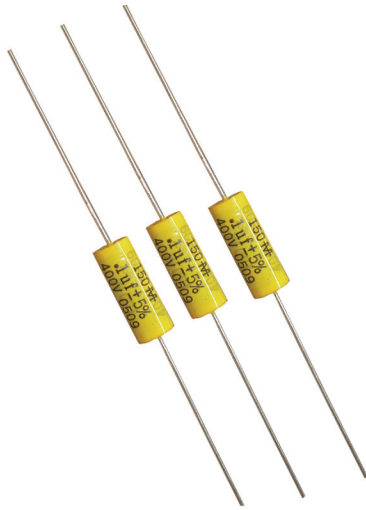


# Type 150 Axial Leaded Metallized Polyester Flame Retardant Wrap and Fill Axial Leaded Capacitors



The Type 150 series axial lead metallized polyester non inductive capacitors are available in bulk or on tape and reel for automatic insertion. Type 150 is a general purpose capacitor for use in blocking, bypass, decoupling, smoothing and some timing applications.

## Highlights

- Available on tape and reel or bulk
- Epoxy end fill meets UL94V-0
- Non inductively wound
- Flame retardant outer wrap meets UL510
- Non polar

## Specifications

<b>Capacitance Range:</b>	0.001 $\mu$ F to 10.0 $\mu$ F
<b>Voltage Range:</b>	63 to 1000 Vdc
<b>Capacitance Tolerance:</b>	$\pm$ 5%, $\pm$ 10%, $\pm$ 20%
<b>Operating Temperature Range:</b>	-55 $^{\circ}$ C to +125 $^{\circ}$ C (derate linearly to 50% rated voltage at 125 $^{\circ}$ C)
<b>Dielectric Withstand Voltage:</b>	1.6 x rated voltage for 2 s @ +25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C
<b>Dissipation Factor (DF):</b>	$\text{tg}\delta \times 10^{-4}$ at +25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C

kHz	C $\leq$ 0.1 $\mu$ F	0.1 $\mu$ F < C $\leq$ 1 $\mu$ F	C > 1 $\mu$ F
1	80	80	100
10	150	150	—
100	250	—	—

<b>Insulation Resistance:</b>	10,000 M $\Omega$ x $\mu$ F, 30,000 M $\Omega$ Min.
<b>Self Inductance:</b>	1 nH max. per 1 mm lead and body length
<b>Life Test:</b>	1000 hrs @ 85 $^{\circ}$ C 1.25 x Vn
<b>Damp Heat Test:</b>	95% RH @ +45 $^{\circ}$ C for 21 days
<b>Soldering:</b>	260 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C for 10 s $\pm$ 1 s
<b>Long Term Storage Stability:</b>	$\Delta$ C/C $\leq$ $\pm$ 3% after 2 years
<b>Maximum Pulse Rise Time dv/dt and Pulse Characteristic (Wo):</b>	

V/n	L Max				dV/dt (V/ $\mu$ sec) Wo (V <sup>2</sup> / $\mu$ sec)
	16.5	19 - 20.5	26.5 - 5.28	31.5 - 33	
50 - 63	4	2	1.5	1	
	504	252	189	126	
100	5	3	2	1	
	1,000	600	400	300	
250	10	7	4	2.5	
	5,000	3,500	2,000	1,250	
400	13.5	10	6.5	4	
	10,800	8,000	5,200	3,200	
630	20	15	10	6	
	25,200	18,900	12,600	7,500	



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

# Type 150 Axial Leaded Metallized Polyester

## Tape and Reel Specifications

## Outline Drawing

L Max (Body Lengthy)		Lead Spacing		Distance Between Reel Flanges		Class
Inches	mm	Inches	mm	Inches	mm	
≤.433	≤11	2.06	52.4	3	75	1
.551 - .808	14 - 20.5	2.5	63.6	3.4	86	2
≥1.03	≥26	2.87	73	3.7	95	3

^Add class number (1, 2, or 3) to catalog number to indicate tape and reel

Diameter		Quantity per Reel
Inches	mm	
0.197	5	3,000
.236 thru .256	6.0 thru 6.5	1,200
0.276	7	1,100
.315 thru .346	8 thru 8.5	800
.354 thru .413	9 thru 10.5	500
.433 thru .512	11 thru 13	300
.551 thru .571	14 thru 14.5	200
>.571	>14.5	Not available



