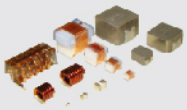
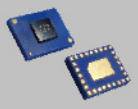
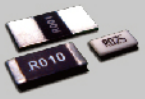
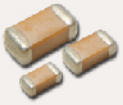
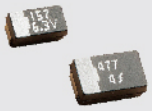
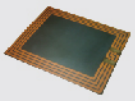
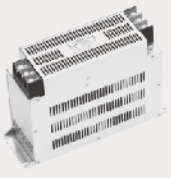
PSA

PASSIVE SYSTEM ALLIANCE
WALSIN TECHNOLOGY CORPORATION

MOV & MLV			Disc Capacitor	
	Inductor			RF Filters & Switch Module
Thin & Thick Film Chip Resistor		PSA	Metal/ Metal Foil Current Sense	
	SMD Y- Capacitors		MLCC	
		Fuse & ESD Protective		Tantalum Capacitor
Film Capacitor			Antenna & NFC/WPC	
	Diode & TVS	Thermistor & EMI Filter		

Product Guide

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IEC-63 Nominal Resistance / Capacitance

E1	100																							
E3	100							220								470								
E6	100				150				220				330				470				680			
E12	100		120		150		180		220		270		330		390		470		560		680		820	
E24	100	110	120	130	150	160	180	200	220	240	270	300	330	360	390	430	470	510	560	620	680	750	820	910
E96	100	102	121	124	147	150	178	182	215	221	261	267	316	324	383	392	464	475	562	576	681	698	825	845
	105	107	127	130	154	158	187	191	226	232	274	280	332	340	402	412	487	499	590	604	715	732	866	887
	110	113	133	137	162	165	196	200	237	243	287	294	348	357	422	432	511	523	619	634	750	768	909	931
	115	118	140	143	169	174	205	210	249	255	301	309	365	374	442	453	536	549	649	665	787	806	953	976

E6: $\sqrt[6]{10} \fallingdotseq 1.46$ E12: $\sqrt[12]{10} \fallingdotseq 1.21$
E1 series resistance:1Ω,10Ω,100Ω,1000Ω,10000Ω,100000Ω

Multilayer Ceramic Capacitor

Quick Product Information

Series	Dielectric	Size	TCC	Capacitance	Tolerance*	Rated voltage
General Purpose Caps (4V~100V)	NPO	0201, 0402, 0603, 0805 1206, 1210, 1812, 1825 2220, 2225	-55 TO +125°C / ±30PPM/°C	0.1pF~0.1μF	A, B, C, D, F, G, J, K	10V, 16V, 25V, 50V, 100V
	X7R	0201, 0402, 0603, 0805 1206, 1210, 1812, 1825 2220, 2225	-55 TO +125°C / ±15%	100pF~47μF	J, K, M	6.3V, 10V, 16V, 25V, 50V, 100V
	X6S	0201, 0402, 0603, 0805 1206,1210	-55 to +105°C / ±22%	0.1μF~100μF	K, M	6.3V, 10V, 16V, 25V, 50V, 100V
	X7S	0201, 0402, 0603, 0805 1206,1210	-55 to +125°C / ±22%	0.1μF~100μF	K, M	6.3V, 10V, 16V, 25V, 50V, 100V
	X5R	0201, 0402, 0603, 0805 1206,1210	-55 TO +85°C / ±15%	100pF~220μF	K, M	4V, 6.3V, 10V, 16V, 25V, 50V
Ultra-small Caps (01R5 series)	NPO	01005	-55 TO +125°C / ±30PPM/°C	0.2pF~220pF	A ,B, C, D, F, G, J	16V, 25V, 50V
	X7R	01005	-55 TO +125°C / ±15%	100pF~1000pF	K, M	10V
	X5R	01005	-55 TO +85°C / ±15%	100pF~0.1μF	K, M	4V, 6.3V,10V
Middle & High Voltage Caps (200V~4kV)	NPO	0402, 0603, 0805, 1206 1210, 1808, 1812, 1825 2220, 2225	-55 TO +125°C / ±30PPM/°C	0.5pF~0.1μF	C, D, J, K	200V, 250V, 500V, 630V, 1kV, 2kV, 3kV, 4kV
	X7R	0603, 0805, 1206, 1210 1808, 1812, 1825, 2220 2225	-55 TO +125°C / ±15%	100pF~2.2μF	K, M	200V, 250V, 400V, 450V, 500V, 630V, 1kV, 2kV, 3kV, 4kV
High Voltage Caps (Surface Coating Type)	NPO	1808, 1812,	-55 TO +125°C / ±30PPM/°C	33pF~120pF	J, K, M	4kV
	X7R	1206, 1210, 1808 1812, 1825, 2220, 2225	-55 TO +125°C / ±15%	150pF~0.018μF	K, M	2kV,2.5kV, 3kV, 4kV
Microwave Caps (RF series)	NPO	01005, 0201, 0402 0603, 0805, 0505, 1111	-55 TO +125°C / ±30PPM/°C	0.1pF~1000pF	A ,B, C, D, F, G, J	6.3V, 10V, 25V, 50V, 100V, 250V, 500V, 1500V
	X8G	0805	-55 to +150°C / ±30ppm/°C	0.1pF~82pF		200V, 250V, 500V
Microwave Caps Narrow Tolerance (UF series)	NPO	0201, 0402	-55 TO +125°C / ±30PPM/°C	0.05pF~10pF	P, Q, A, B	25V, 50V,100V
Automotive Hi-Q Caps Qualified to AEC-Q200 (RT series)	NPO	0402	-55 TO +125°C / ±30PPM/°C	0.1pF~56pF	A ,B, C, D, F, G, J	25V, 50V
High Q & Low ESR Caps (HH series)	NPO	0201, 0402, 0603, 0805	-55 TO +125°C / ±30PPM/°C	0.1pF to 3300pF	A, B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V, 200V, 250V, 500V, 630V
Automotive Capacitor Qualified to AEC-Q200 (MT series)	X8G	0402, 0603, 0805 1206, 1210	-55 TO +150°C / ±30PPM/°C	0.1pF~0.015μF	A, B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V
	NPO	0201, 0402, 0603, 0805 1206, 1210	-55 TO +125°C / ±30PPM/°C	0.1pF~0.047μF	A, B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V, 250V, 500V, 630V, 1kV
	X7R	0201, 0402, 0603, 0805 1206, 1210	-55 TO +125°C / ±15%	100pF~10μF	J, K, M	10V, 16V, 25V, 50V, 100V, 250V, 500V, 630V, 1kV
Automotive Soft Termination Caps Qualified to AEC-Q200 (ST series)	X7R	0402, 0603, 0805 1206, 1210, 1812	-55 TO +125°C / ±15%	270pF~10μF	J, K, M	10V, 16V, 25V, 50V,100V, 1kV, 3kV
Automotive Soft Termination Caps Qualified to AEC-Q200 & VW80808 (VT series)	X7R	0603	-55 TO +125°C / ±15%	100nF	K, M	50V
Automotive Caps Without AEC-Q200 Certification (MG series)	NPO	0201, 0402, 0603, 0805 1206, 1210, 1812	-55 TO +125°C / ±30PPM/°C	0.1pF~0.047μF	A, B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V , 250V, 500V, 630V, 1kV
	X7R	0201, 0402, 0603, 0805 1206, 1210, 1812	-55 TO +125°C / ±15%	100pF~2.2μF	J, K, M	10V, 16V, 25V, 50V, 100V, 250V, 500V, 630V, 1kV
	X5R	0402, 0603, 0805 1206, 1210	-55 TO +85°C / ±15%	0.068μF~6.8μF	K, M	6.3V,10V,16V,25V
High Temperature Caps (HT series)	X8G	0402,0603, 0805 1206, 1210	-55 to +150°C / ±30ppm/°C	0.2pF~0.015μF	A ,B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V
	X8R	0402, 0603, 0805	-55 to +150°C / ±15%	100pF~0.047μF	K, M	10V, 16V, 25V, 50V

* Tolerance: A (±0.05pF), B (±0.1pF), C (±0.25pF), D (±0.5pF), F (±1%), G (±2%), J (±5%), K (±10%), M (±20%), Z (-20/+80%)

Quick Product Information (Continuous)

Series	Dielectric	Size	TCC	Capacitance	Tolerance*	Rated voltage
Safety Certificated Caps X1/Y2 (S2 series)	NPO	1808, 1812, 2211	-55 TO +125°C / ±30PPM/°C	3pF~680pF	D, F, G, J	250Vac
	X7R	1808, 1812, 2220, 2211	-55 TO +125°C / ±15%	100pF~4700pF	K, M	250Vac
Safety Certificated Caps X2 (S3 series)	NPO	1808, 1812	-55 TO +125°C / ±30PPM/°C	3pF~1000pF	D, F, G, J	250Vac
	X7R	1808, 1812, 2220	-55 TO +125°C / ±15%	150pF~0.056μF	K, M	250Vac
Soft Termination Capacitors (SH series, Ag-poly)	NPO	0402, 0603, 0805,1206 1210, 1808, 1812,1825 2220,2225	-55 TO +125°C / ±30PPM/°C	0.1pF~0.1μF	B, C, D, F, G, J	10V, 16V, 25V, 50V, 100V, 200V, 250V, 500V, 630V, 1kV, 3kV
	X7R	0402, 0603, 0805,1206 1210, 1808, 1812,1825 2220,2225	-55 TO +125°C / ±15%	100pF~47μF	K, M	10V, 16V, 25V, 50V, 100V,200V, 250V, 500V, 630V, 1kV, 2kV, 3kV
Soft Termination Capacitors (SG series, Cu-poly)	X7R	0603, 0805, 1206	-55 TO +125°C / ±15%	100pF~10μF	K, M	10V, 16V, 25V, 50V, 100V,200V, 250V, 500V, 630V, 1kV, 2kV
Low Profile Caps (TT series)	X7R	0805, 1206, 1210	-55 TO +125°C / ±15%	1.0μF~10μF	K, M	10V, 16V, 25V, 50V,100V,
	X5R	0402, 0603, 0805 1206, 1210	-55 TO +85°C / ±15%	0.22μF~47μF	K, M	6.3V, 10V, 16V, 25V
Feed Through (3-terminal) Caps (FT series)	X7R	0805	-55 TO +125°C / ±15%	10nF~1μF	M	10V, 16V, 25V, 50V
	X5R	0402	-55 TO +85°C / ±15%	4.3μF	M	4V
Mega Cap type (M series)	NPO	1210, 1812,1825 2220,2225	-55 TO +125°C / ±30PPM/°C	1000pF~0.22uF	B, C, D, F, G, J	50V, 100V,200V, 250V, 500V, 630V
	X7R	1210, 1812,1825 2220,2225	-55 TO +125°C / ±15%	0.01uF~47uF	K, M	50V, 100V,200V, 250V, 500V, 630V

* Tolerance: A (±0.05pF), B (±0.1pF), C (±0.25pF), D (±0.5pF), F (±1%), G (±2%), J (±5%), K (±10%), M (±20%), Z (-20/+80%)

How to Order

Type of MLCC	0805		B	104	K	500	C	T
General Purpose MLCC Ultra-small MLCC Middle & High Voltage MLCC	**Size** Inch (mm) : 01R5(0402), 0201(0603), 0402(1005), 0603(1608), 0805(2012), 1206(3216), 1210(3225), 1808(4520), 1812(4532), 1825(4563), 2220(5750), 2225(5763)		**Dielectric** N=NP0 G=X8G R=X8R B=X7R A=X7S S=X6S X=X5R	**Capacitance** Two significant digits followed by no. of zeros. And R is in place of decimal point. R47=0.47pF 0R5=0.5pF 1R0=1pF 100=10pF 101=100pF 102=1000pF 103=0.01uF 104=0.1uF 105=1uF 106=10uF 107=100uF	**Tolerance** A= ±0.05pF B= ±0.1pF C= ±0.25pF D= ±0.5pF F= ±1% G= ±2% J= ±5% K= ±10% M= ±20% Z=-20/+80% P=±0.02pF** Q=±0.03pF**	**Rated voltage** Two significant digits followed by no. of zeros. And R is in place of decimal point. 4R0=4 Vdc 6R3=6.3 Vdc 100=10 Vdc 160=16 Vdc 250=25 Vdc 350=35 Vdc 500=50 Vdc 101=100 Vdc 201=200 Vdc 251=250 Vdc 401=400 Vdc 451=450 Vdc 501=500 Vdc 631=630 Vdc 102=1000 Vdc 152=1500 Vdc 202=2000 Vdc 252=2500 Vdc 302=3000 Vdc 402=4000 Vdc 502=5000 Vdc 602=6000 Vdc`	**Termination** C=Cu/Ni/Sn	**Packaging** T=7” reeled Q=10” reeled G=13” reeled
High Vol. Cap. with Surface Coating							M= Cu/Ni/Sn Surface coating	
Microwave MLCC Microwave-Narrow Tolerance Microwave-High reliability Automotive High-Q MLCC High Q / Low ESR MLCC Automotive MLCC High Temperature MLCC. Safety Certificated MLCC Low Profile MLCC Feed Through MLCC	**RF** **Series** RF=Microwave UF=Microwave-Narrow Tolerance RH=Microwave-High reliability RT=Automotive High Q Caps Qualified to AEC-Q200 HH=High Q/ Low ESR MT=Automotive Cap. Qualified to AEC-Q200 MG=Automotive Cap. without AEC-Q200 HT=High Temperature Cap. TT=Low profile FT=Feed Through(3-terminal)	**03** **Size** Inch : 02=01005 03=0201 15=0402 11=0505 18=0603 21=0805 22=1111 31=1206 32=1210 42=1808 43=1812 52=2211 55=2220 56=2225					C=Cu/Ni/Sn	
Soft Termination MLCC	ST=Qualified to AEC-Q200 VT=AEC-Q200 & VW80808 SH=With Ag polymer SG=With Cu polymer						C=Cu +Conductive resin /Ni /Sn	
Safety Certificated MLCC	S2=X1/Y2 safety class S3=X2 safety class						E=Soft termination Z=Soft termination +Surface Coating M=Surface Coating K= Non Coating	
Mega Cap type (M Series)	M1= Mega Cap. 1 chip M2= Mega Cap. 2 chips						B=3.60±0.35mm C=4.20±0.35mm F=6.00±0.35mm G=6.60±0.35mm	L= L type lead

* The packaging code per each size of reel, please refer to following table "packaging style and quantity".
** Tolerance “P” & “Q” only for UF series items.

