## 4. High Power Type PF, PE, PC, PA, PB, LC, LA

# Discontinued



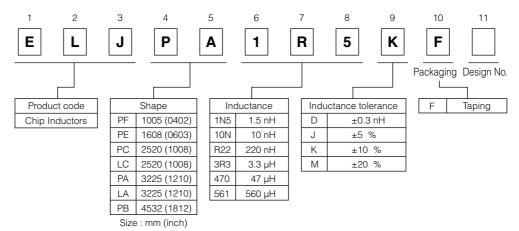
### ■ Features

- Low DCR and large current capability, suitable for power circuitry.
- Wire wound, resin molded chip inductor. (PC, PA, PB, LC, LA type)
- Unique Ceramic Core/Laser-cut technology (PF, PE type)
- Capable of being Re-flow or flow soldered.
- Wide line-up from 1005 to 4532 case sizes.
- Good for mounting.
- RoHS compliant

### ■ Recommended Applications

• AV equipment, Wireless communication equipment and various types of general electronic equipment.

### ■ Explanation of Part Numbers



### ■Storage Conditions

◆ Package : Normal temperature (-5 to 35 °C), normal humidity (85 %RH max.), shall not be exposed to

direct sunlight and harmful gases and care should be taken so as not to cause dew.

● Operating Temperature : -40 to +85 °C (PF, PE)

-20 to +85 °C (PC, PA, PB, LC, LA)

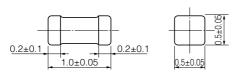
### ■Storage Period

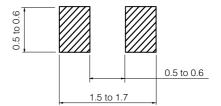
Solderability may be reduced due to the conditions of high temperature and high humidity which causes the oxidation of tin-plated terminals. Even if storage conditions are within specified limits, solderability may be reduced with the passage of time. Therefore, please control the storage conditions and try to use the product within 6 months of receipt.

## ■ Packaging Methods, Soldering Conditions and Safety Precautions

Please see Data Files.

- PF Type 1005 (0402)
- Dimensions in mm (not to scale)



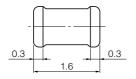


- Standard Packing Quantity
- 10000 pcs./Reel

### ■ Standard Parts

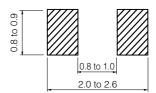
		Inductance		(	Q	SRF *1	Rpc *2	DC Current
Part No.	(nH)	Tolerance (%)	Test Freq. (MHz)	min.	Test Freq. (MHz)	(MHz) min.	$(\Omega)$ max.	(mA) max.
ELJPF2N2DFB	2.2					5300	0.040	1900
ELJPF2N7DFB	2.7					5300	0.050	1800
ELJPF3N3DFB	3.3	D: ±0.3 nH				5000	0.070	1500
ELJPF3N9DFB	3.9	U . ±0.3 IIII				4800	0.080	1400
ELJPF4N7DFB	4.7		100	7	100	4600	0.100	1300
ELJPF5N6DFB	5.6					4200	0.120	1200
ELJPF6N8JFB	6.8					4000	0.160	1100
ELJPF8N2JFB	8.2	J:±5%				3700	0.210	900
ELJPF10NJFB	10					3200	0.260	750

- \*1 : Self Resonant Frequency \*2 : DC Resistance
- PE Type 1608 (0603)
- Dimensions in mm (not to scale)





Recommended Land Pattern in mm (not to scale)



- Standard Packing Quantity
- 3000 pcs./Reel

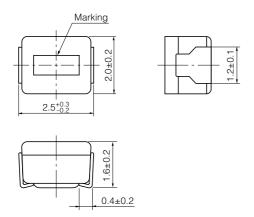
### ■ Standard Parts (E12 Series)

