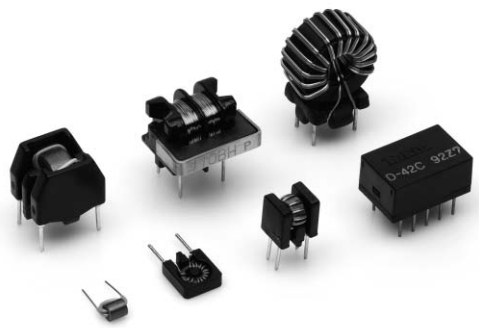
Devices thru Material Innovation

NEC/TOKIN

Vol. 03

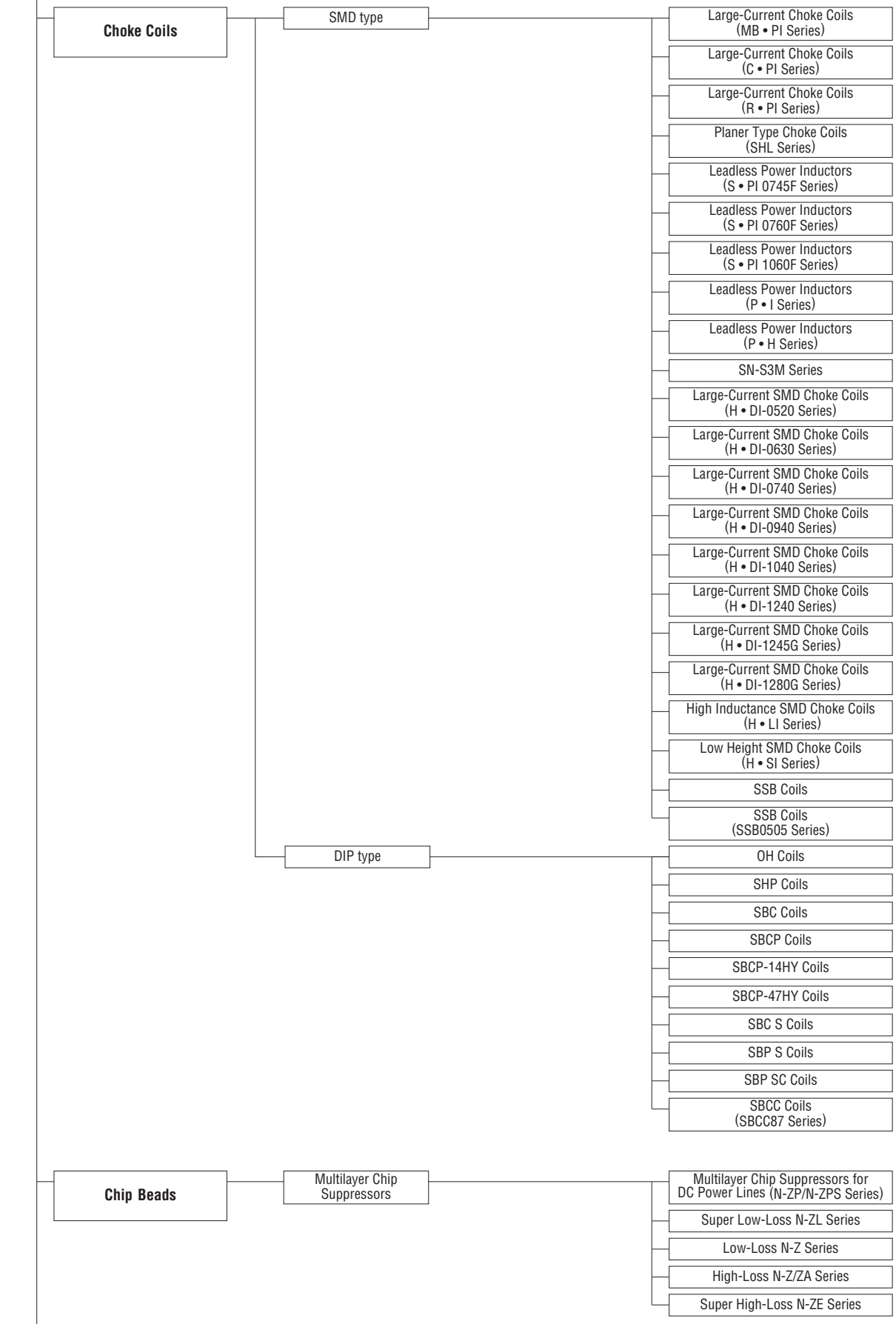
DC Line Filter



DC LINE FILTER

Contents

Classification of NEC TOKIN's EMI suppression parts



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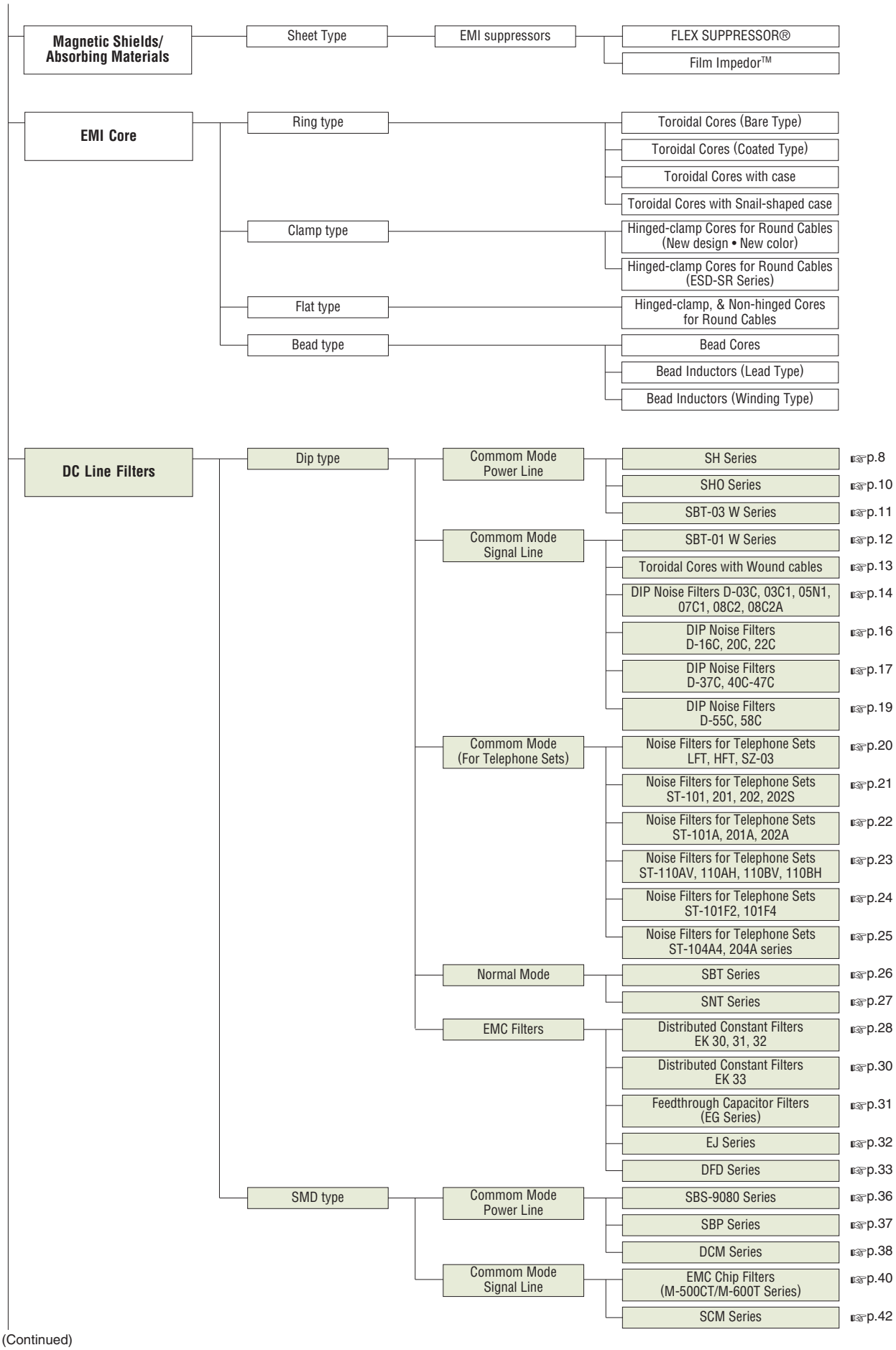
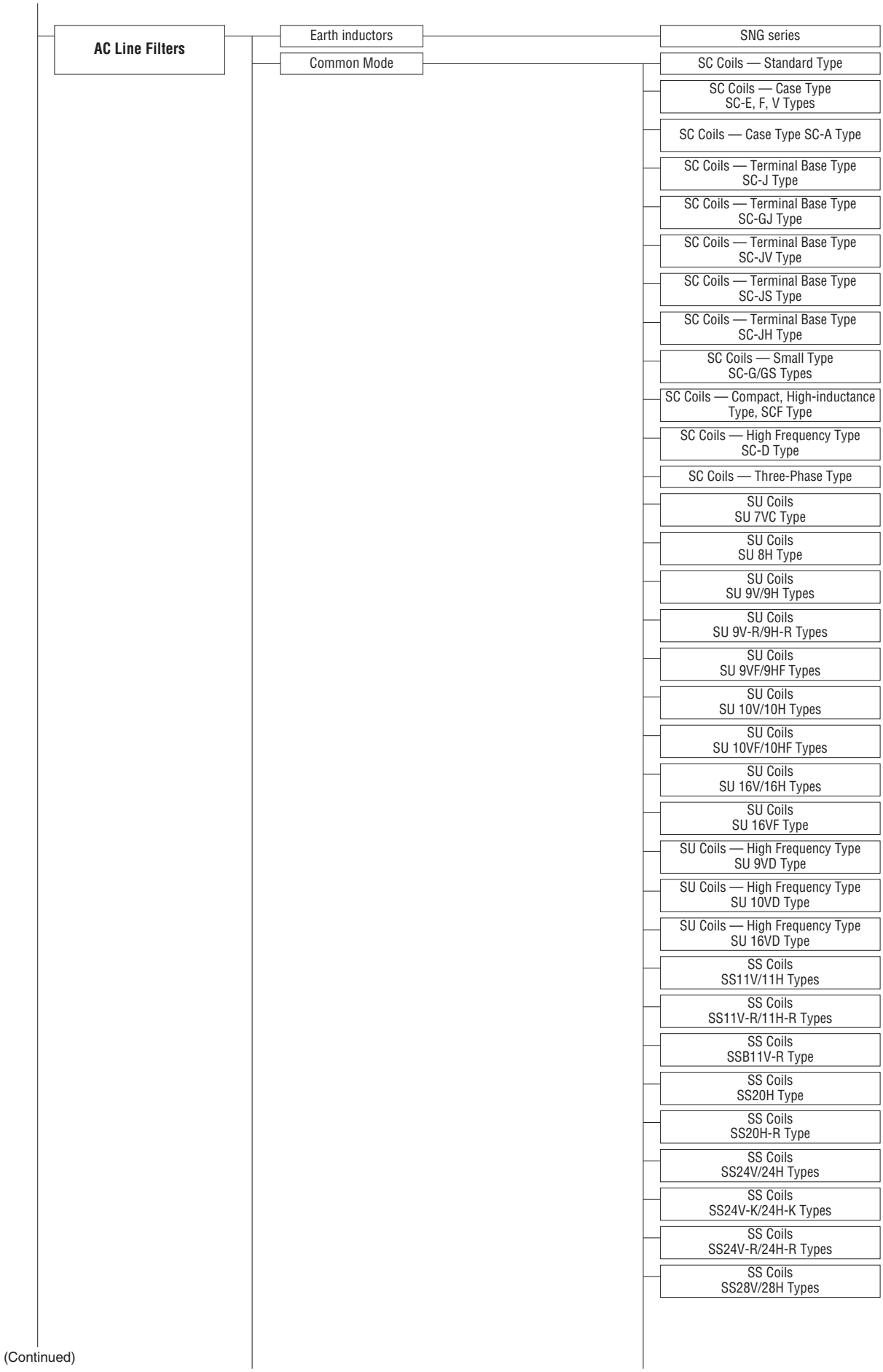

Magnetic Shields/ Absorbing Materials
Sheet Type
EMI suppressors
FLEX SUPPRESSOR®
Film Impedor™
EMI Core
Ring type
Toroidal Cores (Bare Type)
Toroidal Cores (Coated Type)
Toroidal Cores with case
Toroidal Cores with Snail-shaped case
Clamp type
Hinged-clamp Cores for Round Cables (New design • New color)
Hinged-clamp Cores for Round Cables (ESD-SR Series)
Flat type
Hinged-clamp, & Non-hinged Cores for Round Cables
Bead type
Bead Cores
Bead Inductors (Lead Type)
Bead Inductors (Winding Type)
DC Line Filters
Dip type
Commom Mode Power Line
SH Series ☞p.8
SHO Series ☞p.10
SBT-03 W Series ☞p.11
Commom Mode Signal Line
SBT-01 W Series ☞p.12
Toroidal Cores with Wound cables ☞p.13
DIP Noise Filters D-03C, 03C1, 05N1, 07C1, 08C2, 08C2A ☞p.14
DIP Noise Filters D-16C, 20C, 22C ☞p.16
DIP Noise Filters D-37C, 40C-47C ☞p.17
DIP Noise Filters D-55C, 58C ☞p.19
Commom Mode (For Telephone Sets)
Noise Filters for Telephone Sets LFT, HFT, SZ-03 ☞p.20
Noise Filters for Telephone Sets ST-101, 201, 202, 202S ☞p.21
Noise Filters for Telephone Sets ST-101A, 201A, 202A ☞p.22
Noise Filters for Telephone Sets ST-110AV, 110AH, 110BV, 110BH ☞p.23
Noise Filters for Telephone Sets ST-101F2, 101F4 ☞p.24
Noise Filters for Telephone Sets ST-104A4, 204A series ☞p.25
Normal Mode
SBT Series ☞p.26
SNT Series ☞p.27
EMC Filters
Distributed Constant Filters EK 30, 31, 32 ☞p.28
Distributed Constant Filters EK 33 ☞p.30
Feedthrough Capacitor Filters (EG Series) ☞p.31
EJ Series ☞p.32
DFD Series ☞p.33
SMD type
Commom Mode Power Line
SBS-9080 Series ☞p.36
SBP Series ☞p.37
DCM Series ☞p.38
Commom Mode Signal Line
EMC Chip Filters (M-500CT/M-600T Series) ☞p.40
SCM Series ☞p.42

(Continued)


AC Line Filters
Earth inductors
Common Mode
SNG series
SC Coils — Standard Type
SC Coils — Case Type SC-E, F, V Types
SC Coils — Case Type SC-A Type
SC Coils — Terminal Base Type SC-J Type
SC Coils — Terminal Base Type SC-GJ Type
SC Coils — Terminal Base Type SC-JV Type
SC Coils — Terminal Base Type SC-JS Type
SC Coils — Terminal Base Type SC-JH Type
SC Coils — Small Type SC-G/GS Types
SC Coils — Compact, High-inductance Type, SCF Type
SC Coils — High Frequency Type SC-D Type
SC Coils — Three-Phase Type
SU Coils SU 7VC Type
SU Coils SU 8H Type
SU Coils SU 9V/9H Types
SU Coils SU 9V-R/9H-R Types
SU Coils SU 9VF/9HF Types
SU Coils SU 10V/10H Types
SU Coils SU 10VF/10HF Types
SU Coils SU 16V/16H Types
SU Coils SU 16VF Type
SU Coils — High Frequency Type SU 9VD Type
SU Coils — High Frequency Type SU 10VD Type
SU Coils — High Frequency Type SU 16VD Type
SS Coils SS11V/11H Types
SS Coils SS11V-R/11H-R Types
SS Coils SSB11V-R Type
SS Coils SS20H Type
SS Coils SS20H-R Type
SS Coils SS24V/24H Types
SS Coils SS24V-K/24H-K Types
SS Coils SS24V-R/24H-R Types
SS Coils SS28V/28H Types

