Ultra 69U Series

25-10000µH, 0.45-15.3A, Ultra DC Power Inductor

PICO Electronics, Inc.

PRODUCT OVERVIEW

The Pico Ultra 69U Series takes the trusted performance of the 69000 Series to the next level with enhanced current handling for high-load applications. It retains a compact footprint, excellent efficiency, and proven reliability, while delivering improved thermal performance and reduced losses under demanding conditions. Designed for effective noise and ripple suppression, both series support robust power designs. With a broad selection of sizes, mounting options, current ratings, and inductance values, Pico power inductors offer the flexibility engineers need across diverse applications.

Typical applications:

- DC-DC Converters
- Switching Regulators
- Radar & Communication Systems
- Step-up or Step-down Transformers
- Aviation Power Systems
- Automotive & EVs

FEATURES

- Gradual DC saturation profile
- Extreme resistance to impact, shock, and vibration
- Manufactured to MIL-PRF-27 Grade 5, Class S
- High reliability for space and mission critical applications
- Capable of handling 2x current rating in parallel connection
- Multi-optional connections
- Magnetically shielded

Contact Pico for part number of available options:

- Screening and qualification criteria to flight standard
- Fully RoHS compliant or with exemption 7(a)
- Modifications to mechanical design and electrical characteristics
- Custom new design and parameters



SPECIFICATIONS

SIZE AA

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UX10	25	4.37	6.73	7.96	0.015	4
69UX20	50	3.21	4.93	5.84	0.025	3
69UX30	75	2.60	4.00	4.73	0.031	2.4
69UX40	100	2.24	3.44	4.07	0.046	2
69UX50	250	1.44	2.21	2.61	0.114	1.3
69UX60	750	0.83	1.28	1.51	0.314	0.75
69UX70	1000	0.72	1.10	1.31	0.423	0.65
69UX80	1500	0.59	0.90	1.07	0.657	0.55
69UX90	2500	0.45	0.70	0.83	1.056	0.4

SIZE A

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UA10	130	3.67	5.24	6.70	0.057	1.7
69UA20	210	2.94	4.19	5.36	0.090	1.4
69UA30	260	2.64	3.76	4.81	0.100	1.25
69UA40	315	2.39	3.41	4.36	0.138	1.14
69UA50	525	1.87	2.67	3.41	0.224	0.9
69UA60	790	1.51	2.16	2.76	0.349	0.7
69UA70	1050	1.32	1.88	2.41	0.400	0.6
69UA80	1300	1.18	1.69	2.16	0.566	0.4

SIZE B

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UB05	228	4.82	6.50	8.43	0.061	1.1
69UB15	323	4.05	5.47	7.09	0.091	0.9
69UB25	460	3.43	4.63	6.00	0.136	0.8
69UB35	787	2.62	3.54	4.59	0.225	0.6
69UB45	1050	2.26	3.05	3.95	0.328	0.5
69UB55	1310	2.05	2.77	3.59	0.361	0.45
69UB65	1600	1.86	2.51	3.25	0.503	0.4
69UB75	1840	1.73	2.34	3.03	0.540	0.38
69UB85	2100	1.61	2.17	2.81	0.582	0.33

SPECIFICATIONS

SIZE C

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UC05	165	6.15	8.31	10.77	0.043	1.4
69UC15	191	5.77	7.79	10.10	0.046	1.3
69UC25	262	4.99	6.74	8.73	0.067	1.1
69UC35	390	4.10	5.54	7.18	0.103	0.9
69UC45	525	3.55	4.79	6.21	0.119	0.8
69UC55	790	2.88	3.89	5.05	0.184	0.6
69UC65	1050	2.53	3.41	4.43	0.267	0.55
69UC75	1310	2.25	3.04	3.94	0.299	0.5
69UC85	1580	2.05	2.77	3.59	0.412	0.45
69UC95	1838	1.92	2.60	3.37	0.439	0.4

SIZE D

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UD10	150	8.72	11.77	15.26	0.034	1.4
69UD20	250	6.92	9.34	12.10	0.054	1.2
69UD30	500	4.89	6.60	8.56	0.096	0.8
69UD40	750	3.93	5.31	6.88	0.142	0.65
69UD50	1000	3.46	4.67	6.05	0.203	0.55
69UD60	2500	2.18	2.94	3.81	0.512	0.35
69UD63	3200	1.93	2.60	3.37	0.579	0.31
69UD68	4000	1.73	2.33	3.03	0.817	0.28
69UD70	5000	1.54	2.08	2.70	0.915	0.25

