

One Vision, the Strength of Many

Incorporated in 1992, Walsin Technology Corporation is a member of Passive System Alliances, providing complete passive component solutions to worldwide customers.



華新科技
WALSIN
TECHNOLOGY CORPORATION

Product Portfolio

- Multilayer Ceramic Capacitor
- Varistor and Disc Ceramic Capacitor
- Chip Resistor
- Inductor
- LTCC RF Filter
- Antenna Switch and SAW Filter
- Customized Antenna, Connector and Cable Assembly
- KAMAYA Chip Resistors, ESD Suppressor, and Chip Fuse

Multilayer Ceramic Capacitor Product Line

Size											
01005	0201	0402	0603	0805	1206	1210	1808	1812	1825	2220	2225
											

Dielectric						
X8G (-55~150°C)	NP0 (-55~125°C)	X8R (-55~150°C)	X7R/X7S (-55~125°C)	X6S (-55~105°C)	X5R (-55~85°C)	Y5V (-25~85°C)
						

Application and Series						
Application	Series	Dielectric	Size	Rated Voltage	Capacitance	Sample
General Application	General Purpose	NP0, X7R, X7S, X6S, X5R	01005, 0201, 0402, 0603, 0805, 1206, 1210, 1812, 1825, 2220, 2225	4V ~ 100V	0.1pF ~ 220uF	
High Frequency Application	HH (High Q/Low ESR)	NP0	0201, 0402, 0603, 0805	10V ~ 630V	0.1pF ~ 3300pF	
	RF (Ultra High Q/Low ESR)	NP0	01005, 0201, 0402, 0603, 0805, 0505, 1111	6.3V ~ 1500V	0.1pF ~ 1000pF	
	RH (High Reliability)	X8G	0402, 0505, 0603, 0805	200V, 250V	0.1pF to 10pF	
	UF (Accuracy/Narrow Tolerance)	NP0	0201, 0402	25V~100V	0.1pF to 3pF	
Automotive Application	MT (AEC-Q200)	NP0, X7R	0201, 0402, 0603, 0805, 1206, 1210	10V ~ 1KV	0.1pF ~ 2.2uF	
	MG (Non AEC-Q200)	NP0, X7R, X5R	0201, 0402, 0603, 0805, 1206, 1210, 1812	6.3V ~ 1KV	0.1pF ~ 10uF	
	ST (Soft Termination AEC-Q200)	X7R	0603, 0805, 1210, 1206	10V~50V, 100V	1000pF ~ 0.1uF	
	RT (Ultra Hi-Q AEC-Q200)	NP0	0201, 0402	25V~50V	0.1pF ~ 56pF	
Integration Application	FT (Feed Thru/3-Terminal MLCC)	X7R, X5R	0402, 0805	10V, 16V, 25V, 50V	10nF~ 4.3uF	
	TT (Low Profile)	X7R, X5R	0402, 0603, 0805, 1206, 1210	6.3V ~ 100V	0.22uF ~ 47uF	
	M1 & M2 (Mega Cap MLCC)	NP0, X7R	1210, 1812, 1825, 2220, 2225	50V ~ 1KV	1000pF ~ 47uF	
Power Management and Safety Application	Middle & High Voltage	NP0, X7R	0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	200V ~ 4KV	0.5pF ~ 2.2uF	
	S2 (Safety Certificated X1/Y2)	NP0, X7R	1808, 1812, 2211, 2220	Impulse voltage: 5000V/6000V	3pF ~ 4.7nF	
	S3 (Safety Certificated X2)	NP0, X7R	1808, 1812, 2220	Impulse voltage: 2500V	3pF ~ 56nF	
	SH (Soft Termination)	NP0, X7R, X5R	0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	6.3V ~ 3KV	0.5pF ~ 47uF	
	HT (High Temperature: -55 to +150°C)	X8G(NPO), X8R	0402, 0603, 0805, 1206, 1210	10V ~ 100V	0.2pF ~ 0.047uF	

Varistor and Disc Ceramic Capacitor Product Line

Varistor

Metal Oxide Varistor (MOV)

Low Voltage

- Rated Voltage: 11Vrms~40Vrms
- Varistor Voltage: 18V~68V (1 mA DC)
- Disc Size: 5Ø/7Ø/10Ø/14Ø/20Ø
- Lead Space: 5mm/7.5mm/10mm



Middle Voltage

- Rated Voltage: 50Vrms~420Vrms
- Varistor Voltage: 82V~680V (1mA DC)
- Disc Size: 5Ø/7Ø/10Ø/14Ø/18Ø/
20Ø/25Ø/32Ø/34Ø/40Ø/53Ø
- Lead Space: 5mm/7.5mm/
10mm/12.7 mm/25.4 mm



High Voltage

- Rated Voltage: 460Vrms~680Vrms
- Varistor Voltage: 750V~1100V(1 mADC)
- Disc Size: 5Ø/7Ø/10Ø/14Ø/18Ø/
20Ø/25Ø/32Ø/34Ø/40Ø/53Ø
- Lead Space: 5/7.5/10/12.7/25.4 mm



Disc Ceramic Capacitor

Disc DC Capacitor

Class I

- Dielectric: SL
- Rated Voltage & Capacitance:
50V dc, 100V dc : 15pF to 820pF
500V dc : 18pF to 390pF
1KV dc / 2KV dc : 15pF to 220pF
3KV dc, 6KV dc : 10pF to 100pF
- Lead Space: 2.5mm(50vdc&100Vdc),
5mm, 7.5mm, 10mm



Class II

- Dielectric: Y5R(LN)
- Rated Voltage: 1KV dc, 2KV dc
- Capacitance: 100pF to 1000pF
- Lead Space: 5mm, 7.5mm, 10mm



Class II

- Dielectric: Y5P,Y5U,Z5U,Z5V, Y5V
- Rated Voltage & Capacitance:
50V dc, 100V dc : 100pF to 22000pF
500V dc, 1KV dc : 100pF to 10000pF
2KV dc, 3KV dc : 100pF to 10000pF
- Lead Space: 2.5mm(50vdc&100Vdc),
5mm, 7.5mm, 10mm



Disc Y Capacitor

(Meet with IEC-60384-14 safety standard)

AH Series

- Safety Class: X1/Y1
- Dielectric: SL, Y5P, Y5U, Y5V
- Rated Voltage:
X1: 400Vac, 500Vac, 1500Vdc
Y1: 250Vac, 400Vac, 500Vac, 1500Vdc
- Capacitance: 10pF to 4700pF
- Lead Space: 10mm