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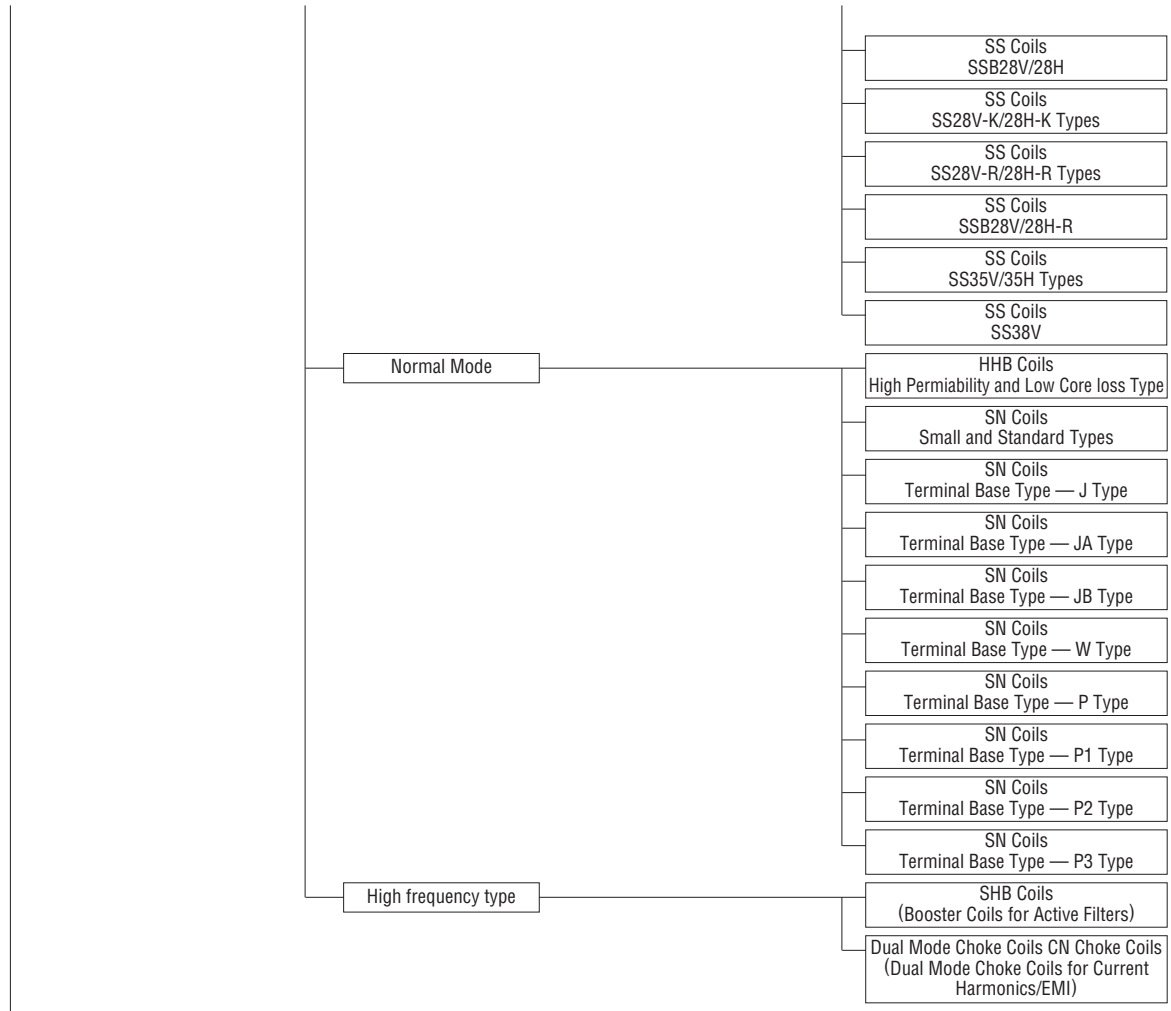
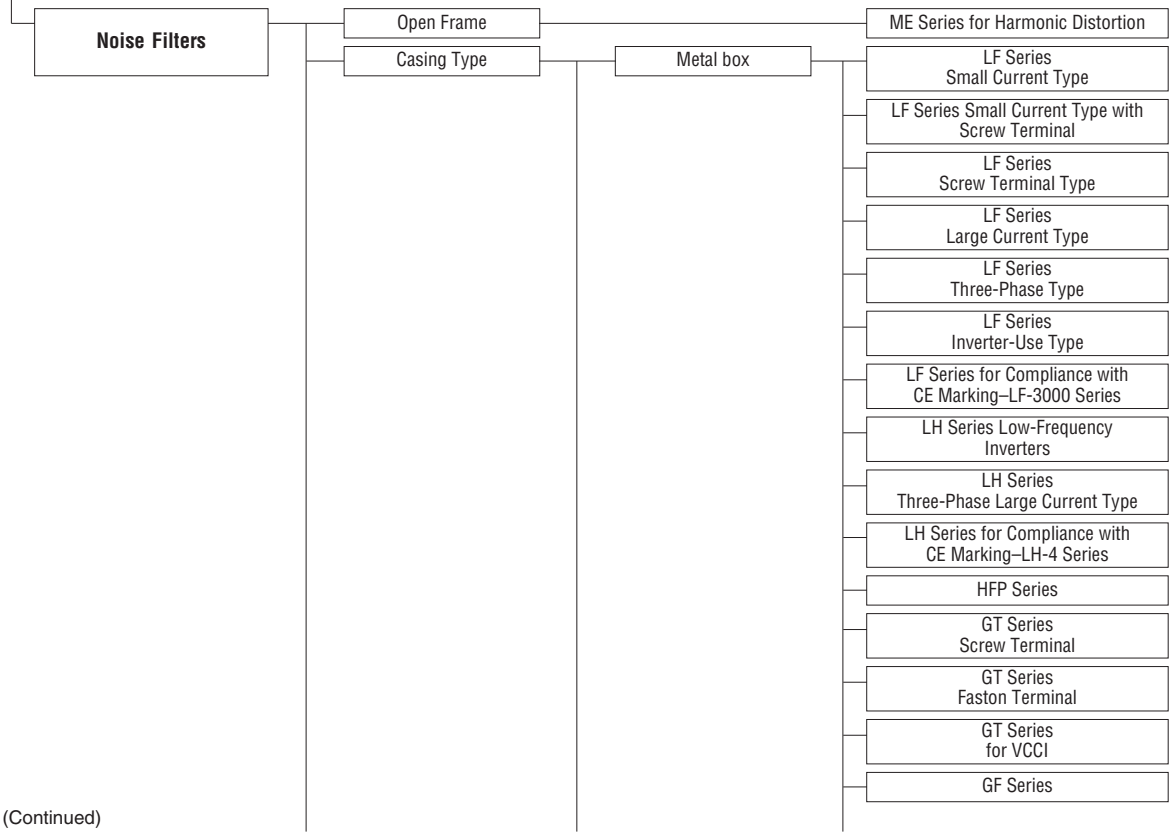
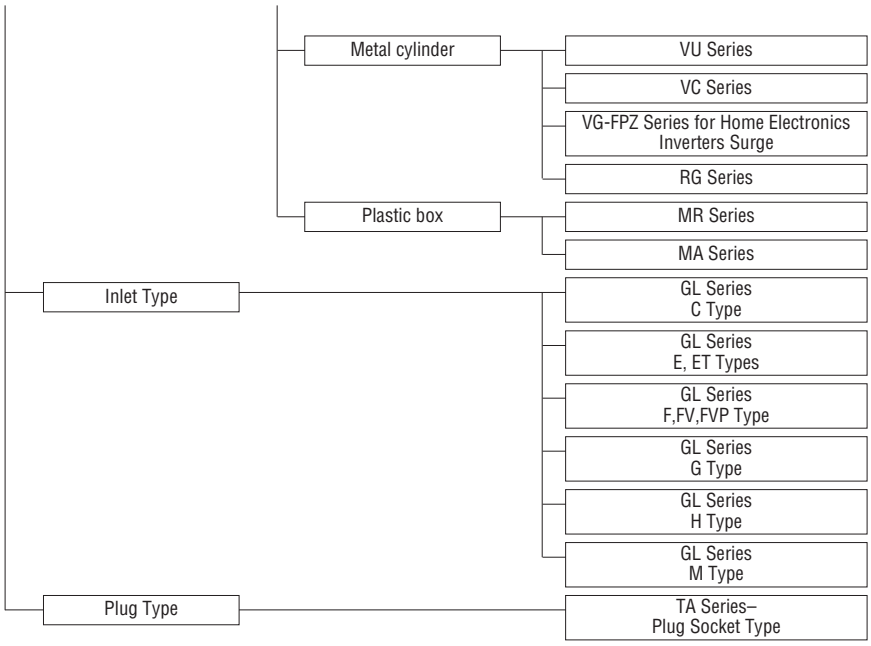
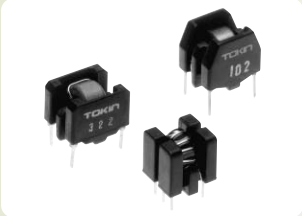

Normal Mode
SS Coils SSB28V/28H
SS Coils SS28V-K/28H-K Types
SS Coils SS28V-R/28H-R Types
SS Coils SSB28V/28H-R
SS Coils SS35V/35H Types
SS Coils SS38V
HHB Coils High Permiability and Low Core loss Type
SN Coils Small and Standard Types
SN Coils Terminal Base Type — J Type
SN Coils Terminal Base Type — JA Type
SN Coils Terminal Base Type — JB Type
SN Coils Terminal Base Type — W Type
SN Coils Terminal Base Type — P Type
SN Coils Terminal Base Type — P1 Type
SN Coils Terminal Base Type — P2 Type
SN Coils Terminal Base Type — P3 Type
High frequency type
SHB Coils (Booster Coils for Active Filters)
Dual Mode Choke Coils CN Choke Coils (Dual Mode Choke Coils for Current Harmonics/EMI)


Noise Filters
Open Frame
ME Series for Harmonic Distortion
Casing Type
Metal box
LF Series Small Current Type
LF Series Small Current Type with Screw Terminal
LF Series Screw Terminal Type
LF Series Large Current Type
LF Series Three-Phase Type
LF Series Inverter-Use Type
LF Series for Compliance with CE Marking–LF-3000 Series
LH Series Low-Frequency Inverters
LH Series Three-Phase Large Current Type
LH Series for Compliance with CE Marking–LH-4 Series
HFP Series
GT Series Screw Terminal
GT Series Faston Terminal
GT Series for VCCI
GF Series

(Continued)


Metal cylinder
VU Series
VC Series
VG-FPZ Series for Home Electronics Inverters Surge
RG Series
Plastic box
MR Series
MA Series
Inlet Type
GL Series C Type
GL Series E, ET Types
GL Series F,FV,FVP Type
GL Series G Type
GL Series H Type
GL Series M Type
Plug Type
TA Series– Plug Socket Type

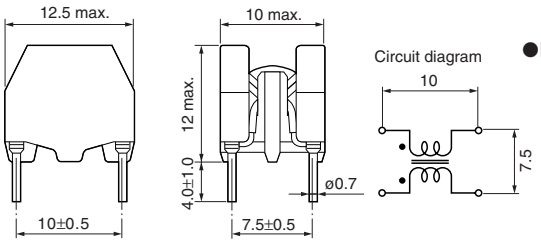
SH Series



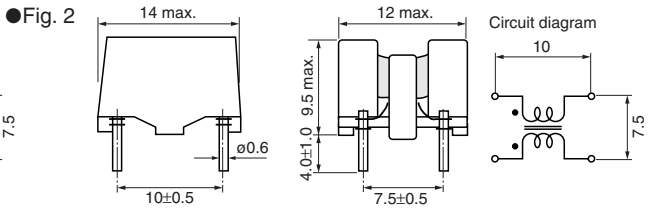
Model		Rated voltage DC (V)	Rated current (A)	Inductance (μH) min.	DC resistance (mΩ/line) max.	Operating temperature range (°C)	Shape and dimensions
for 2 lines	**SH-101**	150	3.0	0.35	16	–25 to +80	Fig. 1
	SH-102	150	3.0	1.5	26	–25 to +80	
	SH-201	150	3.0	0.5	16	–25 to +80	
	SH-202	150	3.0	1.5	20	–25 to +80	
	SH-301	150	3.0	3.2	22	–25 to +80	
	SH-302	150	3.0	7.5	26	–25 to +80	
	SH-211	150	3.0	0.5	18	–25 to +80	Fig. 2
	SH-212	150	3.0	1.5	23	–25 to +80	
	SH-311	150	3.0	3.2	25	–25 to +80	
	SH-312	150	3.0	7.5	30	–25 to +80	
	SH-121	50	3.0	0.35	11	–25 to +80	Fig. 3
	SH-122	50	3.0	1.5	20	–25 to +80	
	SH-221	50	3.0	0.5	11	–25 to +80	
	SH-222	50	3.0	1.5	14	–25 to +80	
	SH-321	50	3.0	3.5	14	–25 to +80	
	SH-322	50	3.0	7.5	20	–25 to +80	
	SH-132	50	2.4	2.6	51	–25 to +60	Fig. 4
	SH-432	50	2.4	30.0	51	–25 to +60	
for 3 lines	**SH-S132**	50	1.0	1.7	81	–25 to +80	Fig. 5

Shape and Dimensions/Circuit Diagram

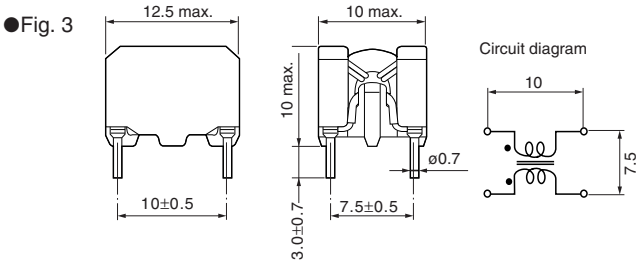
●Fig. 1



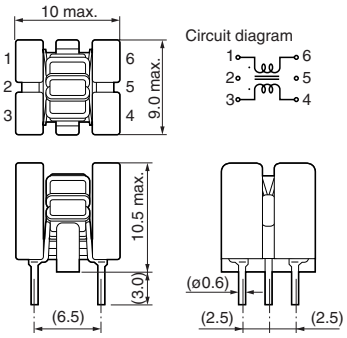
●Fig. 2



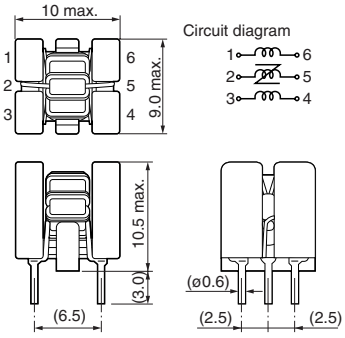
●Fig. 3



●Fig.4

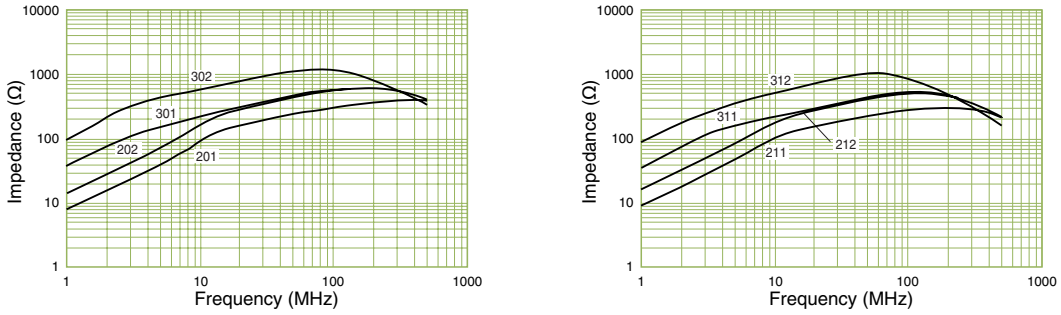


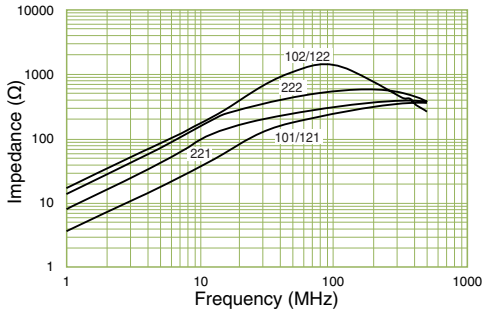
●Fig.5

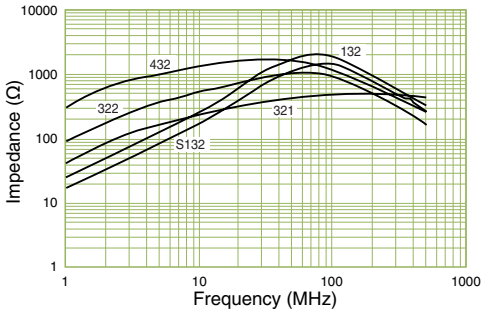


[mm]