		Inductance			Q	SRF *1	Rpc *2	DC Current
Part No.	(nH)	Tolerance (%)	Test Freq. (MHz)	min.	Test Freq. (MHz)	(MHz) min.	$(\Omega)$ max.	(mA) max.
ELJPE2N2KFA	2.2			8		6000	0.030	2100
ELJPE2N7KFA	2.7			8		5500	0.030	2100
ELJPE3N3KFA	3.3			8		5500	0.040	2100
ELJPE3N9KFA	3.9			9		5200	0.040	2100
ELJPE4N7KFA	4.7			9		4800	0.050	2100
ELJPE5N6KFA	5.6			9		4600	0.055	2100
ELJPE6N8KFA	6.8	K: ± 10 %	100	9	100	4000	0.055	1900
ELJPE8N2KFA	8.2			9		3500	0.060	1700
ELJPE10NKFA	10			9		2800	0.065	1400
ELJPE12NKFA	12			9	]	2500	0.080	1300
ELJPE15NKFA	15			9	]	2200	0.100	900
ELJPE18NKFA	18			9		2000	0.120	800
ELJPE22NKFA	22			9		1800	0.150	700

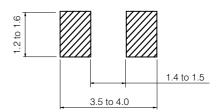
<sup>\*1 :</sup> Self Resonant Frequency \*2 : DC Resistance

03 Sep. 2012

- PC Type 2520 (1008)/PC□3 Type 2520 (1008)
- Dimensions in mm (not to scale)



## Recommended Land Pattern in mm (not to scale)



- Standard Packing Quantity
- 2000 pcs./Reel

### ■ Standard Parts

		Inductance		(	Q	SRF *1	Rpc *2	DC Current
Part No.	(µH)	Tolerance (%)	Test Freq. (MHz)	min.	Test Freq. (MHz)	(MHz) min.	$(\Omega)$ max.	(mA) max.
ELJPC1R0MF	1.0					95	0.45	475
ELJPC1R5MF	1.5		20 % 7.96	10		85	0.55	435
ELJPC2R2MF	2.2	M: ±20 %			7.96	65	0.65	390
ELJPC3R3MF	3.3		7.90	8	7.90	55	0.85	340
ELJPC4R7MF	4.7			0		43	1.2	285
ELJPC6R8KF	6.8			8.5		44	1.3	170
ELJPC100KF	10					32	2.2	210
ELJPC120KF	12	] - K : ±10 %				25	2.7	195
ELJPC150KF	15	7 K.±10 %	2.52	20	2.52	21	3.2	175
ELJPC220KF	22					18	4.0	160
ELJPC330KF	33					16	6.5	120

<sup>\*1 :</sup> Self Resonant Frequency \*2 : DC Resistance

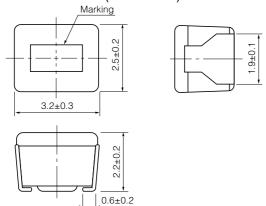
### ■ Standard Parts(PC□3 Type)

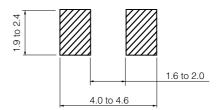
		Inductance		Self Resonant	DC Resistance	Rated	Saturation
Part No.	lo. (µH) Tolerance (%)		Test Freq. (MHz)	Frequency (MHz) min.	$(\Omega)$	Current *1 (mA) max.	Rated Current *2 (mA) max.
ELJPC1R0MF3	1.0			180	0.12 ±30 %	890	400
ELJPC2R2MF3	2.2			95	0.19 ±30 %	700	330
ELJPC3R3MF3	3.3	±20 %	4	75	0.22 ±30 %	650	260
ELJPC4R7MF3	4.7	±20 %	'	65	0.25 ±30 %	610	220
ELJPC100MF3	10			43	0.58 ±30 %	400	140
ELJPC220MF3	22			21	1.22 ±30 %	275	100

<sup>\*1</sup> Rated current is defined by maximum temperature rise of 40 Celsius.

<sup>\*2</sup> Saturation Rated Current is defined by 30% change of inductance. -dL/L<-30%

- PA Type 3225 (1210)/PA□2 Type 3225 (1210)
- Dimensions in mm (not to scale)





