3.50	3.90	37
1 x 4.00	2.75	4.71	4.00	4.40	49
1 x 6.00	3.30	3.14	4.60	5.00	68

Battery Cables

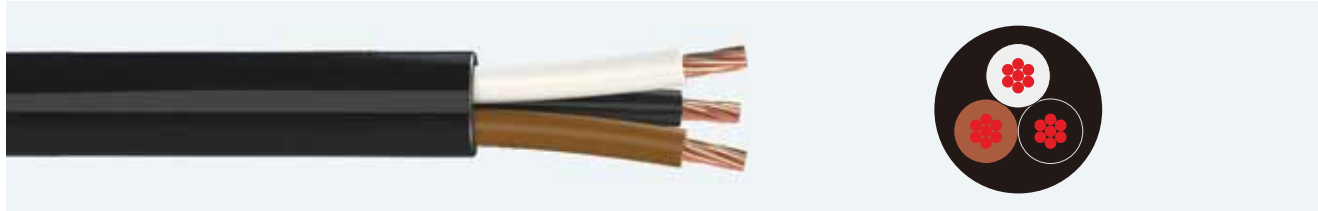
1 x 10.0	4.50	1.82	6.00	6.50	117
1 x 16.0	6.30	1.16	8.30	8.30	193
1 x 25.0	7.80	0.74	10.40	10.40	274
1 x 35.0	9.00	0.53	11.60	11.60	397
1 x 50.0	10.50	0.37	13.50	13.50	547
1 x 70.0	12.50	0.26	15.50	15.50	769
1 x 95.0	14.80	0.20	18.00	18.00	990
1 x 120.0	16.50	0.15	19.70	19.70	1250

Germany Standard



Multi-Core cable

FLYY



Technical data

- **Temperature range:** -40 °C to +105 °C

Cable structure

- Conductors: bare copper
- Insulation: PVC
- Sheath: PVC

Special properties

- Conductors >6 mm² are suitable for use as battery cables
- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- Excellent electrical characteristics

Standard

- ISO 6722 Class B

Application

FLYY multi-core cable is used for the wiring of the automotive application.

NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Resistance at 20°C Ω/km	Outer Diameter Min. mm	Outer Diameter Max. mm	Cable Weight kg/km
2 x 0.50	1.00	37.10	4.30	4.70	31
2 x 0.75	1.20	24.70	5.40	5.80	48
2 x 1.00	1.35	18.50	6.40	6.80	65
2 x 1.50	1.70	12.70	7.00	7.50	83
3 x 0.50	1.00	37.10	5.80	6.20	53
3 x 0.75	1.20	24.70	5.70	6.30	60
3 x 1.00	1.35	18.50	6.90	7.50	81
3 x 1.50	1.70	12.70	6.90	7.50	98

Japanese Standard



AV



Technical data

- Temperature range: -40 °C to +85 °C

Cable structure

- Conductors: bare copper
- Insulation: PVC

Special properties

- Intermittent temperature (48h): 120 °C
- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- Excellent electrical characteristics

Standard

- JIS C 3406

Application

AV single core wire is used for the low voltage circuits of the automotive application.

NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Resistance at 20°C Ω/km	Outer Diameter Min. mm	Outer Diameter Max. mm	Cable Weight kg/km
1 x 0.50	1.00	32.70	2.20	2.40	10
1 x 0.85	1.20	20.80	2.60	2.60	13
1 x 1.25	1.50	14.30	2.90	2.60	17
1 x 2.00	1.90	8.81	3.40	3.40	26
1 x 3.00	2.40	5.59	4.10	4.10	40
1 x 5.00	3.00	3.50	4.90	4.90	62
1 x 8.00	3.70	2.32	5.80	5.80	92
1 x 10.0	4.50	1.84	6.90	6.90	120
1 x 15.0	4.80	1.38	7.40	7.40	160
1 x 20.0	6.10	0.89	8.30	8.80	226
1 x 30.0	8.00	0.52	10.80	11.50	384
1 x 40.0	8.60	0.43	11.40	12.10	462
1 x 50.0	9.80	0.34	13.00	13.80	583
1 x 60.0	10.40	0.29	13.60	14.40	678
1 x 85.0	12.00	0.22	16.00	17.00	924
1 x 100.0	13.60	0.17	17.60	18.60	1151
1 x 0.5f	1.00	36.70	2.40	2.40	9
1 x 0.75f	1.20	24.40	2.60	2.60	12
1 x 1.25f	1.50	14.70	2.90	2.90	18
1 x 2f	1.80	9.50	3.40	3.40	25
1 x 3f	2.40	5.76	4.10	4.10	40