Impedance vs. Frequency



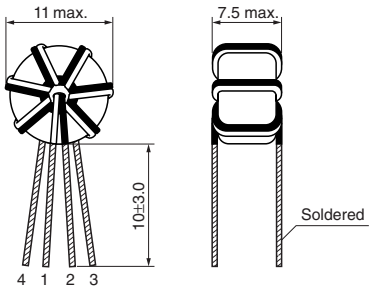




SHO Series

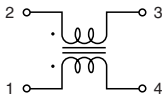
Model	Rated voltage DC (V)	Rated current (A)	Inductance (μH) min.	DC resistance (mΩ/line) max.	Operating temperature range (˚C)
SHO-101	50	4.0	2.0	15.5	–25 to +70
SHO-102	50	4.0	0.6	10.0	–25 to +70
SHO-201	50	4.0	5.0	15.5	–25 to +70
SHO-202	50	4.0	1.6	10.0	–25 to +70
SHO-301	50	4.0	12.0	15.5	–25 to +70
SHO-302	50	4.0	3.9	10.0	–25 to +70

Shape and Dimensions

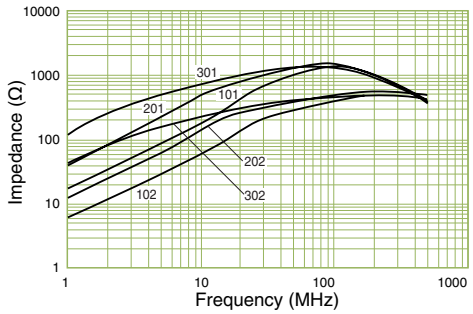


[mm]

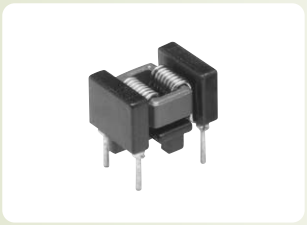
Circuit Diagram



Impedance vs. Frequency



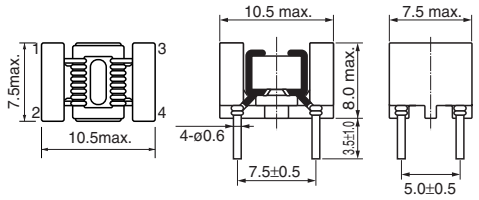
SBT-03W Series



Model	Rated voltage DC (V)	Rated current (A)	Inductance (100kHz, 1mA) (μH) min.	DC resistance (mΩ) max.	Operating temperature range (°C)	Wire size (mmø)	Packaging
SBT-0308W	50	3.0	6.75	20	–25 to +85	0.4	Bulk (100 pcs.)
SBT-0310W	50	2.5	7.7	30	–25 to +80	0.35	
SBT-0315W	50	2.0	11.9	45	–25 to +75	0.3	

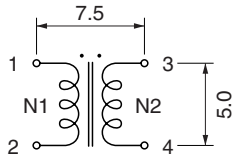
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

Shape and Dimensions



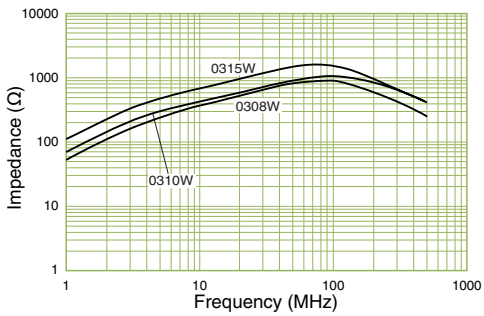
[mm]

Circuit Diagram



[mm]

Impedance vs. Frequency

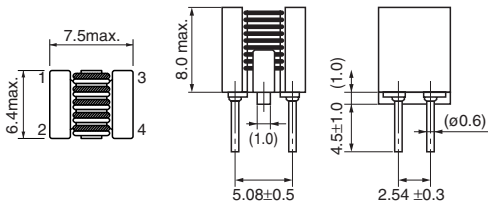


SBT-01W Series

Model	Rated voltage DC (V)	Rated current (mA)	Inductance (1kHz, 70mA) (μH)	DC resistance (mΩ) max.	Operating temperature range (˚C)	Packaging
SBT-0115W	50	500	≧5	30	–25 to +70	Bulk (100pcs.)
SBT-0140W	50	500	40±35%	40	–25 to +70	
SBT-0160W	50	500	60±35%	45	–25 to +70	
SBT-0180W	50	500	80±35%	55	–25 to +70	

• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

Shape and Dimensions



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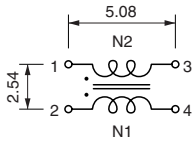
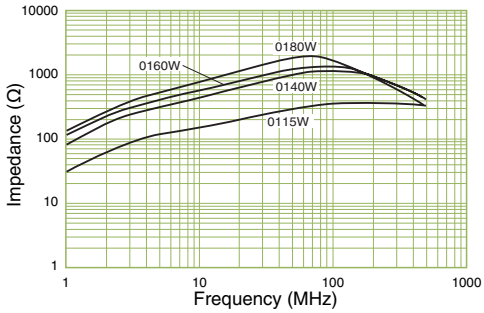
Circuit Diagram



[mm]

Impedance vs. Frequency



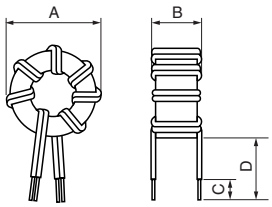
Troidal Cores with Wound Cables

Model	Core	Dimensions (mm)				No. of turns	Wire	Winding status	Frequency range (MHz)
		A	B	C	D				
ESD-H-12E	ESD-R-12C	16	20	5	25	7	UL1007 AWG26 (ø0.4)	Bi-filar winding	Up to 300
ESD-H-12M	ESD-R-12A	15	18.5	5	15	9	Teflon wire (ø0.4)	Bi-filar winding	Up to 100
ESD-H-14U	ESD-R-14A	17.5	7	5	15	10	UL1609 AWG26 (ø0.4)	Bi-filar winding	Up to 100
ESD-H-14NU	ESD-R-14C2	17.5	7	5	15	10	UL1609 AWG26 (ø0.4)	Bi-filar winding	Up to 300

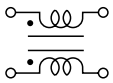
• Recommended soldering conditions: 350±10˚C, 2 to 3 sec.

Shape and Dimensions

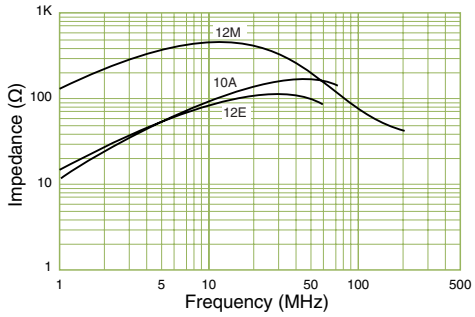
●ESD-H Series

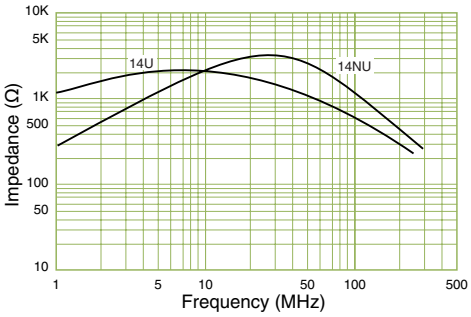


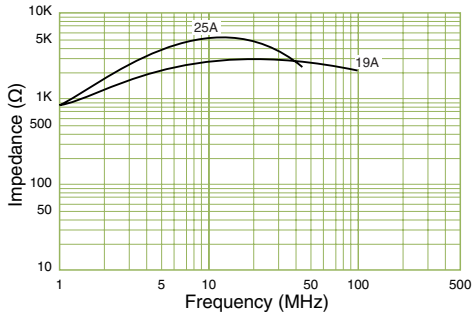
Circuit Diagram



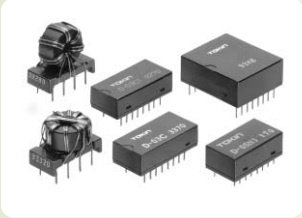
Impedance vs. Frequency

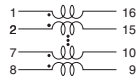
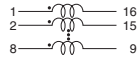
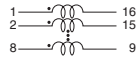
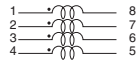
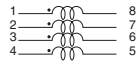






DIP Noise Filters
D-03C, 03C1, 05N1, 07C1, 08C2, 08C2A

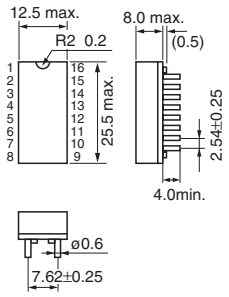


Model	Circuit diagram		Number of terminals/Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (˚C)
D-03C		4 cores	16P/2 circuits x 4 Common mode	50	150	75	–20 to +70
D-03C1					100	150	–20 to +70
D-05N1		8 cores	16P/8 circuits Normal mode	50	100	10	–20 to +70
D-07C1		1 core	16P/8 circuits Common mode	50	300	100	–20 to +70
D-08C2		1 core	8P/4 circuits Common mode	50	2300	25	–20 to +70
D-08C2A		1 core	8P/4 circuits Common mode	50	500	70	–20 to +70

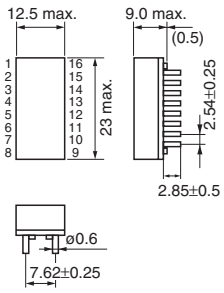
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

Shape and Dimensions

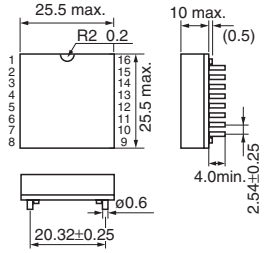
●D-03C, 03CI



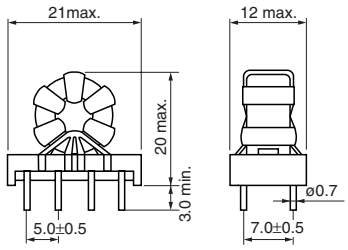
●D-05NI



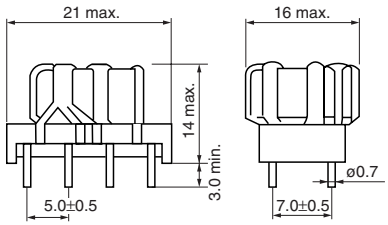
●D-07CI



●D-08C2

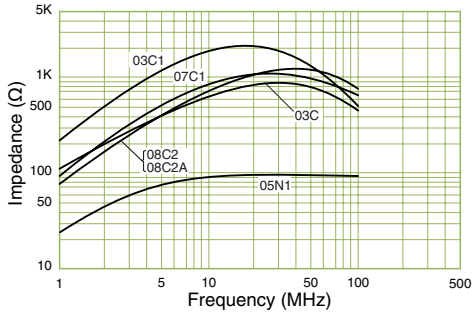


●D-08C2A

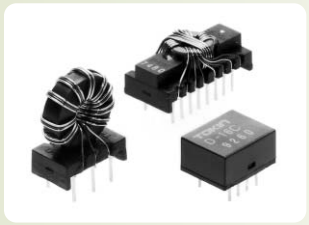


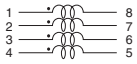
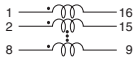
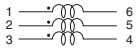
[mm]

Impedance vs. Frequency



DIP Noise Filters
D-16C, 20C, 22C

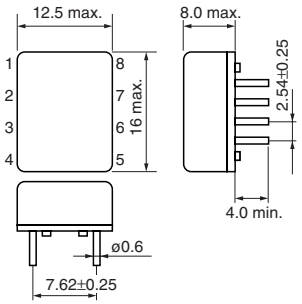


Model	Circuit diagram		Number of terminals/ Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (˚C)
D-16C		1 core	8P/4 circuits Common mode	50	100	50	–20 to +70
D-20C		1 core	16P/8 circuits Common mode	50	500	40	–20 to +70
D-22C		1 core	6P/3 circuits Common mode	50	1500	40	–20 to +70

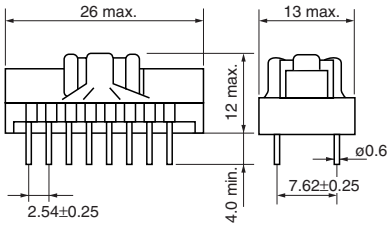
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than10MΩ (100VDC, between lines)

Shape and Dimensions

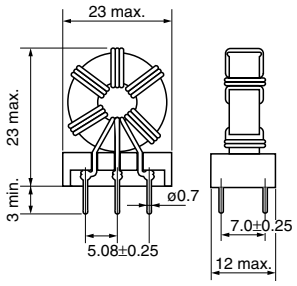
●D-16C



●D-20C

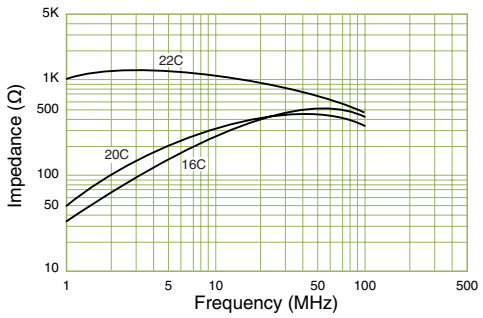


●D-22C



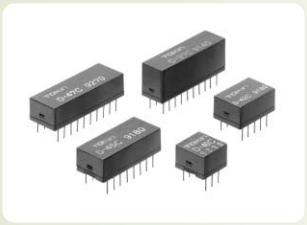
[mm]

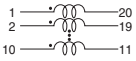
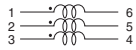
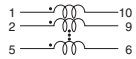
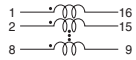
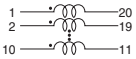
Impedance vs. Frequency



