

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.



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 ~ 0.047μF						

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: 50/70/100/140/200
- Lead Space: 5mm/7.5mm/10mm



Middle Voltage

- Rated Voltage: 50Vrms~420Vrms
- Varistor Voltage: 82V~680V (1mA DC)
- Disc Size: 50/70/100/140/180/200/250/320/340/400/530
- 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: 50/70/100/140/180/200/250/320/340/400/530
- 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	-	-	-	-	-	-	-	-	-	-	Power Supply, PC&P, MP, Base Station, Server, etc	
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	-	-	-	-	-	-	-	-	-	-		
Thick Film High Voltage (UL)	WFxxN	5%, 1%	100KR ~ 100MR	RATED VOLTAGE 1/10W ~ 1W	-	-	-	-	200V	400V	800V	-	-	2000V	3000V	Power Supply, Inverter, DSC, Lighting

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	-	-	-	-	-	-	-	-	-	-	Auto. Industry, etc	
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	-	-	-	-	-	-	-	-	-	-	Auto. ECU, Base Station, Server	
Thick Film Current Sense	WWxxX_J	5%, 1%	10mR ~ 976mR	1/10W ~ 2W	-	-	-	-	-	-	-	-	-	-	Auto. Industry, Battery charger, Power Supply	
Thick Film Power Current Sense	WWxxP/C_J	5%, 1%	10mR ~ 976mR	1/10W ~ 2W	-	-	-	-	-	-	-	-	-	-	Auto. Industry, Battery charger, Power Supply	
Metal Plate Current Sense (NiCu)	WWxxA/M/N_J	5%, 1%	1mR ~ 220mR	1/2W ~ 3W	-	-	-	-	-	-	-	-	-	-	Auto. Industry, Battery charger, Power Supply	
Metal Plate Current Sense (MnCu)	WWxxB/J/K_J	5%, 1%	1mR ~ 220mR	1/2W ~ 3W	-	-	-	-	-	-	-	-	-	-	Auto. Industry, Battery charger, Power Supply	
Metal Foil Current Sense (MnCu)	WWxxD_J	5%, 1%, 0.5%	2mR ~ 700mR	1/3W ~ 2W	-	-	-	-	-	-	-	-	-	-	Auto. Industry, Battery charger, Power Supply	
Thin Film High Precision	WFxx_Q	1%, 0.5%, 0.25%, 0.1%, 0.05%	1R ~ 3MR	1/32W ~ 1W	-	-	-	-	-	-	-	-	-	-	Auto. Industry	
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	WLPMA0A040	WLPM131350	WLPM131365	WLPM171770
Multi-layer Ferrite 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	WLSD084F	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	WLFW1608	WLFW2012	WLFW2520	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	
1003	3216	2012	3216	5220	7635	8010	9937	1903	6050	1204	6525			1204	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



WPC series: Wireless Power Charger

Specification

- Qi available

Material

- FPC+ferrite, Coil+ferrite available



NFC Series: NFC Tag

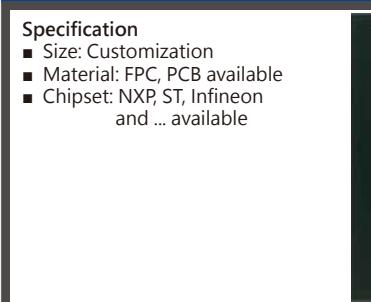
Specification

- Size: Customization
- Material: PCB + Epoxy

NFC Series: NFC Antenna

Specification

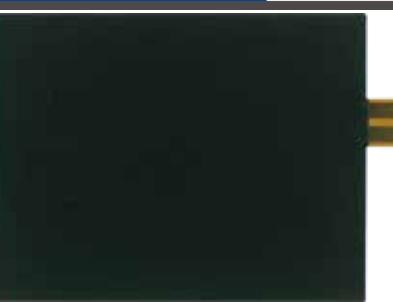
- Size: Customization
- Material: FPC, PCB available
- Chipset: NXP, ST, Infineon and ... available