- Standard Packing Quantity
- 2000 pcs./Reel

## ■ Standard Parts(PA Type)

- Otanidara i ante	- (· · · · <b>)</b> [· · · )							
		Inductance		(	2	SRF *1	RDC *2	DC Current
Part No.	(µH)	Tolerance (%)	Test Freq. (MHz)	min.	Test Freq. (MHz)	(MHz) min.	$(\Omega)$ max.	(mA) max.
ELJPA1R0MF	1.0					150	0.15	600
ELJPA1R5MF	1.5					110	0.18	550
ELJPA2R2MF	2.2	M	7.06	7	7.06	80	0.23	500
ELJPA3R3MF	3.3	M: ±20 %	7.96	/	7.96	58	0.28	400
ELJPA4R7MF	4.7	1				46	0.34	350
ELJPA6R8MF	6.8	1				38	0.42	300
ELJPA100KF	10					23	0.50	240
ELJPA120KF	12					21	0.60	230
ELJPA150KF	15	1				18	0.74	220
ELJPA180KF	18	1				17	0.90	205
ELJPA220KF	22					15	1.15	185
ELJPA270KF	27		2.52	15	0.50	13	1.45	165
ELJPA330KF	33	1	2.52	15	2.52	12	1.65	155
ELJPA390KF	39	1				11	1.90	145
ELJPA470KF	47					9.5	2.25	135
ELJPA560KF	56	K: ±10 %				8.5	3.30	110
ELJPA680KF	68					7.5	3.70	105
ELJPA820KF	82					7.0	4.20	100
ELJPA101KF	100					6.5	5.00	90
ELJPA121KF	120					6.0	7.00	75
ELJPA151KF	150					5.5	8.00	70
ELJPA181KF	180	]	0.796	20	0.796	5.0	9.50	65
ELJPA221KF	220					4.0	11.0	60
ELJPA271KF	270					3.5	14.5	55
ELJPA331KF	330					3.0	16.0	50

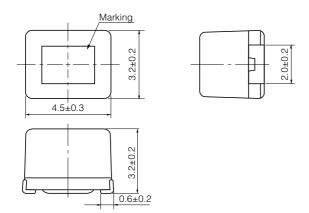
<sup>\*1 :</sup> Self Resonant Frequency \*2 : DC Resistance

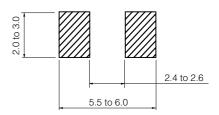
### ■ Standard Parts(PA□2 Type)

		Inductance		Self Resonant	DC Resistance	Rated	Saturation
Part No.	(µH)	Tolerance (%)	Test Freq. (MHz)	Frequency (MHz) min.	$(\Omega)$	Current *1 (mA) max.	Rated Current *2 (mA) max.
ELJPA1R0MF2	1.0			130	0.085 ±30 %	1150	1200
ELJPA2R2MF2	2.2			70	0.17 ±30 %	800	800
ELJPA3R3MF2	3.3	M: ±20 %		42	0.19 ±30 %	750	690
ELJPA4R7MF2	4.7			35	0.23 ±30 %	700	580
ELJPA6R8MF2	6.8			28	0.28 ±30 %	620	530
ELJPA100KF2	10		4	23	0.35 ±20 %	590	400
ELJPA220KF2	22		'	15	0.66 ±20 %	420	290
ELJPA330KF2	33			12	1.05 ±20 %	330	240
ELJPA470KF2	47	K:±10%		9.5	1.75 ±20 %	260	200
ELJPA680KF2	68			7.5	3.20 ±20 %	190	160
ELJPA101KF2	100			6.5	3.90 ±20 %	175	130
ELJPA221KF2	220			4.0	8.70 ±20 %	115	85

<sup>\*1</sup> Rated current is defined by maximum temperature rise of 40 Celsius.

- PB Type 4532 (1812)
- Dimensions in mm (not to scale)





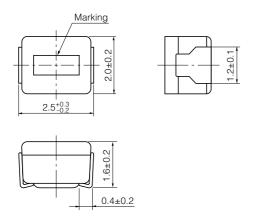
- Standard Packing Quantity
- 500 pcs./Reel

