

MIL-C-38999 Series III



KJA MIL-C-38999 Series III connectors offer high density contact arrangements in a miniature circular shell.

Originally designed for the especially demanding requirements of today's high performance military and commercial aircraft, these connectors are finding their way into applications needing extremely reliable interconnections. KJA's features include, total environmental sealing, wide operating temperature range (-65°C up to 200°C), quick-mating, triple lead threaded, self-locking coupling, 100% scoop proof shell design, EMI - RFI shielding, and are available in a ruggedized 500 hour salt spray plating.

Applications

- High Performance Military Aircraft
- Commercial Airlines
- Communications Equipment
- Armored Personnel Carriers & Tanks
- Missiles
- Shipboard

Features

High Reliability

D38999 - KJA style connectors are used in performance aircraft that demand reliable connections in some of the most rigorous environments. The connectors must perform flawlessly under wide temperature ranges, high vibrations and be resistant to a vast array of contaminants. Visual confirmation of complete mating is accomplished by the plug coupling nut covering over a red band on the mating shell.

Outstanding EMI Shielding Protection

These connectors provide excellent signal integrity due to the shielded mating system that utilizes 360 degree shell grounding fingers providing protection of up to 65 dB at 10 GHz.

Operates at Extreme Temperatures

These connectors will operate in temperatures from -65°C up to 200°C (-85°F up to 392°F).

High Density Connectors

If space and weight are at a premium, KJA connectors offer up to 128 contacts per connector. Ideally suited for the demands of today's digital electronics used on fly-by wire aircraft, advanced robotics, and critical industrial equipment.

Self-Locking Connector Systems

Self-locking coupling nuts and self-locking endbell accessory hardware provide the best performance for threaded connectors in high vibration applications.

Broad Range of Military and Commercial Accessories

Many military standard endbells to M85049 specifications and a wide array of cable termination style are available. Straight, 45 and 90 degree endbells come in many styles from low cost standard clamp to shielded environmentally sealed and everything in between.

Contacts Protection

KJA connectors are designed to be scoop proof. Pin contacts are recessed to prevent contact damage and contact shorting from happening when connector halves are put together while mating.

Contact Retention Clips

KJA's utilize all metal contact retention tines (unlike some 38999 manufacturers that use plastic) which assure the highest level of serviceability and unparalleled contact retention.

MIL-C-38999 approved

KJA's are fully intermatable and intermountable with all other manufacturer's MIL-C-38999 Series III connectors.

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ITT Industries
Engineered for life



Technical Specifications

MATERIALS & FINISHES

Shell	Aluminum alloy
Platings	W - Olive drab chromate over cadmium over electroless nickel per QQ-P-416 F - Electroless Nickel per QQ-N-290
Contacts	Copper alloy
Plating	Gold plate, 50 microinches per MIL-G-45204 type II, grade C, class 1
Insulator	Hard plastic wafer which contains metal retention tines for high reliability retention of crimp contacts
Grommet & Seals	Silicone based elastomer
Grounding Springs	Beryllium copper (Grounded Plug Only)

ELECTRICAL DATA

Contact Sizes 22D, 20, 16 and 12

Operating Voltage & Test Voltage (Unmated Condition)

Test Voltages	Service Rating			
	N	M	I	II
Sea Level	1000	1300	1800	2300
100,000 feet	200	200	200	200

Current Rating
by contact size and wire
accommodation (Test Amps)

Wire Size	22D	20	16	12
28	1.5	-	-	-
26	2.0	-	-	-
24	3.0	3.0	-	-
22	5.0	5.0	-	-
20	-	7.5	7.5	-
18	-	-	10.0	-
16	-	-	13.0	-
14	-	-	-	17.0
12	-	-	-	23.0

Contact Resistance
of mated contacts end to end

Contact Size	Maximum Millivolt Drop
22D	40
20	35
16	25
12	25

Insulation Resistance 5,000 megohms minimum

MECHANICAL

Operating Temperature W plating -65°C to 175°C (-85°F to 347°F)
F plating -65°C to 200°C (-85°F to 392°F)