CON Series: Connector

Options

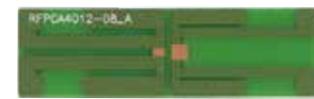
- MCX, MMCX, MMC



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

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	■
		SPDT	1107	■
		DPDT	1511	■
		SP4T	1111	■
		3P3T	2020	■
5G Series	MIPI	DP4T	2020	■
		SPDT	1010	■
		SP3T	1515	■
			1515	■
		DPDT	1515	■
WiFi Series	GPIO	SPDT	1010	■
		SP3T	1515	■
			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	■
		Wi-Fi co-existence	2401-2483	0907	■
	BAW Filter	B40	2300-2400	1109	■
		B41 (120MHz)	2535-2655	1109	■
TDD LTE Series	SAW/BAW Filter	B41F (194MHz)	2496-2690	1109	■
		B41F (194MHz)	2496-2690	1411	■
		B25	1930-1995	1109	■
		B26	859-894	1109	■
FDD LTE Filter	SAW Filter	B1	1920-1980 2110-2170	1814	■
		B5	824-849 869-894	1814	■
	SAW Duplexer	B7	2500-2569 2620-2689	1814	■
		B3	1710-1785 1805-1880	1814	■
BAW Duplexer					

Low Temperature Ceramic 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	■			2.45 GHz	1005 /1608 /2012	■
			2012	■		LTE	2.3-2.7 GHz	1005 / 1608	■
			2520	■		5G NR Power Divider	3300 ~ 5000 MHz	1608	■
	Wi-Fi	5GHz 5.15 ~ 7.125 GHz	1608	■			3400 ~ 3800 MHz	2012	■
			2012	■		5G NR	3300 ~ 3900 MHz	3225	■
	TD-LTE	2.3GHz	1608	■					
		2.5GHz	2012	■					
	5G NR	3300 ~ 4200	2012 / 3225	■					
	DR Filter	5-7 GHz	8x4, 9x4, 9x5	■ 5235 D V					
	UWB	6.23~8.5GHz	1608/2012/2520	■					
Low Pass Filter	Bluetooth/Wi-Fi	2.45GHz	1005	■	Diplexer	Wi-Fi	2.45GHz/5GHz	1005	■
			1608	■				1608	■
			2012	■				2012	■
	Wi-Fi	5GHz & 5.15 ~ 7.125 GHz	1608	■	Triplexer	GPS/Wi-Fi	1.575GHz/2.45GHz/5GHz	2012	■
	TD-LTE	2.5GHz	1608	■					
		700MHz-2690MHz	0605	■					
			1005	■	MoCA Band Pass Filter	D-Low Band	1125~1225MHz	3225	■
		2.6GHz	1608	■		MoCA Extended D-Band	1125-1675MHz	3225	■
		3.5GHz	1608	■		MoCA D-Band WAN2	1350-1675MHz	3225	■
	LoRa	400 ~ 470MHz	2012	■		MoCA C4-Band WAN1	975-1025MHz	3225	■
		500 ~ 700MHz	2012	■		MoCA E-Band	475-675MHz	3225	■
							400-700MHz	3225	■
Balanced Filter (Balun Filter)	Bluetooth/Wi-Fi	2.45GHz	1608	■	MoCA High Pass Filter	Satellite Broadcast	950-2150MHz	3225	■
			2012	■					
			2520	■					
	LTE	2.6GHz-3.5GHz	2012	■	WiFi 6 / WiFi6/E Diplexer	WiFi 6	5490 - 5850 MHz	1608	■
						WiFi 6/E	5150-5835 MHz 6095-7125 MHz	3225/4532	■
						WiFi 6 Diplexer	2400-2500 MHz 5150-7125 MHz	2012	■