## Ratings

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
<b>63 Vdc</b>							
150154*63AA^	0.150	0.197	0.433	0.024	5.0	11.0	0.6
150154*63BB^	0.150	0.236	0.650	0.024	6.0	16.5	0.6
150184*63AA^	0.180	0.197	0.433	0.024	5.0	11.0	0.6
150184*63BB^	0.180	0.236	0.650	0.024	6.0	16.5	0.6
150224*63BB^	0.220	0.236	0.650	0.024	6.0	16.5	0.6
150274*63BB^	0.270	0.236	0.650	0.024	6.0	16.5	0.6
150334*63BB^	0.330	0.236	0.650	0.024	6.0	16.5	0.6
150394*63CB^	0.390	0.256	0.650	0.024	6.5	16.5	0.6
150474*63DB^	0.470	0.276	0.650	0.024	7.0	16.5	0.6
150564*63DB^	0.560	0.276	0.650	0.024	7.0	16.5	0.6
150684*63DC^	0.680	0.276	0.807	0.024	7.0	20.5	0.6
150824*63EC^	0.820	0.315	0.807	0.031	8.0	20.5	0.8
150105*63EC^	1.000	0.315	0.807	0.031	8.0	20.5	0.8
150155*63HC^	1.500	0.374	0.807	0.031	9.5	20.5	0.8
150225*63HE^	2.200	0.374	1.102	0.031	9.5	28.0	0.8
150335*63KE^	3.300	0.433	1.102	0.031	11.0	28.0	0.8
150475*63ME^	4.700	0.492	1.102	0.031	12.5	28.0	0.8
150685*63QF^	6.800	0.571	1.299	0.031	14.5	33.0	0.8
150106*63TF^	10.000	0.610	1.299	0.031	15.5	33.0	0.8
<b>100 Vdc</b>							
150683*100AA^	0.068	0.197	0.433	0.024	5.0	11.0	0.6
150683*100BB^	0.068	0.236	0.650	0.024	6.0	16.5	0.6
150823*100AA^	0.082	0.197	0.433	0.024	5.0	11.0	0.6
150823*100BB^	0.082	0.236	0.650	0.024	6.0	16.5	0.6
150104*100AA^	0.100	0.197	0.433	0.024	5.0	11.0	0.6
150104*100BB^	0.100	0.236	0.650	0.024	6.0	16.5	0.6
150124*100BB^	0.120	0.236	0.650	0.024	6.0	16.5	0.6
150154*100BB^	0.150	0.236	0.650	0.024	6.0	16.5	0.6
150184*100CB^	0.180	0.256	0.650	0.024	6.5	16.5	0.6
150224*100CB^	0.220	0.256	0.650	0.024	6.5	16.5	0.6

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
150274*100CB^	0.270	0.256	0.650	0.024	6.5	16.5	0.6
150334*100EB^	0.330	0.315	0.650	0.031	8.0	16.5	0.8
150394*100EB^	0.390	0.315	0.650	0.031	8.0	16.5	0.8
150474*100DC^	0.470	0.276	0.807	0.031	7.0	20.5	0.8
150564*100EC^	0.560	0.315	0.807	0.031	8.0	20.5	0.8
150684*100FC^	0.680	0.335	0.807	0.031	8.5	20.5	0.8
150824*100HC^	0.820	0.374	0.807	0.031	9.5	20.5	0.8
150105*100IC^	1.000	0.394	0.807	0.031	10.0	20.5	0.8
<b>100 Vdc</b>							
150155*100IE^	1.500	0.394	1.102	0.031	10.0	28.0	0.8
150225*100LE^	2.200	0.453	1.102	0.031	11.5	28.0	0.8
150335*100PE^	3.300	0.531	1.102	0.031	13.5	28.0	0.8
150475*100RF^	4.700	0.591	1.299	0.031	15.0	33.0	0.8
150685*100WF^	6.800	0.689	1.299	0.031	17.5	33.0	0.8
150106*100YF^	10.000	0.807	1.299	0.031	20.5	33.0	0.8
<b>250 Vdc</b>							
150123*250AA^	0.012	0.197	0.433	0.024	5.0	11.0	0.6
150123*250BB^	0.012	0.236	0.650	0.024	6.0	16.5	0.6
150153*250AA^	0.015	0.197	0.433	0.024	5.0	11.0	0.6
150153*250BB^	0.015	0.236	0.650	0.024	6.0	16.5	0.6
150183*250AA^	0.018	0.197	0.433	0.024	5.0	11.0	0.6
150183*250BB^	0.018	0.236	0.650	0.024	6.0	16.5	0.6
150223*250AA^	0.022	0.197	0.433	0.024	5.0	11.0	0.6
150223*250BB^	0.022	0.236	0.650	0.024	6.0	16.5	0.6
150273*250AA^	0.027	0.197	0.433	0.024	5.0	11.0	0.6
150273*250BB^	0.027	0.236	0.650	0.024	6.0	16.5	0.6

\* Indicates capacitance tolerance

^If ordering tape and reel,

J = ±5%, K = ±10%, M = ±20%

insert 1, 2, or 3.