DIP Noise Filters

D-37C, 40C, 42C, 45C, 47C

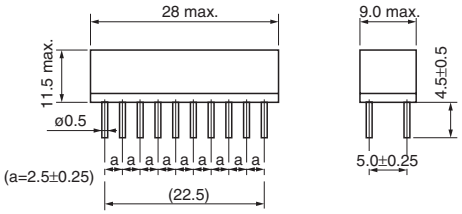


Model	Circuit diagram		Number of terminals/ Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)
D-37C		1 core	20P/10 circuits Common mode	50	300	200	–20 to +70
D-40C		1 core	6P/ 3 circuits Common mode	50	300	200	–20 to +70
D-42C		1 core	10P/ 5 circuits Common mode	50	300	200	–20 to +70
D-45C		1 core	16P/ 8 circuits Common mode	50	300	150	–20 to +70
D-47C		1 core	20P/ 10 circuits Common mode	50	300	200	–20 to +70

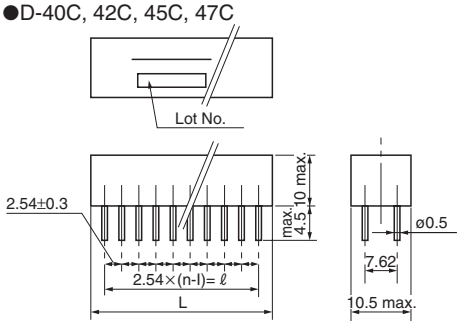
• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (100VDC, between lines)

Shape and Dimensions

●D-37C



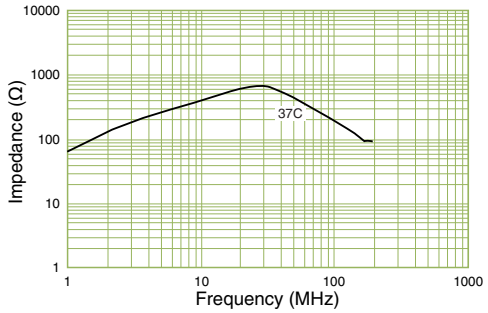
●D-40C, 42C, 45C, 47C

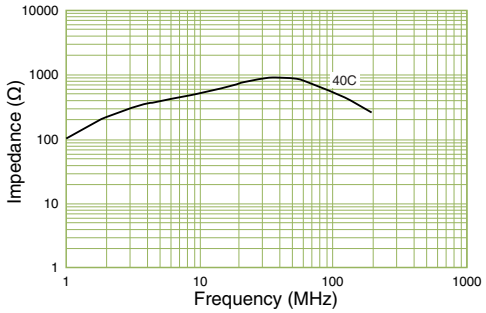


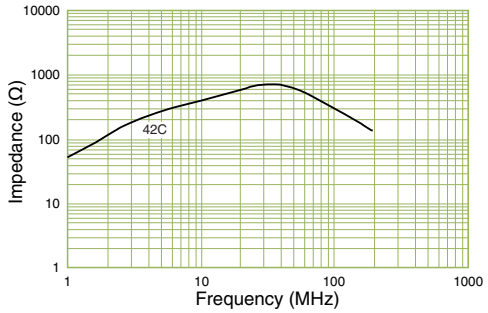
Model	Number of Circuits	ℓ	L
D-40C	3	5.08	12.7 max.
D-42C	5	10.16	18 max.
D-45C	8	17.78	25 max.
D-47C	10	22.86	28 max.

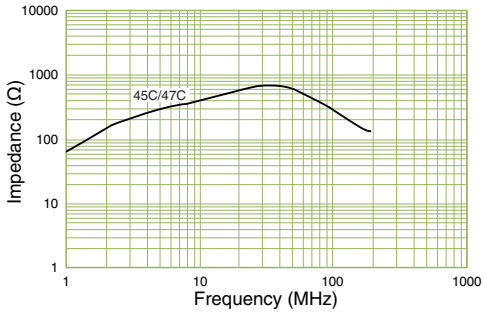
[mm]

Impedance vs. Frequency

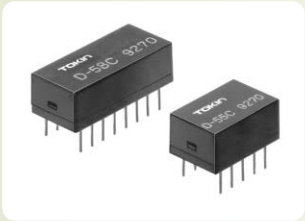


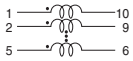
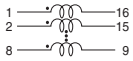






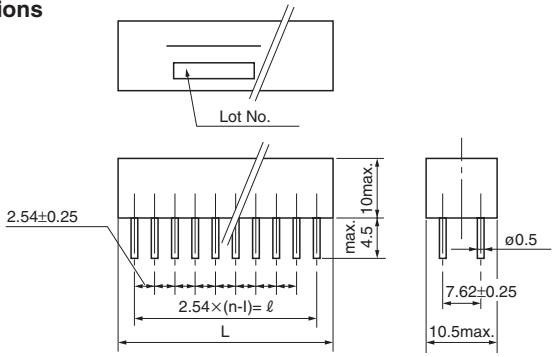
DIP Noise Filters
D-55C, 58C



Model	Circuit diagram		Number of terminal/ Circuits	Rated voltage DC (V)	Rated current DC (mA/Line)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)
D-55C		1 core	10P/5 circuits Common mode	50	300	200	–20 to +70
D-58C		1 core	16P/8 circuits Common mode	50	300	200	–20 to +70

• Withstanding voltage: 200VDC (one minute, between lines) • Insulation resistance: more than10MΩ (100VDC, between lines)

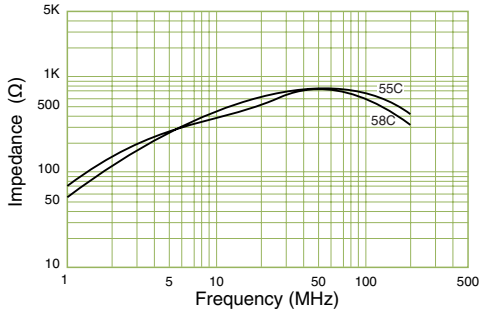
Shape and Dimensions



Model	Number of Circuits	ℓ	L
D-55C	5	10.16	18 max.
D-58C	8	17.78	25 max.

[mm]

Impedance vs. Frequency

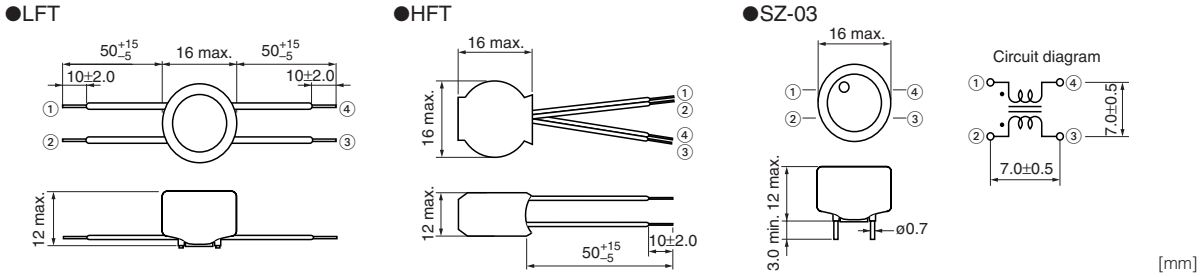


EMI/EMC Filters for Telephone Sets
LFT, HFT, SZ-03

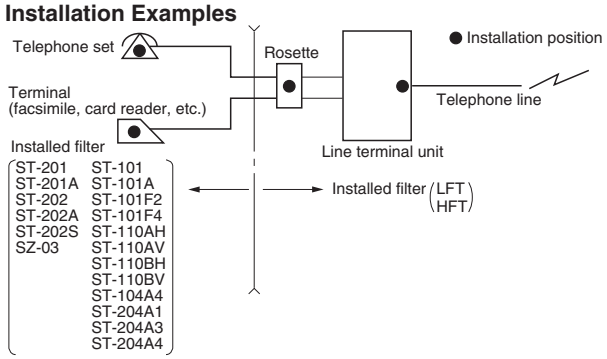
Model	Frequency range (MHz)	Impedance or attenuation (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/line) max.	Operating temperature range (°C)	Remarks
LFT	0.5 to 7	27 (15 dB) (at 0.5 MHz)	50	100	10	–20 to +75	AM band
SZ-03	0.5 to 7	27 (at 0.5 MHz)	50	100	10	–20 to +75	AM band
HFT	7 to 40	2.6 (15 dB) (at 7MHz)	50	100	0.2	–20 to +75	FM band

• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC, between lines)

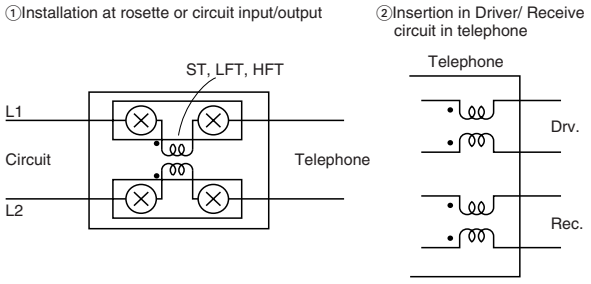
Shape and Dimensions/Circuit Diagram



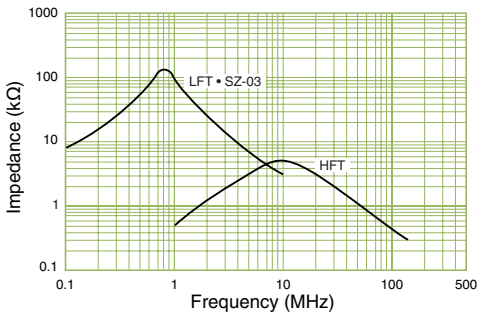
Installation Examples



Design Examples



Impedance vs. Frequency



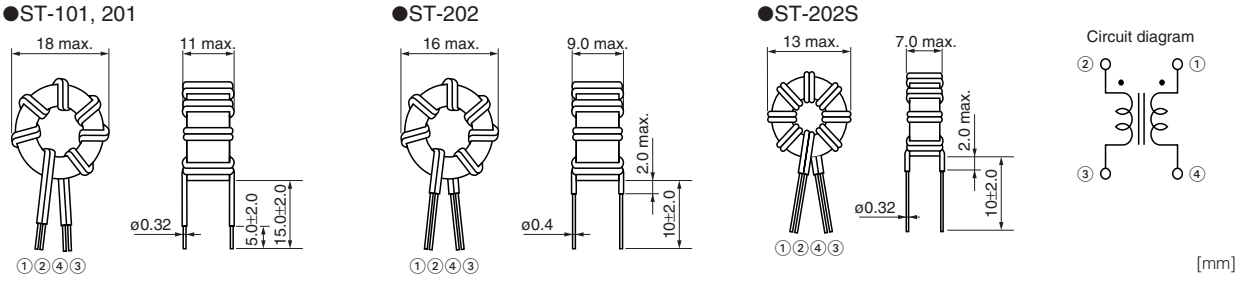
EMI/EMC Filters for Telephone Sets

ST-101, 201, 202, 202S

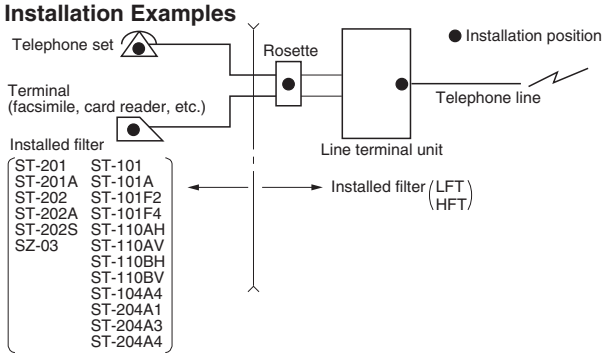
Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	Remarks
ST-101	0.5 to 7	3 (at 0.5 MHz)	50	200	180	–20 to +75	AM band
ST-201	7 to 40	1.5 (at 7 MHz)	50	200	100	–20 to +75	FM band
ST-202	7 to 100	0.6 (at 100 MHz)	50	1000	40	–20 to +75	FM band
ST-202S	7 to 100	0.6 (at 100 MHz)	50	1000	35	–20 to +75	FM band

- Withstanding voltage: 500VDC (one minute, between lines)
- Insulation resistance: more than10MΩ (250VDC, between lines)
- Recommended soldering conditions: 350±10˚C, 2 to 3 sec.

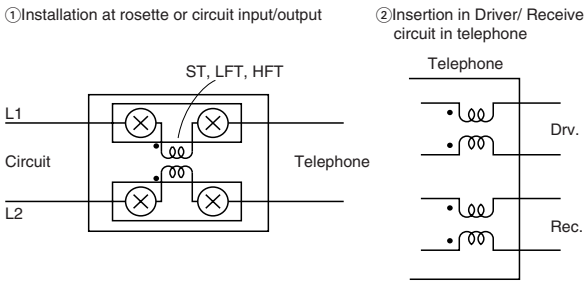
Shape and Dimensions/Circuit Diagram



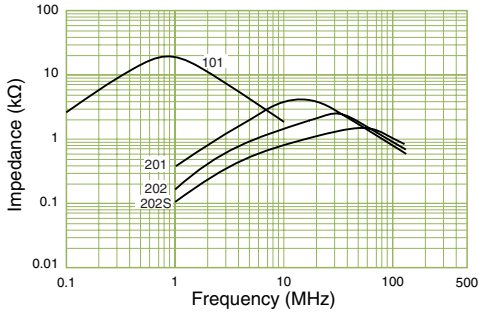
Installation Examples



Design Examples



Impedance vs. Frequency

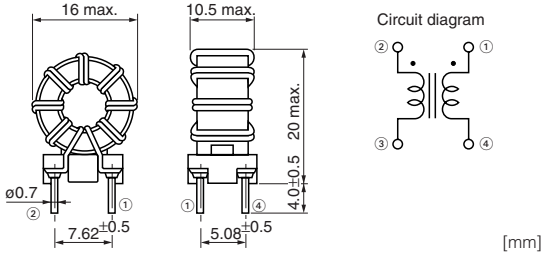


EMI/EMC Filters for Telephone Sets
ST-101A, 201A, 202A

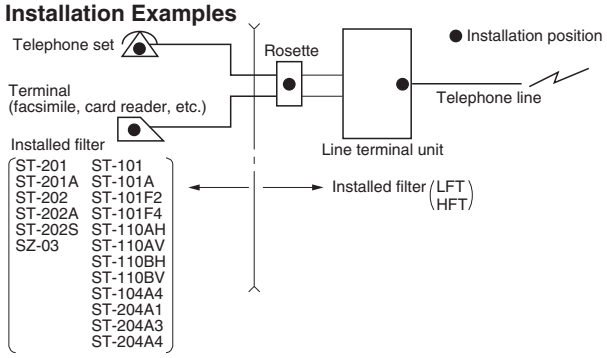
Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (mΩ/Line) max.	Operating temperature range (°C)	Remarks
ST-101A	0.5 to 7	3 (at 0.5 MHz)	50	200	250	–20 to +65	AM band
ST-201A	7 to 40	1.5 (at 7 MHz)	50	200	150	–20 to +65	FM band
ST-202A	7 to 100	0.6 (at 100 MHz)	50	1000	50	–20 to +65	FM band

• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than10MΩ (100VDC, between lines)

Shape and Dimensions/Circuit Diagram



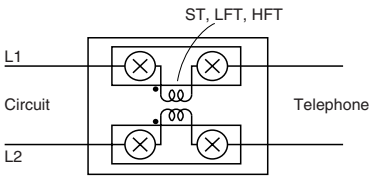
Installation Examples



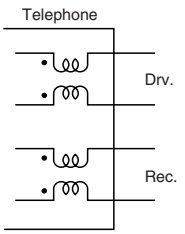
ST-201	ST-101
ST-201A	ST-101A
ST-202	ST-101F2
ST-202A	ST-101F4
ST-202S	ST-110AH
SZ-03	ST-110AV
	ST-110BH
	ST-110BV
	ST-104A4
	ST-204A1
	ST-204A3
	ST-204A4