	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						
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
	RGC	±0.1, ±0.5, ±1	3.3Ω~4.7MΩ		*	*	*	*	*	*	*	*	*	
	RNC	±0.1, ±0.25, ±0.5, ±1	10Ω~330KΩ		*	*	*	*	*	*	*	*	*	
	RMPC	±1, ±5	1Ω~10MΩ		*	*	*	*	*	*	*	*	*	Environmental Concern
Anti Sulfuration	RMCH	±0.5, ±1, ±5	1Ω~1MΩ		*	*	*	*	*	*	*	*	*	Instruments, Infrared Ray, Sensor, Charger, Power Supply, Automotive Industry, etc
	TWMC	±1, ±5	1Ω~1MΩ							*				Power Supply, Automotive Industry, etc
	RMGW	±0.5, ±1, ±5	1Ω~10MΩ		*	*	*	*	*	*	*	*	*	Automotive Electronic Control Unit (ECU), Automotive Industry, HVAC, etc
	RMAW	±0.5, ±1, ±5	1Ω~10MΩ		*									
KAMAYA Chip Resistors	FCR	0~30, ±15	1Ω~4.7MΩ				*	*	*	*	*	*	*	Mobile Phone, Tablets, Lighting, DSC, etc
	RHC	±5, ±10, ±20, ±30, ±50	100MΩ~150GΩ				*	*	*	*	*	*	*	Instruments, Infrared Ray, Power Supply, etc
	RVC	±0.5, ±1, ±2, ±5, ±10	47Ω~51MΩ				*	*	*	*	*	*	*	
	RZC	±5, ±10, ±20	1MΩ~16MΩ											Power Supply, Inverter, Digital Camera, Lighting, LED TV, etc
High Power	RVAC	±0.5, ±1, ±5	47Ω~51MΩ							*				
	RPC	±5, ±10, ±20	0.27Ω~22MΩ				*	*	*	*	*	*	*	
	RPCH	±0.5, ±1, ±5	1Ω~1MΩ				*	*	*	*	*	*	*	
	RBX	±0.5, ±1, ±5	1Ω~1MΩ				*	*	*	*	*	*	*	
Current Sensing	RPC	±0.5, ±1, ±5	1Ω~1MΩ				*	*	*	*	*	*	*	
	RPGW	±0.5, ±1, ±5	1Ω~1MΩ				*	*	*	*	*	*	*	
	RLC	±1, ±2, ±5	50mΩ~10Ω			*	*	*	*	*	*	*	*	
	RCC	±1, ±5	10mΩ~100mΩ			*	*	*	*	*	*	*	*	
Fusible Resistor	RLP	±1, ±5	1mΩ~15mΩ			*	*	*	*	*	*	*	*	
	MLP	±1, ±5	0.5mΩ~10mΩ				*	*	*	*	*	*	*	
	MLP63C	±1, ±5	0.5mΩ~10mΩ											
	WLP63	±1, ±2, ±5	1mΩ~100mΩ											
Networks	TWLC	±1, ±5	100mΩ~910mΩ											
	FRC	±5	1Ω~100Ω				*	*	*	*	*	*	*	Battery Circuit
	LTC	±5	33Ω~10KΩ		0603x2	1005x2	0603x4	1005x4	1608x4	1608x8				Temperture sensing & control, circuit protection & etc
	RAC	±1, ±5	1Ω~1MΩ		*	*								Mobile Phone, Tablets, SSD, RAM Module, Automotive Industry, etc
KAMAYA Chip Fuse	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			*							
	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			*							HDD, Battery Pack, LCD Monitor, Lighting Ballast, Switch Mode, Power Supply, Printer, Inverter, etc
	Slow Blow	SBF32	1A ~ 8A	Slow Blow type										
KAMAYA ESD Suppressor	High Rated Voltage	HFC32	1A ~ 12.5A	Fast-Acting type										
	SPGA	SPGA	0.5pF max.	8kV Contact discharge		*								
	Low Capacitance	SPC	0.1pF max.	8kV Contact discharge			*							USB Port, HDMI, Signal Transmission Line, Touch Screen Module, PC, TV, etc
	High ESD Protection Performance	HSPC	0.2pF max.	15kV Aerial discharge			*							

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

Application for Automotive

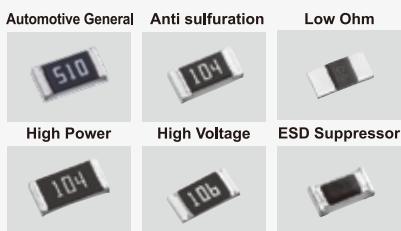
Battery Management

- Battery Charger
- Charging stations
- Battery management system



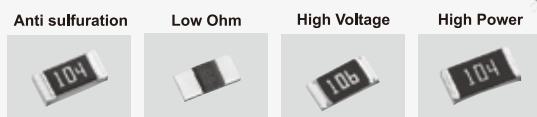
Body Control

- 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)