Chip-Resistor

Quick Product Information

Function	Type	Size	Range	Tolerance
General Purpose	General Purpose	01005~2512	1Ω~10MΩ	1%,5% & Jumper
Array	Convex Type	0603x4, 0603x2, 0402x4, 0402x2, 0602x8	10Ω~1MΩ	1%,5% & Jumper
	Flat Type	0201x4, 0201x2	10Ω~1MΩ	1%,5% & Jumper
	Concave Type	0603x4,0402x4,0402x2	10Ω~1MΩ	1%,5% & Jumper
	Network	1206 (10P8R)	10Ω~100KΩ	5%
Current Sense Low Ohm	Thick Film	0201~2512	0.010Ω~0.976Ω	1%, 5%
	Thick Film High Power	0402~2512	0.010Ω~0.976Ω	1%, 5%
	Thick Film Wide Termination	0612, 1020, 1225	0.1Ω ~ 0.910Ω	1%, 5%
	Metal Foil Low Ohm	2512, 2010, 1206, 0805, 0603, 0402	0.002Ω~0.700Ω	0.5%, 1%, 5%
	Metal Plate Low Ohm	2512, 2010, 1206, 0805, 0603	0.001Ω~0.100Ω	1%, 5%
High Precision	Thick film (TC100)	0201~2512	10Ω~1.0MΩ	0.1%, 0.5%
	Thick film (TC50)	0201~1206	10Ω~1.0MΩ	0.1%, 0.5%
Specialty	High Voltage UL Safety	0603~2512	100KΩ~100MΩ	1%, 5%
	Surge	0402~2512	0.27Ω~22MΩ	5%, 10%
	Triple Power Surge	0603~2512	1Ω ~ 1MΩ	1%, 5%
	High Power	0402~2512	1Ω ~ 1MΩ	1%, 5%
	Triple Power	0402~ 2512	1Ω ~ 1MΩ	1%, 5%
	Attenuator	0404 (4P3R)	0dB ~ 20dB	0.2dB,0.3dB, 0.4dB, 0.8dB 1dB,1.5dB, 2dB, 2.5dB
	High Ohm	0402	11MΩ~ 30MΩ	1%, 5%
	Ultra High Ohm	0603~1206	11MΩ~100MΩ	1%, 5%
	Trimmable	0402~1206	1Ω~4.7MΩ	0/-10%, 0/-20%, 0/-30%
	Wide Termination	0612, 1020, 1225	1Ω ~ 1MΩ	1%, 5%
Pb <100ppm	General Purpose	01005~2512	1Ω~10MΩ	1%,5% & Jumper
	Array	0603x4, 0402x4, 0402x2	10Ω~1MΩ	1%,5% & Jumper
	High Power	0402~2512	1Ω~1MΩ	1%,5% & Jumper
Automotive	High Grade General Purpose	0201~2512	1Ω~10MΩ	1%,5% & Jumper
Anti-sulfur	High Grade General Purpose	0402~2512	1Ω~10MΩ	1%,5% & Jumper

Thin Film

Function	Type	Size	Range	TCR (ppm/°C)	Tolerance
High Precision	High Precision (TC2, 3, 5)	0201~2512	4,7Ω~600KΩ	2, 3, 5 ppm/°C	0.05% , 0.1%, 0.25%, 0.5%, 1%
	High Precision (TC10, 15)	0201~2512	4,7Ω ~ 3MΩ	10, 15 ppm/°C	
	High Power High Precision (TC10, 15)	0201~2512	4,7Ω ~ 1.5MΩ	10, 15 ppm/°C	
	High Power High Precision (TC25, 50)	0201~2512	1Ω ~ 1.5MΩ	25, 50 ppm/°C	
	High Precision (TC25, 50)	0201~2512	1Ω ~ 3MΩ	25, 50 ppm/°C	
High Precision NiCrAl AEC-Q200	Automotive (TC5)	0402~2512	1Ω ~600KΩ	5 ppm/°C	0.05% ,0.1%, 0.25%, 0.5%, 1%
	Automotive (TC10, 15)	0402~2512	4,7Ω~1.5MΩ	10, 15 ppm/°C	
	Automotive (TC25, 50)	0402~2512	4,7Ω~3MΩ	25, 50 ppm/°C	
High Precision TaN AEC-Q200	Automotive High Stability (TC10,15)	0402~1206	10Ω~1MΩ	10, 15 ppm/°C *	0.05%, 0.1%, 0.25%, 0.5%, 1%
	Automotive High Stability (TC25, 50)	0402~1206	10Ω~1MΩ	25, 50 ppm/°C	0.05%, 0.1%, 0.25%, 0.5%, 1%
Anti-Sulfuration	High Precision (TC25, 50)	0402~2512	4,7Ω~3MΩ	25, 50 ppm/°C	0.05%*, 0.1%, 0.25%, 0.5%, 1%
Anti-Sulfuration AEC-Q200	Automotive High Precision (TC25, 50)	0402~2512	4,7Ω~1.5MΩ	25, 50 ppm/°C	0.05%*, 0.1%, 0.25%, 0.5%, 1%

* Available Upon Request

How To Order

Type code	Size code	Functional code	Resistance	Tolerance	Packaging code	Termination code	Special code	Power code	TCR code
WR	**12**	**X**	**1000**	**F**	**T**	**L**	**J**		
WR : General 1~10MR MR : Automotive SR : Anti-Sulfuration ZR : Non magnetic	25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005) 02 : 0201 (0603) 01 : 01005 (0402)	X : 5% for 1 ~ 10MΩ, 1% for 10 ~ 1MΩ W : 1% for <10Ω and >1MΩ F : TC100, 1-10ohm 1%	E24 (J tol.) E24+E96 (F tol.) *Please see remark for detail explanation	F : ± 1% J : ± 5% P : Jumper X : random	T : 7" reel taping A : 7" reel taping 15Kpcs D : 7" reel taping 20Kpcs E : 7" up side down taping V : 7" reel taping 1Kpcs Q : 10" reel taping G : 13" reel taping H : 0402-50K/13" reel B : Bulk C : Bulk after measuring K : 10" reel taping (0402 30K/RL) J : 10" reel taping (0402 40K/RL) I : 13" up side down taping	L= Sn base (Lead free) R= Pb ≦100ppm (total) W= Wide term. P: Precious metal	J: AEC-Q200 Compliant V: AEC-Q200 Compliant & Anti-Sulfuration *Please see customized specification		
WW	**12**	**M**	**R002**	**F**	**T**	**L**	**J**	**H**	**L**
WW : R < 1Ω	25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005)	X : Thick film low ohm (WTC) W : Thick film low TCR Hi-power Q : Metal low ohm M : Metal low ohm R : Metal low ohm high power N : Metal low ohm high power P : Thick film low TCR high Power C : Thick film Power low ohm low TCR, up side down D : Metal Foil E : Thick film Power low ohm A : Metal low ohm NiCu 2512 3W B : Metal low ohm MnCu 2512 3W J : Metal low ohm low EMF K : Metal low ohm low EMF T : Thick film triple power WW25T 3W L : Wide term. High power Y : Wide term. High power 4T S: Metal low ohm U: Metal low ohm Power	R followed by 3 significant digits e.g. : 0.1Ω = R100 0.033Ω = R033 0.56Ω = R560 0.5mΩ = R0L5 15.5mΩ = 15L5	F : ± 1% G : ± 2% J : ± 5%	T : 7" reel taping Q : 10" reel taping G : 13" reel taping B : Bulk U : 7" reel taping (4kpcs/RL) Z : 7" reel taping (3kpcs/RL)	L= Sn base (Lead free) R= Pb ≦100ppm (total)	J: AEC-Q200 Compliant *Please see customized specification	T: 1/20W A: 1/16W B: 1/10W C: 1/8W U: 0.15W S: 1/5W R: 2/5W D: 1/4W E: 1/3W F: 1/2W Q: 2/3W G: 3/4W H: 1W I: 1.5W J: 2W K: 3W L: 4W M: 5W N: 10W	G: 1200 H: 1000 I: 800 J: 600 K: 400 M: 350 Z: 250 L: 200 Y: 150 N: 100 X: 70 P: 50 Q: 25 S: 15 V: 10 W: 5 A: 1 B: 2 C: 3
WF/WK	**12**	**H**	**1001**	**B**	**T**	**L**	**J**		
WF: Special Function SF: Special Function Anti-Sulfur WK: Special function Made in KM	25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005)	G : High ohm (>10MΩ) H : Thick film, High Precision <1% K : Thick film, TCR50ppm M : Trimmable P : High Power S : Surge V : High voltage N : Ultra High voltage (WFxxN for UL Safety) X : Special resistance A : Triple Power 2512 3W E : Triple power & Surge L: Thick film wide term.High power	E24 (J tol.) E24+E96 (F tol.) *Please see remark for detail explanation	T : ± 0.01% U : ± 0.02% A : ± 0.05% B : ± 0.1% C : ± 0.25% D : ± 0.5% F : ± 1% G : ± 2% J : ± 5% K : ± 10% L : ± 15% M : ± 20% P : Jumper X : 0/-30% Y : 0/-20% Z : 0/-10%	T : 7" reel taping Q : 10" reel taping M : 10" reel taping 4Kpc/RL G : 13" reel taping B : Bulk D : 7" reel taping 20Kpcs V : 7" reel taping 1Kpcs A : 7" reel taping 15Kpcs W : 7" reel taping 2Kpcs Z : 7" reel taping (3kpcs/RL)	L= Sn base (Lead free) R= Pb ≦100ppm (total) N= Narrow Termination P: Precious metal	J: AEC-Q200 Compliant V: AEC-Q200 Compliant & Anti-Sulfuration *Please see customized specification		
WA	**04**	**X**	**103_**	**J**	**T**	**L**	**J**		
WA : General Array MA : Automotive Array SA : Anti-Sulfur Array	06 : 0603 (1608) 04 : 0402 (1005) 02 : 0201 (0603)	X : *4, convex Y : *2, convex W : *8, convex T : *4, concave P : *3, convex (Attenuator) F : *4, Reverse G : *2, Reverse H : *4, FLAT I : *2, FLAT	E24 (J tol.) E24+E96 (F tol.) *Please see remark for detail explanation	F : ± 1% J : ± 5% P : Jumper	T : 7" reel taping A : 7" reel taping 15Kpcs Q : 10" reel taping G : 13" reel taping B : Bulk	L= Sn base (Lead free) R= Pb ≦100ppm (total) P: Precious metal	J: AEC-Q200 Compliant *Please see customized specification		
WT	**04**	**X**	**103_**	**J**	**T**	**L**			
T : Network Resistors	04 : total package size 1206 (3216)	X : *8, convex	E24 (J tol.) *Please see remark for detail explanation	J : ± 5% P : Jumper	T : 7" reel taping B : Bulk	L= Sn base (Lead free)			

Thin Film Series: Precision; High Precision; Auto Grade; Current Sensing Resistor

Type code	Size code	Functional code	Resistance	Tolerance	Packaging code	Termination code	Special code
WF/SF/MF	12	T	1001	B	T	L	Q
WF: Thin Film Precision SF: Thin Film Anti-Sulfuration WF_Q: High Precision Thin Film AEC-Q200 Compliant SF_Q: Thin Film Anti-Sulfuration/ AEC-Q200 Compliant ASTM B809 SF_A: High Precision Thin Film Anti-Sulfuration ASTM B809 +Under Oil 105℃+3.5% Sulfur power 500hrs MF: Precision Thin Film Auto Grade AEC-Q200 Qualified ASTM-B809	25 : 2512 (6432) 20 : 2010 (5025) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005) 02 : 0201 (0603)	T : TCR 50 ppm U : TCR 25 ppm Q : TCR 50 ppm, Power R : TCR 25 ppm, Power F : Low TCR 15 ppm W : Low TCR 10 ppm Z : Ultra Low TCR 5 ppm B : Ultra Low TCR 3 ppm* C : Ultra Low TCR 2 ppm* * Available Upon Request	E24+E192 *Please see remark for detail explanation	T : ± 0.01% U : ± 0.02% A : ± 0.05% B : ± 0.1% C : ± 0.25% D : ± 0.5% F : ± 1%	T : 7" Reel &Taped Q : 10" Reel &Taped G : 13" Reel &Taped V : 7" Reel &Taped 1Kpcs B : Bulk M : 7” Reel 5K/RL 0402	L= Sn base (Lead free)	Q= AEC-Q200 Compliant A= Under Oil 105℃+3.5% Sulfur power 500 hurs

Type code	Size code	Functional code		Resistance	Tolerance	Packaging code	Termination code
TTL	12	Q (Power Rating)	N (TCR)	XXXX	F	T	L
TTL: Thin Film Foil Current Sensor (High Power /Low TCR)	25 : 2512 (6432) 12 : 1206 (3216) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005)	Q: 2W P: 1W M: 1/2W K: 1/3W J: 1/4W I: 1/5W H: 1/8W G: 1/10W	N : 50 ppm O : 75 ppm P : 100 ppm Q :150 ppm R : 200 ppm U : 350 ppm	e.g: R020 = 20mΩ R0050 = 5mΩ R2L5 = 2.5mΩ	D : ± 0.5% F : ± 1% G : ± 2% J : ± 5%	T : 7" Reel & Taped	L= Sn base (Lead free)