Design Examples

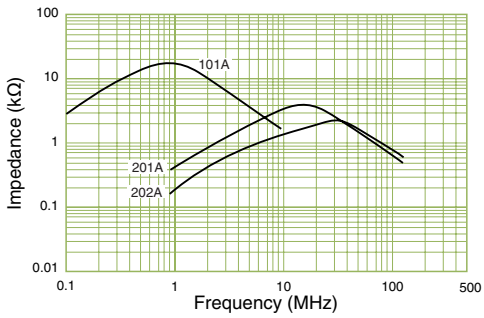
①Installation at rosette or circuit input/output



②Insertion in Driver/ Receive circuit in telephone

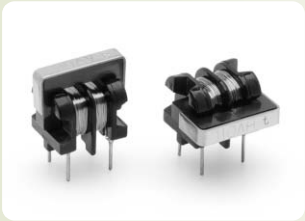


Impedance vs. Frequency



EMI/EMC Filters for Telephone Sets

ST-110AV, 110AH, 110BV, 110BH

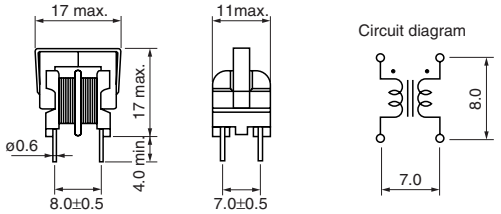


Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (mΩ/Line) max.	Operatings temperature range (˚C)	Remarks
ST-110AV	0.5 to 7	27 (at 0.5 MHz)	50	300	3	–20 to +75	AM band
ST-110AH	0.5 to 7	27 (at 0.5 MHz)	50	300	3	–20 to +75	AM band
ST-110BV	0.5 to 7	150 (Resonant)	50	150	7.5	–20 to +75	AM band
ST-110BH	0.5 to 7	150 (Resonant)	50	150	7.5	–20 to +75	AM band

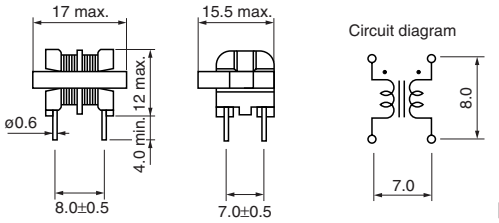
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC,between lines)

Shape and Dimensions/Circuit Diagram

●ST-110AV, ST-110BV

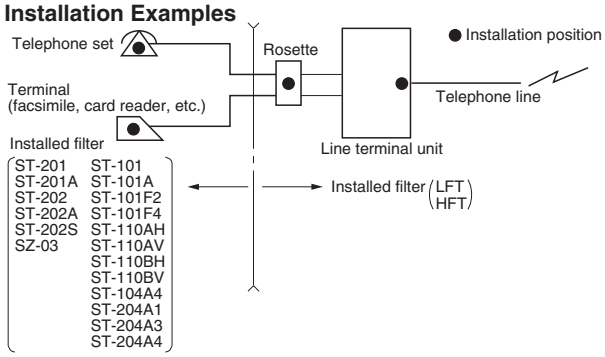


●ST-110AH, ST-110BH

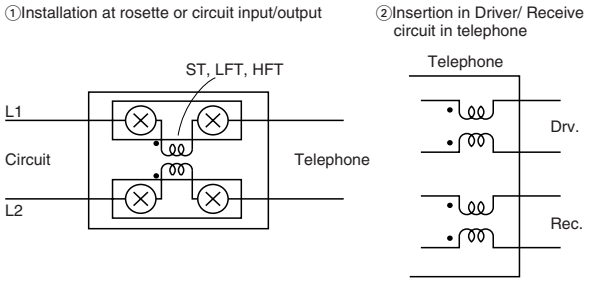


[mm]

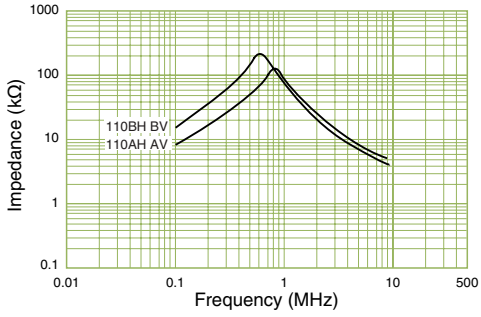
Installation Examples



Design Examples



Impedance vs. Frequency

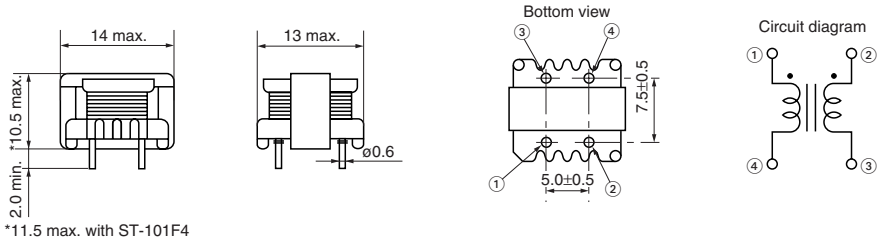


EMI/EMC Filters for Telephone Sets
ST-101F2, 101F4

Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/Line) max.	Operating temperature range (°C)	Remarks
ST-101F2	0.5 to 7	40 (at 600 kHz)	50	200	2.7	–20 to +75	AM band
ST-101F4	0.5 to 7	60 (at 600 kHz)	50	200	3.5	–20 to +75	AM band

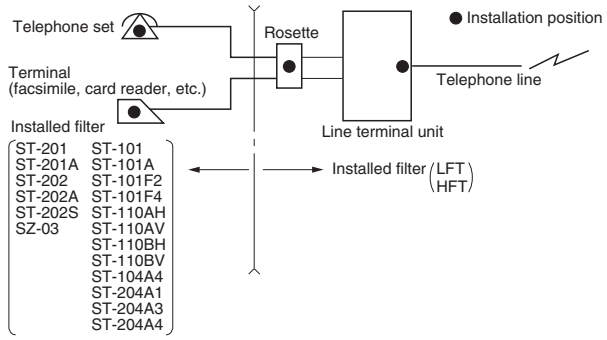
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC between lines)

Shape and Dimensions/Circuit Diagram

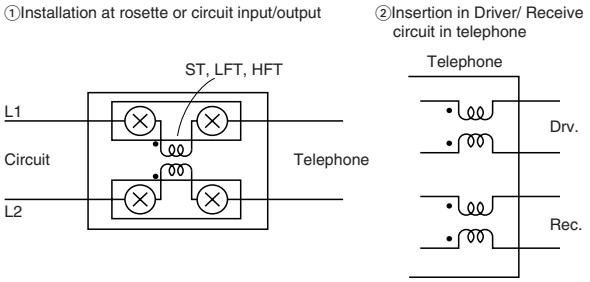


[mm]

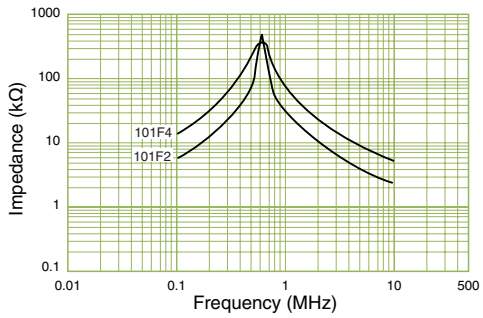
Installation Examples



Design Examples



Impedance vs. Frequency



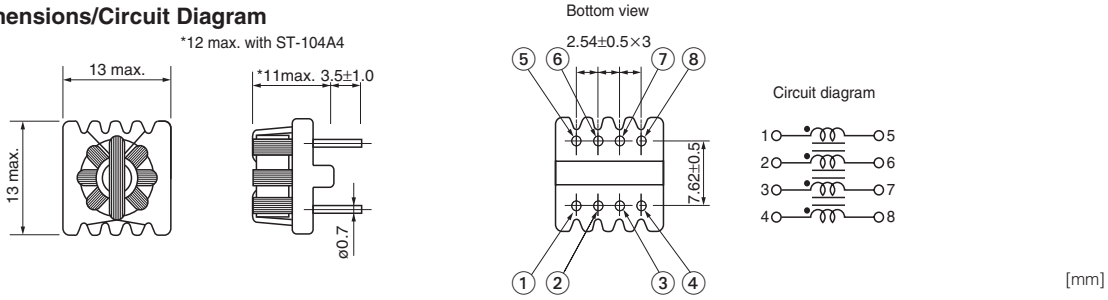
EMI/EMC Filters for Telephone Sets

ST-104A4, 204A Series

Model	Frequency range (MHz)	Impedance (kΩ) min.	Rated voltage DC (V)	Rated current (mA)	DC resistance (Ω/Line) max.	Operating temperature range (°C)	Remarks
ST-104A4	0.5 to 7	3.0 (at 0.5 MHz)	50	500	0.36	–20 to +75	AM band
ST-204A1	7 to 100	0.25 (at 10 MHz)	50	500	0.10	–20 to +75	FM band
ST-204A3	7 to 40	1.0 (at 7 MHz)	50	500	0.17	–20 to +75	FM band
ST-204A4	7 to 40	0.6 (at 7 MHz) REF	50	500	0.12	–20 to +75	FM band

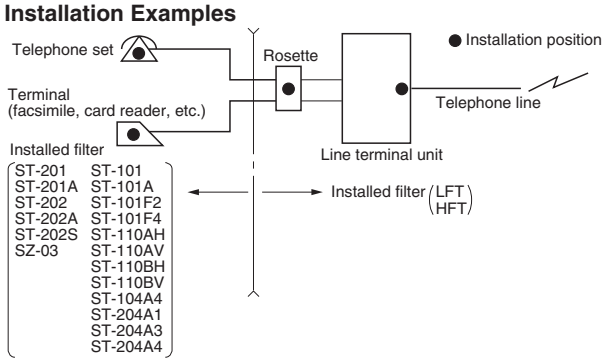
• Withstanding voltage: 500VDC (one minute, between lines) • Insulation resistance: more than 10MΩ (250VDC, between lines)

Shape and Dimensions/Circuit Diagram



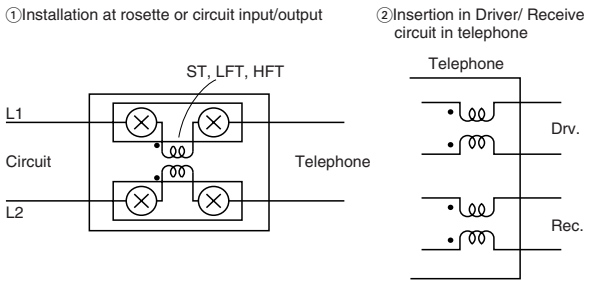
[mm]

Installation Examples

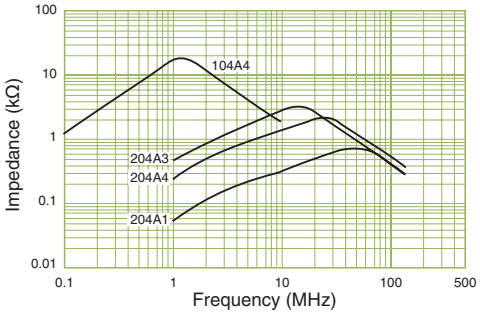


ST-201	ST-101
ST-201A	ST-101A
ST-202	ST-101F2
ST-202A	ST-101F4
ST-202S	ST-110AH
SZ-03	ST-110AV
	ST-110BH
	ST-110BV
	ST-104A4
	ST-204A1
	ST-204A3
	ST-204A4

Design Examples



Impedance vs. Frequency



SBT Series

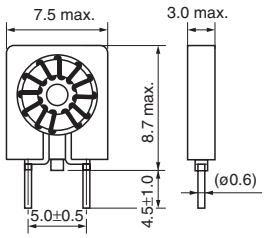
• Tape and Reel Dimensions (see page 34)

Model	Rated voltage DC (V)	Rated current (mA)	Inductance (1kHz, 70mA) (μH)	DC resistance (mΩ) max.	Operating temperature range (˚C)	Packaging
SBT-0208□	50	500	8±50%	20	–25 to +70	Bulk (100pcs.)
SBT-0210□	50	500	10±50%	20	–25 to +70	
SBT-0240□	50	500	40±35%	34	–25 to +70	
SBT-0260□	50	500	60±35%	50	–25 to +70	

• TA Taping (2000 pcs./ reel x 6), TF Flat taping (1000pcs./ box x 10)

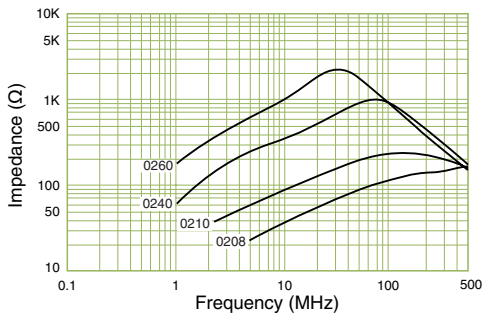
Shape and Dimensions

●SBT-02□□



[mm]

Impedance vs. Frequency



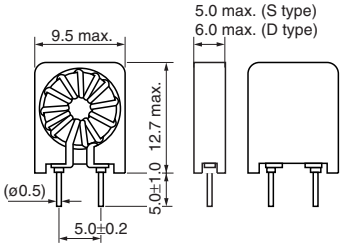
SNT Series

• Tape and Reel Dimensions (see page 34)

Model	Rated current* (A)	Inductance (μH) min.	DC resistance (mΩ) max.	Operating temperature range (°C)	Packaging
SNT-S10□□	3.0	1.5	25	–20 to +60	Bulk (100 pcs.)
SNT-S20□□	1.5	6	35	–20 to +60	
SNT-S30□□	0.5	13	95	–20 to +60	
SNT-D10□□	3.0	2.5	25	–20 to +60	
SNT-D20□□	1.5	10	45	–20 to +60	
SNT-D30□□	0.5	20	98	–20 to +60	

*The rated current is for the wire and it is different from the inductance guaranteeing values.
• T□Taping (1000 pcs./ reel)• TFFlat taping (SNT-S type: 1000 pcs./ reel), (SNT-D type: 500 pcs./ reel)

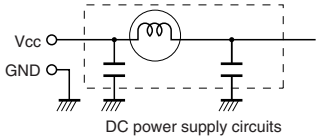
Shape and Dimensions



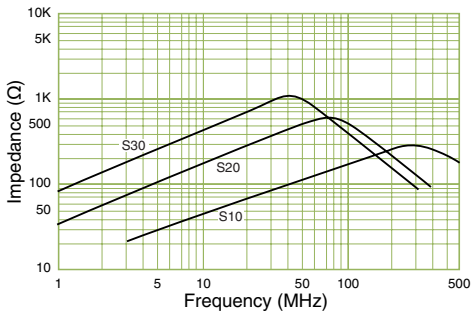
[mm]

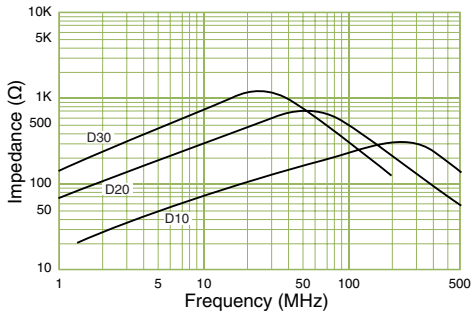
Design Example

●For noise suppression in the secondary low-voltage power supply circuit

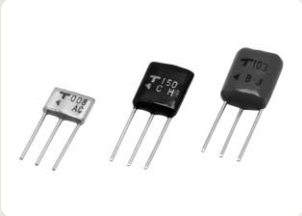


Impedance vs. Frequency





Distributed Constant Filters
EK 30, 31, 32

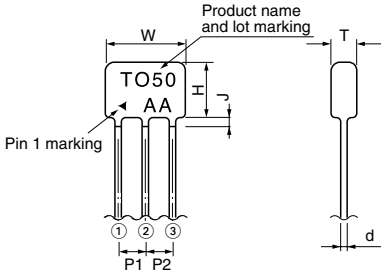


• Tape and Reel Dimensions (see page 34)

	Model	Rated voltage DC (V)	Rated current DC (mA)	DC resistance (mΩ) max.	Dielectric breakdown voltage DC (V)	Insulation resistance (MΩ) min.	Operating temperature range (˚C)
Low Frequency Type 30	**EK30-1103**	50	500	105	125	2×10^4	–25 to +85
Low Frequency Type 31	**EK31-050M**	50	500	60	125	2×10^4	–25 to +85
	EK31-020M	50	500	60	125	2×10^4	–25 to +85
	EK31-010M	50	500	60	125	2×10^4	–25 to +85
	EK31-008M	50	500	60	125	2×10^4	–25 to +85
	EK31-004M	50	500	70	125	2×10^4	–25 to +85
	EK31-002M	50	500	110	125	2×10^4	–25 to +85
	EK31-001M	50	500	150	125	2×10^4	–25 to +85
Low Frequency Type 32	**EK32-200M**	50	500	60	125	2×10^4	–25 to +85
	EK32-150M	50	500	60	125	2×10^4	–25 to +85
	EK32-100M	50	500	60	125	2×10^4	–25 to +85
	EK32-080M	50	500	60	125	2×10^4	–25 to +85

• The operating temp. range includes the self-temp. rise.