See tape & reel specifications to determine which class applies.

Part Number highlighted in yellow, available until stock is depleted.

Replacement part number with "BB" case size.

# Type 150 Axial Leaded Metallized Polyester

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
<b>250 Vdc</b>							
150333*250AA^	0.0330	0.197	0.433	0.024	5.0	11.0	0.6
150333*250BB^	0.0330	0.236	0.650	0.024	6.0	16.5	0.6
150393*250AA^	0.0390	0.197	0.433	0.024	5.0	11.0	0.6
150393*250BB^	0.0390	0.236	0.650	0.024	6.0	16.5	0.6
150473*250AA^	0.0470	0.197	0.433	0.024	5.0	11.0	0.6
150473*250BB^	0.0470	0.236	0.650	0.024	6.0	16.5	0.6
150563*250AA^	0.0560	0.197	0.433	0.024	5.0	11.0	0.6
150563*250BB^	0.0560	0.236	0.650	0.024	6.0	16.5	0.6
150683*250BB^	0.0680	0.236	0.650	0.024	6.0	16.5	0.6
150823*250BB^	0.0820	0.236	0.650	0.024	6.0	16.5	0.6
150104*250CB^	0.1000	0.256	0.650	0.024	6.5	16.5	0.6
150124*250DB^	0.1200	0.276	0.650	0.024	7.0	16.5	0.6
150154*250EB^	0.1500	0.315	0.650	0.031	8.0	16.5	0.8
150184*250EB^	0.1800	0.315	0.650	0.031	8.0	16.5	0.8
150224*250FB^	0.2200	0.335	0.650	0.031	8.5	16.5	0.8
150274*250EC^	0.2700	0.315	0.807	0.031	8.0	20.5	0.8
150334*250FC^	0.3300	0.335	0.807	0.031	8.5	20.5	0.8
150394*250GC^	0.3900	0.354	0.807	0.031	9.0	20.5	0.8
150474*250HC^	0.4700	0.374	0.807	0.031	9.5	20.5	0.8
150564*250IC^	0.5600	0.394	0.807	0.031	10.0	20.5	0.8
150684*250GE^	0.6800	0.354	1.102	0.031	9.0	28.0	0.8
150824*250HE^	0.8200	0.374	1.102	0.031	9.5	28.0	0.8
150105*250JE^	1.0000	0.413	1.102	0.031	10.5	28.0	0.8
150155*250ME^	1.5000	0.492	1.102	0.031	12.5	28.0	0.8
150225*250PF^	2.2000	0.531	1.299	0.031	13.5	33.0	0.8
150335*250TF^	3.3000	0.610	1.299	0.031	15.5	33.0	0.8
150475*250XF^	4.7000	0.728	1.299	0.031	18.5	33.0	0.8
150685*250ZF^	6.8000	0.845	1.299	0.031	21.5	33.0	0.8
<b>400 Vdc</b>							
150822*400AA^	0.0082	0.197	0.433	0.024	5.0	11.0	0.6
150822*400BB^	0.0082	0.236	0.650	0.024	6.0	16.5	0.6
150103*400AA^	0.0100	0.197	0.433	0.024	5.0	11.0	0.6
150103*400BB^	0.0100	0.236	0.650	0.024	6.0	16.5	0.6
150123*400AA^	0.0120	0.197	0.433	0.024	5.0	11.0	0.6
150123*400BB^	0.0120	0.236	0.650	0.024	6.0	16.5	0.6
150153*400BB^	0.0150	0.236	0.650	0.024	6.0	16.5	0.6
150183*400BB^	0.0180	0.236	0.650	0.024	6.0	16.5	0.6
150223*400BB^	0.0220	0.236	0.650	0.024	6.0	16.5	0.6
150273*400BB^	0.0270	0.236	0.650	0.024	6.0	16.5	0.6
150333*400BB^	0.0330	0.236	0.650	0.024	6.0	16.5	0.6
150393*400CB^	0.0390	0.256	0.650	0.024	6.5	16.5	0.6
150473*400DB^	0.0470	0.276	0.650	0.024	7.0	16.5	0.6
150563*400EB^	0.0560	0.315	0.650	0.024	8.0	16.5	0.6