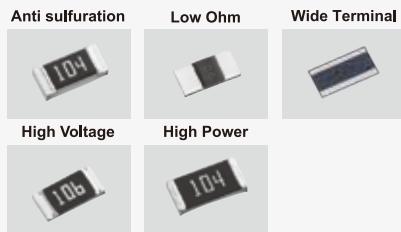
Infotainment

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



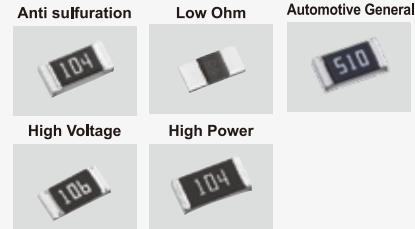
Powertrain

- Ignition coil
- HV/EV Inverter
- Electric motor



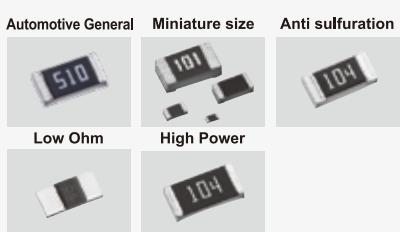
Chassis Control

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



ADAS (Autopilot)

- Millimeter Wave Radar/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下さい。
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



<http://www.kamaya.co.jp>

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	
±100, ±200	[10 ⁶ /°C]
-55 ~ +155	[°C]



RPC series	
Anti surge	
1608 ~ 6332	[mm]
0.25 ~ 1	[W]
0.27 ~ 22M	[Ω]
J, K, M	
±100, ±200	[10 ⁶ /°C]
-55 ~ +155	[°C]



RPCH series	
Anti surge / High power	
1005 ~ 3225	[mm]
0.2 ~ 0.75	[W]
1 ~ 1M	[Ω]
D, F, J	
±100, ±200	[10 ⁶ /°C]
-55 ~ +155	[°C]



RBX series	
Anti surge / Anti-sulfuration	
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 / Anti-sulfuration	
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



医療機器
Medical



<http://www.kamaya.co.jp>

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

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RoHS

AEC-Q200

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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



<http://www.kamaya.co.jp>

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。一般的な電流検測向けに抵抗値が数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下さい。
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

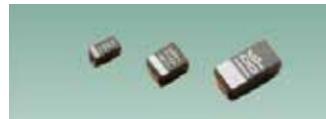
Tantalum Capacitors & Micro Fuses

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

Nitsuko

Small Size

Low Noise

AEC Q-200

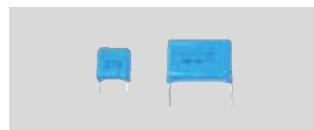
High Temperature

■ Product Line-up



FPB, FPB2

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



FPT2

Feature	High Temperature ~125°C
	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



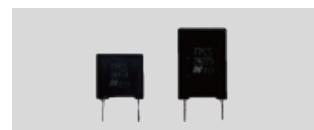
FSX

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/>

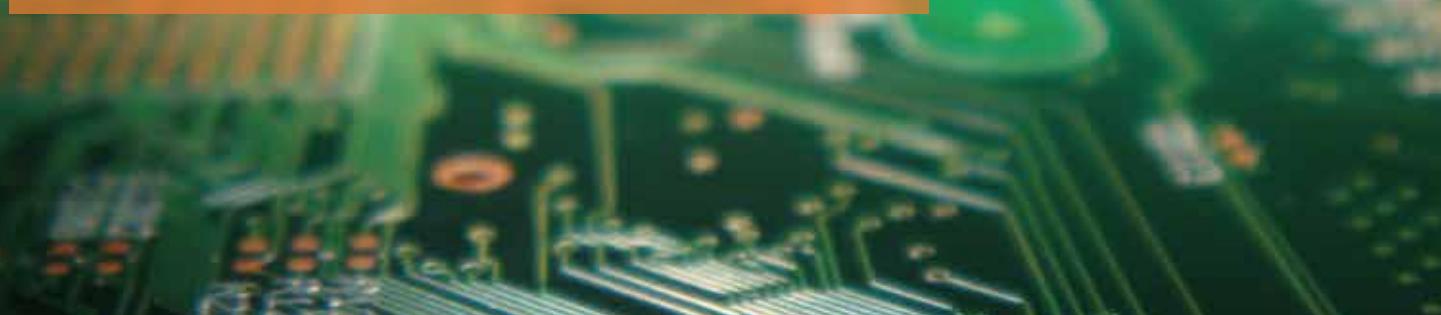


SOSHIN ELECTRIC CO., LTD.

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 WiFi6 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 WiFi6 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



**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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