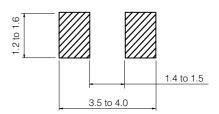
### ■ Standard Parts

		Inductance		(	Q	SRF *1	Rpc *2	DC Current
Part No.	(µH)	Tolerance (%)	Test Freq. (MHz)	min.	Test Freq. (MHz)	(MHz) min.	$(\Omega)$ max.	(mA) max.
ELJPB100KF	10					19	0.65	360
ELJPB120KF	12					17	0.70	340
ELJPB150KF	15					15	0.80	320
ELJPB180KF	18					14	0.90	310
ELJPB220KF	22					13	1.0	300
ELJPB270KF	27		2.52	10	2.52	11	1.2	270
ELJPB330KF	33		2.52	10	2.52	10	1.4	250
ELJPB390KF	39					9.5	1.6	230
ELJPB470KF	47	K: ±10 %				8.5	1.9	210
ELJPB560KF	56					8	2.2	190
ELJPB680KF	68					7	2.6	170
ELJPB820KF	82					6.5	3.5	160
ELJPB101KF	100					6	4.0	150
ELJPB121KF	120					5.5	4.5	130
ELJPB151KF	150		0.796	20	0.796	5	6.5	120
ELJPB181KF	180					4.5	7.5	110
ELJPB221KF	220					4	9.0	90

\*1 : Self Resonant Frequency \*2 : DC Resistance

- LC Type 2520 (1008)
- Dimensions in mm (not to scale)





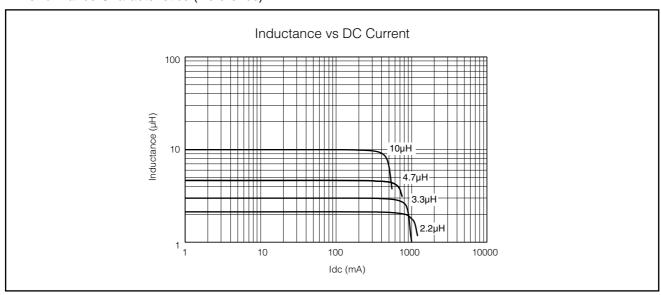
- Standard Packing Quantity
- 2000 pcs./Reel

### ■ Standard Parts

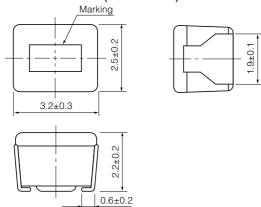
		Inductance		DC Resistance	Rated	Saturation
Part No.	(µH)	Tolerance (%)	Test Freq. (MHz)	$(\Omega)$	Current *1 (mA) max.	Rated Current *2 (mA) max.
ELJLC2R2MF	2.2			0.33 ±30 %	520	1050
ELJLC3R3MF	3.3	M : ±20 %	1	0.57 ±30 %	400	820
ELJLC4R7MF	4.7		<b>'</b>	0.75 ±30 %	350	700
ELJLC100KF	10	K: ±10 %		1.60 ±30 %	240	470

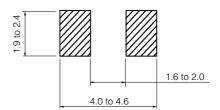
- \*1 Rated current is defined by maximum temperature rise of 40 Celsius.
  \*2 Saturation Rated Current is defined by 30% change of inductance. -dL/L<-30%</li>

## ■ Performance Characteristics (Reference)



- LA Type 3225 (1210)
- Dimensions in mm (not to scale)





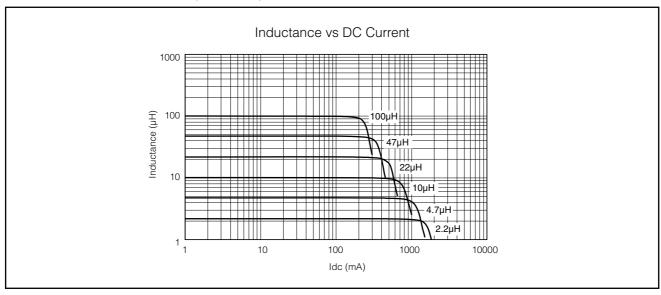
- Standard Packing Quantity
- 2000 pcs./Reel