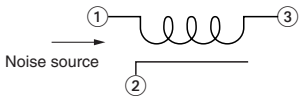
Shape and Dimensions



Model	W max.	H max.	T max.	P_1 +0.4 −0.2	P_2 +0.4 −0.2	J max.	d ±0.05	Per Box
30 type	8.0	12.0	5.0	2.5	2.5	1.0	0.5	1000
31 type	7.0	5.0	2.5	2.5	2.5	1.0	0.5	2000
32 type	7.5	9.5	3.5	2.5	2.5	1.0	0.5	1500

[mm]

Circuit Diagram



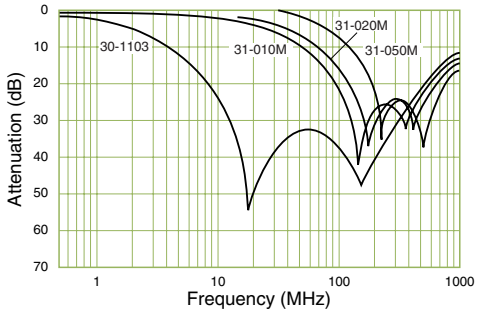
Numbering System

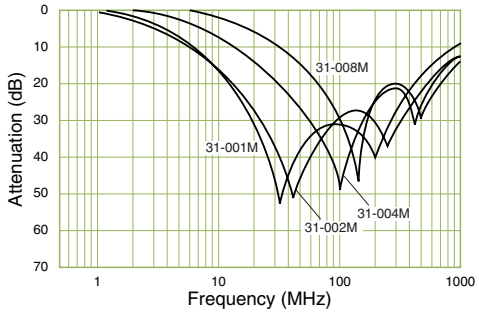
EK ○○ -○○○ **M** ○○
① ② ③ ④

① Series
② Type
③ Nominal cut-off frequency
④ TF : Taping (EK 30 type: 1000 pcs./ box, EK 31 type: 2000pcs./box, EK 32 type: 1500 pcs./ box)

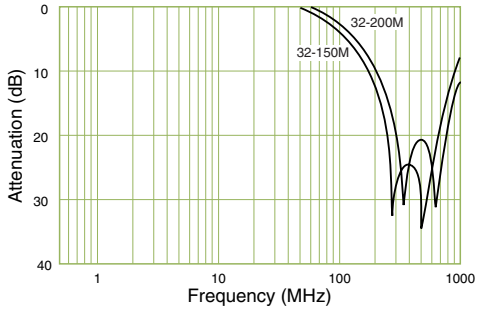
Attenuation Characteristics

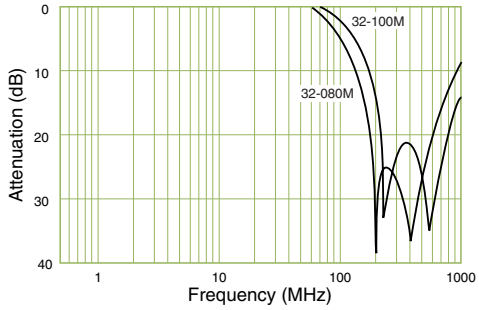
●EK 30, EK 31 Type





●EK 32 Type





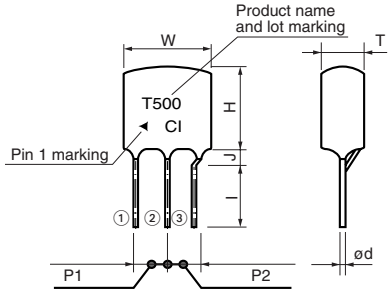
Distributed Constant Filters
EK 33

• Tape and Reel Dimensions (see page 35)

Model	Rated voltage DC (V)	Rated current DC (mA)	Dielectric breakdown voltage DC (V)	Insulation resistance (MΩ) min.	DC resistance (MΩ) max.	Capacitance (Reference) C (pF)	Operating temperature range (°C)	Attenuation level (dB) min.
EK33-250NB	50	500	125	3×10^4	85	25	–25 to +85	10 (at 260 to 700 MHz)
EK33-500NB	50	500	125	3×10^4	140	50	–25 to +85	10 (at 120 to 800 MHz)
EK33-131NB	50	500	125	3×10^4	200	130	–25 to +85	10 (at 60 to 800 MHz)

• The operating temperature range includes self-temperature rise.

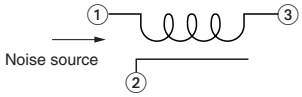
Shape and Dimensions



Model	W max.	H max.	T max.	P_1 $^{+0.4}_{-0.2}$	P_2 $^{+0.4}_{-0.2}$	J max.	d ±0.05	Per Box
EK33-250NB	8.3	10.0	4.5	2.5	2.5	2.0	0.5	1000
EK33-500NB	8.3	10.0	4.5	2.5	2.5	2.0	0.5	1000
EK33-131NB	9.0	7.5	4.5	3.5	2.5	2.0	0.5	1000

[mm]

Circuit Diagram

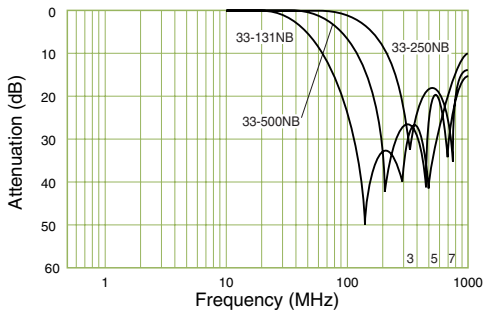


Numbering System

EK - ○○ - ○○○ - ○○
① ② ③ ④

① Series
② Type
③ Capacitance
④ TF : Flat taping (1000 pcs./box)

Attenuation Characteristics



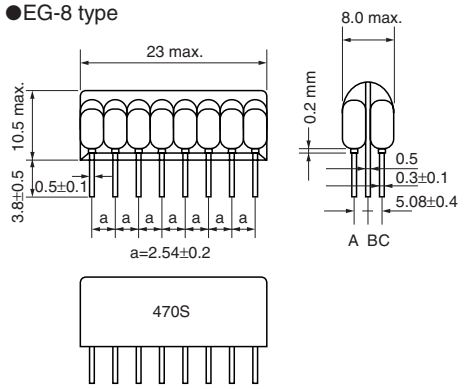
Feedthrough Capacitor Filters EG Series

Model	Rated voltage DC (V)	Rated current (A) max.	Operating temperature range (°C)	Storage temperature range (°C)
EG-□-□□□□	50	5	–25 to +85	–40 to +100

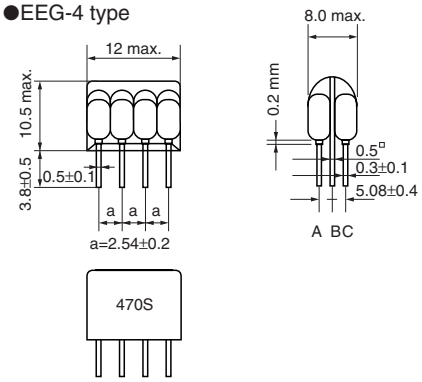
• Withstanding voltage: 125VDC • Insulation resistance: 1000MΩ

Shape and Dimensions

●EG-8 type

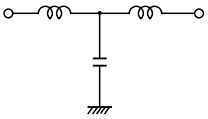


●EEG-4 type



[mm]

Circuit Diagram



(Circuit per one line)

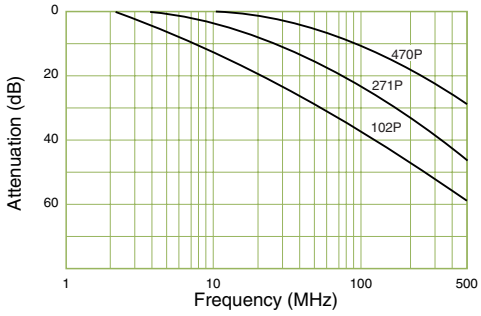
Numbering System

EG—□—□□□□

① ②

① 3:3 line, 4:4 line, 8:8 line
② 470S : 47pF, 101S : 100pF, 271S : 270pF, 471P : 470pF, 102P : 1,000pF

Attenuation Characteristics

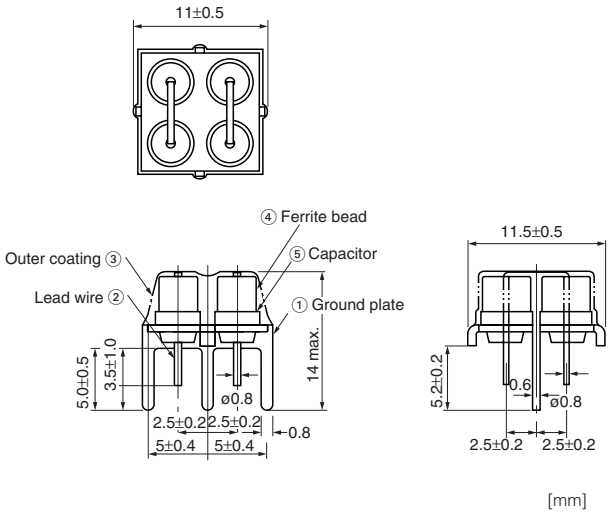


EJ Series

Model	Rated voltage DC (V)	Rated current (A) max.	Operating temperature range (˚C)	Storage temperature range (˚C)
EJ-2-332P	50	10	–25 to +85	–40 to +100

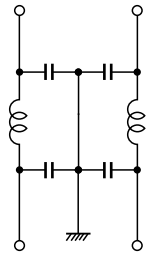
- Withstanding voltage: 300VDC, 1 to 5 seconds, between lines (INPUT-OUTPUT-GROUND)
- Insulation resistance: more than 1000MΩ (50VDC, one minute)

Shape and Dimensions

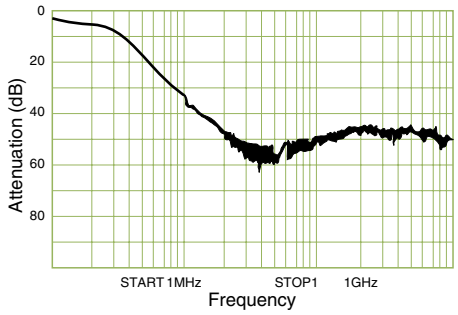


[mm]

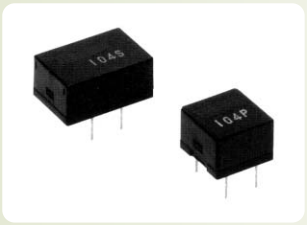
Circuit Diagram



Attenuation Characteristics



DFD Series

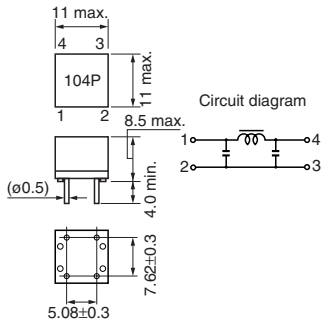


Model	Rated voltage DC (V)	Rated current DC (A)	DC resistance (mΩ) max.	Operating temperature range (°C)
DFD-104P	50	2.0	100	–25 to +85
DFD-104S	50	2.0	100	–25 to +85

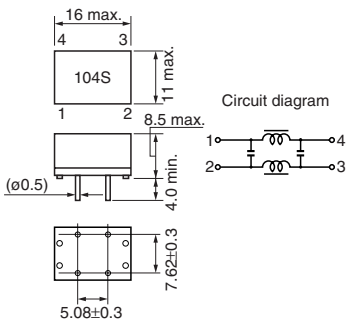
• Withstanding voltage: 125VDC, 5 sec. between terminal 1 and 2 • Insulation resistance: more than 500MΩ (100VDC, one minute)

Shape and Dimensions/Circuit Diagram

●DFD-104P

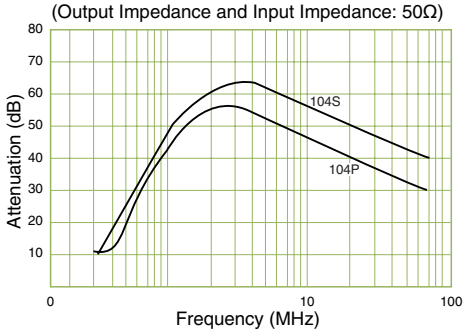


●DFD-104S



[mm]

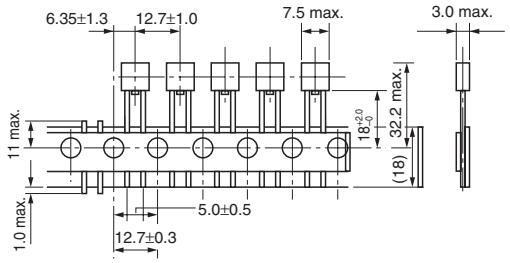
Attenuation Characteristics



Tape and Reel Dimensions

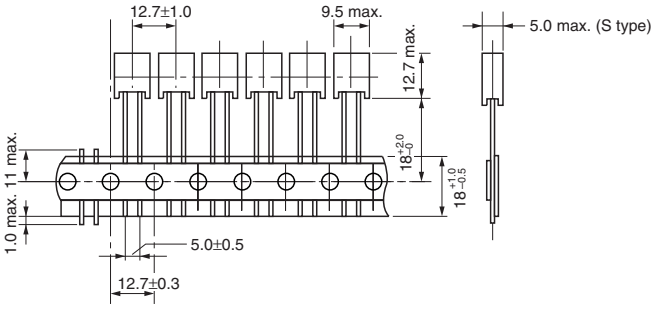
SBT Series

Tape and Reel Dimensions



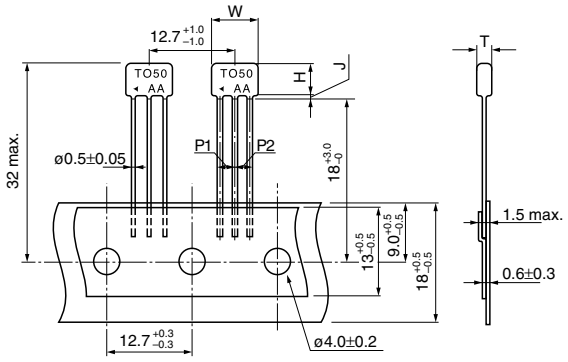
SNT Series

Tape and Reel Dimensions



Distributed Constant Filters EK 30, 31, 32

Tape and Reel Dimensions

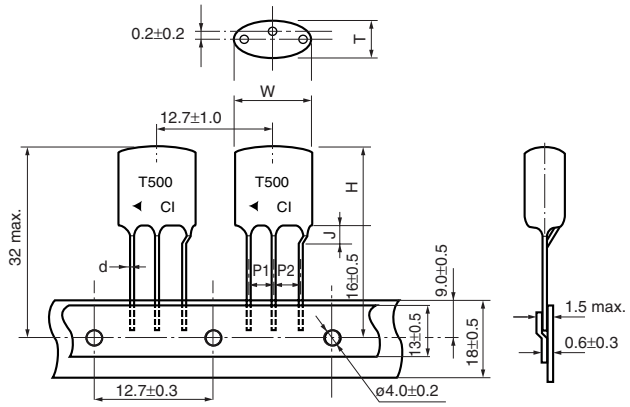


[mm]