Sealing Against sand, dust per MIL-STD-202 & ice resistance

Wire Sealing Range

Contact Size	Minimum inches	Maximum inches	Minimum mm	Maximum mm
22D	.030	.054	0.76	1.37
20	.040	.083	1.02	2.11
16	.065	.109	1.65	2.77
12	.097	.142	2.46	3.61
8	.135	.155	3.43	3.74

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Technical Specifications

Insulation Strip Length

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Contact Size	Strip Length inch (mm)
22D	.125 (3.18)
20	.188 (4.77)
16	.188 (4.77)
12	.188 (4.77)

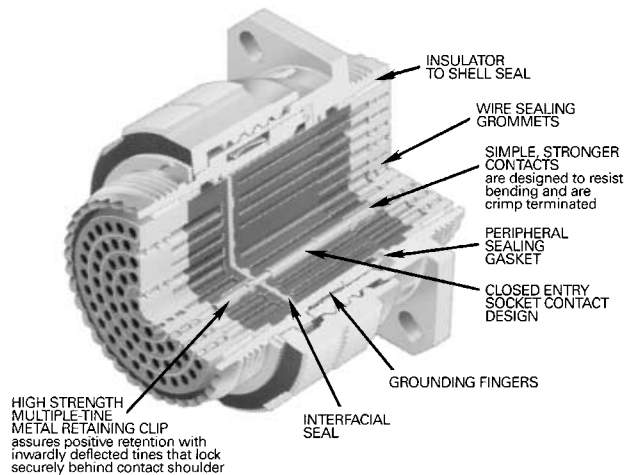
Mating Life	500 cycles minimum
Salt Spray	Finish W: 500 hour per MIL-STD-1344A method 1001 condition C Finish F: 48 hour per MIL-STD-1344A method 1001 condition B
Temperature Durability	Finish W 175°C (347°F), Finish F 200°C (392°F), mated, wired test period 1000 hours to MIL-STD-1344 Method 1005
Chemical Resistance	Lubricating oils, hydraulic fluids, coolants, deicing fluids per MIL-STD-1344A Method 1016 condition a - I
Sine Vibration	60g at -65°C to + 200°C (-85°F to +392°F) ambient temperature with simulated accessory load
Random Vibration	49.5 grms at ambient temperatures
Shock	300 grms
EMI Shielding Effectiveness	100 MHz to 10 GHz - minimum attenuation of 50 dB
Contact Type	Crimp, fiber optic, coax, twinax, or printed circuit
Number of Circuits	3 to 128
Contact Insertion	Insertion from rear of connector with simple plastic or high quality metal hand tool. Extraction from rear with simple plastic or high quality metal hand tools
Contact Retention	Per MIL-C-38999 J tested to MIL-STD-1344A method 2007

Contact	Axial load Newtons +/-10%	Axial load Pounds +/-10%
22D	44	10
20	67	15
16	112	25
12	111	25

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Polarization	Five keyways with optional minor keyways rotation (Note insert and main keyway remain fixed)
Approvals	MIL-C-38999

Cross Section



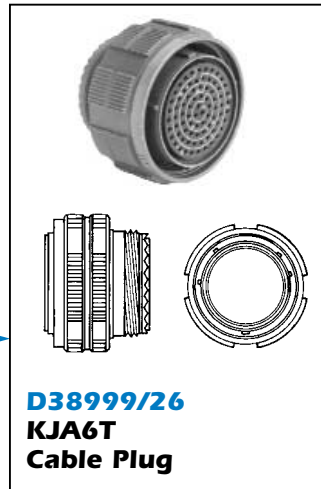
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How to Order

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STEP 1 Choose Shell Style



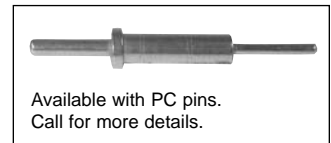
KJA0 and KJA7
mate with KJA6

STEP 2 Choose Finish

F = Electroless
Nickel

OR

W = Olive Drab
Chromate over
Cadmium over
Electroless
Nickel



STEP 7 Create Part # by using these 6 steps

Example:
Military

D38999/20	F	A35	P	N	L/C
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1	2	3	4	5	6
Shell Style	Finish	Layout	Contact	Rotation	Modifier