### ■ Standard Parts

		Inductance		DC Resistance	Rated	Saturation
Part No. (µH)		Tolerance Test Freq. (%) (MHz)		$(\Omega)$	Current *1 (mA) max.	Rated Current *2 (mA) max.
ELJLA2R2KF	2.2			0.20 ±30 %	740	1400
ELJLA3R3KF	3.3			0.24 ±30 %	670	1200
ELJLA4R7KF	4.7			0.35 ±30 %	560	900
ELJLA6R8KF	6.8			0.55 ±30 %	460	800
ELJLA100KF	10	±10 %	1	0.71 ±20 %	410	600
ELJLA220KF	22			1.90 ±20 %	250	420
ELJLA470KF	47			4.30 ±20 %	165	300
ELJLA680KF	68			5.50 ±20 %	145	260
ELJLA101KF	100			9.50 ±20 %	110	200

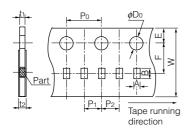
<sup>\*1</sup> Rated current is defined by maximum temperature rise of 40 Celsius.

## ■ Performance Characteristics (Reference)

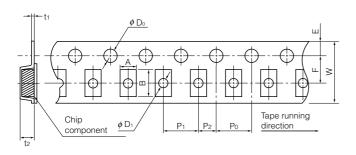


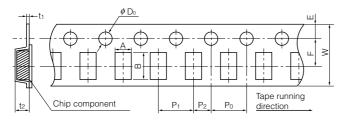
<sup>\*2</sup> Saturation Rated Current is defined by 30% change of inductance. -dL/L<-30%

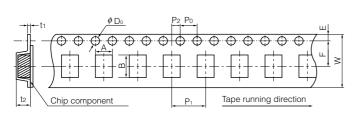
- Packaging Methods (Taping)
- Punched Carrier Tape Dimensions in mm (not to scale)



Embossed Carrier Tape Dimensions in mm (not to scale)







## Type □F

	A	В	W	Е	F	P <sub>1</sub>
RF, QF, PF	0.71	1.21	8.0	1.75	3.5	2.0
	$P_2$	P₀	<b>ø</b> D₀	t <sub>1</sub>	t <sub>2</sub>	•

■ Type □E, Type ND, Type □C

	Α	В	W	Е	F	P₁
RE, QE, PE	1.0	1.8	8.0	1.75	3.5	4.0
ND	1.45	2.25	8.0	1.75	3.5	4.0
NC, FC, PC, LC, SC	2.40	2.90	8.0	1.75	3.5	4.0
	$P_2$	P₀	<b>ø</b> D₀	<b>ø</b> D₁	t <sub>1</sub>	t <sub>2</sub>
RE, QE, PE	P <sub>2</sub>	P <sub>0</sub> 4.0	φD₀ φ1.5	φD <sub>1</sub> φ0.6	t <sub>1</sub> (0.27)	t <sub>2</sub>
RE, QE, PE ND	-			,		

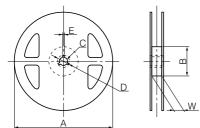
■ Type □A

	Α	В	W	Е	F	P₁
NA, FA, PA, LA, SA, EA, DA	2.80	3.60	8.0	1.75	3.5	4.0
	P <sub>2</sub>	Po	φDο	t <sub>1</sub>	t <sub>2</sub>	
NA, FA, PA, LA, SA, EA, DA	2.0	4.0	<i>ф</i> 1.5	(0.25)	2.40	

■ Type □B

	A	В	W	Ē	F	P₁
FB, PB	3.60	4.90	12.0	1.75	5.5	8.0
	P <sub>2</sub>	P <sub>0</sub>	<b>ø</b> D∘	t <sub>1</sub>	t <sub>2</sub>	
FB, PB	2.0	4.0	<b>ø</b> 1.5	(0.30)	3.50	

• Taping Reel Dimensions in mm (not to scale)



Parts Types	А	В	С	D	Е	W
RF, QF, PF, RE, QE, PE, ND, NC, FC, PC, LC, SC, NA, FA, PA, LA, SA, EA, DA	180	60	13	21	2	9
FB, PB	180	60	13	21	2	13

### ■ Standard Packing Quantity/Reel

Types	Quantity	Quantity		
RF, C	)F, PF	10000 pcs.		
RE, QE,	PE, ND	3000 pcs.		
NC, FC, F	C, LC, SC	2000 pcs.		
NA, FA, PA, L	A, SA, EA, DA	2000 pcs.		
FB,	PB	500 pcs.		