Model	W	H	T	P_1	P_2	J	d	Per Box
	max.	max.	max.	+0.4, −0.2	+0.4, −0.2	max.	±0.05	
30 type	8.0	12.0	5.0	2.5	2.5	1.0	0.5	1000
31 type	7.0	5.0	2.5	2.5	2.5	1.0	0.5	2000
32 type	7.5	9.5	3.5	2.5	2.5	1.0	0.5	1500

Distributed Constant Filters EK33

Tape and Reel Dimensions



[mm]

Model	W	H	T	P_1	P_2	J	d	Per Box
	max.	max.	max.	+0.4, −0.2	+0.4, −0.2	max.	±0.05	
EK33-250NB	8.3	10.0	4.5	2.5	2.5	2.0	0.5	1000
EK33-500NB	8.3	10.0	4.5	2.5	2.5	2.0	0.5	1000
EK33-131NB	9.0	7.5	4.5	3.5	2.5	2.0	0.5	1000

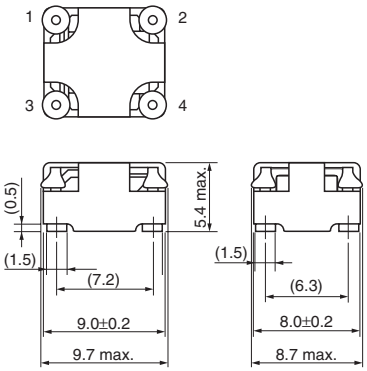
SBS-9080 Series

• Tape and Reel Dimensions (see page 45) • Precautions (see page 44)

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (at 180MHz) (Ω) typ.	DC resistance (mΩ/line) max.	Operating temperature range (˚C)
SBS9080-509T	50	5.0	1200	15	–25 to +50

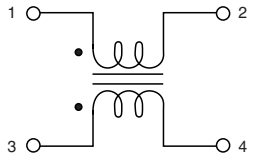
• Withstanding voltage: 125V DC for one minute between lines • Insulation resistance: More than 10MΩ (100V DC, between lines)

Shape and Dimensions

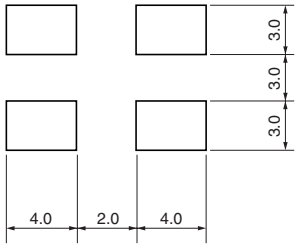


[mm]

Circuit Diagram

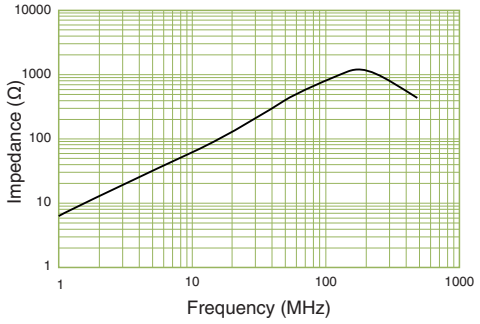


Recommended Land Pattern



[mm]

Impedance vs. Frequency



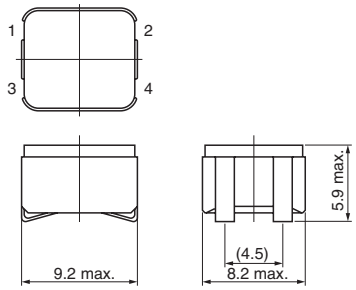
SBP Series

• Tape and Reel Dimensions (see page 45) • Precautions (see page 44)

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (at 100MHz) (Ω) min.	DC resistance (mΩ/line) max.	Operating temperature range (°C)
SBP-5001T	50	5.0	500	7	–25 to +70

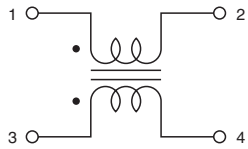
• Withstanding voltage: 200V DC for one minute between lines • Insulation resistance: More than 10MΩ (100V DC, between lines)

Shape and Dimensions

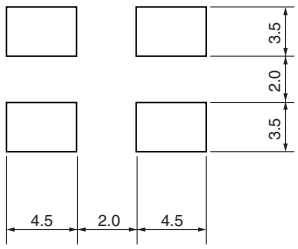


[mm]

Circuit Diagram

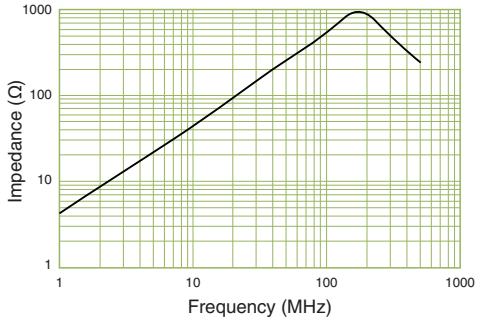


Recommended Land Pattern

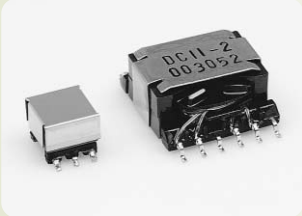


[mm]

Impedance vs. Frequency



DCM Series



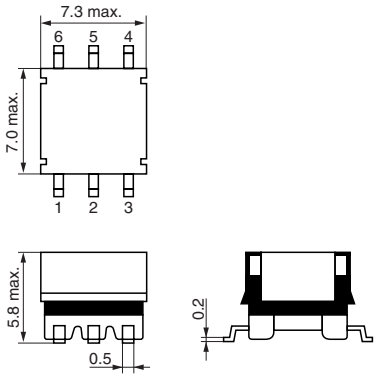
• Tape and Reel Dimensions (see page 47) • Precautions (see page 44)

Model	Rated voltage (V)	Rated current (A)	L (μH) min	Rdc (mΩ) max	Type
DCM5-01	50	0.2	2540	3180	EE5
DCM5-02	50	0.5	520	510	EE5
DCM5-03	50	1.0	210	180	EE5
DCM5-04	50	2.0	30	30	EE5
DCM11-01	50	0.8	1350	240	ED11.6/5
DCM11-02	50	1.3	630	105	ED11.6/5

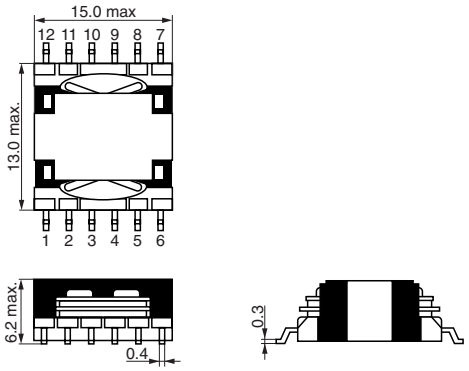
●Inductance measurement condition : f = 10KHZ 0.1V ※●Insulation resistance : more than 100MΩ(DC250V, 1min, between lines) ●Operating temperature range(℃) : -20 to 110(includes the selftemp.rise.)
Look : By number-of-turns adjustment, to products other than the above-mentioned characteristic is also possible, please consult.
●Common mode winding with section bobbin. ※●Withstanding voltase : 250V DC for one minute between lines.

Shape and Dimensions

●DCM5 Series



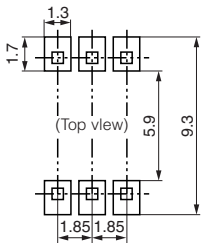
●DCM11 Series



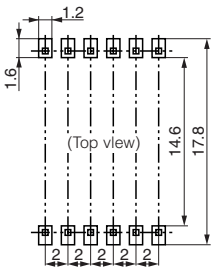
[mm]

Rcecommended Land Pattern

●DCM5 Series



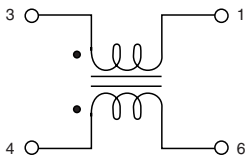
●DCM11 Series



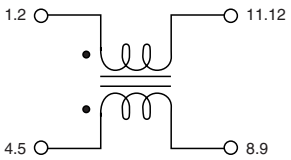
[mm]

Circuit Diagram

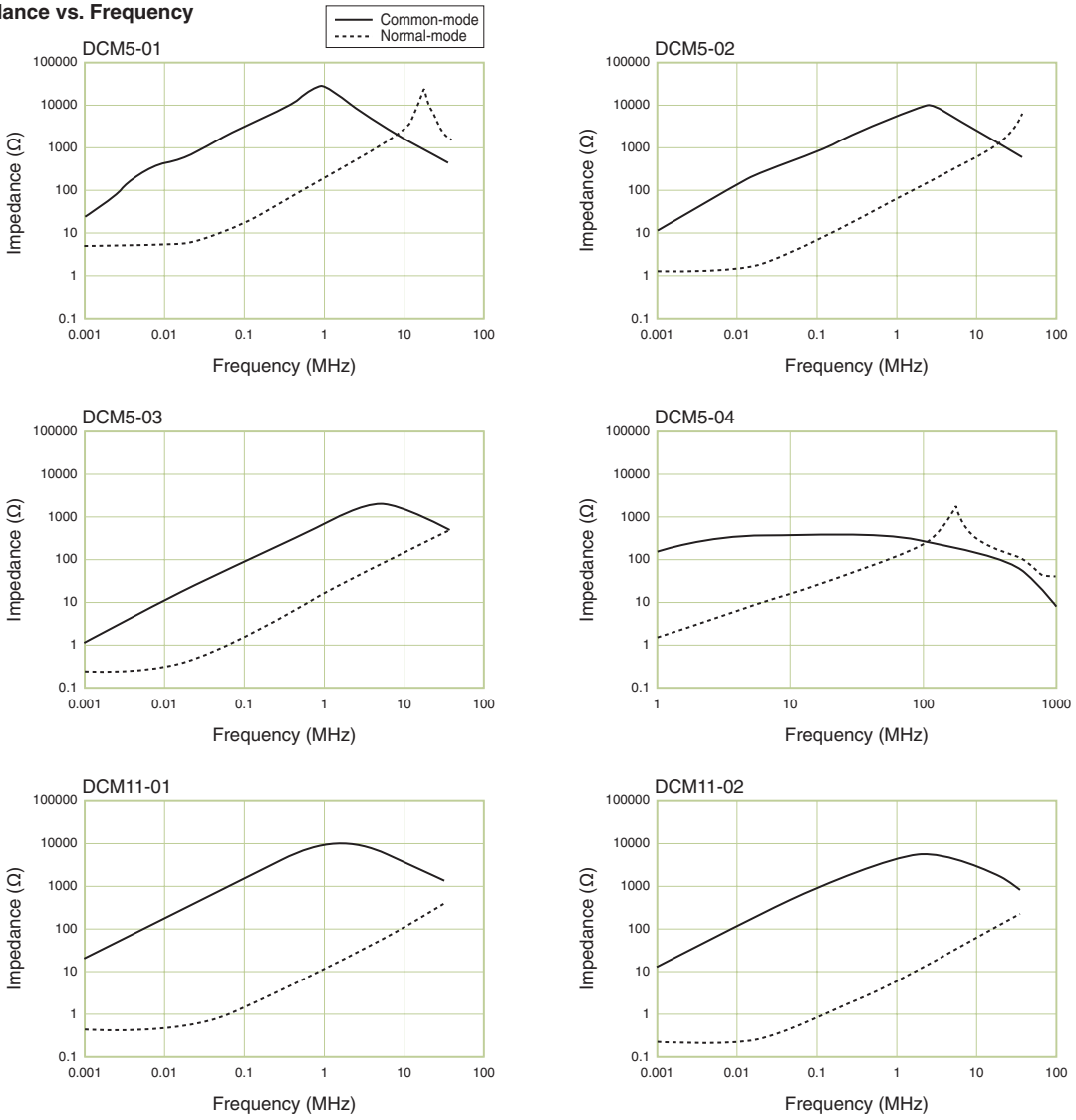
●DCM5 Series



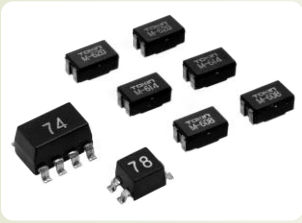
●DCM11 Series



Impedance vs. Frequency



EMC Chip Filters
M-500CT/M-600T Series



• Tape and Reel Dimensions (see page 45-47) • Precautions (see page 44)

M-500CT Series

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (Ω) min.	DC resistance (mΩ) max.	Operating temperature range (˚C)
M-521CT	50	1.0	700 (at 10 MHz)	100	–25 to +85
M-522CT	50	1.0	200 (at 20 MHz)	100	–25 to +85
M-523CT	50	1.5	200 (at 20 MHz)	65	–25 to +85
M-532CT	50	0.5	450 (at 100 MHz)	90	–25 to +85
M-538CT	50	0.1	800 (at 100 MHz)	220	–25 to +70
M-542CT	50	0.5	200 (at 10 MHz)	120	–20 to +75

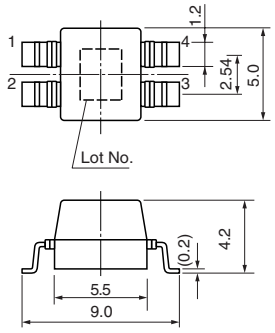
M-600T Series

Model	Rated voltage DC (V)	Rated current DC (A)	Impedance (Ω) min.	DC resistance (mΩ) max.	Operating temperature range (˚C)
M-608T	50	0.1	300 (at 100 MHz)	80	–20 to +80
M-614T	50	0.1	1000 (at 50 MHz)	120	–20 to +80
M-620T	50	0.1	1000 (at 30 MHz)	160	–20 to +80

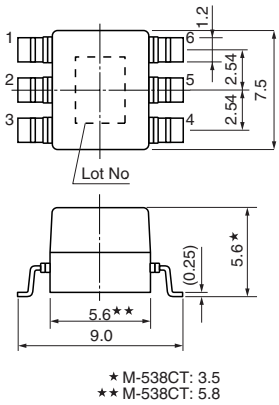
• Insulation resistance: more than 10MΩ (100V DC, between lines)

Shape and Dimensions

●M-521CT, M-522CT, M-523CT

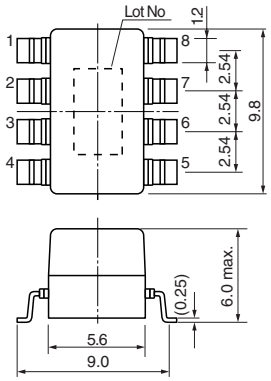


●M-532CT, M-538CT

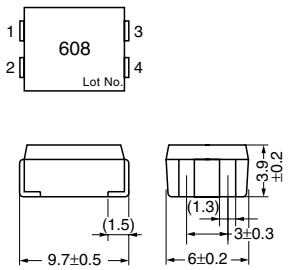


★ M-538CT: 3.5
★★ M-538CT: 5.8

●M-542CT



●M-608T, M-614T, M-620T

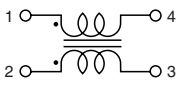


tolerance±0.2

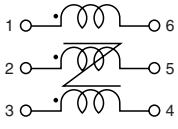
[mm]