AC Series

- Safety Class: X1/Y2
- Dielectric: SL, Y5P, Y5U, Y5V
- Rated Voltage:
X1: 400Vac, 440Vac, 500Vac, 1500Vdc
Y2: 250Vac/300Vac, 500Vac, 1500Vdc
- Capacitance: 10pF to 10000pF
- Lead Space: 5mm, 7.5mm, 10mm



Radial Lead Type

Multilayer Ceramic Capacitor

RD21

- Dielectric: NPO,X7R,Y5V
- Rated Voltage: 10V dc to 1KV dc
- Capacitance: 1pF to 22uF
- Lead Space: 5mm



RD20

- Dielectric: NPO,X7R,Y5V
- Rated Voltage: 10Vdc to 250Vdc
- Capacitance: 1pF to 10uF
- Lead Space: 2.5mm



SMD Type Safety

Standard Ceramic Capacitor

SYW series

- Dielectric SL, Y5P, Y5U, Y5V
- Rated Voltage (Y1: 250V~/400V~)
- Capacitance 10~2200pF
- Size: 7.8mm(L) x 5.4mm(W)



SYL series

- Dielectric SL, Y5P, Y5U, Y5V
- Rated Voltage (X1:440V~/Y2:300V~)
- Capacitance 22~2200pF
- Size 4.3mm(L) x 3.5mm(W)



Chip Resistor Product Line for Non-Automotive Application

Non-Automotive Grade Chip Resistor (JIS C 5201-1)															
Product Category	Product Type	Tolerance (%)	R-Range (ohm)	Power (W)	01005 (0402)	0201 (0603)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)	1210 (3225)	1218 (3248)	2010 (5025)	2512 (6432)	Application
Thick Film General Purpose	WR	5%, 1%	1 ~ 10MR	1/20W ~ 1W	-	-									All kinds of electronic equipments or devices
Thick Film General Purpose Total Pb free	WR_R	5%, 1%	1 ~ 10MR	1/20W ~ 1W	-										
Thick Film Current Sense	WWxxX	5%, 1%	10mR ~ 976mR	1/10W ~ 2W											
Thick Film Power Current Sense	WWxxP/W/C	5%, 1%	10mR ~ 976mR	1/10W ~ 2W		-									
Metal Plate Current Sense (NiCu)	WWxxA/M/N	5%, 1%	1mR ~ 220mR	1/2W ~ 3W											
Metal Plate Current Sense (MnCu)	WWxxB/J/K	5%, 1%	1mR ~ 220mR	1/2W ~ 3W											
Metal Foil Current Sense (MnCu)	WWxxD	5%, 1%, 0.5%	2mR ~ 700mR	1/3W ~ 2W											
Thin Film High Precision	WFXx	1%, 0.5%, 0.25%, 0.1%, 0.05%	1R ~ 3MR	1/32W ~ 1W		-									Power Supply, Measuring instrument, medical devices,etc
Thin Film High Precision Anti-sulfur	SFXx	1%, 0.5%, 0.25%, 0.1%, 0.05%	4.7R ~ 1.5MR	1/16W ~ 1W											
Thick Film High Precision	WFXxH/K	0.5%, 0.1%	10R ~ 1MR	1/16W ~ 1/3W											
Thick Film High Power	WFXxP/A	5%, 1%, 0.5%, 0.1%	1R ~ 1MR	1/8W ~ 3W											Power Supply, Industry, etc
Thick Film High Power Total Pb free	WFXxP_R	5%, 1%	1R ~ 1MR	1/8W ~ 2W											
Thick Film Power Surge	WKxxS	5%, 10%	0.27R ~ 22MR	1/8W ~ 1W											Power Supply, Inverter, DSC, Lighting
Thick Film High Voltage (UL)	WFXxN	5%, 1%	100KR ~ 100MR	RATED VOLTAGE				200V	400V	800V			2000V	3000V	Power Supply, Inverter, DSC, Lighting
				1/10W ~ 1W											
Array	Product Type	Tolerance (%)	R-Range (ohm)	Power (W)	0201x2	0201x4	0402x2	0402x4	0402x8	0603x2	0603x4				Application
Thick Film Convex Array	WAxxX/Y/W	5%, 1%	10R ~ 1MR	1/16W ~ 1/10W											Ram module, SSD, PC&P
Thick Film Flat Array	WAxxA/B/F/G	5%, 1%	10R ~ 1MR	1/32W											
Thick Film Concave Array	WAxxT/U	5%, 1%	10R ~ 1MR	1/16W ~ 1/10W											

Chip Resistor Product Line for Automotive Application

Automotive Grade Chip Resistor (AEC-Q200)															
Product Category	Product Type	Tolerance (%)	R-Range (ohm)	Power (W)	01005 (0402)	0201 (0603)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)	1210 (3225)	1218 (3248)	2010 (5025)	2512 (6432)	Application
Thick Film General Purpose	MR	5%, 1%	1 ~ 10MR	1/20W ~ 1W		-	-	-	-						Auto. Industry, etc
Thick Film General Purpose Total Pb free	MR_R	5%, 1%	1 ~ 10MR	1/16W ~ 1W			-	-	-						
Thick Film General Purpose Anti-sulfur	SR	5%, 1%	1 ~ 10MR	1/20W ~ 1W			-	-	-						Auto. ECU, Base Station, Server
Thick Film General Purpose Anti-sulfur Total Pb free (SR_R)	SR_R	5%, 1%	1 ~ 10MR	1/20W ~ 1W			-	-	-						
Thick Film Current Sense	WWxxX_J	5%, 1%	10mR ~ 976mR	1/10W ~ 2W			-	-	-						Auto. Industry, Battery charger, Battery Pack, Motor Unit, Power Supply
Thick Film Power Current Sense	WWxxP/C_J	5%, 1%	10mR ~ 976mR	1/10W ~ 2W		-	-	-	-						
Metal Plate Current Sense (NiCu)	WWxxA/M/N_J	5%, 1%	1mR ~ 220mR	1/2W ~ 3W											
Metal Plate Current Sense (MnCu)	WWxxB/I/K_J	5%, 1%	1mR ~ 220mR	1/2W ~ 3W											
Metal Foil Current Sense (MnCu)	WWxxD_J	5%, 1%, 0.5%	2mR ~ 700mR	1/3W ~ 2W			-	-	-						Auto. Industry
Thin Film High Precision	WFxx_Q	1%, 0.5%, 0.25%, 0.1%, 0.05%	1R ~ 3MR	1/32W ~ 1W		-	-	-	-						
Thin Film High Precision Anti-sulfur	SFxx_Q	1%, 0.5%, 0.25%, 0.1%, 0.05%	4.7R ~ 1.5MR	1/16W ~ 1W			-	-	-						Auto. ECU, Base Station, Server
Thin Film High Precision High Stability	MFxx (TaN)	1%, 0.5%, 0.25%, 0.1%, 0.05%	10R ~ 1MR	0.062W ~ 0.4W			-	-	-						Auto. ECU, Base Station, Server
Thick Film High Precision	WFxxH/K_J	0.5%, 0.1%	10R ~ 1MR	1/16W ~ 1/3W			-	-	-						Auto. Industry
Thick Film High Precision Anti-Sulfur	SFxxH/ SFxxH_A	0.5%, 0.1%	10R ~ 1MR	1/16W ~ 1/3W			-	-	-						Auto. ECU, Base Station, Server
Thick Film High Power	WFxxP_J	5%, 1%	1R ~ 1MR	1/8W ~ 2W			-	-	-						Power Supply, PC&P, MP
Thick Film Power Surge	MFxxE	5%, 1%	1R ~ 1MR	1/3W ~ 2W			-	-	-						Power Supply, PC&P, MP
Thick Film High Voltage (UL)	WFxxN_J	5%, 1%	100KR ~ 100MR	RATED VOLTAGE				200V	400V	800V			2000V	3000V	Power Supply, Inverter, Lighting, LED TV, DSC
				1/10W ~ 1W				-	-	-					