SIZE E

Part Number [1]	Inductance [µH]	DC Current 10% drop in L [A]	DC Current 20% drop in L [A]	DC Current 30% drop in L [A]	DC Resistance [Ω]	Self Resonant Frequency [MHz]
69UE05	1500	4.52	6.10	7.91	0.163	0.4
69UE15	2000	3.95	5.33	6.91	0.235	0.35
69UE25	3000	3.22	4.34	5.63	0.363	0.3
69UE35	4000	2.79	3.76	4.87	0.406	0.25
69UE45	5000	2.50	3.37	4.37	0.571	0.2
69UE55	7500	2.04	2.75	3.57	0.887	0.18
69UE65	10000	1.77	2.39	3.10	1.020	0.15

Note 1: For RoHS compliance, please consult with Pico's engineer and provide the part number.
Note 2: All Inductors have split windings (except size AA). Ratings shown in table are for series connection. Parallel connection will have 1/4 inductance at twice the DC current and 1/4 the DC resistance.
ie. Parallel connection of PICO # 69UA10 will have 32.5 µH, 14.3mΩ DC resistance, 7.34A DC current at 10% drop in L.

SPECIFICATIONS

GENERAL

Parameter	Condition	Min.	Typ.	Max.	Units
Dielectric Withstanding Voltage	60Hz	-	200	-	V_{RMS}
Insulation Resistance	300VDC	10	-	-	GΩ
Operating Temperature Range	Ambient with temperature rise	-55	-	+130	°C
Storage Temperature Range	Ambient	-55	-	+130	°C
Size	See mechanical drawings				
Weight	See mechanical drawings				
Case	Epoxy Insulated Metal				
Potting	Vacuum Impregnated Epoxy				
Box Packaging	Length x Width x Height	11.56 x 8.92 x 1.4 (293.624 x 226.568 x 35.56)			inches (mm)

OPTIONAL DESIGN CRITERIA

Test	Standard	Description
Vibration	MIL-STD-202	Method 204, Vibration, High Frequency
Shock	MIL-STD-202	Method 213, Shock (Specified Pulse)
Immersion	MIL-STD-202	Method 104, Immersion
Moisture Resistance	MIL-STD-202	Method 106, Moisture Resistance
Flammability	MIL-STD-202	Method 111, Flammability (External Flame)
Thermal Shock	MIL-STD-202	Method 107, Thermal Shock

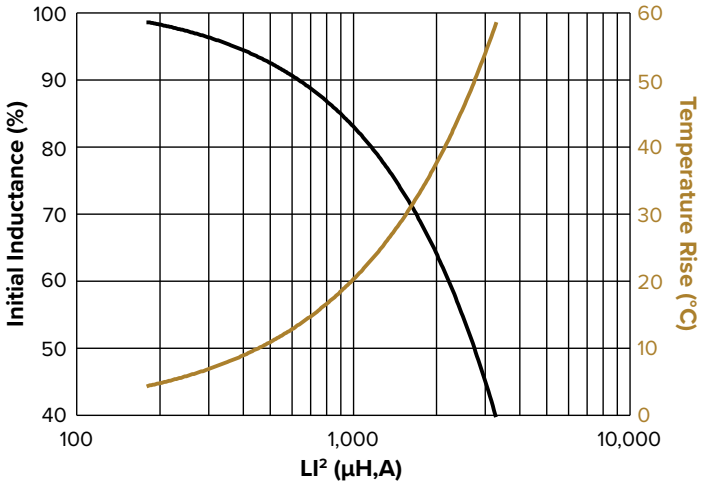
OPTIONAL SCREENING AND QUALIFICATION

Standard	Screening & Qualification	Test [3]
MIL-PRF-27	a.) Group A inspection Level-T - Table VII b.) Qualification inspection, Grade 5 - Table V	I. Thermal Shock II. Vibration III. Burn-in IV. Induced Voltage V. Shock VI. Dielectric Withstanding Voltage (at reduced pressure) VII. Insulation Resistance VIII. Electrical Characteristics IX. Visual and Mechanical Examination (External) X. Life XI. Radiographic Inspection
MIL-STD-981	a.) Group A screening tests – Table VI b.) Group B tests – Table XII, Class S	
EEE-INST-002, Section M1	a.) Magnetics Screening Req. – Table 2 b.) Magnetics Part Qual. – Table 3	