Remark:

1. Detail product part number, functional code, tolerance combination; please refer to specific data sheet.
2. E24 (J tol.): 2 significant digits followed by No. of zeros and a blank, e.g.: 3ohm = 3R0_, 10ohm = 100_, 220ohm = 221_, 56Kohm = 563_ ,("_" means blank).
3. E24+E192 (F tol.): 3 significant digits followed by No. of zeros, e.g.: 3Ω = 3R00, 10Ω = 10R0, 220Ω = 2200, 56KΩ = 5602.
4. Example: ("_" means a blank)
   Chip-R 0805 size, 4.3ohm, 5%, General type, Sn termination, 5000pcs taped in reel: WR08X4R3_JTL
5. 1218 standard packing Q'ty is 3Kpcs in 10" reel and packing code is T code

Safety Standard Ceramic Capacitor

SAP Part Number Explanation

To order, please also specify Pan Overseas Part No. as the following example for SAP system：

YV	0AC	472	M	10	0	L	20	C	7	H
1	2	3	4	5	6	7	8	9	10	11

1. Temperature characteristic (identified code):

CODE	SL	YP (Y5P)	YU (Y5U)	YV (Y5V)
Cap. Change (%)	-1000~+350ppm/°C(+20°C~+85°C)	±10%	+20%to -55%	+30%to –80%

2. TYPE, Capacitor class and Rated voltage (identified by 3-figure code):

0AC=AC(X1-400V~/Y2-250V~); 1AC=AC(X1-440V~/Y2-300V~); 5AC = AC(X1:500V~/Y2:500V~/1500VDC)
7AC(for Automotive)= AC(X1:440V~/Y2:300V~/1500VDC)
0AH=AH(X1-400V~/Y1-250V~); 1AH=AH(X1-400V~/Y1-400V~); 5AH = AC(X1:500V~/Y1:500V~/1500VDC)
0AS=AS(X1-760V~/Y1-500V~) (Only approval for VDE//ENEC/UL/CUL/CQC)

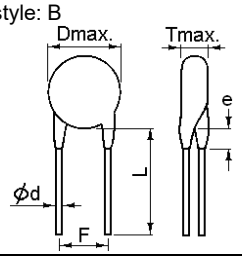
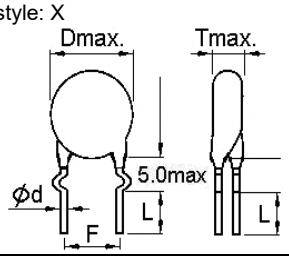
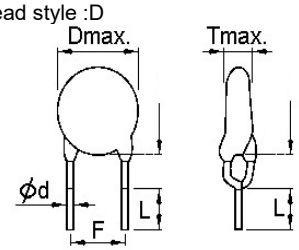
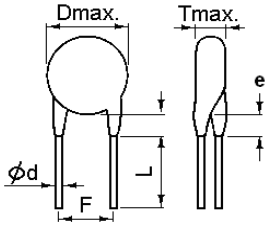
3. Capacitance (identified by 3-figure code)

4. Capacitance tolerance (identified by code)

5. Nominal body diameter dimension (identified by 2-figure code)

6. Internal control code:0—Normal, other code—Special control

7. Lead Style:

Lead type & Code	Lead Configuration	Lead type & Code	Lead Configuration
Type B **Straight lead for taping**	Lead style: B 	**Type X** **Outside kink lead**	Lead style: X 
Type D **Vertical kink short lead**	Lead style :D 	**Type L** **Straight lead for bulk**	Lead style :L 

8.Packing mode and lead length (identified by 2-figure code)

Bulk Code	Description
3E	lead length L：3.5mm
04	lead length L：4.0mm
4E	lead length L：4.5mm
20	lead length L：20mm

Taping Code	Description
AM	Box and Pitch：25.4 mm (10.0mm)
AF	Box and Pitch：15.0 mm (Pitch=7.5mm)
AS	Box and Pitch：15.0 mm (Pitch=10mm)

9. Length tolerance

Code	Description
A	±0.5 mm (only for kink lead type)
B	±1.0 mm
C	MIN.
D	Taping special purpose

10. Pitch

Code	Description
7	7.5±1.0 mm
M	7.5±0.5 mm
0	10±1.0 mm
A	10±0.5 mm

11. Epoxy Resin Code

Code	Description
H	Halogen and Pb free, epoxy resin (Ag electrode)
W	Ag electrode products / Halogen and Pb free, epoxy resin. (for 85C/85% 1000HR).

Code	Description
T	Halogen and Pb free, epoxy resin (Cu electrode)

Safety Standard Ceramic Capacitor
AH and AS Type-Class X1/Y1; AC Type-Class X1/Y2

Introduction

Ideal for use as X/Y capacitors for AC line filters and primary-secondary coupling on switching power Supplies and AC adapters applications. Having internationally recognized safety certifications, these capacitors are well-suited for applications that require keeping potentially disruptive or damaging line transients and EMI out of susceptible equipment.
They are also an ideal solution in situations where there is a need to suppress line disturbances at the power.

Features

- Compact size
- Cost effective products
- Ideal for across the line applications
- Safety Standard Recognized for AC applications
- Coated with flame-retardant epoxy resin (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available

Approval standards

Agencies	Approval Mark	Capacitor class & Rated Voltage	Type, Capacitor class and Rated voltage Code
UL		X1: 400Vac /440Vac /500Vac/ 760Vac /1500Vdc Y1: 250Vac /400Vac /500Vac/ 1500 Vdc Y2: 250Vac /300Vac /500Vac/ 1500 Vdc	0AH/1AH/5AH/0AS 0AC/1AC/5AC 7AC(for Automotive)
cUL			
ENEC			
CQC			
DEMKO		X1: 400Vac /440Vac /500Vac/ 1500Vdc Y1: 250Vac /400Vac /500Vac/ 1500 Vdc Y2: 250Vac /300Vac /500Vac/ 1500 Vdc	0AH/1AH/5AH 0AC/1AC/5AC 7AC(for Automotive)
SEMKO			
NEMKO			
FIMKO			
SEV			
VDE	or	X1: 400Vac /440Vac / 760Vac Y1: 250Vac /400Vac /500Vac Y2: 250Vac /300Vac	0AH/1AH/0AS 0AC/1AC
CSA		X1: 400Vac /440Vac Y1: 250Vac /400Vac Y2: 250Vac /300Vac	0AH/1AH 0AC/1AC
KTL			

General specification

Capacitance Range	AH:10pF to 4700pF; AC:10pF to 10000pF; AS: 100pF to 4700pF
Capacitance Tolerance	±5%, ±10%, ±20%
Operating Temperature Range	-40℃~ +125℃
Temperature Coefficient (△C Max)	SL:-1000~+350ppm/℃,Y5P: ±10% , Y5U:+20~55% , Y5V:+30 ~80%
Rated Voltage	AH Type: X1: 400Vac /500Vac/ 1500Vdc / Y1: 250Vac /400Vac /500Vac/ 1500 Vdc ; AC Type: X1: 400Vac /440Vac /500Vac/ 1500Vdc / Y2: 250Vac /300Vac /500Vac/ 1500 Vdc ; AS Type: X1:760Vac / Y1:500Vac
Dissipation Factor(tanδ) or Q	SL: 30pF&above:Q≧1000 Below 30pF:Q≧400+20×C @20℃, 1MHz, 1±0.2Vrms Y5P: tanδ=2.5% Max. , Y5U: tanδ=2.5% Max. , Y5V: tanδ=5.0% Max. @20℃, 1KHz, 1±0.2Vrms
Insulation Resistance	10000MΩ at 500VDC for 60 Seconds
Dielectric Strength	2600VAC for 60 Seconds (AC TYPE) (For Lead Pitch=7.5 & 10 mm)
	4000VAC for 60 Seconds (AH,AS TYPE) (For Lead Pitch=10.0mm)

Ceramic Disc Capacitor

Part Number Explanation

To order, please also specify Pan Overseas Part No. as the following example for SAP system：

YP	102	102	K	060	B	20	C	5	H
Dielectric Code	Voltage Code	Capacitance Code	Tolerance Code	Diameter Code	Lead Style	Length or Packing	Length Tolerance	Pitch	Coating
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶ Dielectric Code

CLASS I:		CLASS II:	
CODE	T.C. (ppm/°C)	CODE	T.C. (△C%)
SL	SL (-1000 ~ +350) (+20°C to +85°C)	YP	Y5P (±10%)
		ZU	Z5U (+22 ~ -56%)
		ZV	Z5V (+22 ~ -82%)
		YU	Y5U (+22 ~ -56%)
		YV	Y5V (+22 ~ -82%)

❷ Voltage Code

CODE	WV
500	50 VDC
501	500 VDC
102	1KVDC
202	2KVDC
302	3KVDC
602	6KVDC

❸ Capacitance Code

CODE	Capacitance
100	10 pF
101	100 pF
102	1000 pF
472	4700 pF
103	0.01uF

❹ Tolerance Code

CODE	Tolerance
J	± 5%
K	± 10%
M	± 20%
Z	-20 ~ +80 %

❺ Diameter Code

CODE	Diameter max
040	Refer to the product diameter D max in catalog or datasheet
050	
060	
070	
080	
090	
100	
110	
120	
130	
140	

❻ Lead Style-Reference Lead Style

❼ Packing / Pitch / Lead Length

Taping(ex)	
CODE	Packing & Pitch
AF	Ammo Box & Pitch 15.0 mm
AN	Ammo Box & Pitch 12.7 mm
AM	Ammo Box & Pitch 25.4 mm
Bulk (ex)	
CODE	Length
3E	3.5mm
04	4.0mm
4E	4.5mm
05	5.0mm
20	20.0mm

❽ Length Tolerance

CODE	Length Tolerance
A	± 0.5 mm (Only for short kink lead type)
B	± 1.0 mm
C	Min.
D	Tapping & Special Purpose

❾ Pitch

CODE	Length Pitch
2	2.5±0.8mm
5	5.0±0.8mm (for Bulk)
	5.0+0.8-0.2mm (for Taping)
7	7.5 ± 1mm
0	10.0 ± 1mm

❿ Coating Type

CODE	Coating
A	Phenolic resin Halogen free and Pb free
H	Epoxy resin Halogen free and Pb free

Ceramic Disc Capacitor

CLASS I 50V, 100V, 500V, 1KV, 2KV, 3KV, 6KV TEMPERATURE COMPENSATION TYPE

Features

- Capacitance has linear temperature coefficient
- Capacitance high stability
- Epoxy Coating for 1KV, 2KV, 3KV, 6KV parts (equivalent to UL94V-0 standards)
- RoHS Compliance
- Halogen free products are available
- Low lost at wide range of frequency

Capacitance Range	15~820 pF
Capacitance Tolerance	±5%
Operating Temperature Range	-25°C ~ +125°C.
Rated Voltage	50,100, 500, 1000, 2000, 3000 ,6000 VDC
Q Factor @ 1MHz, 1±0.2 Vrms, 25°C	C≧30 pF.....Q≧1,000, C＜30 pF.....Q≧400+20*C
Insulation Resistance (IR) @ 25°C	10,000 MΩ Minimum
Dielectric Strength	50~500VDC:3 times the rated WVDC ; 1K, 2K, 3KVDC:2 times the rated WVDC; 6KVDC:1.5 times the rated WVDC.
Testing Parameters	1MHz ±20%, 1.0Vrms±0.2Vrms

CLASS II 50V, 100V, 500V, 1KV, 2KV, 3KV Hi-K TYPE

Features

- Capacitance has non-linear temperature coefficient.
- Large capacitance in small size.
- Epoxy Coating for 1KV, 2KV and 3KV parts (equivalent to UL94V-0 standards).
- RoHS Compliance.
- Halogen free products are available.
- Wide range of general purposes applications.

Capacitance Range	100pF to 22000pF
Capacitance Tolerance	±10%(for Y5P), ±20%(for Z5U), +80% -20%(for Z5U&Z5V&Y5V)
Operating Temperature Range	Y5P: -25℃~+125℃, Y5U: -25℃~+85℃ Z5U & Z5V: +10℃~+85℃
Rated Voltage	50,100, 500,1000, 2000, 3000VDC
Dissipation Factor (tan δ)	Y5P, Z5U, Y5U : tanδ≤2.5%, Z5V, Y5V : tanδ≤5.0%
Insulation Resistance (IR) @ 25°C	10,000 MΩMinimum or 200 MΩμF whichever is smaller
Dielectric Strength	50~500VDC: 2.5 times the rated WVDC; 1K, 2K, 3KVDC: 2 times the rated WVDC
Testing Parameters	1KHz ±20%, 1.0Vrms±0.2Vrms

1KV, 2KV LOW DISSIPATION LN TYPE

Features

- Reduced heat dissipation permitted due to small dielectric loss of the ceramic material.
- Operating temperature range is guaranteed up to 125 degree C.
- Coated with flame-retardant epoxy resin (equivalent to UL94V-0 standards).
- RoHS Compliance.
- Halogen free products are available.
- Ideal for use on high frequency pulse circuits such as a horizontal resonance circuit for CTV and snubber circuits for switching power supplies.

Capacitance & Capacitance Tolerance	100pF to 1000pF ±10%,,
Operating Temperature Range	-25℃~ +125℃
Rated Voltage	1K, 2K VDC
Dissipation Factor (tan δ)	0.2% Max
Cap. Change:	±15%(-25℃~+85℃)
Insulation Resistance (IR) @ 25℃	10000MΩ Minimum or 200MΩμF whichever is smaller (500VDC, 60sec)
Dielectric Strength	2 times the rated WVDC
Testing Parameters	1KHz ±20%, 1.0Vrms±0.2Vrms

Radial Leaded Multilayer Ceramic Capacitor

Features

- MLC Radial Lead Capacitor (RD) has wide application in computer, data processing, telecommunication, industrial control and instrumentation equipment.
- The radial lead MLC is built with superior moisture, and shock resistant epoxy coating material, can be supplied in both, bulk or taping form for automatic insertion.
- RoHS compliance.
- Halogen free products are available.