Array	Product Type	Tolerance (%)	R-Range (ohm)	Power (W)			0402x2	0402x4	0603x2	0603x4					Application
Thick Film Convex Array	WAxxX_J	5%, 1%	10R ~ 1MR	1/16W ~ 1/10W				-							Ram Module
	MAxxX	5%, 1%	10R ~ 1MR	1/16W ~ 1/10W				-							Auto. Industry
Thick Film Convex Array Anti-Sulfur	SAxx	5%, 1%	10R ~ 1MR	1/16W ~ 1/10W			-	-	-						Base Station, Ram Module

Inductor Product Line

Power Inductor

Molded Power Inductor									
WLPH201208 AEC-Q200 Compliant	WLPH201610/12 AEC-Q200 Compliant	WLPH252010/12 AEC-Q200 Compliant	WLPM444220	WLPM545230	WLPM706630	WLPM A0A040	WLPM131350	WLPM131365	WLPM171770
									
Multi-layer Ferrite Power Inductor				Assembly Shielded Wire Wound Power Inductor					
WLFM160808	WLFM201609	WLFM201219	WLFM252019	WLSS214P	WLSS428P	WLSS125P	WLSSA50G		
									
Shielded Wire Wound Power Inductor				Unshielded Wire Wound Power Inductor					
WLPN404010	WLPN505020	WLPN606045	WLPN808042	WLSN032D	WLSN054D	WLSN073D	WLSN084F	WLSN105D	
									

RF Inductor

Multi-Layer High Frequency (AEC-Q200 Compliant)	Multi-Layer Inductor (AEC-Q200 Compliant)			Wire Wound Ceramic Chip Inductor (AEC-Q200 Compliant/ High current/ High Q)					
WLCM0603TG/WLCM0603TN	WLCM0603	WLCM1005	WLCM1608	WLCW1005	WLCW1608	WLCW2012	WLCW2520	WLCW3225	WLCW4532
									
Air Wound Coil Inductor (AEC-Q200 Compliant)				Square Air Wound Coil Inductor (AEC-Q200 Compliant)					
WLAC291	WLAC292	WLAC293	WLAC294	WLQC0806/ WLQC0807/ WLQC0908			WLQC1111/ WLQC1515/ WLQC2222/ WLQC2929		
									

Signal and Noise

Chip Bead (AEC-Q200 Compliant/Standard/High current)	Wire Wound Ferrite Chip Inductor			Common Mode Choke (AEC-Q200 Compliant)		Balun Transformer
WLBD1005/1608/2012/3216/3225/4516/4532	WLCW1608	WLCW2012	WLCW2520	WTCF2012	WTCF2012FH	WTBL2012
						

Antenna, Connector & Cable Assembly Product Line

ANT/FRA/ECA Series: Chip Antenna

GPS		Bluetooth / Wi-Fi / Zigbee							Wi-Fi	TPMS	NFC	LoRa	
1.575GHz		2.45GHz							2.4/5GHz	433MHz	13.56MHz	868MHz	915MHz
1003	3216	2012	3216	5220	7635	8010	9937	1903	6050	1204	6525	1204	
													

DPA Series: External Dipole Antenna (W/O Cable and W/ Cable)

Specification

- Size: 8709, 1310, 1313, 1513, 1713, 2513, 3913...
- Antenna Gain: 2dBi~9dBi
- Impedance: 50 ohm

Options:

- Connector: SMA/IPEX/Cable/Core
- Color: Black/White
- Frequency: WiFi 2.4GHz/5GHz, LoRA 433MHz/868MHz/915MHz, LTE 700-960/1710-2690MHz, WiFi 6E



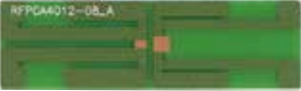
PCA Series: PCB Antenna

Specification

- Impedance: 50 ohm

Options:

- Size: Customization
- Connector: IPEX/Cable/Core
- Frequency: WiFi 2.4GHz/5GHz, WiFi 6E, LoRA 433MHz/868MHz/915MHz, LTE 700-960/1710-2690MHz



FPA Series: FPC Antenna

Specification

- Impedance: 50 ohm
- Antenna Gain: 3dBi

Options:

- Size: Customization
- Connector: IPEX/Cable/Core
- Frequency: WiFi 2.4GHz/5GHz, WiFi 6E, LoRA 433MHz/868MHz/915MHz, LTE 700-960/1710-2690MHz



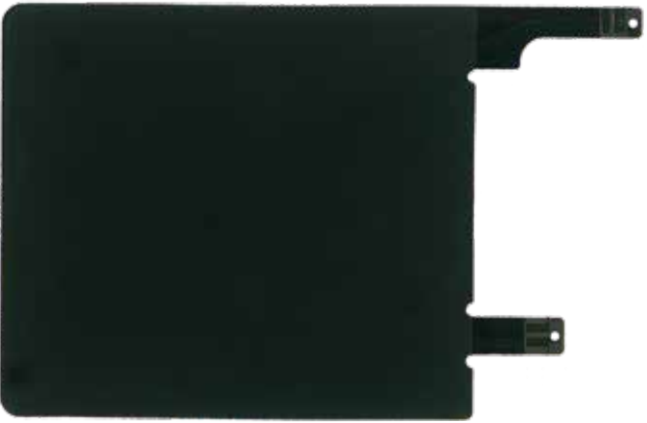
WPC series: Wireless Power Charger

Specification

- Qi available

Material

- FPC+ferrite, Coil+ferrite available



NFC Series: NFC Tag

Specification

- Size: Customization
- Material: PCB + Epoxy



CON Series: Connector

Options

- MCX, MMCX, MMC



NFC Series: NFC Antenna

Specification

- Size: Customization
- Material: FPC, PCB available
- Chipset: NXP, ST, Infineon and ... available