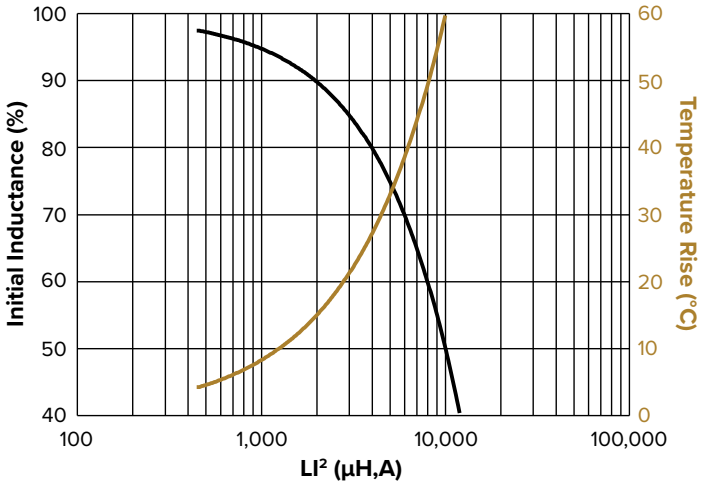
Note 3: Screening and qualification tests are not limited to the options in the chart above. Each standard may also be stringent or exclude certain tests from one another. Please contact Pico for specific application needs and for Pico part number.