The "f" in the nominal size column indicates a flexible conductor with a finer wire diameter.

Japanese Standard



CAVS



Technical data

- Temperature range: -40 °C to +80 °C

Cable structure

- Conductors: bare copper
- Insulation: PVC

Special properties

- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- High abrasion resistance
- Excellent electrical characteristics

Standard

- JASO D 611-94

Application

CAVS single core wire is used for the wiring of the automotive application.

NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Resistance at 20°C Ω/km	Outer Diameter Min. mm	Outer Diameter Max. mm	Cable Weight kg/km
1 x 0.30	0.70	50.20	1.40	1.50	3
1 x 0.50	0.90	32.70	1.60	1.70	5
1 x 0.85	1.10	20.80	1.80	1.90	7
1 x 1.25	1.40	14.30	2.10	2.20	10

American Standard



TWP



Technical data

- **Temperature range:** -40 °C to +80 °C (3000 hrs)

Cable structure

- Conductors: bare copper
- Insulation: PVC

Special properties

- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- High abrasion resistance
- Excellent electrical characteristics

Standard

- SAE J1128

Application

TWP single core wire is used for the wiring of the automotive application where there is requirement for the reduced diameter and the smaller weight.

AWG-no.	NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Outer Diameter Max. mm	Cable Weight kg/km
22	1 x 0.35	0.76	1.70	6
20	1 x 0.50	0.97	1.90	8
18	1 x 0.80	1.17	2.20	11
18	1 x 0.80	1.17	2.20	11
16	1 x 1.00	1.45	2.40	15
14	1 x 2.00	1.80	2.70	22
12	1 x 3.00	2.29	3.30	34
10	1 x 5.00	2.87	4.00	53
8*	1 x 8.00	4.06	4.90	85

* for SAE J1128 application only

American Standard GPT



Technical data

- **Temperature range:** -40 °C to +80 °C (3000 hrs)

Cable structure

- Conductors: bare copper
- Insulation: PVC

Special properties

- Resistant to motor fluids, fuels
- Hydrolysis resistant
- Resistant to pressure at high temperatures
- Excellent electrical characteristics

Standard

- SAE J1128

Application

GPT single core wire is used for the general circuit wiring of the automotive application.

AWG-no.	NO. Cores x Cross-sec. mm ²	Conductor Diameter Max. mm	Outer Diameter Max. mm	Cable Weight kg/km
20	1 x 0.50	0.97	1.90	8
18	1 x 0.80	1.17	2.20	11
18	1 x 0.80	1.17	2.20	11
16	1 x 1.00	1.45	2.40	15
14	1 x 2.00	1.80	2.70	22
12	1 x 3.00	2.29	3.30	34
10	1 x 5.00	2.87	4.00	53

RG58 C/U



Construction

Inner Conductor		Insulation		Braiding		Sheath	
Material dia. mm		Material dia. mm		Material		Material dia. mm	
CCA	19 x 0.18	SPE	2.95	TC	92%	PVC	4.95

Electrical Characteristics

- Max. conductor DC resistance at 20°C (Ohm/km) 38.4
- Min. insulation DC resistance at 20°C (MOhm x km) 500
- Rated temperature (°C) 80
- Max. operating voltage (VRMS) 1900
- Rated voltage (V) 30
- Capacitance (pF/m) 103 ± 3
- Velocity ratio (%) 66
- Impedance (Ohm) 50 ± 3