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
150683*400DC^	0.0680	0.276	0.807	0.024	7.0	20.5	0.6
150823*400EC^	0.0820	0.315	0.807	0.031	8.0	20.5	0.8
150104*400EC^	0.1000	0.315	0.807	0.031	8.0	20.5	0.8
150124*400EC^	0.1200	0.315	0.807	0.031	8.0	20.5	0.8
150154*400GC^	0.1500	0.354	0.807	0.031	9.0	20.5	0.8
150184*400EE^	0.1800	0.315	1.102	0.031	8.0	28.0	0.8
150224*400FE^	0.2200	0.335	1.102	0.031	8.5	28.0	0.8
150274*400GE^	0.2700	0.354	1.102	0.031	9.0	28.0	0.8
150334*400IE^	0.3300	0.394	1.102	0.031	10.0	28.0	0.8
150394*400JE^	0.3900	0.413	1.102	0.031	10.5	28.0	0.8
150474*400LF^	0.4700	0.453	1.299	0.031	11.5	33.0	0.8
150564*400LF^	0.5600	0.453	1.299	0.031	11.5	33.0	0.8
150684*400MF^	0.6800	0.492	1.299	0.031	12.5	33.0	0.8
150824*400PF^	0.8200	0.531	1.299	0.031	13.5	33.0	0.8
150105*400QF^	1.0000	0.571	1.299	0.031	14.5	33.0	0.8
150155*400WF^	1.5000	0.689	1.299	0.031	17.5	33.0	0.8
150225*400YF^	2.2000	0.807	1.299	0.031	20.5	33.0	0.8
<b>630 Vdc</b>							
150102*630AA^	0.0010	0.197	0.433	0.024	5.0	11.0	0.6
150102*630BB^	0.0010	0.236	0.650	0.024	6.0	16.5	0.6
150122*630AA^	0.0012	0.197	0.433	0.024	5.0	11.0	0.6
150122*630BB^	0.0012	0.236	0.650	0.024	6.0	16.5	0.6
150152*630AA^	0.0015	0.197	0.433	0.024	5.5	11.0	0.6
150152*630BB^	0.0015	0.236	0.650	0.024	6.0	16.5	0.6
150182*630AA^	0.0018	0.197	0.433	0.024	5.5	11.0	0.6
150182*630BB^	0.0018	0.236	0.650	0.024	6.0	16.5	0.6
150222*630AA^	0.0022	0.197	0.433	0.024	5.5	11.0	0.6
150222*630BB^	0.0022	0.236	0.650	0.024	6.0	16.5	0.6
150272*630AA^	0.0027	0.197	0.433	0.024	5.5	11.0	0.6
150272*630BB^	0.0027	0.236	0.650	0.024	6.0	16.5	0.6
150332*630AA^	0.0033	0.197	0.433	0.024	5.5	11.0	0.6
150332*630BB^	0.0033	0.236	0.650	0.024	6.0	16.5	0.6
150392*630AA^	0.0039	0.197	0.433	0.024	5.5	11.0	0.6
150392*630BB^	0.0039	0.236	0.650	0.024	6.0	16.5	0.6
150472*630AA^	0.0047	0.197	0.433	0.024	5.5	11.0	0.6
150472*630BB^	0.0047	0.236	0.650	0.024	6.0	16.5	0.6
150562*630AA^	0.0056	0.197	0.433	0.024	5.5	11.0	0.6
150562*630BB^	0.0056	0.236	0.650	0.024	6.0	16.5	0.6

\* Indicates capacitance tolerance

^If ordering tape and reel,

**J = ±5%, K = ±10%, M = ±20%**

insert 1, 2, or 3.

See tape & reel specifications to determine which class applies.

Part Number highlighted in yellow, available until stock is depleted.

Replacement part number with "BB" case size.