MTA Series: PIFA Metal Stamping Antenna

Specification

- Impedance: 50 ohm

Options:

- Size: Customization
- Connector: IPEX/Cable/SMD/DIP
- Band: 2.4GHz~2.5GHz/5GHz, WiFi 6E



CBA Series: Antenna Cable Assembly

Cable Options

- RG-316, RG-178, RG-174, OD:1.13, OD:1.37

Connector Options

- SMA, N type, IPEX, MCX, SMC



Antenna Switch and SAW Filter Product Line

Antenna Switch				
Application	Interface	Type	Size	Sample
LTE Series	GPIO	SPDT	1107	
		SP4T	1111	
			2020	
		SP6T	2020	
		SP8T	2020	
	MIPI	SP10T	2424	
5G Series	GPIO	SPDT	1107	
		DPDT	1511	
	MIPI	SP4T	1111	
		3P3T	2020	
		DP4T	2020	
WiFi Series	GPIO	SPDT	1010	
			1515	
		SP3T	1515	
		DPDT	1515	
WiFi 6E Series	GPIO	SPDT	1010	
		DPDT	1515	
Antenna Tuner Series	MIPI	SP4T	1511	
		4SPST	1515	
			1511	

SAW Filter					
Application	Type	Band	Frequency(MHz)	Size	Sample
GPS/WIFI Series	SAW Filter	GPS 3mode	1559-1605	1109	
	BAW Filter	Wi-Fi co-existence	2401-2483	0907	
				1109	
TDD LTE Series	SAW/BAW Filtler	B40	2300-2400	1109	
		B41 (120MHz)	2535-2655	1109	
		B41F (194MHz)	2496-2690	1109	
		B41F (194MHz)	2496-2690	1411	
FDD LTE Filter	SAW Filter	B25	1930-1995	1109	
		B26	859-894	1109	
	SAW Duplexer	B1	1920-1980 2110-2170	1814	
		B5	824-849 869-894	1814	
		B7	2500-2569 2620-2689	1814	
	BAW Duplexer	B3	1710-1785 1805-1880	1814	

Low Temperature Cermaic Co-firing (LTCC) RF Filter Product Line

RF Filter										
Series	Application	Frequency	Size	Sample	Series	Application	Frequency	Size	Sample	
Band Pass Filter	Bluetooth /Wi-Fi/Zigbee	2.45GHz	1005		Balun	GSM / WiFi / LTE	699-960 MHz 800 - 1000 MHz 1500 -3000 MHz 5.15 ~ 7.125 GHz	1608 /2012		
			1608				Bluetooth / WiFi / ZigBee	2.45 GHz	1005 /1608 /2012	
			2012					LTE	2.3-2.7 GHz	1005 / 1608
			2520			5G NR Power Divider		3300 ~ 5000 MHz	1608	
	1608		3400 ~ 3800 MHz	2012						
	Wi-Fi	5GHz 5.15 ~ 7.125 GHz	2012			5G NR	3300 ~ 3900 MHz	3225		
			2.3GHz	1608						
	TD-LTE	2.5GHz	2012		CPL(Coupler)	Bluetooth/Wi-Fi/Mobile	Various Frequency bands	0605		
		5G NR	3300 ~ 4200	2012 / 3225					1608	
	DR Filter	5-7 GHz	8x4, 9x4, 9x5			Diplexer	Wi-Fi	2.45GHz/5GHz	1005	
UWB	6.23~8.5GHz	1608/2012/2520		1608						
				2012						
Low Pass Filter	Bluetooth/Wi-Fi	2.45GHz	1005		Triplexer	GPS/Wi-Fi	1.575GHz/2.45GHz/5GHz	2012		
			1608							
			2012							
	Wi-Fi	5GHz & 5.15 ~ 7.125 GHz	1608		MoCA Band Pass Filter	D-Low Band	1125~1225MHz	3225		
			1608				MoCA Extended D-Band	1125-1675MHz	3225	
	TD-LTE	700MHz-2690MHz	0605			MoCA D-Band WAN2	1350-1675MHz	3225		
			1005			MoCA C4-Band WAN1	975-1025MHz	3225		
			2.6GHz	1608			MoCA E-Band	475-675MHz	3225	
			3.5GHz	1608				400-700MHz	3225	
	LoRa	400 ~ 470MHz	2012			MoCA High Pass Filter	Satellite Broadcast	950-2150HHz	3225	
500 ~ 700MHz		2012								
Balanced Filter (Balun Filter)	Bluetooth/Wi-Fi	2.45GHz	1608		WiFi 6 / WiFi6/E Diplexer	WiFi 6	5490 - 5850 MHz	1608		
			2012			WiFi 6/E	5150-5835 MHz 6095-7125 MHz	3225/4532		
			2520			WiFi 6 Diplexer	2400-2500 MHz 5150-7125 MHz	2012		
	LTE	2.6GHz-3.5GHz	2012							