Attenuation at 20 °C (dB/100m)

50 MHz	10.65
200 MHz	22.60
600 MHz	42.00

RG174 A/U



Construction

Inner Conductor		Insulation		Braiding		Sheath	
Material dia. mm		Material dia. mm		Material		Material dia. mm	
CCS	7 x 0.16	SPE	1.52	TC	84%	PVC	2.8

Electrical characteristics

- Max. conductor DC resistance at 20°C (Ohm/km) 441
- Min. insulation DC resistance at 20°C (MOhm x km) 200
- Rated temperature (°C) 80
- Rated voltage (V) 30
- Capacitance (pF/m) 105 ± 3
- Velocity ratio (%) 66
- Impedance (Ohm) 50 ± 3

Attenuation at 20 °C (dB/100m)

10 MHz	9.5
100 MHz	27
200 MHz	40

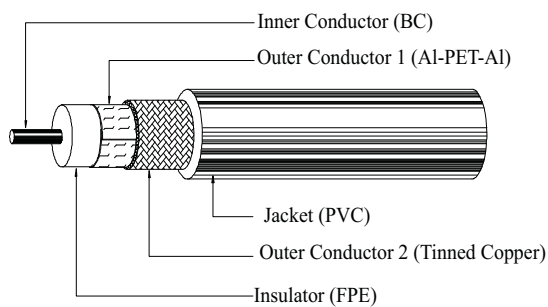
RTK 031



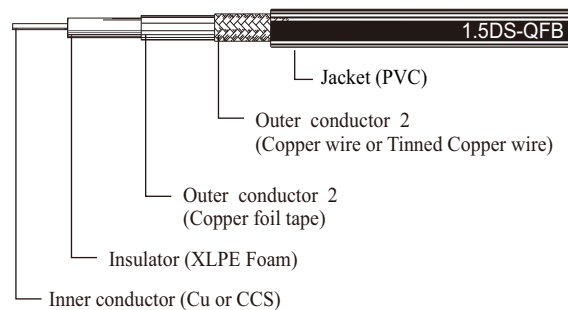
Application

TV, radio, or phone receivers on automobile; Car navigation system (GPS); Wiring inside telecommunications and electronic equipment such as portable phone.

RTK-031



1.5DS-QFB / 2.5DS-QFB / 3.5D-QFB



- Temperature range: -40 °C to 105 °C

- Flame retardancy: IEC 60332-1, 60332-3

- Jacket: PVC/LSZH/PUR

Model	RTK-031	1.5DS-QFB	2.5DS-QFB	3.5D-QFB		
Inner conductor: wires/conductor dia.(mm)	7 x 0.27	7 x 0.20	7 x 0.32	1 x 1.2		
Insulator dia. (mm)	2.1	1.6	2.7	3.5		
Outer conductor 1 (>100%)	AL/PET/AL	Copper Foil	Copper Foil	Copper Foil		
Outer conductor 2	0.1 x 16 x 7	0.10 x 16 x 5	0.08 x 16 x 10	0.14 x 16 x 5		
Outer dia. (mm)	3.2±0.1	3.0±0.2	3.8±0.3	5.6±0.3		
Electrical properties	Max. Conductor resistance (Ohm/km)	48	85	33.3	15.9	
	Capacitance at 1 kHz (nF/km)	85±4	89±4	86±4	86±4	
	Characteristic impedance (Ohm)	50±2	50±2	50±2	50±2	
	Std. attenuation (dB/km)	800 MHz	437	590	420	310
		900 MHz	453	630	450	330
		1500 MHz	605	830	560	440
		1900 MHz	684	950	660	510
		2300 MHz	757	1060	760	570
		2500 MHz	797	1110	800	600
3000 MHz		881	--	--	--	
5800 MHz	--	1790	1260	1030		