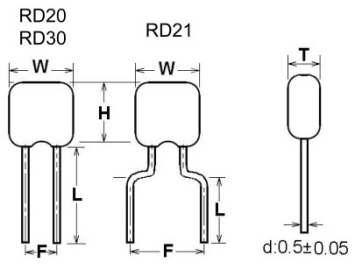
SAP Part Number Explanation

RD21	B		102	K	500	B	5	H	07	B
Product Type	**Dielectric Code**		**Capacitance Code**	**Tolerance Code**	**Rated Voltage**	**Packaging Code**	**Chip Size**	**Termination**	**Lead length**	**Length Tolerance**
RD21 RD20 RD30	Code	T.C	1R0=1pF 1R5=1.5pF 100=10pF 101=100pF 102=1000pF 472=4700pF 103=10000pF 104=100000pF	D=±0.5pF J=±5% K=±10% M=±20% Z=+80%/-20%	100=10V 160=16V 250=25V 500=50V 101=100V 201=200V 251=250V 501=500V 631=630V 102=1000V 202=2000V 302=3000V	A=Ammo B=Bulk	5=0805 6=1206 0=1210 2=1812 8=1808	H= Cu/Ni/Sn Halogen free	Tapping: AN=Ammo Bulk 07=7.0 mm 3E=3.5 mm 05=5.0 mm	D= Taping A=±0.5mm B=±1mm
	N	NPO								
	B	X7R								

Lead Configuration And Dimension

(Unit: mm)

Size		Width (W) Max.	Height (H)Max.	Height (H1)Max	Length (L)	Lead spacing for Taping (F)	Lead spacing for Bulk (F)	Lead Diameter (d)
RD20	0805	5.0	4.5	6.0	3.5 or 5.0 or 7.0	2.5±1.0	2.54±1.0	0.5±0.05
RD21	0805	5.0	4.5	6.5		5.0±1.0	5.08±1.0	
	1206	6.5	5.0	7.0				
	1210	6.5	5.5	7.5				
RD30	1808	8.0	6.0	7.5		5.0±1.0	5.08±1.0	
	1812	8.0	6.5	8.0				



General Electrical Data

Dielectric	NP0	X7R
Size	RD20: 0805 RD21: 0805, 1206, 1210 RD30: 1808 and 1812	
Capacitance range	1.0pF to 0.1uF	100pF to 4.7uF
Capacitance Tolerance	J: ± 5%, K: ± 10%, M: ± 20%, Z: +80% / -20%	
Rated Voltage (WVDC)	50V, 100V, 200V, 250V, 500V, 630V, 1000V, 2000V	50V, 100V, 200V, 250V, 500V, 630V, 1000V, 2000V, 3000V
Operating Temperature	-55~+125℃	-55~+125℃
Capacitance characteristic	0 ± 30 (ppm/℃)	± 15%
Termination	H=Cu/Ni/Sn Halogen free	

SMD Type Safety Standard Ceramic Capacitor

Part Number Explanation

To order, please also specify Pan Overseas Part No. as the following example for SAP system：

YV	SYW	102	M	P	00
1	2	3	4	5	6

1. Temperature characteristic (identified code):

CODE	SL	YP (Y5P)	YU (Y5U)	YV (Y5V)
Cap. Change (%)	-1000~+350ppm/°C(+20°C~+85°C)	±10%	+20%to -55%	+30%to –80%

2. TYPE (identified by 3-figure code):

SYW= Y1:250V~/400V~
SYL= X1:440V~/Y2:300V~

3. Capacitance (identified by 3-figure code)

4. Capacitance tolerance (identified by code)

5. Special Specification Code (identified by 2-figure code)

Code	Description
P	Pb Solder Product

6. Internal control code:0—Normal, other code—Special control

Safety Standards Approval

Safety Standard	Standard No.	Safety Standard	Standard No.
UL / CUL	ANSI/UL 60384-14	CQC	GB/T6346.14
ENEC	EN 60384-14:2013/A1:2016	KC	K60384-14

SYW Type-Class X1/Y1

SAP P/N	T.C.	Capacitance	Tolerance
SLSYW100JP00	SL	10 pF	±5%
SLSYW220JP00		22 pF	
SLSYW470JP00		47 pF	
SLSYW680JP00		68 pF	
YPSYW101KP00	Y5P	100 pF	±10%
YPSYW221KP00		220 pF	
YPSYW331KP00		330 pF	
YPSYW471KP00		470 pF	
YUSYW471MP00	Y5U	470 pF	±20%
YUSYW681MP00		680 pF	
YUSYW102MP00		1000 pF	
YUSYW152MP00		1500 pF	
YVSYW222MP00	Y5V	2200 pF	±20%

SYL Type-Class X1/Y2

SAP P/N	T.C.	Capacitance	Tolerance
SLSYL220KP00	SL	22 pF	±10%
SLSYL470KP00		47 pF	
YPSYL680KP00	Y5P	68 pF	±10%
YPSYL101KP00		100 pF	
YPSYL221KP00		220 pF	
YPSYL331KP00		330 pF	
YUSYL471MP00	Y5U	470 pF	±20%
YUSYL561MP00		560 pF	
YUSYL681MP00		680 pF	
YUSYL102MP00		1000 pF	
YVSYL152MP00	Y5V	1500 pF	±20%
YVSYL222MP00		2200 pF	

Metal Oxide Varistor (MOV)

How To Order

SR	241	K	10	D	S	2 0 C	7	E	E	N
Type Code	**Varistor Voltage**	**Tolerance**	**Disk Size code**	**Disk type**	**Lead style**	**Lead Cutting & Taping Code**	**Lead space + Tol. (mm)**	**Lead Material (mm)**	**Coating**	**Special code**
SR: Walsin Varistor	(DC volt) (From 180 to 112) Two significant digits Followed by no. of zeros 180=18volt 101=100volt 102=1000volt	J :±10% K :±10%	05:5mm 07:7mm 10:10mm 14:14mm 18:18mm 20:20mm 25:25mm	D:Standard E:High Energy	S: Straight Lead L: Inline Crimped O: Outward Crimped I: Inward Crimped	Taping AND:P=12.7mm, Ammo AMD:P=25.4mm, Ammo TND:P=12.7mm, Reel AMD:P=25.4mm, Reel Bulk 20C:20mm Min 3EA:3.5±0.5mm 05A:5.0±0.5mm	5:5.0±0.5 E:5.0±0.8 F:5.0±1.0 7:7.5±0.5 M:7.5±0.8 N:7.5±1.0 R:10.0±0.5 0:10.0±1.0 T:10.0±0.8	A:0.6 CU wire B:0.8 CU wire C:1.0 CU wire D:0.6 CP wire E:0.8 CP wire F:1.0 CP wire	E:Epoxy coating S:Silicon coating	N:N/A

General Characteristics

Storage Temperature	–40˚C to +125°C
Operating Surface Temperature	125˚C
Operating Ambient Temperature	–40˚C to +85˚C (without derating)
Maximum Voltage - Temperature Coefficient	< –0.05% /°C
Insulation Resistance	1000 Mega-ohm minimum
Hi Pot (Leads To Case, 1 Min.)	2500 VAC
Typical Response Time	<25 Nero-seconds
Epoxy Rating	94V-0
Current / Energy Derating (>85°C)	–2.5% / °C
DC Leakage Current	200μA maximum (at rated DC working voltage)
Solderability	MIL-STD-202F

Power Dissipation Ratings(P, in-watts) :

Disc Size	11Vac~40Vac	50Vac~680Vac
5mm	0.01	0.15
7mm	0.02	0.25
10mm	0.05	0.4
14mm	0.1	0.6
18mm	--	0.8
20mm	0.2	1.0
25mm	--	1.2
32mm	--	1.6
34mm(single)	--	2.1
34mm(dual)	--	2.73
40mm	--	2.1
53mm	--	2.5

Inductor

Quick Product Information

Application	Type	Series	Range	Size (mm)			Quantity per reel
				L	W	H	
RF Inductor	Wire Wound Ceramic Chip Inductor (AEC-Q200)	(WCA) WCI1005CP	1nH ~ 120nH	1.19	0.64	0.66	4K
		(WCA) WCI1608CP	1.6nH ~ 470nH	1.8	1.12	1.02	4K
		WCI1608HQ	1.8nH ~ 390nH	1.7	1.02	0.9	4K
		(WCA) WCI2012CP	2.2nH ~ 1000nH	2.29	1.73	1.52	3K
		WCI2012HQ	6.2nH ~ 51nH	2.4	1.65	1.45	3K
		(WCA) WCI2520CP	1.0nH ~ 12000nH	2.92	2.79	2.02 / 2.10	2K
		(WCA) WCI3225CG	4.7nH ~ 3300nH	3.42	2.3	2.8	1.5K
		(WCA) WCI4532CP	82nH ~ 4700nH	4.55	3.23	3.61	0.6K
	Multi-Layer High Frequency (AEC-Q200)	MCI0603TM	0.6nH ~ 75nH	0.6	0.3	0.3	15K
		MCI0603TG	0.3nH ~ 39nH	0.6	0.3	0.3	15K
		MCI1005HQ	0.3nH ~ 150nH	1.0	0.5	0.5	10K
		MCI1608HQ	1H ~ 470nH	1.6	0.8	0.8	4K
		MCI Automotive	0.3nH ~ 120nH	0.6~1.6	0.3~0.8	0.3~0.8	4K~15K
	SMD Air Wound Coil (AEC-Q200)	(LIA) LSI291A	2.5nH ~ 18.5nH	3.68	3.05	3.18	0.5K
		(LIA) LSI291B	17.5nH ~ 43nH	6.86	3.05	3.18	0.5K
		(LIA) LSI292AR	1.65nH ~ 5.4nH	2.21	1.42	1.37	2K
		(LIA) LSI292BR	5.6nH ~ 12.55nH	4.04	1.42	1.37	2K
		(LIA) LSI293A	22nH ~ 120nH	4.83	3.81	4.2	1K
		(LIA) LSI294A	90nH ~ 538nH	10.55	6.35	5.9	1K
	SMD Square Air Wound Coil (AEC-Q200)	(LQA) LSQ0806A	5.5nH ~ 19nH	2.591	1.829	1.397	2K
		(LQA) LSQ0807A	6.9nH ~ 22nH	2.591	1.829	1.524	2K
		(LQA) LSQ0908A	8.1nH ~ 33nH	2.972	2.134	1.829	2K
		(LQA) LSQ1111A	27nH ~ 47nH	3.3	2.67	2.79	2.5K
		(LQA) LSQ1515A	47nH ~ 82nH	5.84	3.56	3.73	2
		(LQA) LSQ2222A	90nH ~ 300nH	11.94	5.72	5.69	0.75K
		LSQ2929A	330nH ~ 500nH	14	7.49	7.24	0.6K

Application	Type	Series	Range	Size (mm)			Quantity per reel
				L	W	H	
Signal and Noise	Chip Bead (AEC-Q200)	MCB1005-S	10Ω~ 1000Ω	1	0.5	0.5	10K
		MCB1005-B	470Ω~ 1800Ω	1	0.5	0.5	10K
		MCB1005-H	20Ω~ 1000Ω	1	0.5	0.5	10K
		MCB1005-P	10Ω~ 70Ω	1	0.5	0.5	10K
		MCB1608-S	10Ω~ 2500Ω	1.6	0.8	0.8	4K
		MCB2012-S	30Ω~ 2000Ω	2	1.2	0.85	4K
		MCB2012-H	120Ω~ 600Ω	2	1.25	0.9	4K
		MCB3216-S	31Ω~ 2000Ω	3.2	1.6	1.1	3K
		MCB3225-S	60Ω~ 90Ω	3.2	2.5	1.3	2K
		MCB4516-S	80Ω~ 150Ω	4.5	1.6	1.6	2K
		MCB4532-S	70Ω~ 120Ω	4.5	3.2	1.5	1K
		MCB Automotive	10Ω ~ 2500Ω	1.0~3.2	0.5~1.6	0.5~1.1	3K~10K
	Chip Bead High Current Type (AEC-Q200)	MHC1005S	10Ω~ 120Ω	1	0.5	0.5	10K
		MHC1005P	33Ω~ 600Ω	1	0.5	0.5	10K
		MHC1005M	10Ω~ 120Ω	1	0.5	0.5	10K
		MHC1005G	120Ω	1	0.5	0.5	10K
		MHC1608S	10Ω~ 1000Ω	1.6	0.8	0.8	4K
		MHC1608P	22Ω~ 600Ω	1.6	0.8	0.8	4K
		MHC2012S	22Ω~ 1500Ω	2	1.25	0.85	4K
		MHC3216S	19Ω~ 1200Ω	3.2	1.6	1.1	3K
		MHC3225S	60Ω~ 1000Ω	3.2	2.5	1.3	2K
		MHC4516S	60Ω~ 850Ω	4.5	1.6	1.6	2K
		MHC4532S	120Ω~ 1300Ω	4.5	3.2	1.5	1K
		MHC Automotive	10Ω~ 1500Ω	1.0~4.5	0.5~3.2	0.5~1.6	1K~10K
	Wire Wound Ferrite Chip Inductor	WFI1608FT	0.047uH ~ 10uH	1.65	1.15	1.05	3K
		WFI1608FN	0.049uH ~ 0.65uH	1.8	1.3	1.2	4K
		WFI2012FS	0.078uH ~ 27uH	2.29	1.91	1.6	3K
		WFI2520FS	0.047uH ~ 22uH	2.72	2.59	1.83	2K
	Common Mode Choke (AEC-Q200)	(SCA) SCM2012FS	67Ω~750Ω	2	1.2	1.2	2K
		(SCA) SCM2012FH	67Ω~ 120Ω	2	1.2	1.2	2K
		SCM2012LH	67Ω~ 120Ω	2	1.2	1.2	2K
		SCM2012LS	67Ω~ 600Ω	2	1.2	1.2	2K
		SCM1268F	800Ω~2700Ω	12	11	6.8	7K
		SCM3216F	90Ω~ 2200Ω	3.2	1.6	1.9	2K
		SCM5025F	100Ω~ 1500Ω	4.8	5.0	2.3	2.5K
	Balun Transformer	BIH2012OB	50 / 50Ω ; 75 / 75Ω	2	1.2	1.2	2K