KAMAYA Chip Resistors	Product Category		Product Type	Tolerance on Rated Resistance (%)	Rated Resistance Range	Chip Size (mm)									Application	
						0402	0603	1005	1608	2012	3216	3225	5025	6332		
	Automotive Grade		RMC	±0.5, ±1,±2,±5	1Ω~24MΩ		■	■	■	■	■	■	■*	■*	■	Automotive Industry, etc
			RACA	±1, ±5	1Ω~1MΩ	1005x4		1608x4		1608x4						
	General Purpose		RMC	±0.5, ±1,±2,±5	1Ω~24MΩ	■	■	■	■	■	■	■	■	■	■	Mobile Phone, Tablets, Lighting, Power Supply, SSD, RAM, Module, PC & Peripherals, Digital Still Camera, etc
		Precision (Thick Film)	RGC	±0.1,±0.5, ±1	3.3Ω~4.7MΩ		■	■	■	■	■					
		High Precision (Thin Flim)	RNC	±0.1, ±0.25,±0.5, ±1	10Ω~330KΩ		■	■	■	■	■					Environmental Concern
		Pb Free	RMPC	±1, ±5	1Ω~10MΩ	■	■	■	■	■	■	■				
		High Power	RMCH	±0.5, ±1,±5	1Ω~1MΩ		■	■	■	■	■	■				
	Anti Sulfuration	Wide Terminal	TWMC	±1, ±5	1Ω~1MΩ							■		■	■	Power Supply, Automotive Industry, etc
		Barrier/ Special electrode	RMGW	±0.5, ±1,±5	1Ω~10MΩ		■	■	■	■	■	■	■	■	■	
		Special electrode	RMAW	±0.5, ±1,±5	1Ω~10MΩ		■									Automotive Electronic Control Unit (ECU), Automotive Industry, HVAC, etc
	Trimmable Chip		FCR	0~30, ±15	1Ω~4.7MΩ				■	■	■	■	■	■	■	
	High Ohmic		RHC	±5,±10, ±20,±30,±50	100MΩ~150GΩ				■	■						Instruments, Infrared Ray, Power Supply, etc
	High Voltage		RVC	±0.5,±1, ±2,±5,±10	47Ω~51MΩ				■	■	■			■	■	
		Special High Voltage type	RZC	±5, ±10, ±20	1MΩ~16MΩ									■	■	Power Supply, Inverter, Digital Camera, Lighting, LED TV, etc
	High Power	Anti-Sulfuration	RVAC	±0.5, ±1, ±5	47Ω~51MΩ						■					
		Anti Surge	RPC	±5, ±10, ±20	0.27Ω~22MΩ				■	■	■	■	■	■	■	
		Anti Surge/High Power	RPCH	±0.5, ±1,±5	1Ω~1MΩ			■	■	■	■	■				
		Anti Surge/Anti-Sulfuration	RBX	±0.5, ±1,±5	1Ω~1MΩ				■	■	■	■				
		Anti Surge/Anti-Sulfuration/High Power	RPGW	±0.5, ±1,±5	1Ω~1MΩ				■	■	■	■*	■			
	Current Sensing	General Purpose type	RLC	±1, ±2, ±5	50mΩ~10Ω			■	■	■	■	■	■	■	■	Circuit on Battery Pack, PC & Peripherals, AC Adaptor, DC/DC Coverter, Motor Circuit, Game Console, LED, Power Supply, Automotive Industry, etc
		Face Down type	RCC	±1, ±5	10mΩ~100mΩ			■	■	■	■					
		Metal Plate type	RLP	±1, ±5	1mΩ~15mΩ				■	■	■				■	
			MLP	±1, ±5	0.5mΩ~10mΩ					■*	■				■	
			MLP63C	±1, ±5	0.5mΩ~10mΩ										■	
			WLP63	±1,±2, ±5	1mΩ~100mΩ										■	
		WideTermination General type	TWLC	±1, ±5	100mΩ~910mΩ						■		■	■	■	
	Fusible Resisitor		FRC	±5	1Ω~100Ω				■	■	■					Battery Circuit
Linear Positive T-C Chip Thermistors		LTC	±5	33Ω~10KΩ					■	■					Temputure sensing & control, circuit protection & etc	
Networks		RAC	±1, ±5	1Ω~1MΩ	■	■	■			■	■	■	■	■	Mobile Phone, Tablets, SSD, RAM Module, Automotive Industry, etc	
	Anti Sulfuration	RAAW	±1, ±5	10Ω~1MΩ	■		■	■								

Product Category		Product Type	Rated Current	Fusing Characteristics	0402	0603	1005	1608	2012	3216	3225	5025	6332	Application
KAMAYA Chip Fuse	General Purpose	FCC/FHC	0.15A ~ 5A	Fast-Acting type			■	■	■	■				HDD, Battery Pack, LCD Monitor, Lighting Ballast, Switch Mode, Power Supply, Printer, Inverter, etc
	In-rush Withstand/Low Ohm Fast Acting	FMC	0.5A ~ 5A	Fast-Acting type			■	■						
	General Purpose Low Ohm	FCCR	0.15A ~ 2.5A	Fast-Acting type			■	■						
	Slow Blow	SBF32	1A ~ 8A	Slow Blow type						■				
	High Rated Voltage	HFC32	1A ~ 12.5A	Fast-Acting type						■				

Product Category		Product Type	Capcittance	Test Voltage	0402	0603	1005	1608	2012	3216	3225	5025	6332	Application
KAMAYA ESD Suppressor	SPGA	SPGA	0.5pF max.	8kV Contact discharge		■								USB Port, HDMI, Signal Transmission Line, Touch Screen Module, PC, TV, etc
	Low Capacitance	SPC	0.1pF max.	8kV Contact discharge			■							
	High ESD Protection Performance	HSPC	0.2pF max.	15kV Aerial discharge			■	■						

*Under development, please refer to product catalog for current status.

Application for Automotive

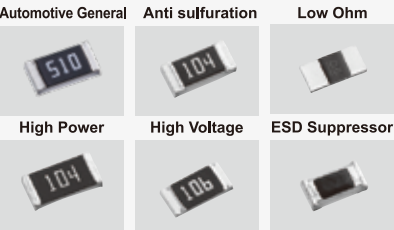
Battery Management

- Battery Charger
- Charging stations
- Battery management system



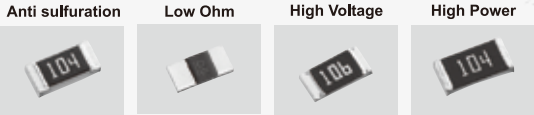
Body Control

- Smart Key/Immobilizer
 - Retractable Power Door Mirror
 - HID & LED Head Light
 - Power Window
 - Meter
 - Power seat
 - Air conditioner



Safety

- Airbags
- Electronic Stability Control (ESC)
- Anti-lock Brake System(ABS)
- Tire Pressure Monitoring System (TPMS)



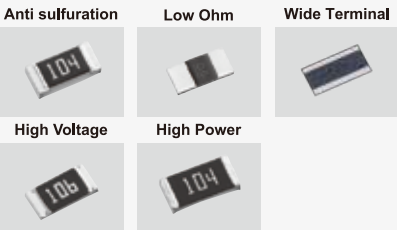
Infotainment

- Car navigation system
- Rear View Camera Monitor
- Electronic Toll Collection System