Circuit Diagram

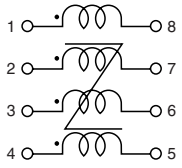
●M-521CT, M-522CT, M-523CT



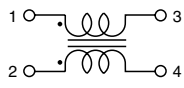
●M-532CT, M-538CT



●M-542CT

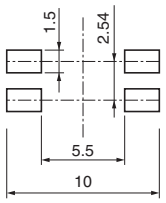


●M-608T, M-614T, M-620T

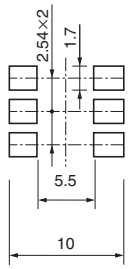


Recommended Land Pattern

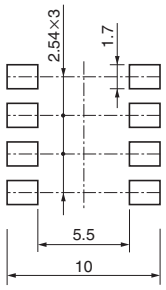
●M-521CT, M-522CT, M-523CT



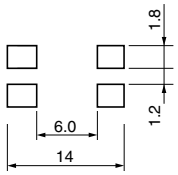
●M-538CT



●M-542CT



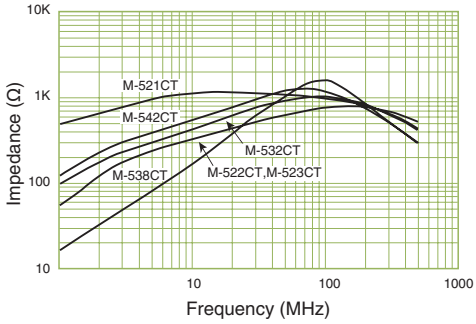
●M-608T, M-614T, M-620T



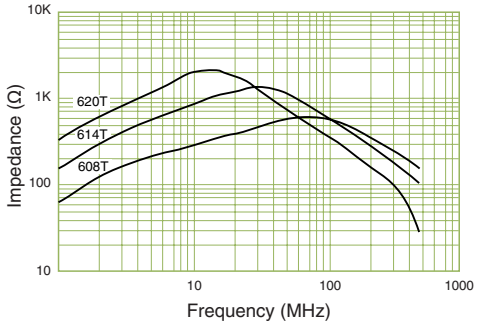
[mm]

Impedance vs. Frequency

M-500CT Series



M-600T Series



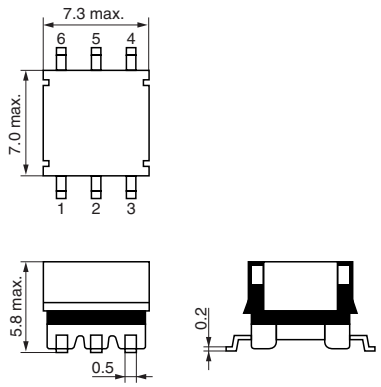
SCM Series

• Tape and Reel Dimensions (see page 47) • Precautions (see page 44)

Model	Rated voltage (V)	Rated current (A)	L (μH) min	Rdc (mΩ) max
SCM5-01	50	0.2	2540	3180
SCM5-02	50	0.5	520	510
SCM5-03	50	1.0	210	180
SCM5-04	50	2.0	30	30

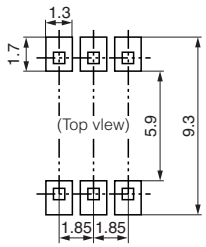
●Inductance measurement condition : f = 10KHZ 0.1V ※●Insulation resistance : more than 100MΩ(DC100V, 1min, between lines) ●Operating temperature range(℃) : -20 to 110(includes the selftemp.rise.)
Look : By number-of-turns adjustment, correspondence to products other than the above-mentioned characteristic is also possible, please consult.
●Bitiller winding. ※●Withstanding voltage : 100V DC for one minute between lines.

Shape and Dimensions



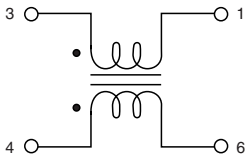
[mm]

Rcecommended Land Pattern

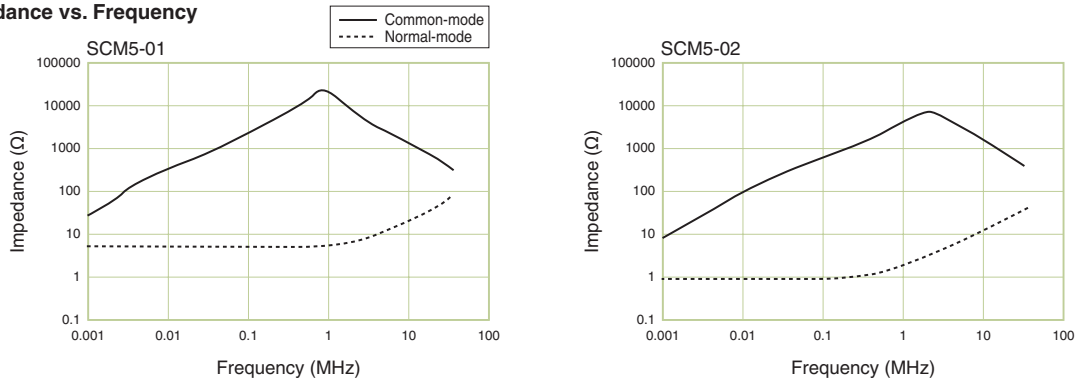


[mm]

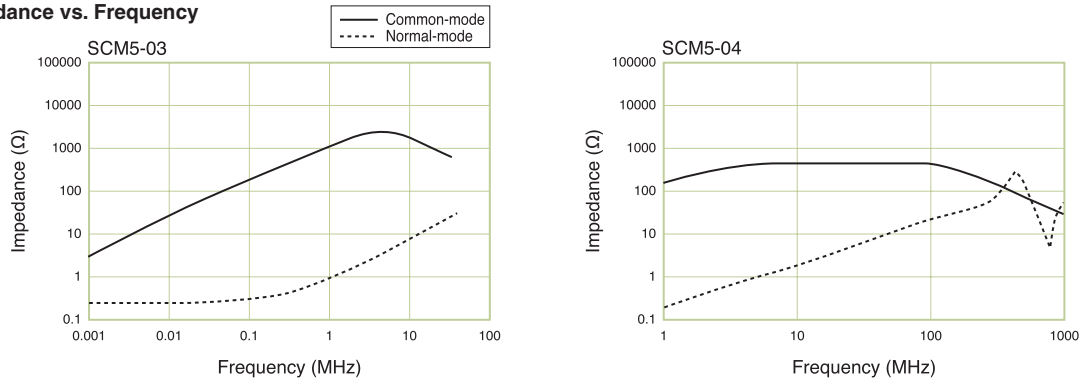
Circuit Diagram



Impedance vs. Frequency



Impedance vs. Frequency



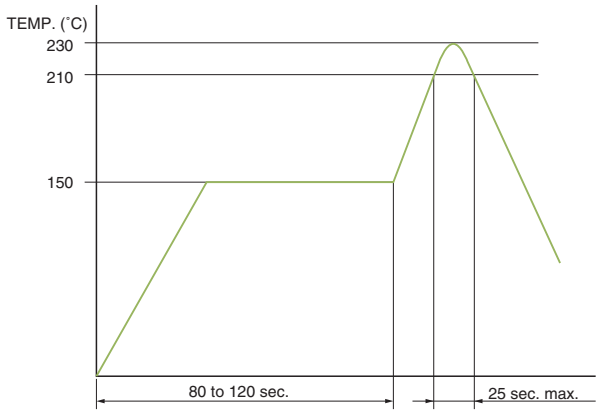
Precautions

Shelf Life

Use within 6 months. If the product is used after a storage period of 6 months or longer, confirm its solderability before use.

Recommended Soldering Conditions

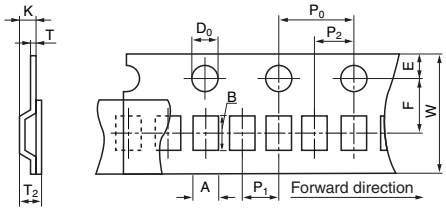
- Soldering irons:
  Tip temperature: 300±5˚C
  Duration of heat: approx. 4 seconds
- Flow soldering: not suitable
- Reflow soldering: Refer to the following temperature profile.



Tape and Reel Dimensions

SBS9080 (1000pcs./reel)

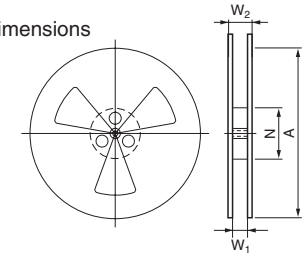
Dimensions of indented square-hole plastic tape



[mm]

A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, −0	0.6≧	7.2≧	7.0≧
9.5	10.3	16	7.5	1.75	12	2.0	4.0	1.5	0.6	7.2	7.0

Reel dimensions

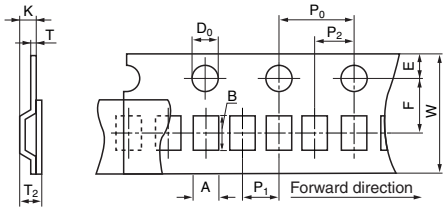


[mm]

A	N	W_1	W_2
		±0.5	25≧
330	100	17.5	25

SBP-5001T (1000pcs./reel)

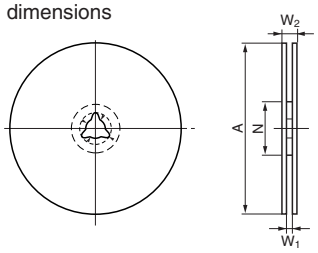
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, −0	0.4≧	5.7≧	5.8≧
9.0	9.0	16	7.5	1.75	12	2.0	4.0	1.5	0.4	5.7	5.8

Reel dimensions

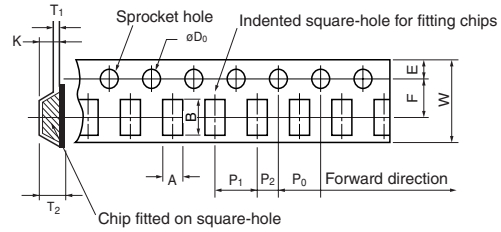


[mm]

A	N	W_1	W_2
		+6, −0	25≧
330	79	16	25

M-521CT/M-522CT/M-523CT (conforms to EIAJ RC-1009) (1500pcs./reel)

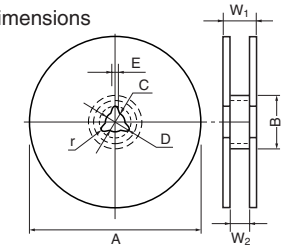
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, −0	max.	max.	max.
5.3	9.5	16	7.5	1.75	8.0	2.0	4.0	1.5	0.6	6.5	6.4

Reel dimensions

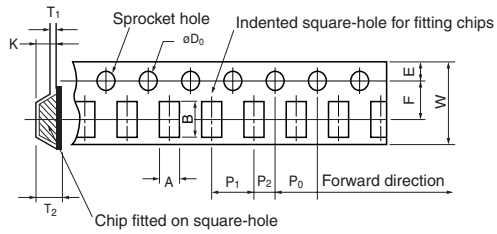


[mm]

A	B	C	D	E	r	W_1	W_2
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, −0
330	79	13	21	2.0	1.0	25	16

M-532CT (conforms to EIAJ RC-1009) (1000pcs./reel)

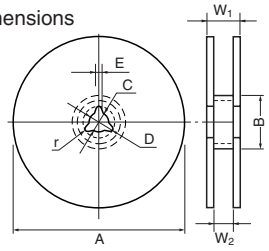
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, –0	max.	max.	max.
7.9	9.4	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	6.9	6.8

Reel dimensions

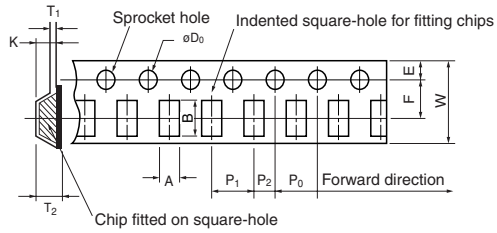


[mm]

A	B	C	D	E	r	W_1	W_2
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, –0
330	80	13.0	21.0	2.0	1.0	25.0	16.0

M-538CT (conforms to EIAJ RC-1009) (1500pcs./reel)

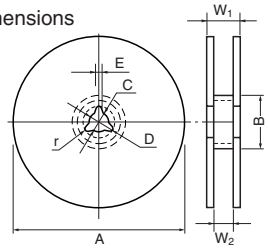
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, –0	max.	max.	max.
7.9	9.4	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	4.6	4.5

Reel dimensions

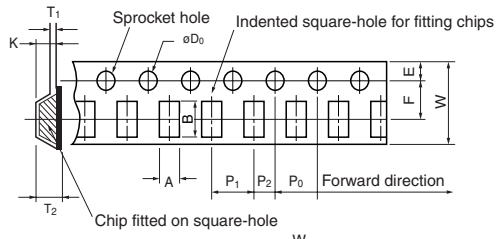


[mm]

A	B	C	D	E	r	W_1	W_2
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, –0
330	80	13.0	21.0	2.0	1.0	25.0	16.0

M-542CT (conforms to EIAJ RC-1009) (1000pcs./reel)

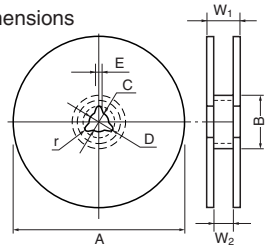
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, –0	max.	max.	max.
9.5	10.5	16.0	7.5	1.75	12.0	2.0	4.0	1.5	0.6	7.2	7.0

Reel dimensions

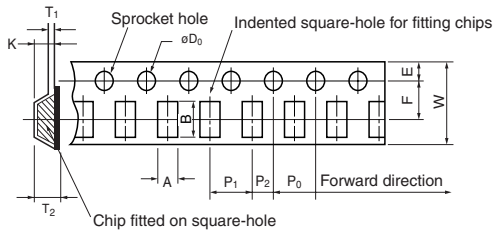


[mm]

A	B	C	D	E	r	W_1	W_2
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, –0
330	100	13.0	21.0	2.0	1.0	25.0	17.5±0.5

M-608T/M-614T/M-620T (conforms to EIAJ RC-1009) (1500pcs./reel)

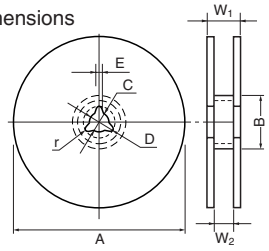
Dimensions of indented square-hole plastic tape



[mm]

A	B	W	F	E	P_1	P_2	P_0	D_0	T_1	T_2	K
±0.3	±0.3	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1, –0	max.	max.	max.
6.4	10.2	16.0	7.5	1.75	8.0	2.0	4.0	1.5	0.6	6.5	6.4

Reel dimensions

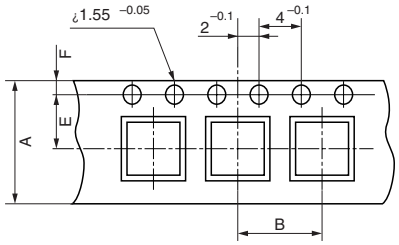


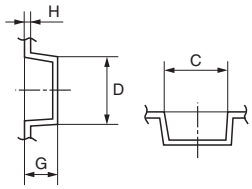
[mm]

A	B	C	D	E	r	W_1	W_2
±3.0	±2.0	±0.2	±0.8	±0.5	—	max.	+6, –0
330	79	13.0	21.0	2.0	1.0	25.0	16.0

DCM5/SCM5 Series (2000pcs /reel)

Dimensions of indented square-hole plastic tape





[mm]

Model	A	B	C	D	E	F	G	H
SCM5 Series DCM5 Series	16±0.3	8.0	6.3	8.3	7.5	1.75	5.2	0.38±0.05
DCM Series	24±0.3	20	14.5	17.2	11.5	1.75	6.8	0.38±0.05