Quick Product Information

Application	Type	Series	Range	Size (mm)			Quantity per reel
				L	W	H	
Power Inductor	Multi-Layer Power Inductor (AEC-Q200)	MIP1608-P	0.24uH ~ 2.2uH	1.6	0.80	0.80	4K
		MIP1608-H	2.2uH ~ 4.7uH	1.6	0.80	0.80	4K
		MIP2012-P	0.47uH ~ 2.2uH	2.0	1.25	0.50	4K
		MIP2012-H	2.2uH ~ 4.7uH	2.0	1.25	0.9	3K
		(MPA) MIP2012	1.0uH ~ 4.7uH	2.0	1.25	0.90	3K
		MIP2012-P	0.47uH ~ 4.7uH	2.0	1.25	0.90	3K
		(MPA) MIP2016	2.2uH ~ 4.7uH	2.0	1.60	0.90	3K
	SMD Shielded Wire Wound Power Inductor (AEC-Q200)	CSME0310D	1.0uH ~ 22uH	3	3	1	2K
		CSME0312D	0.33H ~ 47uH	3	3	1.2	2K
		CSME0315D	1.0uH ~ 100uH	3	3	1.5	2K
		CSME0412D	1.0uH ~ 47uH	4	4	1.2	4.5K
		(CSMEA) CSME0418D	1.0uH ~ 220uH	4	4	1.8	3.5K
		CSME0420D	0.33uH ~ 100uH	4	4	2	3K
		CSME0430D	0.47uH ~ 150uH	4	4	3.0	2K
		CSME0520D	1.0uH ~ 22uH	4.9	4.9	2	0.8K
		(CSMEA) CSME0540D	1.0uH ~ 100uH	4.9	4.9	4.1	1.5K
		CSME0628D	0.9uH ~ 100uH	6	6	2.8	2K
		(CSMEA) CSME0645D	1.0uH ~ 150uH	6	6	4.5	1.5K
		(CSMEA) CSME0840D	0.9uH ~ 100uH	8	8	4.2	1K
		CSME3225D	1.0uH ~ 560uH	3.2	2.5	2.0	2K
		CSMM0315D	0.22uH ~ 15uH	3	3	1.5	2K
		CSMM0412D	0.47uH ~ 22uH	4	4	1.2	4.5K
		CSMM0420D	0.24uH ~ 47uH	4	4	2	3K
	SMD Molded Power Choke (AEC-Q200)	WIP201208Y	0.47uH	2.0	1.2	0.8	3K
		WIP201210Y	1.0uH	2.0	1.2	1.0	3K
		WIP201610P	0.24uH ~ 2.2uH	2.0	1.6	1.0	3K
		(WPA) WIP201610S	0.47uH ~ 2.2uH				
		WIP201610Y	0.47uH ~ 1uH				
		WIP252010P	0.22uH ~ 4.7uH	2.5	2.0	1.0	3K
		(WPA) WIP252010S	0.33uH ~ 2.2uH				
		WIP252010A	0.47uH ~ 1.0uH	2.5	2.0	1.8	3K
		WIP252012P	0.47uH ~ 4.7uH	2.5	2.0	1.2	3K
		(WPA) WIP252012S	0.47uH ~ 2.2uH				
		WIP322512A	0.47uH ~ 6.8uH	3.2	2.5	2.3	3K
		WIP322512D	0.47uH ~ 1.5uH	3.2	2.5	1.2	3K

RF Device

High Frequency Multilayer Band Pass Filter

Application	Part Number	Frequency Range (GHz)	Insertion Loss (dB)	Attenuation (dB min.)	VSWR (max.)	Impedance (Ω)	Size (mm)
2.4GHz BAND	RFBPF1005040A3T	2.4~2.5	1.5max.(25℃) 1.7max.(-40~+85℃)	13(824~915MHz) 5(1545~1605MHz) 34(4800~5000MHz) 27(7200~7500MHz)	2.1	50	1.00x0.50x0.40
	RFBPF1109060A28Q1C	2.4~2.5	1.0max.(25℃) 1.3max.(-40~+85℃)	20(50~960MHz) 30(1560~1606MHz) 15(1710~1990MHz) 10(3600MHz) 35(4800~5000MHz) 25(7200~7500MHz)	2.0	50	1.10x 0.90x0.60
	RBBPF1411060A3T	2.4~2.5	1.1	20(50~960MHz) 10(1710~1990MHz) 9(3600MHz) 22(4800~7200MHz)	2.0	50	1.40x1.10x0.60
	RFBPF1608060AA7M1U	2.4~2.5	0.95max.(25℃) 1.25max.(-40~+85℃)	20(500~960MHz) 23(3200MHz) 30(4800~5000MHz) 32(7200~7500MHz)	2.0	50	1.60x0.80x0.60
	RFBPF1608060ADT	2.4~2.5	1.8max.(25℃) 2.1max.(-40~+85℃)	25(800~1000MHz) 22.5(1200~1300MHz) 5.5(2000MHz) 10.5(3000MHz) 23.5(3600~3800MHz) 35(4800~5000MHz) 35(7200~7500MHz)	2.0	50	1.60x0.80x0.60
	RFBPF1608060AET	2.4~2.5	1.7max.(25℃) 2.0max.(-40~+85℃)	25(880MHz) 20(3200MHz) 35(4800~5000MHz) 25(7200~7500MHz)	2.0	50	1.60x0.80x0.60
	RFBPF1606A17T	2.4~2.5	1.8max.(25℃) 2.1max.(-40~+85℃)	27(800~900MHz) 25(4800~5000MHz) 30(7200~7500MHz)	2.0	50	1.60x0.80x0.70
5GHz BAND	RFBPF1608060K68Q1C	4.9~5.9	1.3max.(25℃) 1.5max.(-40~+85℃)	38(30~2700MHz) 16(3453~3547MHz) 33(3667~3883MHz) 9(6900~7093MHz) 32(7333~7750MHz) 40(10600~11650MHz) 18(15540~17760MHz)	2.0	50	1.60x0.80x0.60
	RFBPF1608060K78Q1C	5.15~5.95	0.8max.(25℃) 1.0max.(-40~+85℃)	40(30~2700MHz) 45(3400~3800MHz) 20(7250~7800MHz) 20(10300~11700MHz)	1.5	50	1.60x0.80x0.60
	RFBPF1608060K88Q1C	5.15~5.95	0.7max.(25℃) 0.85max.(-40~+85℃)	35(30~2700MHz) 30(3400~3800MHz) 12(7250~7800MHz) 20(10300~11700MHz)	1.5	50	1.60x0.80x0.60
	RFBPF1608060K98Q1C	5.15~5.95	0.6max.(25℃) 0.8max.(-40~+85℃)	40(30~2700MHz) 12(7250~7800MHz) 20(7250~7800MHz) 2(10300~11700MHz)	1.5	50	1.60x0.80x0.60
	RFBPF1608060KG8D1T	5.15~5.95	0.8	40(30~2700MHz) 45(3400~3800MHz) 20(6900MHz) 20(7250~7800MHz) 20(10300~11700MHz)	1.67	50	1.60x0.80x0.60
MoCA / Docsis	RFBPF3225180Y1T	975~1025	3.0	30(54~870MHz) 30(1125~1675MHz) 30(2300MHz)	2.0	75	3.20x2.50x1.80
	RFBPF3225200Y07B1U	475~675	2.5max.(25℃) 2.7max.(-40~+85℃)	60(2.5MHz) 40(2.5~100MHz) 35(100~200MHz) 35(200~300MHz) 8(300~400MHz) 57(950MHz) 47(950~2025MHz) 41(2025~2500MHz) 35(2500~3000MHz)	2.0	75	3.20x2.50x1.80
	RBBPF3225180Y27B1U	400~700	2.0	42(1~200MHz) 30(950~2150MHz) 35(2150~3000MHz) 27(3000~5900MHz)	2.0	50	3.20x2.50x1.80
	KFBPF2012100C67B1U	1125~1675	2.5	35(1~900MHz) 20(900~1002MHz) 35(2000~2500MHz) 20(2500~5900MHz)	2.0	50	2.00x1.25x1.05
	RBBPF3225180C67B1U	1125~1675	2.0	40(1~900MHz) 25(900~1002MHz) 35(2000~2500MHz) 27(2500~5900MHz)	2.0	50	3.20x2.50x1.80

High Frequency Multilayer Band Pass Filter

Application	Part Number	Frequency Range (GHz)	Insertion Loss (dB)	Attenuation (dB min.)	VSWR (max.)	Impedance (Ω)	Size (mm)
Wireless 2.4G	RBBPF1005040A1T	2.4~2.5	2.5	25(824~960MHz) 20(1710~1910MHz) 20(4800~5000MHz) 15(7200~7500MHz)	2.0	50	1.00x0.50x0.40
	RFBPF1005040A3T	2.4~2.5	1.5max.(25℃) 1.7max.(-40~+85℃)	13(824~915MHz) 5(1545~1605MHz) 34(4800~5000MHz) 27(7200~7500MHz)	2.1	50	1.00x0.50x0.40
	RFBPF1109060A28Q1C	2.4~2.5	1.0max.(25℃) 1.3max.(-40~+85℃)	20(50~960MHz) 30(1560~1606MHz) 15(1710~1990MHz) 10(3600MHz) 35(4800~5000MHz) 25(7200~7500MHz)	2.0	50	1.10x 0.90x0.60
	RFBPF1411060A1T	2.4~2.5	1.8max.(25℃) 2.1max.(-40~+85℃)	40(824~960MHz) 40(1545~1605MHz) 20(1710~1990MHz) 8(2110~2170MHz) 35(3600MHz) 35(4800~5000MHz) 35(7200~7500MHz)	2.0	50	1.40x1.10x0.60
	RFBPF1608060A7T	2.4~2.5	3.0	25(695~800MHz) 20(1910MHz) 35(3200MHz) 20(4800~5000MHz) 20(7200~7500MHz)	2.0	50	1.60x0.80x0.60
	RFBPF2012040ABT	2.4~2.5	2.5	30(824~849MHz) 30(880~915MHz) 30(1545~1605MHz) 30(1565~1585MHz) 35(1710~1785MHz) 40(1850~1910MHz) 32(1920~1980MHz) 7(3168~4752MHz) 11(3300~3800MHz) 35(4800~4967MHz) 26(5150~6000MHz) 23(7200~7450MHz)	2.0	50	2.00x1.20x0.40
	RFBPF2520120A1T	2.4~2.5	1.7	30(900MHz) 30(1850MHz) 20(2100MHz) 40(4800MHz) 25(7200MHz)	2.0	50	2.50x2.00x1.20
Wireless 5G	RFBPF1005040K0T	4.9~5.95	1.2max.(25℃) 1.5max.(-40~+85℃)	20(2400~2500MHz) 20(9800~11900MHz) 18(14700~17850MHz)	2.0	50	1.00x0.50x0.40
	RFBPF1608060K88Q1C	5.15~5.95	0.7max.(25℃) 0.85max.(-40~+85℃)	35(30~2700MHz) 30(3400~3800MHz) 12(7250~7800MHz) 20(10300~11700MHz)	1.5	50	1.60x0.80x0.60
	RFBPF1608060KG8D1T	5.15~5.95	0.8	40(30~2700MHz) 45(3400~3800MHz) 20(6900MHz) 20(7250~7800MHz) 20(10300~11700MHz)	1.67	50	1.60x0.80x0.60
	RFBPF1607K158D1T	5.15~5.95	0.6max.(25℃) 0.8max.(-40~+85℃)	35(2400~2500MHz) 30(10300~11900MHz) 25(15450~17850MHz)	1.57	50	1.60x0.80x0.60
	RFBPF1606K358Q1C	5.15~7.125	1.3(5150~5250MHz) 1.2(5250~5350MHz) 1.0(5500~5850MHz) 1.0(5850~7015MHz) 1.2(7015~7125MHz)	40(100~960MHz) 40(1160~1250MHz) 38(1420~1610MHz) 38(1690~2200MHz) 38(2300~2370MHz) 38(2400~2490MHz) 38(2490~2690MHz) 38(3300~3800MHz) 35(3800~4200MHz) 11(4500~4600MHz) 14(8220~8500MHz) 27(9000~9600MHz) 25(9600~9800MHz) 25(10300~11850MHz) 30(11850~14250MHz) 20(15450~21750MHz)	2.0	50	1.60x0.80x0.60
	RFBPF1606K48T	5.15~6.425	1.35(5150~5925MHz) 2.00(5925~6425MHz)	30(2700~4200MHz) 33(7200MHz) 25(10300~11800MHz) 10(14500~19100MHz)	1.7	50	1.60x0.80x0.60
	RFBPF2012100KST	4.9~5.9	1.5(4.90GHz) 1.5(5.25GHz) 1.5(5.85GHz)	30(3450MHz) 20(11000MHz)	2.0	50	2.00x1.20x1.00