DATA CURVES

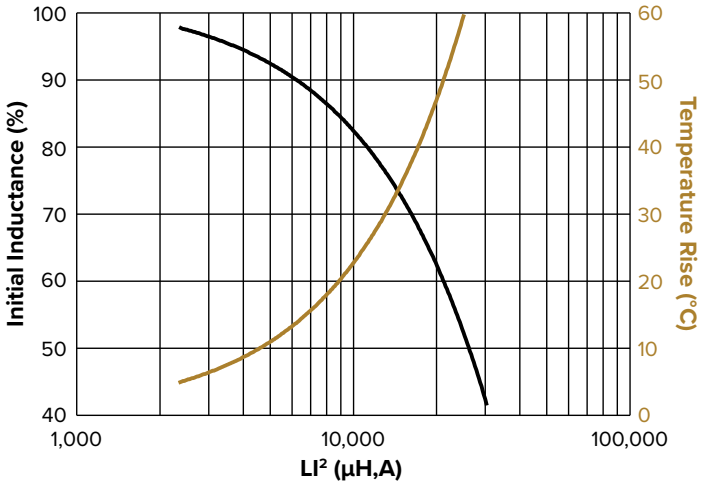
Size AA



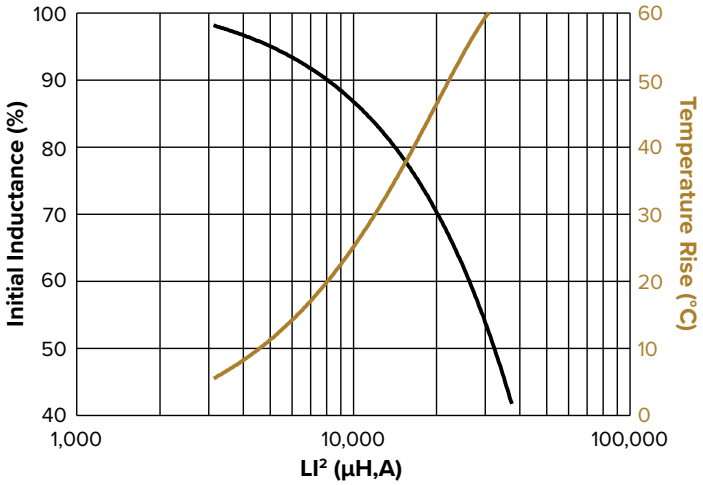
Size A



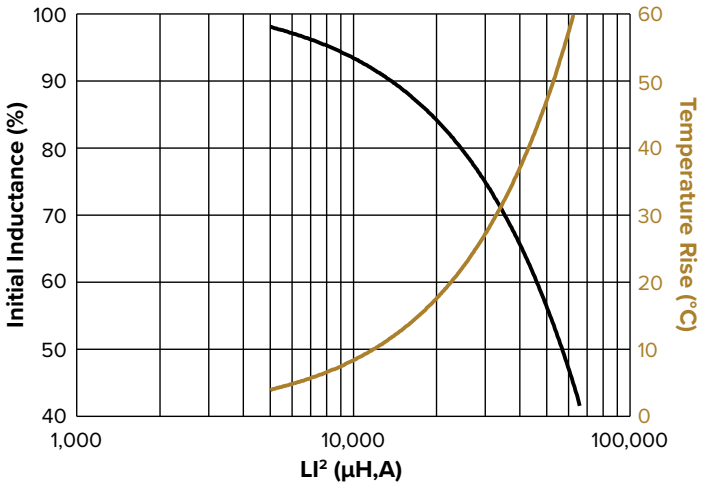
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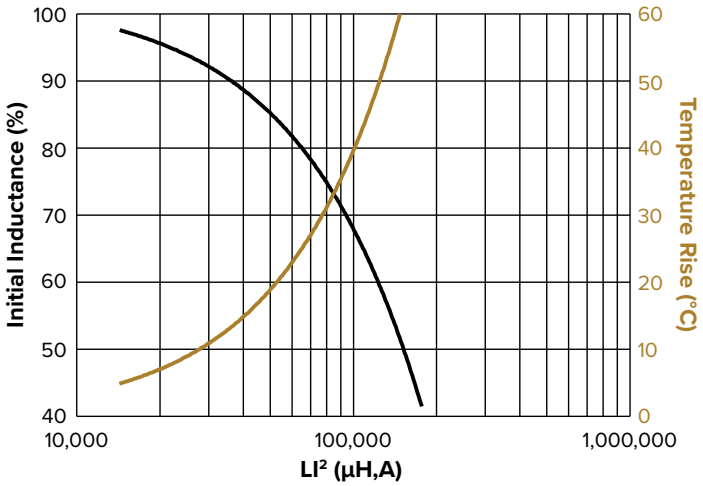
Size C