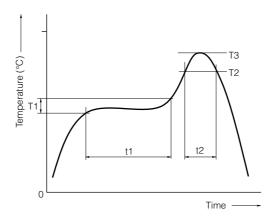
\* Under conditions of high temperature and humidity deterioration of the taping and packaging may be accelerated.

Please carefully control storage conditions and use the product within 6 months of receipt.

## **Panasonic**

## **Soldering Conditions**

### ■ Reflow soldering conditions



### Pb free solder recommended temperature profile

Туре	Preheat		Soldering		Peak Temperature		Time of
	T1 [°C]	t1 [s]	T2 [°C]	t2 [s]	T3	T3 Limit	Reflow
□F	150 to 180	60 to 120	230 °C	40 max.	250 °C, 10 s	260 °C, 10 s	2 times max.
□E	150 to 180	60 to 120	230 °C	40 max.	250 °C, 10 s	260 °C, 10 s	2 times max.
□D	150 to 180	60 to 120	230 °C	40 max.	245 °C, 10 s	250 °C, 10 s	2 times max.
□С	150 to 180	60 to 120	230 °C	40 max.	245 °C, 10 s	250 °C, 10 s	2 times max.
□A	150 to 180	60 to 120	230 °C	40 max.	245 °C, 10 s	250 °C, 10 s	2 times max.
□В	150 to 180	60 to 120	230 °C	40 max.	245 °C, 10 s	250 °C, 10 s	2 times max.

### ■ Flow soldering conditions

Preheat: 130 to 150 °C, 60 to 180 s, Soldering: 260 °C, 5 s max.

### ■ Notes

- Solderability may be reduced due to the conditions of high temperature and high humidity which causes the oxidation
  of tin-plated terminals. Even if storage conditions are within specified limits, solderability may be reduced with the
  passage of time. Therefore, please control the storage conditions and try to use the product within 6 months of receipt.
- In case the product has been stored for a period longer than 6 months, use the product only after confirmation of its solderability.

## **Panasonic**

### 

(Common precautions for Chip Inductors)

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.
- \* Systems equipped with a protection circuit and a protection device
- \* Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

### ⚠ Precautions for use

### 1. Operation range and environments

- (1) These products are designed and manufactured for general and standard use in general electronic equipment (e.g. AV equipment, home electric appliances, office equipment, information and communication equipment)
- ② These products are not intended for use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.
  - In liquid, such as water, oil, chemicals, or organic solvent
  - In direct sunlight, outdoors, or in dust
  - In salty air or air with a high concentration of corrosive gas, such as Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, or NO<sub>2</sub>
  - In an environment where these products cause dew condensation

#### 2. Handling

- ① Do not bring magnets or magnetized materials close to the product. The influence of their magnetic field can change the inductance value.
- ② Do not apply strong mechanical shocks by either dropping or collision with other parts. Excessive schock can damage the part.

### 3. Land pattern design

- ① Please refer to the recommended land pattern for each type shown on the datasheet.
- ② Avoid placing the chip inductor on any metal pattern except the recommended land pattern because a drop of Q and mutual conductance may occur.
- ③ In case of flow soldering, venting of soldering flux gases should be made for high density assemblies to get a good solder connection.
- ④ In case of reflow soldering, consider the layout because taller components close to chip inductor tend to block thermal conduction.

#### 4. Mounting

- ① In general, magnetic and electric characteristics of ferrite cores can be changed by applying excessively strong force. Placement force should not exceed 20 N.
- 2 Do not bend or twist the PWB after mounting the part.

### 5. Cleaning

- ① Do not use acid or alkali agents. Some cleaning solvents may damage the part.
  - Confirm by testing the reliability in advance of mass production.
- ② If Ultrasonic cleaning is used, please confirm the reliability in advance. It is possible that combined resonance of component and PWB and cavitation can cause an abnormal vibration mode to exist causing damage.

### 6. Caution about applying excessive current

The rated current is defined as the smaller value of either the current value when the inductance drops 10 % down from the initial point or the current value when the average temperature of coil inside rises 20 °C up from the initial point. Do not operate product over the specific max. current.