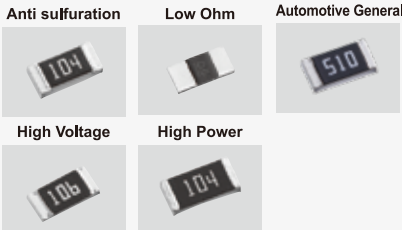
Powertrain

- Ignition coil
- Electric motor
- HV/EV Inverter



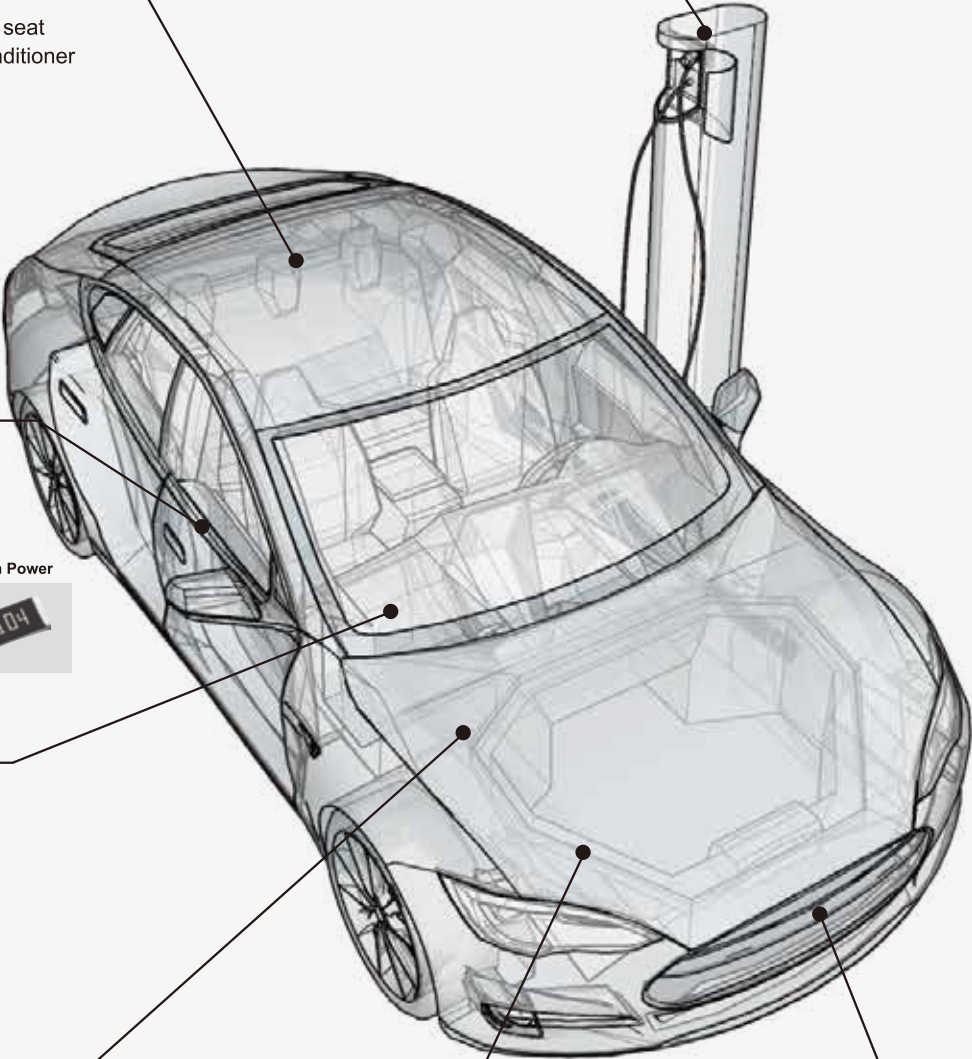
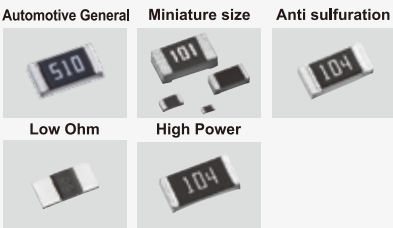
Chassis Control

- Electric Power Steering (EPS)
- Electric Parking Brake (EPB)



ADAS (Autopilot)

- Millimeter Wave Rader/Infrared Lidar
- Ultrasonic sensor/Motion sensor
- Camera/Night vision device
- Adaptive Cruise Control(ACC)



車載グレードチップ抵抗器

Automotive Grade Chip Resistors

KAMAYA車載グレード製品は車載専用ラインで生産し、車載用途要求に基づいたトレーニングを受け、特別社内テストに合格した専用オペレータのみが生産に携わることで、車載グレード製品の製造環境を整えています。

Kamaya automotive grade product is produced in dedicated automotive line by well-trained operators with Kamaya internal approval automotive application criteria. Kamaya sets up the production condition for automotive grade products.



HALOGEN FREE

ANTIMONY FREE

RoHS

AEC-Q200

*詳細は弊社製品カタログをご確認ください。
Please check kamaya product catalog for details.

■ラインアップ Line-up



RMC series

General purpose

0603 ~ 6332	[mm]
0.05 ~ 1	[W]
1 ~ 24M	[Ω]
D, F, G, J	
±100, ±200, +600/-200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RMCH series

High power

0603 ~ 3225	[mm]
0.063 ~ 0.75	[W]
1 ~ 1M	[Ω]
D, F, J	
±100, ±200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RGC series

High Precision

0603 ~ 3216	[mm]
0.05 ~ 0.25	[W]
3.3 ~ 4.7M	[Ω]
B, D, F	
±50, ±100	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RVC series

High Voltage

1608 ~ 6332	[mm]
0.1 ~ 1	[W]
47 ~ 51M	[Ω]
D, F, G, J, K	
±100, ±200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



TWMC series

General purpose

1632 ~ 3263	[mm]
0.75 ~ 2	[W]
1 ~ 1M	[Ω]
F, J	
±200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]

■アプリケーション Application



車載
Automotive



工業製品
Industrial equipment



耐サージチップ抵抗器

High Power & Anti Surge Chip Resistors

汎用抵抗と比べ同一サイズでの定格電力アップ、または耐サージ性に優れた抵抗器です。定格電力をアップしているので機器の小型化にも貢献できます。耐サージ品は車載や産業機器の電源など、高電圧サージを発生するような場所で回路を保護する為のサージ吸収用抵抗器として最適です。耐硫化学品も用意していますので、使用環境・条件により最適な製品を選択できます。

High Power & Anti Surge Chip Resistor has Increased rated dissipation and better anti-surge performance compared to general type. It serves to miniaturize equipments with high rated dissipation, it is possible to select the most suitable product under the condition of used.



HALOGEN FREE

ANTIMONY FREE

RoHS

AEC-Q200

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Please check kamaya product catalog for details.