# Type 150 Axial Leaded Metallized Polyester

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
<b>630 Vdc</b>							
150682*630AA <sup>^</sup>	0.0068	0.197	0.433	0.024	5.5	11.0	0.6
150682*630BB <sup>^</sup>	0.0068	0.236	0.650	0.024	6.0	16.5	0.6
150822*630BB <sup>^</sup>	0.0082	0.236	0.650	0.024	6.0	16.5	0.6
150103*630BB <sup>^</sup>	0.0100	0.236	0.650	0.024	6.0	16.5	0.6
150123*630BB <sup>^</sup>	0.0120	0.236	0.650	0.024	6.0	16.5	0.6
150153*630BB <sup>^</sup>	0.0150	0.236	0.650	0.024	6.0	16.5	0.6
150183*630CB <sup>^</sup>	0.0180	0.256	0.650	0.024	6.5	16.5	0.6
150223*630DB <sup>^</sup>	0.0220	0.276	0.650	0.024	7.0	16.5	0.6
150273*630CC <sup>^</sup>	0.0270	0.256	0.807	0.024	6.5	20.5	0.6
150333*630EC <sup>^</sup>	0.0330	0.315	0.807	0.031	8.0	20.5	0.8
150393*630EC <sup>^</sup>	0.0390	0.315	0.807	0.031	8.0	20.5	0.8
150473*630EC <sup>^</sup>	0.0470	0.315	0.807	0.031	8.0	20.5	0.8
150563*630FC <sup>^</sup>	0.0560	0.335	0.807	0.031	8.5	20.5	0.8
150683*630GC <sup>^</sup>	0.0680	0.354	0.807	0.031	9.0	20.5	0.8
150823*630HC <sup>^</sup>	0.0820	0.374	0.807	0.031	9.5	20.5	0.8
150104*630FE <sup>^</sup>	0.1000	0.335	1.102	0.031	8.5	28.0	0.8
150124*630GE <sup>^</sup>	0.1200	0.354	1.102	0.031	9.0	28.0	0.8
150154*630IE <sup>^</sup>	0.1500	0.394	1.102	0.031	10.0	28.0	0.8
150184*630JE <sup>^</sup>	0.1800	0.413	1.102	0.031	10.5	28.0	0.8
150224*630LE <sup>^</sup>	0.2200	0.453	1.102	0.031	11.5	28.0	0.8
150274*630ME <sup>^</sup>	0.2700	0.492	1.102	0.031	12.5	28.0	0.8
150334*630NF <sup>^</sup>	0.3300	0.512	1.299	0.031	13.0	33.0	0.8
150394*630QF <sup>^</sup>	0.3900	0.571	1.299	0.031	14.5	33.0	0.8
150474*630RF <sup>^</sup>	0.4700	0.591	1.299	0.031	15.0	33.0	0.8
150564*630TF <sup>^</sup>	0.5600	0.610	1.299	0.031	15.5	33.0	0.8
150684*630WF <sup>^</sup>	0.6800	0.689	1.299	0.031	17.5	33.0	0.8
150824*630XF <sup>^</sup>	0.8200	0.728	1.299	0.031	18.5	33.0	0.8
150105*630YF <sup>^</sup>	1.0000	0.807	1.299	0.031	20.5	33.0	0.8

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
<b>1000 Vdc</b>							
150102*1000CB <sup>^</sup>	0.0010	0.256	0.650	0.031	6.5	16.5	0.6
150152*1000CB <sup>^</sup>	0.0015	0.256	0.650	0.031	6.5	16.5	0.6
150222*1000CB <sup>^</sup>	0.0022	0.256	0.650	0.031	6.5	16.5	0.6
150332*1000CB <sup>^</sup>	0.0033	0.256	0.650	0.031	6.5	16.5	0.6
150472*1000DB <sup>^</sup>	0.0047	0.276	0.650	0.031	7.0	16.5	0.6
150682*1000EB <sup>^</sup>	0.0068	0.315	0.650	0.031	8.0	16.5	0.8
150103*1000DC <sup>^</sup>	0.0100	0.276	0.807	0.031	7.0	20.5	0.6
150153*1000FC <sup>^</sup>	0.0150	0.335	0.807	0.031	8.5	20.5	0.8
150223*1000HC <sup>^</sup>	0.0220	0.374	0.807	0.031	9.5	20.5	0.8
150333*1000FE <sup>^</sup>	0.0330	0.335	1.102	0.031	8.5	28.0	0.8
150473*1000HE <sup>^</sup>	0.0470	0.374	1.102	0.031	9.5	28.0	0.8
150683*1000KE <sup>^</sup>	0.0680	0.433	1.102	0.031	11.0	28.0	0.8
150104*1000NE <sup>^</sup>	0.1000	0.512	1.102	0.031	13.0	28.0	0.8
150154*1000OF <sup>^</sup>	0.1500	0.551	1.299	0.031	14.0	33.0	0.8
150224*1000WF <sup>^</sup>	0.2200	0.689	1.299	0.031	17.5	33.0	0.8
150334*1000YF <sup>^</sup>	0.3300	0.807	1.299	0.031	20.5	33.0	0.8
150474*1000ZF <sup>^</sup>	0.4700	0.945	1.299	0.031	24.0	33.0	0.8

\* Indicates capacitance tolerance ^If ordering tape and reel,  
insert 1, 2, or 3.  
**J = ±5%, K = ±10%, M = ±20%**

See tape & reel specifications to determine which class applies.  
 Part Number highlighted in yellow, available until stock is depleted.  
 Replacement part number with "BB" case size.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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