High Frequency Multilayer Low Pass Filter

Application	Part Number	Frequency Range (MHz)	Insertion Loss (dB)	Attenuation (dB min.)	VSWR (max.)	Impedance (Ω)	Size (mm)
GSM850/900GHz BAND	RFLPF06050G9D0T	824~915	0.5max.(25℃) 0.7max.(-40~+85℃)	20(2400~2750MHz)	2.0	50	0.65x0.50x0.40
	RFLPF10050G9D0T	824~915	0.6	25(1648~1830MHz) 25(2472~2745MHz) 25(3296~3660MHz)	2.0	50	1.00x0.50x0.40
	RFLPF10050G9D3T	824~915	0.5max.(25℃) 0.7max.(-40~+85℃)	25(1648~1830MHz) 25(2472~2745MHz) 25(3296~3660MHz)	2.0	50	1.00x0.50x0.40
	RFLPF10050G9D4T	699~915	0.5max.(25℃) 0.7max.(-40~+85℃)	25(1648~1830MHz) 25(2472~2745MHz) 25(3296~3660MHz)	2.0	50	1.00x0.50x0.40
	RFLPF10050G9D58Q1C	814~915	0.5max.(25℃) 0.65max.(-40~+85℃)	18(1648~1830MHz) 17(2472~2745MHz)	2.0	50	1.00x0.50x0.40
DCS/PCS BAND	RFLPF16081G8D78Q1C	1880~2025	1.4	25(2400~2500MHz) 18(4020~4045MHz) 25(6030~6075MHz)	2.0	50	1.60x0.80x0.60
	RFLPF16081G8DC8Q1C	1880~2170	0.60(1880~1920MHz) 0.70(1920~1980MHz) 0.80(2010~2170MHz) 2.00(2025~2170MHz)	15(2400~2500MHz) 20(3760~4050MHz) 12(5150~5850MHz) 12(5640~6075MHz) 5(7520~8100MHz)	2.0	20	1.60x0.80x0.60
	RFLPF20121G8D1T	1880~2025	1.35max.(25℃) 1.50max.(-40~+85℃)	38(2400~2500MHz) 25(4020~4045MHz) 27(6030~6075MHz)	1.9	50	2.00x1.20x0.90
MoCA	RFLPF3225200Q5T	5~1002	1.8(25℃) 2.05(-40~+85℃)	33(1125~1400MHz) 26(1400~1675MHz)	2.0	75	3.20x2.50x1.80

Balun Transformers

Application	Part Number	Frequency Range (MHz)	Unbalance	Balance	Return Loss (dB) Min	Insertion Loss (dB)	Amplitude Difference (dB) Max	Attenuation (dB min.)	Phase Difference	Size(mm)
GSM 850/ GSM 900/ DCS1800/ PCS1900	RFBLN2012090BM5T25	869~960	50	200	10	1.1	2.0	10(1738~1920MHz) 20(2400~2500MHz) 20(2607~2880MHz)	180± 10	2.00x1.25x0.95
		1805~2025	50	200	10	1.8	2.0	15(2400~2500MHz) 20(3610~3980MHz) 20(5415~5970MHz)	180± 15	
	RFBLN2012090BS0T53	869~960	50	200	10	1.1(25℃) 1.3(-40~+85℃)	2.0	10(1738~1920MHz) 20(2400~2500MHz) 20(2607~2880MHz)	180± 15	2.00x1.25x0.95
		1805~1990	50	200	10	1.6(25℃) 1.8(-40~+85℃)	2.0	15(2400~2500MHz) 15(3610~3980MHz) 20(5415~5970MHz)	180± 15	
	RFBLN2012090BS0T50	869~960	50	200	10	1.1(25℃) 1.3(-40~+85℃)	2.0	10(1738~1920MHz) 20(2400~2500MHz) 20(2607~2880MHz)	180± 15	2.00x1.25x0.95
		1805~2025	50	200	10	1.8(25℃) 2.0(-40~+85℃)	2.0	15(2400~2500MHz) 15(3610~3980MHz) 20(5415~5970MHz)	180± 15	

Chip Antenna

Part Number	Frequency Range (GHz)	Azimuth Beamwidth (MHz)	Gain (dBi)	VSWR (max.)	Impedance (Ω)	Polarization	Size (mm)
RFANT2012090A0T	2.4~2.5	Omni-directional	1.72	2.0	50	Linear	2.00x1.25x0.90
RFANT3216120A5T	2.4~2.5	Omni-directional	2	2.0	50	Linear	3.20x1.60x1.20
RFANT5220110A2T	2.4~2.5	Omni-directional	2	2.0	50	Linear	5.20x2.00x1.10
RGFRA1903041A1T	2.4~2.5	Omni-directional	2	2.0	50	Linear	19.0x3.00x3.80
RGFRA1204021A1T	2.4~2.5	Omni-directional	2	2.0	50	Linear	12.0x4.00x2.00
RGFRA1204011DCT	900~930	Omni-directional	1	2.0	50	Linear	12.00x4.00x1.60
RGFRA1204011DET	855~885	Omni-directional	1	2.0	50	Linear	12.00x4.00x1.60

Diplexer

Application	Part Number	Frequency (MHz)	Impedance (Ω)	Insertion Loss (dB)	Attenuation (dB)	Return Loss (dB) Min	Isolation	Size (mm)
ISM Band 2.4/5GHz	RFDIP160806BLM6T68	2400~2500	50	0.50(25℃) 0.65(-40~+85℃)	21(4800~5000MHz) 21(5000~5950MHz) 25(7200~7500MHz)	10	32(2400~2500MHz) 25(4900~6000MHz)	10
		4900~5950	50	0.60(25℃) 0.75(-40~+85℃)	27(824~2170MHz) 30(2400~2500MHz 20(9800~11900MHz			
	RFDIP1606L150BT	2400~2500	50	0.45(25℃) 0.55(-40~+85℃)	20(4800~5000MHz) 22(5000~5950MHz) 20(7200~7500MHz)	10	-	1.60x0.80x0.60
		4900~5850	50	0.60(25℃) 0.70(-40~+85℃)	26(824~2170MHz) 30(2400~2500MHz) 25(9500~11900MHz)			
	RFDIP1606L150AT	2400~2500	50	0.45(25℃) 0.55(-40~+85℃)	21(4800~5000MHz) 23(5000~5500MHz) 28(5500~5950MHz) 21(7200~7500MHz)	10	-	1.60x0.80x0.60
		4900~5850	50	0.60(25℃) 0.70(-40~+85℃)	27(824~2170MHz) 31(2400~2500MHz) 26(9800~11900MHz)			
	RFDIP1607L898D1T	2400~2500	50	0.90(25℃) 1.05(-40~+85℃)	15(700~1300MHz) 25(4800~5000MHz) 30(7000~7500MHz)	10	30(2400~2500MHz) 25(4900~5950MHz)	1.60x0.80x0.70
		4900~5950	50	0.80(25℃) 0.95(-40~+85℃)	27(1200~1500MHz) 26(1500~2000MHz) 20(2300~3000MHz) 25(9800~11900MHz) 15(14700~17850MHz)			
	RFDIP160806ELM6T63	2400~2500	50	0.45(25℃) 0.55(-40~+85℃)	21(4800~5000MHz) 23(5000~5950MHz) 30(7200~7500MHz)	10	32(2400~2500MHz) 25(4900~6000MHz)	1.60x0.80x0.60
		4900~5950	50	0.60(25℃) 0.80(-40~+85℃)	26(824~2170MHz) 30(2400~2500MHz) 32(9800~11900MHz) 15(15500~17500MHz)			
	RFDIP1607ALM9T21	2400~2500	50	0.75(25℃) 0.85(-40~+85℃)	8(30~1000MHz) 30(4800~7125MHz) 30(7200~7500MHz) 15(7700~7950MHz) 15(7500~12000MHz)	13	40(2400~2500MHz) 25(4800~5000MHz) 10(15450~21375MHz)	1.60x0.80x0.60
		5150~7125	50	1.25(25℃) 1.45(-40~+85℃)	15(100~2300MHz) 40(2400~2500MHz) 15(2700~3500MHz) 25(10300~14250MHz) 15(15450~21375MHz)			
	RFDIP1607ELM9T21	2400~2500	50	0.85(25℃) 0.95(-40~+85℃)	15(30~1000MHz) 30(4800~7125MHz) 30(7200~7500MHz) 15(7700~7950MHz) 15(7500~12000MHz)	13	40(2400~2500MHz) 25(4800~5000MHz) 10(15450~21375MHz)	1.60x0.80x0.60
		5150~7125	50	1.20(25℃) 1.45(-40~+85℃)	15(100~2300MHz) 40(2400~2500MHz) 15(2700~3500MHz) 25(10300~14250MHz) 15(15450~21375MHz)			
	KFDIP1606L96B8Q1C	2400~2500	50	0.7(25℃) 0.9(-40~+85℃)	40(4800~5000MHz) 20(7200~7500MHz)	10	40(2400~2500MHz) 40(4800~5000MHz) 40 (5000~6000MHz	1.60x0.80x0.60
		4900~5100 5150-5950	50	1.3(25℃) 1.5(-40~+85℃) 1.0(25℃) 1.2(-40~+85℃)	40(2400~2500MHz) 25(10300~11700MHz 15(15300~16200MHz			
	RFDIP1606L115A8D1T	2400~2500	50	0.50(25℃) 0.70(-40~+85℃)	27(4800~5000MHz) 27(7200~7500MHz)	12	27(2400~2500MHz) 27(5150~5850 MHz)	1.60x0.80x0.60
		5150~5850	50	0.70(25℃) 0.90(-40~+85℃)	27(2400~2500MHz) 27(10300~11700MHz) 27(15450~16200MHz)			
	RFDIP1606L115B8D1T	2400~2500	50	0.50(25℃) 0.70(-40~+85℃)	27(4800~5000MHz) 27(7200~7500MHz)	12	27(2400~2500MHz) 27(5150~5850 MHz)	1.60x0.80x0.60
		5150~5850	50	0.70(25℃) 0.90(-40~+85℃)	27(2400~2500MHz) 27(10300~11700MHz) 27(15450~16200MHz)			
892 MHz & 1.94GHz Band	RFDIP1608070GM1T76	698~960	50	0.8(typ.0.45)	25(1710~2700MHz)	10	-	1.60x0.80x0.60
		1710~2700		0.7(typ.0.50)	20(698~960MHz) 20(5150~5850MHz)			
	RFDIP2012090GM1T58	698~960	50	0.4(25℃) 0.45(-40~+85℃	13(1710~2690MHz)	10	-	2.00x1.25x0.90
		1710~2690		0.55(25℃) 0.65(-40~+85℃	19(698~960MHz)			

SAW Filter

Application	Function	Pmax(dBm)	Part Number	Band	Frequency(MHz)	Package (mm)
GPS	SAW	15	SF11091582CT01T	GPS+GLONASS+BEIDOU	1559-1563 1574-1576 1597-1605	1.1 x 0.9
	SAW	15	SF11091176CT01T	GPS(L5)	1164-1189	1.1 x 0.9
	SAW Diplexer	15	BF151G51G1T11T	GPS(L1+L5)	1559.05 -1605.89 1164-1189	1.5 x 1.1
WiFi	SAW	25	SF11092442AT01T	WIFI 2.4	2401-2483	1.1 x 0.9
	SAW	25	SF11092442AE02T	WIFI 2.4 (co-exists B7/40/41)	2401-2483	1.1 x 0.9
	SAW	25	SF11092442AE03T	WIFI 2.4 (co-exists B7/40/41)	2402.5-2481.5	1.1 x 0.9
	SAW	25	SF11092437AE01T	WIFI 2.4 (co-exists B7/40/41) Ch1-11	2402.5-2471.5	1.1 x 0.9
	SAW	25	SF11092442AT03T	WIFI 2.4 (co-exists B7/40/41)	2401- 2483	1.1 x 0.9
TDD LTE	SAW	29	SF112350B40T01T	B40	2300-2400	1.1 x 0.9
	SAW	15	SF112350B40T02T	B40	2300-2400	1.1 x 0.9
	SAW	30	SF112595B41T02T	B41 (120M)	2535-2655	1.1 x 0.9
	SAW	15	SF112595B41T01T	B41F (194M)	2496-2690	1.1 x 0.9
FDD LTE	SAW	15	SF110881B5T01T	B5	869-894	1.1 x 0.9
	SAW	15	SF112665B7T01T	B7	2620-2690	1.1 x 0.9
	SAW	15	SF111962B25T01T	B25	1930.6-1994.4	1.1 x 0.9
	SAW	15	SF1108776B26T01T	B26	859-894	1.1 x 0.9
	SAW Duplexer	29	DF182140B1T01T	B1	1920-1980 2110-2170	1.8 x 1.4
	SAW Duplexer	30	DF181747B3T01T	B3	1710-1785 1805-1880	1.8 x 1.4
	SAW Duplexer	29.5	DF180836B5T01T	B5	824-849 869-894	1.8 x 1.4
	SAW Duplexer	29.5	DF180897B8T01T	B8	880.25-914.75 925.25-959.75	1.8 x 1.4
	SAW Duplexer	30	DF181882B25T01T	B25	1850-1910 1930-1995	1.8 x 1.4
	SAW Quadplexer	30	QF2016CS9LT10T	B25+60+70	1850.25-1914.75 1930.25-2019.75 1695.25-1779.75 2110.25-2199.75	2.0 x 1.6
	SAW Diplexer	17	BF15915866E01T	Lora	863-870 902-928	1.5 x 1.1