■ラインアップ Line-up



RMCH series

High power

0603 ~ 3225 [mm]

0.063 ~ 0.75 [W]

1 ~ 1M [Ω]

D, F, J

 $\pm 100, \pm 200$ [$10^{-6}/^{\circ}\text{C}$]-55 ~ +155 [$^{\circ}\text{C}$]

RPC series

Anti surge

1608 ~ 6332 [mm]

0.25 ~ 1 [W]

0.27 ~ 22M [Ω]

J, K, M

 $\pm 100, \pm 200$ [$10^{-6}/^{\circ}\text{C}$]-55 ~ +155 [$^{\circ}\text{C}$]

RPCH series

Anti surge / High power

1005 ~ 3225 [mm]

0.2 ~ 0.75 [W]

1 ~ 1M [Ω]

D, F, J

 $\pm 100, \pm 200$ [$10^{-6}/^{\circ}\text{C}$]-55 ~ +155 [$^{\circ}\text{C}$]

RBX series

Anti surge / Anti-sulfuration

1608 ~ 3225 [mm]

0.25 ~ 0.75 [W]

1 ~ 1M [Ω]

D, F, J

 $\pm 100, \pm 200$ [$10^{-6}/^{\circ}\text{C}$]-55 ~ +155 [$^{\circ}\text{C}$]

RPGW series

Anti surge / High power / Anti-sulfuration

1608 ~ 3216 [mm]

0.33 ~ 0.66 [W]

1 ~ 1M [Ω]

D, F, J

 $\pm 100, \pm 200$ [$10^{-6}/^{\circ}\text{C}$]-55 ~ +155 [$^{\circ}\text{C}$]

■アプリケーション Application



車載
Automotive



工業製品
Industrial equipment



電源
Power supply



医療機器
Medical



耐硫化チップ抵抗器

Anti-Sulfuration Chip Resistors

耐硫化チップ抵抗器は車載、産業機器など過酷な環境で使用される製品において硫化による断線を防ぐ抵抗器です。釜屋電機ではさまざまなタイプの抵抗器の耐硫化を進めており、使用環境や求められる耐性に合わせた最適な製品を選択できます。

Anti-sulfuration chip resistor is a resistor that prevents sulfide disconnection while used under severe environment such as for automotive or industrial equipment. KAMAYA is working on anti-sulfuration for various resistors, making it possible to select suitable product for the condition of use or for the required performance.



HALOGEN FREE

ANTIMONY FREE

RoHS

AEC-Q200

*詳細は弊社製品カタログをご確認ください。
Please check kamaya product catalog for details.

■ラインアップ Line-up



RMGW series

General purpose

0603 ~ 6332	[mm]
0.05 ~ 1	[W]
1 ~ 10M	[Ω]
D, F, J	
±100 ~ +600/-200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RMAW series

General purpose

0603	[mm]
0.05	[W]
1 ~ 10M	[Ω]
D, F, J	
±100 ~ +600/-200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RAAW series

Networks

0603x2, 0603x4	[mm]
0.031	[W]
10~1M	[Ω]
F, J	
±200 ~ ±350	[10 ⁻⁶ /°C]
-55~+155	[°C]



RVAC series

High voltage

3216	[mm]
0.25	[W]
100 ~ 51M	[Ω]
D, F, J	
±100, ±200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]



RBX series

Anti surge

1608 ~ 3225	[mm]
0.25 ~ 0.75	[W]
1 ~ 1M	[Ω]
D, F, J	
±100, ±200	[10 ⁻⁶ /°C]
-55 ~ 155	[°C]



RPGW series

Anti surge / High power

1608 ~ 3216	[mm]
0.33 ~ 0.66	[W]
1 ~ 1M	[Ω]
D, F, J	
±100, ±200	[10 ⁻⁶ /°C]
-55 ~ +155	[°C]

■アプリケーション Application



車載
Automotive



工業製品
Industrial equipment



電源
Power supply



低抵抗チップ抵抗器

Low Ohm Chip Resistors

電流検出に最適な低抵抗チップ抵抗器です。電圧値と抵抗値から抵抗器に流れる電流値が求められます。一般的な電流検出向けに抵抗値が数Ω以下の厚膜タイプ、数十A以上の大電流を検出するための抵抗値が数mΩ程度と非常に小さい金属板タイプや金属箔タイプの低抵抗器を取り揃えています。

Low ohm chip resistor is for current sensing. Current value is calculated by the value of voltage and resistance. Line up for General thick film type for several ohms, metal plate for milliohm.

HALOGEN FREE

ANTIMONY FREE

RoHS

AEC-Q200

*詳細は弊社製品カタログをご確認ください。
Please check kamaya product catalog for details.

■ラインアップ Line-up



RLC series

General purpose

1005 ~ 6332 [mm]

0.125 ~ 1 [W]

50m ~ 10 [Ω]

F, G, J

±100 ~ 0/+300 [10⁻⁶/°C]

-55 ~ +155 [°C]



TWLC series

Wide termination

1632 ~ 3263 [mm]

1 ~ 2 [W]

100m ~ 910m [Ω]

F, J

0/+200 ~ 0/+800 [10⁻⁶/°C]

-55 ~ +155 [°C]



RLP/MLP series

Metal plate

1608 ~ 6332 [mm]

0.33 ~ 3 [W]

1m ~ 15m [Ω]

F, J

±70, ±100, ±150 [10⁻⁶/°C]

-55 ~ +155 [°C]

■アプリケーション Application



電流検測
Current sensing



電流制御
Current control



電源管理
BMS



センサー
Sensor





MATSUO

Tantalum Capacitors & Micro Fuses

by Matsuo Electric

Competitive & Complete Product Lines for 5G, IoT, Automotive.



Tantalum Capacitors



267E Series Standard and Extended Capacitor

Features	Extended capacitance Lead-free and RoHS compliant Excellent mechanical protection Superior moisture resistance High soldering heat resistance.
----------	--

Rated Temperature	+85°C
Rated Voltage	2.5 ~ 50VDC
Capacitance	0.22μF ~ 680μF

Application:
General use, and
wide range of application.



267N Series High Reliability for Automotive

Features	AEC-Q200 compliant Lead-free and RoHS compliant Excellent mechanical protection Superior moisture resistance High soldering heat resistance.
----------	--

Rated Temperature	+85°C
Rated Voltage	4.0 ~ 35VDC
Capacitance	0.1μF ~ 220μF

Application:
Automotive Electronics,
such as ECU, ABS, Air Bags, and etc.



251M Series Ultra miniature

Features	Face-down Terminal Size 1005 to 3216 Ultra-low profile and size Lead-free and RoHS Compliant
----------	---

Rated Temperature	+85°C
Rated Voltage	2.0 ~ 35VDC
Capacitance	0.47μF ~ 330μF

Application:
Compact portable devices,
such as DVC, DSC, SSD, smart
phones, hearing aids and etc.