Example:
Commercial

KJA0T	9	F	35	P	N	L/C
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1	3A	2	3B	4	5	6
Shell Style	Layout 1st #	Plating	Layout 2nd #	Contact	Rotation	Modifier

Note: To develop KJA part # Step 3 is divided into 3A and 3B. 3A (Shell size) precedes Step 2 (Plating Designation) followed by 3B, last part of layout # (Omit the dash)

Legend for charts:

- Dark Blue Type = Military Part number only
- Black Type/Light Blue Field = Commercial Part number only
- Dark Blue Type/Light Blue Field = Military & Commercial Part number
- Grey Field = General information only

Order by numbers in blue, all other numbers are for assistance in selecting the proper part #.

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STEP 3

Choose Layout (Listed by Shell Size)

For listing by # of contacts, see page KJA 6.

Military D38999 Layout	Commercial KJA Layout	Service Rating See Chart on Page KJA2	Contacts					
			Total Number	22D	20	16	12	8
A35	9-35	M	6	6				
A98	9-98	I	3		3			
B35	11-35	M	13	13				
B5	11-5	I	5		5			
B98	11-98	I	6		6			
C35	13-35	M	22	22				
C8	13-8	I	8		8			
C98	13-98	I	10		10			
D15	15-15	I	15		14	1		
D18	15-18	I	18		18			
D19	15-19	I	19		19			
D35	15-35	M	37	37				
D5	15-5	II	5			5		
D97	15-97	I	12		8	4		
E26	17-26	I	26		26			
E35	17-35	M	55	55				
E6	17-6	I	6				6	
E8	17-8	II	8			8		
F11	19-11	II	11			11		
F32	19-32	I	32		32			
F35	19-35	M	66	66				
G11	21-11	M	11				11	
G16	21-16	II	16			16		
G35	21-35	M	79	79				
G39	21-39	I	39		37	2		
G41	21-41	I	41		41			
G75	21-75	M	4					4**
H21	23-21	II	21			21		
H35	23-35	M	100	100				
H53	23-53	I	53		53			
H55	23-55	I	55		55			
J19	25-19	I	19				19	
J20	25-20	I***	30		10	13	4*	3**
J24	25-24	I	24			12	12	
J29	25-29	I	29			29		
J35	25-35	M	128	128				
J37	25-37	I	37			37		
J4	25-4	I	56		48	8		
J42	25-42	I	42		38			4*
J43	25-43	I	43		23	20		
J46	25-46	I	46		40	4		2*
J61	25-61	I	61		61			
J64	25-64	I	64	40	8	10	6	
J66	25-66	I	66	53	2	11		
J8	25-8	M***	8					8***

Note: when ordering KJAs, see Commercial example STEP 7



*COAX **Twinax ***COAX/Twinax Call for more information

STEP 4

Choose Contact

P = Pin

S = Socket

Note: See Step 6 if you are not ordering contacts with part.

A = Less Pin Contacts

B = Less Socket Contacts

Use only for special contact types (PC Pin, Thermocouple, Fiberoptic).

STEP 5

Choose Rotation

N = Normal (Standard)

A = Next Most popular

B = Not popular, limited availability

C =

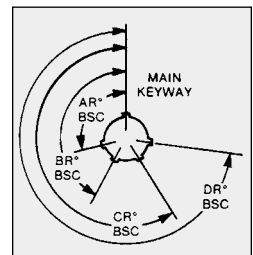
D =

E =

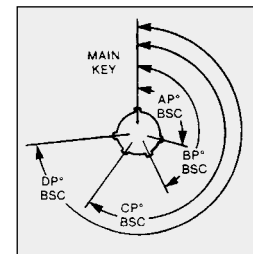
Check for availability

Shell Size		Minor Key Locations			
		AR & AP	BR & BP	CR & CP	DR & DP
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
13	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
15	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
17	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
19	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
21	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
23	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

Receptacle



Plug



STEP 6

Modifier

For other commercial modification, i.e., less tools, with PC contact or with endbell, call.

Omit for standard contacts

L/C = for use with standard contacts, but supplied without contacts, seal plugs or tools (P.O. must state Less Contacts)

Note: L/C is not marked on part

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