Antenna Switch

Application	Part Number	Controller	Description	Frequency (GHz)Min.	Frequency (GHz)Max.	Insertion loss (dB) typ.	Isolation (dB) typ.	Package (mm)
LTE	RFASWA630P5F06	GPIO	SPDT	0.1	6	0.3@2.7GHz	25@2.7GHz	1.1 x 0.7
	RFASWK626PTF0G	GPIO	SP4T	0.1	2.7	0.65@2.7GHz	21@2.7GHz	1.1 x 1.1
	RFASWK414PTF0G	GPIO	SP4T	0.1	2.7	0.7@2.7GHz	24@2.7GHz	2.0 x 2.0
	RFASWH416PTF0G	GPIO	SP6T	0.1	2.7	0.7@2.7GHz	24@2.7GHz	2.0 x 2.0
	RFASWD418PTF0G	GPIO	SP8T	0.1	2.7	0.7@2.7GHz	24@2.7GHz	2.0 x 2.0
Wi-Fi	RFASWA758BTF0C	GPIO	SPDT	0.1	7.2	0.25@2.5GHz 0.35@5.5GHz 0.55@7.125GHz	37@2.5GHz 26@2.5GHz 21@7.125GHz	1.0 x 1.0
	RFASWA751BTF0C	GPIO	SPDT	0.1	7.2	0.25@2.5GHz 0.35@5.5GHz 0.55@7.125GHz	37@2.5GHz 26@2.5GHz 21@7.125GHz	1.0 x 1.0
	RFASWM317ATF0C	GPIO	SP3T	0.1	7.2	0.35@2.5GHz 0.50@5.5GHz 0.70@7.125GHz	32@2.5GHz 24@5.5GHz 22@7.125GHz	1.5 x 1.5
	RFASWM610ATF0C	GPIO	SP3T	0.1	7.2	0.36@2.5GHz 0.90@5.5GHz 1.1@7.125GHz	31@2.5GHz 21@5.5GHz 19@7.125GHz	1.1 x 1.1
	RFASWB355ATF0C	GPIO	DPDT	1	6	0.75@2.5GHz 1.45@5.5GHz	0.75@2.5GHz 1.45@5.5GHz	1.5 x 1.5
5G NR	RFASWA630PTF0E	GPIO	SPDT	0.1	6	0.65@6GHz	15@6GHz	1.1 x 0.7
	RFASWB022ATF0E	GPIO	DPDT	0.1	5	0.95@5GHz	30@5GHz	1.5 x 1.1

Antenna

Dipole Antenna (N/SMA)

Series	Size(mm)		Operating Frequency Range	Gain	VSWR	Return Loss
	L	Ø				
8709	87	9.95	2.4~2.5 GHz	2 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2 dBi 5.15~7.125 GHz: 3 dBi	<2	<-10 dB
			UHF	2 dBi	<2	<-10 dB
1513	157.5	13	2.4~2.5 GHz	3 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 3 dBi 5.15~7.125 GHz: 3 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.5 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
1713	172.5	13	2.4~2.5 GHz	3 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 4 dBi 5.15~7.125 GHz: 5 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.5 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
3913	392	12.5	2.4~2.5 GHz	9 dBi	<2	<-10 dB
1310	135.7	10	2.4~2.5 GHz	5 dBi	<2	<-10 dB
			5.15~7.125 GHz	5 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	3 dBi~4 dBi	<2	<-10 dB
			Lora	3 dBi	<2.5	<-7 dB
			5G NR	3 dBi	<3	<-6 dB
			UHF	3 dBi	<2.5	<-7 dB
1413	148.5	13	2.4~2.5 GHz	3 dBi	<2	<-10 dB
			5.15~7.125 GHz	3 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	3 dBi	<2	<-10 dB
			5G NR	3 dBi	<3	<-6 dB
1615	169.9	13	5G NR +Sub-6G+5G	0.93 dBi (@617~960 MHz) 2.71 dBi (@1710~2690 MHz) 3.66 dBi (@ 3300~4200 MHz) 4.37 dBi (@5150~7150 MHz)	<3.0(@617~960/1710~2690 MHz) <3.0(@3300~4200/5150~7150 MHz)	<6.0 dB(@617~960/1710~2690 MHz) <-6.0 dB(@3300~4200/5150~7150 MHz)
1913	196.6	13	2.4~2.5 GHz	5dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 4 dBi 5.15~7.125 GHz: 5 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.0 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
			UHF	2 dBi	<2	<-10 dB
2213	217.1	13	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 5 dBi 5.15~7.125 GHz: 4 dBi	<2	<-10 dB
			2.4~2.5 GHz	6 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	7 dBi	<2	<-10 dB
			5.15~7.125 GHz	7 dBi	<2	<-10 dB
			5G NR	5 dBi	<3	<-6 dB
2220	220	20	2.4 GHz	5 dBi	<2	<-10 dB
			5.15~7.125 GHz	5 dBi	<2	<-10 dB
			2.4~2.5 GHz	7 dBi	<2	<-10 dB
2520	250	20	2.4 GHz	5~7 dBi	<2	<-10 dB
			5.15~7.125 GHz	7 dBi	<2	<-10 dB
			2.4~2.5 GHz（High Gain）	7 dBi	<2	<-10 dB
3019	309	191	698 ~ 960 MHz 1710 ~ 2690 MHz 3300 ~ 3800 MHz	5 dBi (@698~960 MHz) 8 dBi (@1710~2690 MHz) 11 dBi (@3300~3800 MHz)	<3.5 (@698~960 MHz) <3.0 (@1710~2690 MHz) <3.0 (@3300~3800 MHz)	<-5.1 dB(@698~960 MHz) <-6.0 dB(@1710~2690 MHz) <-6.0 dB(@3300~3800 MHz)
6609	66.7	9.95	UHF	--	<3	<-6 dB
1714	175.51	13	5G NR +Sub-6G+5G	1.37 dBi(@617~960 MHz) 2.11 dBi(@1447~1510 MHz) 2.20 dBi(@ 1560~1609 MHz) 3.96 dBi(@1710~2690 MHz) 3.60 dBi(@3300~4200 MHz) 4.99 dBi(@5150~5800 MHz) 4.29 dBi(@5925~7150 MHz)	<3.0(@617~960 MHz) <2.5(@1447~1510 MHz) <2.0(@1560~1609/1710~2690/ 3300~4200/5150~5800/5925~7150 MHz)	<6.0 dB(@617~960 MHz) <7.3(@1447~1510 MHz) <-6.0 dB(@1560~1609/1710~2690/ 3300~4200/5150~5800/5925~7150 MHz)
7575	75	75	3300 ~ 5000 MHz	8 dBi (@3300 ~ 5000 MHz)(ANT1) 8 dBi (@3300 ~ 5000 MHz)(ANT2)	<2	<-10 dB

Dipole Antenna (Cable)

Series	Size(mm)		Operating Frequency Range	Gain	VSWR	Return Loss
	L	Ø				
8709	87	9.35	2.4~2.5 GHz	2 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2 dBi 5.15~7.125 GHz: 3 dBi	<2	<-10 dB
1513	152	9.35	2.4~2.5 GHz	3 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 3 dBi 5.15~7.125 GHz: 3 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.0 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
1514	158	14	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 5 dBi 5.15~7.125 GHz: 7 dBi	<2	<-10 dB
1713	172	9.35	2.4~2.5 GHz	3 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 4 dBi 5.15~7.125 GHz: 5 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.0 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
1310	135.7	10	2.4~2.5 GHz	5 dBi	<2	<-10 dB
			5.15~7.125 GHz	5 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	3 dBi~4 dBi	<2	<-10 dB
			5G NR	3 dBi	<3	<-6 dB
1913	192	9.35	2.4~2.5 GHz	5 dBi	<2	<-10 dB
			2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 4 dBi 5.15~7.125 GHz: 5 dBi	<2	<-10 dB
			5150~7125 MHz	5150~5850 GHz: 3.0 dBi 5950~7125 GHz: 3.5 dBi	<2	<-10 dB
1330	130	30	5G NR	-0.09 dBi (@824~960 MHz) 1.81 dBi (@1700 ~ 2700 MHz)	<3	<-6 dB
6537	64	37	5G NR	0.65 dBi (@699~746 MHz) 4.61 dBi (@1710~2155 MHz)	<3 .5(@ 699~746 MHz) <3(@1710~2155 MHz)	<-5.1 dB(@699~746 MHz) <-6 dB(@1710~2155 MHz)
4617	46	17.5	2.4~2.5 GHz	2 dBi	<2	<-10 dB
1615	169.9	13	5G NR +Sub-6G+5G	0.93 dBi (@617~960 MHz) 2.71 dBi (@1710~ 2690 MHz) 3.66 dBi (@ 3300~4200 MHz) 4.37 dBi (@5150~7150 MHz)	<3.0(@617~960/1710~2690 MHz) <3.0(@3300~4200/5150~7150 MHz)	<6.0 dB(@617~960/1710~2690MHz) <-6.0 dB(@3300~4200/5150~7150 MHz)

Cable Assembly

Series	Connector 1	Connector 2	Wire Diameter	Color	L	Operating Frequency Range	VSWR
1006	Straight Reverse SMA Jack	IPEX(or Strip & Tin)	Ø1.13/Ø1.37/RG178	Option	Option	DC ~7.125 GHz	2.0
1106	Straight Reverse SMA Jack	IPEX(or Strip & Tin)	Ø1.13/Ø1.37/RG178	Option	Option	DC ~7.125 GHz	2.0
1613	R/A Reverse SMA Jack	IPEX(or Strip & Tin)	Ø1.13/Ø1.37/RG178	Option	Option	DC ~7.125 GHz	2.0
0403	IPEX	IPEX(or Strip & Tin)	Ø0.81/Ø1.13/Ø1.37/RG178	Option	Option	DC ~7.125 GHz	2.0
0202	IPEX III	IPEX(or Strip & Tin)	Ø0.81	Option	Option	DC ~7.125 GHz	2.0
xxxx	Strip & Tin	Strip & Tin	Ø0.81/Ø1.13/Ø1.37/RG178	Option	Option	DC ~7.125 GHz	2.0
1015	N Jack	MMCX(or Strip & Tin)	RG316	Option	Option	DC ~7.125 GHz	2.0
1008	Straight Reverse SMA Plug	IPEX(or Strip & Tin)	RG405	Option	Option	DC ~7.125 GHz	2.0

Connector

Series	Size(mm)		Operating Frequency Range	VSWR
	L	W		
1612	16.8	12.3	DC ~ 7.125 GHz	2.0
0703	7.5	3.3	DC ~ 7.125 GHz	2.0
1308	13.3	8	DC ~ 7.125 GHz	2.0
1609	16.5	9	DC ~ 7.125 GHz	2.0
2914	29.1	14.7	DC ~ 7.125 GHz	1.5

NFC, WPC & WNC

TYPE	Series	Size(mm)		Ls		Rs		Q	
		L	w						
NFC	5030	50	30	1.62±0.1μH		0.66±0.15Ω		15.42±2.5(1MHz)	
	5040	50	40	1.89±0.1μH		0.76±0.15Ω		15.62±2.5(1MHz)	
	6040	60	40	2.37±0.1μH		0.85±0.15Ω		17.5±2.5(1MHz)	
WPC	4832	48	32	1.35±0.1μH		0.3±0.15Ω		28.3±2.5(1MHz)	
WNC	6060	60	60	NFC	2.11±0.1μH	NFC	0.572±0.15Ω	NFC	37.2±2.5(1MHz)
				WPC	18.69±0.1μH	WPC	0.837±0.15Ω	WPC	14.03±2.5(1MHz)

PCB Antenna, FPA Antenna and Metal Antenna

TYPE	Series	Size(mm)		Cable Length (mm) L	Operating Frequency Range	Gain	VSWR	Return Loss
		L	w					
PCB	1118	118	18	Option	5G NR +Sub-6G+5G	3.32 dBi(@698~960 MHz) 6.04 dBi(@1710~2690 MHz) 5.36 dBi(@3300~3800 MHz) 4.39 dBi(@5150~5850 MHz)	<2.0(@698~960 MHz) <3.0(@1710~2690/ 3300~3800/5150~5850 MHz)	<-10.0 dB (@698~960/1710~2690 MHz) <-6.0 dB (@3300~3800/5150~5850 MHz)
	2022	20	22	Option	5G NR +Sub-6G+5G	5.54 dBi	<2	<-10dB
	2313	23	13	Option	5.15~7.125 GHz	3dBi	<2	<-10dB
	4305	43	5	Option	2.4~2.5 GHz	2dBi	<2	<-10dB
	2010	20.1	10	Option	5.15~7.125 GHz	3dBi	<2	<-10dB
	5010	50	10	Option	2.4~2.5 GHz	3dBi	<2	<-10dB
	4308	43	8.3	Option	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2dBi 5.15~7.125 GHz: 3dBi	<2	<-10dB
	4606	46.5	6	Option	2.4~2.5 GHz	2dBi	<2	<-10dB
	3513	35	13	Option	2.4~2.5 GHz	4dBi	<2	<-10dB
	3515	35	15	Option	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2dBi 5.15~7.125 GHz: 3dBi	<2	<-10dB
	2022	20	22.75	Option	5150 ~ 7125 MHz	3.5dBi	<2	<-10dB
	7505	75	5.2	Option	UHF	--	<2.5	<-7.3dB
	7910	79	10	Option	UHF	--	<2	<-10dB
	2120	21	20	Option	5925 ~ 7125 MHz	4.89dBi	<3	<-6dB
	1020	100.2	20	Option	617~960 MHz 1710~2690 MHz 3300~5000 MHz 5150~5925 MHz	--	<3.5	<-5.1dB
	1116	112.2	16.2	Option	617~960 MHz 1710~2690 MHz 3300~4200 MHz 5150~7150 MHz	617~960 MHz: 0.93dBi 1710~2690 MHz: 2.71dBi 3300~4200 MHz: 3.66dBi 5150~7150 MHz: 4.37dBi	<3	<-6dB
	3090	30	90	Option	5G NR	698~960 MHz: 0.59 dBi 1710~2690 MHz: 3.09dBi	<3	<-6dB
	3624	36	24.5	Option	UWB	3.1 ~5 GHz: 3.44 dBi 6 ~8 GHz: 5.12 dBi 9 ~10.6 GHz: 3.43 dBi	<2	<-10dB
FPA	3025	30.3	25.3	Option	2.4~2.5 GHz	3dBi	<2	<-10dB
	3225	25	32.6	Option	2.4~2.5 GHz	2dBi	<2	<-10dB
	3226	32.35	26	Option	2.4~2.5 / 5.15~7.125 GHz	3dBi	<2	<-10dB
	4305	43	5.5	Option	2.4~2.5 GHz	3dBi	<2	<-10dB
	3010	30	10	Option	2.4~2.5 GHz	2dBi	<2	<-10dB
	2006	20	6	Option	5.15~7.125 GHz	2dBi	<2	<-10dB
	2022	20	22.75	Option	5150 ~ 7125 MHz	3.5dBi	<2	<-10dB
	1120	110	20	Option	5G NR	698 ~798 MHz: 3.55 dBi 824 ~960 MHz: 3.59 dBi 1710 ~2170 MHz: 3.95 dBi 2300 ~2400 MHz: 4.56 dBi 2500 ~2690 MHz: 4.66 dBi	<2	<-10dB
	3624	36	24.5	Option	UWB	3.1~5 GHz: 3.43 dBi 6~8 GHz: 5.49 dBi 9~10.6 GHz: 3.75 dBi	<2	<-10dB
Metal	3109	31	9	Option	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2 dBi 5.15~7.125 GHz: 2 dBi	<2	<-10dB
	2107	21.5	7.1	None	2.4~2.5 GHz	3 dBi	<2	<-10dB
	2807	28.6	7.9	Option	2.4~2.5 GHz	3 dBi	<2	<-10dB
	3407	34	7.5	Option	2.4~2.5 GHz	3 dBi	<2	<-10dB
	3706	37.4	6.5	Option	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 5 dBi 5.15~7.125 GHz: 5 dBi	<2	<-10dB
	2712	27.75	12.8	None	2.4~2.5 GHz	3.38 dBi	<2	<-10dB
	2811	27.05	11.3	None	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2.66dBi 5.15~7.125 GHz: 3.68dBi	<2	<-10dB
	2911	29.6	11.3	None	2.4~2.5/5.15~7.125 GHz	2.4~2.5 GHz: 2.14dBi 5.15~7.125 GHz: 2.68dBi	<2	<-10dB
	2007	20.9	7.8	Option	5150 ~ 7125 MHz	5 dBi	<2	<-10dB
	2008	20.2	8.6	Option	5150 ~ 7125 MHz	5 dBi	<2	<-10dB
	3307	33	7.2	Option	UWB	3.1~5 GHz: 4.79 dBi 6~8 GHz: 5.39 dBi 9~10.6 GHz: 4.96 dBi	<2	<-10dB