#### <Package markings>

Package markings include the product number, quantity, and country of origin. In principle, the country of origin should be indicated in English.

## Chip Inductors

Type:  $\Box$ F,  $\Box$ E,  $\Box$ D,  $\Box$ C,  $\Box$ A,  $\Box$ B



Ceramic Core/Laser-Cut and wire wound type chip inductors for automatic and high-density mounting Wide variation product line-up correspond to various needs

### ■ Recommended Applications

 Cellular phones, wireless communication equipment (W-LAN, Bluetooth), various modules, HIC, TV, VTR, PC & peripherals, DVD, DSC, STB.

### ■ Inductors · Selection Guide

Size: mm (inch)

	Non War		Wire wound					
Technology	Non w		Wire wound					
Usage Case	Size 1005 (0402)	Size 1608 (0603)	Size 2012 (0805)	Size 2520 (1008)	Size 3225 (1210)	Size 4532 (1812)		
odago	(0402)	(0003)	(0003)	(1008)	(1210)	(1012)		
	ELJRF	ELJRE	ELJND	ELJNC	ELJNA			
High Freq. Use	*	*	•	•				
	1.0–100 nH	1.0–220 nH	10–1000 nH	10–820 nH	47–8200 nH			
		ELJQE						
High Freq.	ELJQF							
High-Q	*	•						
	1.0–39 nH	2.2–56 nH						
				ELJFC	ELJFA	ELJFB		
General Use				4				
deficial ose				0.00.100	0.00.000	0.00.1000		
				0.22-100 μH	0.22-220 µH	0.22-1000 μH		
	ELJPF	ELJPE		ELJPC/PC□3 ELJLC	ELJPA/PA□2 ELJLA	ELJPB		
High Power	•	<b>*</b>		ELUC	ELJLA	240		
	2.2–10 nH	2.2–22 nH		1.0–33 µH	1.0-330 µH	10-220 µH		
				ELJSC	ELJSA			
Magnetically				ELJSC	ELJSA			
Shielded				-				
				27–100 μH	10–270 μH			
					ELJEA			
Low DC								
Resistance					10,000,011			
					1.0–330 μH			
Signal					ELJDA/ELJFA			
Processing Use					6			
(Low Distortion Type)					39–100 μH			
					22 .00 p			

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**Authorized Distributor** 

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### Panasonic:

ELJ-PA270KF ELJ-PA100KF ELJ-PA1R0MF ELJ-PA680KF ELJ-PC150KF ELJ-PC1R0MF ELJ-PC1R5MF ELJ-PC220KF ELJ-PC2R2MF ELJ-PC6R8KF ELJ-PA101KF ELJ-PA120KF ELJ-PA121KF ELJ-PA151KF ELJ-PA180KF ELJ-PA181KF ELJ-PA1R5MF ELJ-PA221KF ELJ-PA271KF ELJ-PA331KF ELJ-PA390KF ELJ-PA3R3MF ELJ-PA470KF ELJ-PA4R7MF ELJ-PA560KF ELJ-PA820KF ELJ-PB100KF ELJ-PB101KF ELJ-PB120KF ELJ-PB121KF ELJ-PB150KF ELJ-PB151KF ELJ-PB180KF ELJ-PB181KF ELJ-PB221KF ELJ-PB270KF ELJ-PB390KF ELJ-PB470KF ELJ-PB560KF ELJ-PB820KF ELJ-PC120KF ELJ-PC330KF ELJ-PA220KF ELJ-PA180MF2 ELJ-PA6R8MF ELJ-PB220KF ELJ-PA150KF ELJ-PC4R7MF ELJ-PA330KF ELJ-PA2R2MF ELJ-PA330KF ELJ-PA221KF2 ELJ-PA2R2MF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF ELJ-PA330KF2 ELJ-PA330KF2 ELJ-PA470KF2 ELJ-PA4R7MF2 ELJ-PA680KF2 ELJ-PC220MF3 ELJ-PC100MF3 ELJ-PC2R2MF3 ELJ-PC1R0MF3 ELJ-PA3R3MF2 ELJ-PC4R7MF3 ELJ-PA6R8MF2 ELJ-PC3R3MF3