Tantalum Capacitors with conductive polymer



TCA Series Ultra low ESR

Features	Ultra low ESR Low impedance Excellent noise absorption Higher permissible ripple current Benign Failure Mode
----------	--

Rated Voltage	2.5 ~ 10VDC
Capacitance	10μF ~ 680μF

Application:
In-vehicle, Industrial

Current Micro Fuse



JHC Series High current

Features	High current rating All-in-one fuse element 250% Fusing
----------	---

Size	7358/1173
Rating Current	30-100A
Rated Voltage	35-110V

Application:
For safety of Li-Ion Battery Circuit,
Ex: Power tool, Bicycle, E-Bike, UPS



JAG Series High Reliability for Automotive

Features	High current rating Lead-free, bromine-free. AEC Q-200 Compliant
----------	--

Size	3216
Rating Current	0.5-10A
Rated Voltage	32-72V

Application:
For safety of Power circuit
High reliability for Automotive equipment.



JAJ , JAK Series High current

Features	High current rating JAJ: 200% Fusing JAK: 250% Fusing Lead-free, bromine-free
----------	--

Size	3216
Rating Current	10-20A
Rated Voltage	60V

Application:
For safety of Li-Ion Battery Circuit
Ex. LED, motors, notebook PC



TCB Series Ultra miniature and Ultra low ESR

Features	Ultra low ESR Ultra miniature Excellent noise absorption Higher permissible ripple current Flame retardancy
----------	---

Rated Voltage	2.5 ~ 10VDC
Capacitance	4.7μF ~ 220μF

Application:
Mobile, PC, Game Console

Film Capacitors

Nitsuko lineup are excellent film capacitors
Competitive & Complete Product Lines for Power supply
Design-Win at Global power supply makers



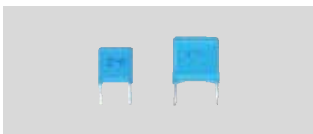
Small Size

Low Noise

AEC Q-200

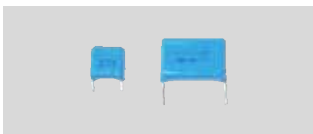
High Temperature

■ Product Line-up



FPB, FPB2

Feature	General Use Small
Voltage	250~1250VDC
Capacitance Range	0.001~10μF



FPT2

Feature	High Temperature~125℃ Small High density
Voltage	630VDC
Capacitance Range	0.068~2.2μF
Application	LED bulb Fan less High temp environment



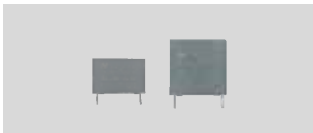
FPS4, FPS5

Feature	For Power supply PFC Low Noise Small
Voltage	450VDC
Capacitance Range	0.47~4.7μF
Application	AV equipment game machines PC adapter.



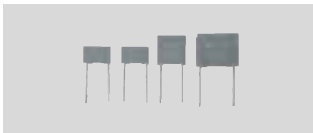
FPF

Feature	High Current
Voltage	250~630VDC
Capacitance Range	0.01~10μF
Application	High current Coupling Resonance circuit High current smoothing Power module sunbber



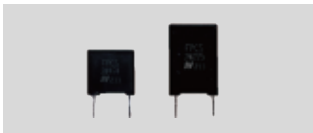
FSX

Feature	X2 capacitor Small
Voltage	310VAC
Capacitance Range	0.01 ~ 10μF



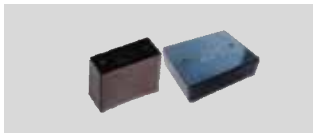
FSG

Feature	For Power supply LLC Small
Voltage	1000VDC, 1600VDC
Capacitance Range	0.0068~0.12μF



FPCS

Feature	For Power supply PFC Small
Voltage	450VDC
Capacitance Range	0.47~2.2μF



FPCL

Feature	Long life High Voltage High Current
Voltage	630~1300VDC
Capacitance Range	1~65μF
Application	DC link, Smoothing (Electrolytic capacitor Alternative)



車載

Automotive



工業製品

Industrial equipment



電源

Power supply



<http://www.nitsuko-ele.co.jp/>



SOSHIN ELECTRIC CO., LTD.

LTCC RF Filters & EMI Filters

by SOSHIN ELECTRIC CO.,LTD

Soshin Electric's products play an indispensable role to support our lives in the various application field, such as industrial, Medical, Communication, Transportation, Aerospace equipment

LTCC RF Filters



For WiFi6E Router

Lo Band 5170 - 5835 MHz
Hi Band 6095 - 7125 MHz

HMD0148-T/HMD0149-T

Size	L 4.5 W3.2 mm
Insertion Loss	2.5dB
Attenuation	45dB

HMD6160-T/HMD6161-T

Size	L 3.2 W2.5 mm
Insertion Loss	2.5dB
Attenuation	30dB



For WiFi6E Router

Lo Band 5170 - 5330 MHz
Hi Band 5490 - 5835 MHz

HMD0108-T/HMD0109-T

Size	L 4.5 W3.2 mm
Insertion Loss	2.5dB
Attenuation	40dB

HMD6160-T/HMD6161-T

Size	L 3.2 W2.5 mm
Insertion Loss	2.5dB
Attenuation	25dB



**For 5G Base station
n41 , n77(n78)**

HMD6151-T

Size	L 3.2 W2.5 mm
Frequency	2496 – 2690MHz
Insertion Loss	1.5dB
Attenuation	28dB

HMD6162-T

Size	L 3.2 W2.5 mm
Frequency	3200-4000 MHz
Insertion Loss	1.5dB
Attenuation	20dB



**For Automotive WiFi,
V2X , Keyless Entry**

HMD9112J-01-T

Size	L 1.6 W0.8 mm
Frequency	5855 - 5925 MHz
Insertion Loss	0.6dB
Attenuation	30dB

H20057 (Under Development)

Size	L 2.0 W1.2 mm
Frequency	6220 - 8655 MHz
Insertion Loss	3.0dB
Attenuation	15dB

※AEC-Q200 Compliant

EMI Filters



NF2000A-SUM

Features	Small Type
Current	10-20A
Voltage	1φ2W 250VAC
Application:	SMPS



NF3000C-Dx

Features	Small Type
Current	10-50A
Voltage	3φ3W 500VAC
Application:	Industrial Equipment



NF4000C-TG

Features	High Attenuation
Current	36-300A
Voltage	3φ4W 500VAC
Application:	Industrial Equipment



NF2000C-SJB

Features	High Voltage
Current	300-1600A
Voltage	1φ2W 1000VDC
Application:	Power conditioner



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