Tantalum Capacitor and Micro-Fuse by Matsuo Electric

Tantalum Capacitor

Category	Series		Equipment				Size	Operating Temp range	Capacitance	Tolerance	Rated Voltage
			Space	Automotive	Industry	Consumer					
Manganese	267P	· High reliability	•				3216, 3528, 6032, 7343, 7343H, 7257	-55~125℃	0.1~100uF	±20%(M) ±10%(K) ±5%(J)	4V, 6V, 10V, 15V, 20V,25V, 35V, 50V
	271N	· High reliability · High Temperature		•			3216, 3528, 6032, 7343	-55~150℃	0.1~68uF	±20%(M) ±10%(K)	4V, 6.3V, 10V, 16V, 20V, 25V, 35V
	267N	· High reliability · AEC-Q200 Compliant		•			3216, 3528, 6032, 7343	-55~125℃	0.1~220uF	±20%	4V, 6.3V, 10V, 16V, 20V, 25V, 35V
	279	· Safety (Built in Fuse)			•	•	3528, 6032, 7343, 7343H, 7257	-55~125℃	0.15~330uF	±20%(M) ±10%(K)	6.3V, 10V, 16V, 20V, 25V, 35V, 50V
	267	· Standard Series			•	•	3216, 3528, 6032, 7343 7343H, 7257	-55~125℃	0.047~680uF	±20%(M) ±10%(K)	2.5V, 4V, 6.3V, 10V, 16V, 20V, 25V, 35V, 50V
	281	· High Capacitance			•	•	7343, 7343H	-55~125℃	4.7~470uF	±10%, ±20%	4V, 6.3V, 10V, 16V, 20V, 25V, 35V, 50V
	251	· High Capacitance · Miniature (Face dawn structure)				•	1608, 2012, 3216	-55~125℃	0.47~330uF	±20%(M) ±10%(K)	2V, 2.5V, 3V, 4V, 6.3V, 8V, 10V, 16V, 20V, 25V, 35V
Polymer	TCA	· Low ESR · Standard series			•	•	3216, 3528, 6032, 7343	-55~105℃	22~680uF	±20%	2.5V, 4V, 6.3V, 10V
	TCB	· Low ESR · Miniature (Face dawn structure)				•	1608, 2012, 3216,	-55~105℃	4.7~220uF	±20%	2.5V, 4V, 6.3V, 10V

Micro-Fuse

Category	Series		Equipment			Size	Operating temp range	Rated Current	Rated Voltage
			Automotive	Industry	Consumer				
Thin Film Type	KAB	· Miniature · UL/cUL Approval		•	•	1608 2012	-40~125℃	0.2~6.3A (1608) 0.2~5.0A (2012)	24V, 32V, 50V
	KABT	· Miniature · High pulse resistance · UL/cUL Approval		•	•	1608	-40~125℃	1.6~6.3A	32V
	KABM	· Miniature · High reliability · UL/cUL Approval	•[inside]			1608 2012	-40~125℃	0.5~6.3A (1608) 0.5~8.0A (2012)	24V, 32V, 50V
	KABN	· Miniature · High reliability · UL/cUL Approval	•[control]			1608 2012	-40~125℃	0.5~2.0A (1608) 0.5~2.0A (2012)	24V, 32V, 50V
Wire Type	JAG	· High pulse resistance · UL/cUL Approval		•	•	3216	-40~125℃	0.5~10A	32V, 50V, 72V
	JAGN	· High pulse resistance · AEC-Q200 Compliant · UL/cUL Approval	•			3216	-40~125℃	0.5~10A	32V, 50V, 72V, 96V
Flame Type	JAJ JAK	· High Current · Miniature · UL/cUL Approval		•	•	3216	-40~125℃	10~20A	60V
	JAJN JAKN	· High Current · Miniature · AEC-Q200 Compliant · UL/cUL Approval	•			3216	-40~125℃	10~20A	60V
Terminal Integrated Type	JHC	· Ultra High Current · UL/cUL Approval		•	•	7343 1173	-40~125℃	30~100A	35V, 60V, 84V, 110V
	JHCN	· Ultra High Current · AEC-Q200 Compliant · UL/cUL Approval	•			7343 1173	-40~125℃	30~100A	35V, 60V

NTC Thermistor and Varistor by JOYIN CO., LTD.

NTC Thermistor

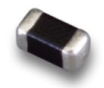
NTC POWER	Series	Body Size (Ø mm)	Zero Power Resistance at 25℃ (Ω)	Imax (A)	Max. Load Cap. AC240V (μF)	Operating Temp. Range ℃	Agency Approvals		
							UL/c UL	TUV	CQC
	JNR	5φ / 8φ / 10φ / 13φ / 15φ / 20φ / 25φ	0.7 ~ 220	0.3 ~ 15	68 ~ 1200	-40~+200℃	E171531	R50236285	CQC10001050816

SMD NTC	Series	Body Size (mm)	Zero Power Resistance at 25℃ ((KΩ))	B Value (K)	Dissipation Factor (δ(mW/℃))	Thermal Time Constant (τ(sec.))	Operating Temp. Range ℃	Agency Approvals	
								UL/c UL	TUV
	JSN	0201, 0402, 0603, 0805	5 ~ 470	3380 ~ 4400	1.0 ~ 2.4	3.0 ~ 7.5	-40~+150℃	E171531	R 50267437

NTC Specialty	Series	Body Size (Ø mm)	Zero Power Resistance at 25℃ (KΩ)	B Value (K)	Dissipation Factor δ(mW/℃)	Thermal Time Constant τ(sec.)	Operating Temp. Range ℃	Agency Approvals	
								UL/c UL	TUV
	JCR	JCR03 JCR05	1 ~ 330	3380 ~ 4360	2.5	18	-40~+125℃	E171531	R 50357749
			1 ~ 330	3380 ~ 4360	2.5	18			
			1 ~ 470	3750 ~ 5200	7.2	18			
	JTD JFR JSR	-	10 ~ 100	3380 ~ 4360	0.7 ~ 1.6	0.8 ~ 3.4	-40~+105℃	E171531	R 50357749
			10 ~ 33	3380 ~ 3980	1.6	3.4	-40~+100℃		
			10 ~ 150	3435 ~ 4360	2.0	10	-40~+125℃		
	JAS JAT	-	10 ~ 100	3435 ~ 4360	2.0	10	-40~+125℃	E171531	R 50357749
			10 ~ 200	3380 ~ 4250	2.5	18	-40~+125℃	E171531	R 50357749

Varistor

ESD Guard	Series	Body size (mm)	Rated Voltage (V)	Trigger Voltage (V)	Clamping Voltage (V)	Capacitance (pF)	Leakage current (uA)	Operating Temp. Range ℃
	JES	0201 / 0402 / 0603	5 ~ 30	250 ~ 300	30	0.2	0.01	-40~+85℃

MultiLayer Varistor	Series	Body size (mm)	Working Voltage (V)	Varistor Voltage @1mA (V)	Clamping Voltage (V)	Capacitance (pF)	Peak Current (A)	Operating Temp. Range ℃
	JMV	0201 / 0402 / 0603 / 0805 / 1206 / 1210 / 1812 / 2220	5.5 ~ 100	7.8 ~ 132	22 ~ 200	2.5 ~ 8,300	20 ~ 4,500	-40~+125℃

Metal Oxide Varistor	Series	Body size (Ø mm)	Varistor Voltage (±10%~±20%) (V @ 1mA)	Operating Voltage Range V_{AC}(rms)	Max. Surge current (8/20μs)			Operating Temp. Range ℃	Agency Approvals		
					Std. Surge	High Surge	Ultra Surge		UL/ c UL	VDE	CQC
	JVR JVZ	5φ / 7φ / 10φ / 14φ / 20φ / 25φ	18~1800	11 ~ 1000	N grade: 100A~ 6.5KA	S grade: 250A~ 10KA	U grade: 1.5KA~ 13KA	JVR: -40~+85℃ JVZ: -40~+105℃	E325508	5937	CQC07001019159~164
	JVT	5φ / 7φ / 10φ / 14φ / 20φ / 25φ	18~1100	11 ~ 1000	N grade: 100A~ 6.5KA	S grade: 250A~ 10KA	U grade: 1.5KA~ 13KA	-40~+125℃	E325508	5937	CQC150011300699~703

Film Capacitor by Nitsuko Electronics Corporation

Quick Product Information

Application		Series Code	Features	Rated Voltage	Capacitance (μF)	Temp. Range (℃)
General use	Standard	FPB	• Small Standard	250VDC 450VDC 630VDC 800VDC 1250VDC	0.47 ~ 10 0.22 ~ 4.7 0.068 ~ 2.2 0.68 ~ 2.2 0.001 ~ 0.47	-40 ~ +85 (+105)
		FPB2 〔NEW〕	• Small	630VDC	0.47 ~ 2.2	-40 ~ +105
		FPT2	• High Temperature • Small • (~ +125℃)	630VDC	0.068 ~ 2.2	-40 ~ +105 (+125)
		FPT	• High Temperature • (~ +125℃)	630VDC	0.01 ~ 0.047	-40 ~ +105 (+125)
		MDX	• Standard	250VDC 450VDC 630VDC	0.01 ~ 0.33 0.01 ~ 0.15 0.015 ~ 0.047	-40 ~ +85 (+105)
		MDD	• Lead pitch 5mm, 7.5mm	50VDC 250VDC	0.1 ~ 2.2 0.01 ~ 0.15	-40 ~ +85 (+105)
	PFC circuit in power	FPCS 〔NEW〕	• Boxed small • Low noise • Halogen-free product	450VDC	0.47 ~ 2.2	-40 ~ +85 (+110)
		FPS5 〔NEW〕	• Small • Low noise • Halogen-free product	450VDC	0.47 ~ 2.2	-40 ~ +85 (+110)
		FPS4	• Small standard • Low noise • Halogen-free product	450VDC	0.47 ~ 4.7	-40 ~ +85 (+110)
		FPS3	• Low noise • Halogen-free product	450VDC	0.47 ~ 2.2	-40 ~ +85 (+110)
		FPA	• 550V • Halogen-free product	550VDC	0.47 ~ 2.2	-40 ~ +85 (+110)
	Large Capacitance	MDL	• Miniature and Large capacitance • For high frequency and high ripple	35VDC 63VDC	4.7 ~ 22 10 ~ 22	-40 ~ +85 (+105)
	High voltage	MDD	• High voltage 500 VAC	500VAC	0.0022 ~ 0.1	-40 ~ +85 (+105)
High frequency circuit use		FP F	• High current	250VDC 450VDC 630VDC	0.01 ~ 10 0.01 ~ 3.3 0.01 ~ 2.2	-40 ~ +105
Across- the- line use		FSX	• EMI suppression class X2 • Small	310VAC	0.01 ~ 10	-40 ~ +110
		CFD-N	• For Japan • For noise immunity test	125VAC 250VAC	0.033 ~ 4.7 0.01 ~ 2.2	-40 ~ +85 (+105)
Power Electronics in General (DC-Link, Smoothing, etc.)		FPCL	• Long life, High voltage, High current	630VDC 800VDC 1100VDC 1300VDC	5 ~ 65 10 ~ 20 1 ~ 25 1 ~ 15	-40 ~ +70 (+85)

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