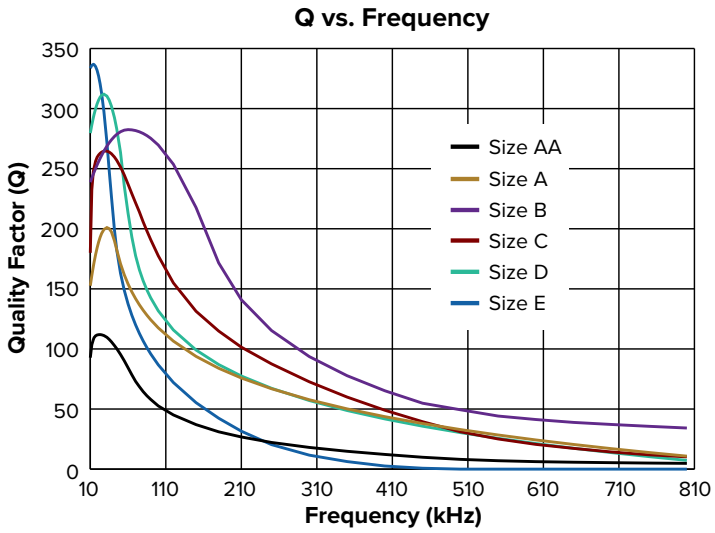
Size D



Size E



DATA CURVES



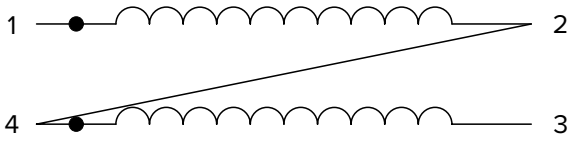
ELECTRICAL SCHEMATIC

SIZE AA

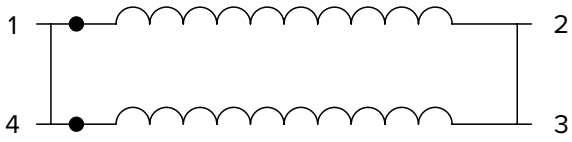


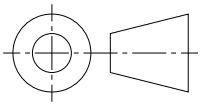
SIZE A, B, C, D & E

SERIES CONNECTION



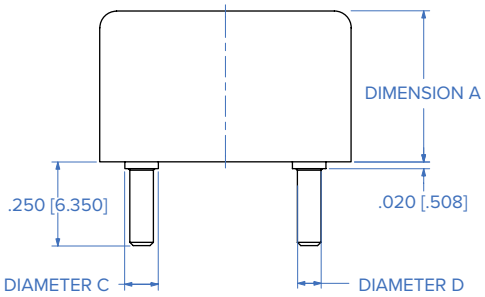
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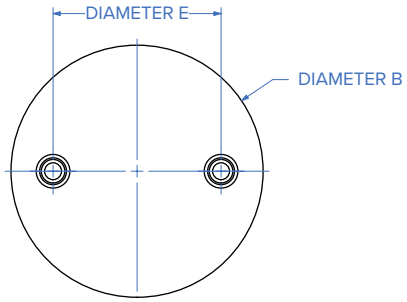




MECHANICAL DRAWINGS

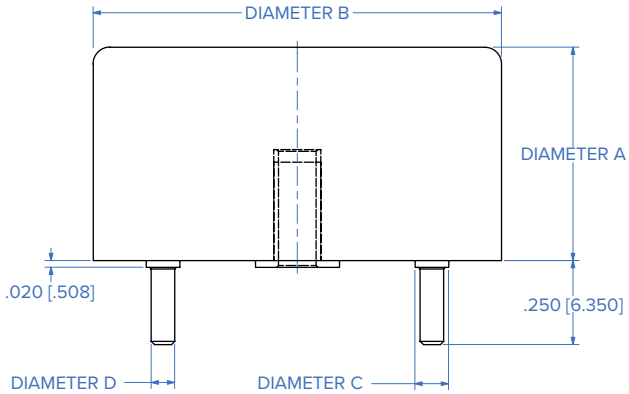
SIZE AA

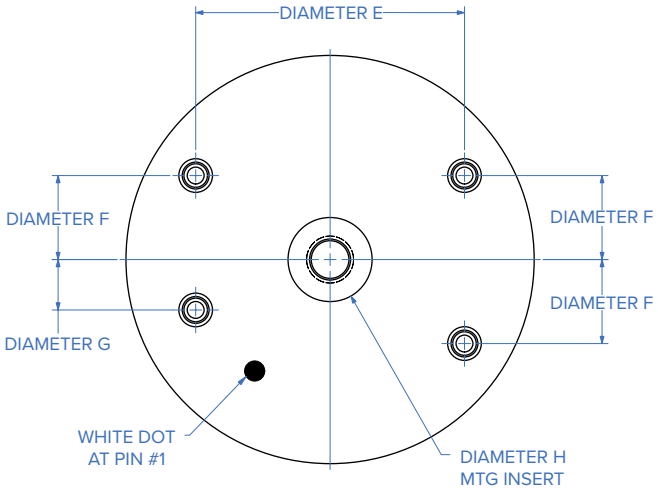




BOTTOM VIEW

SIZE A TO E

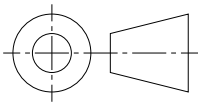




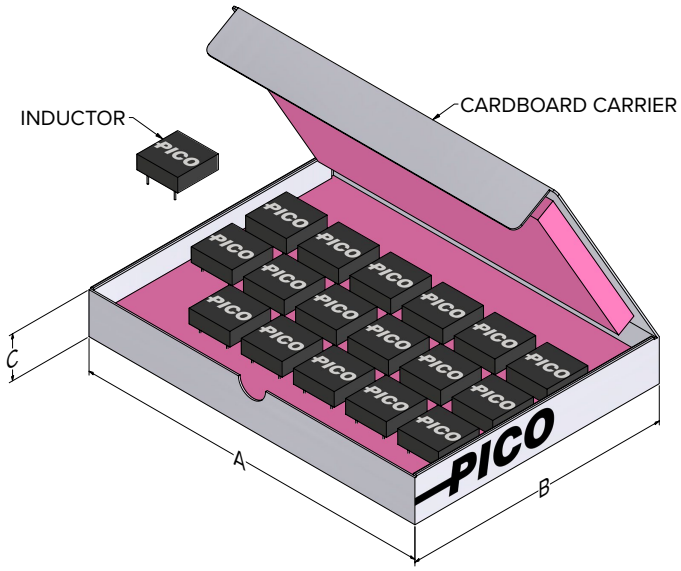
BOTTOM VIEW

Size	Dimension / Diameter								Insert	Typ. Weight (grams)
	A	B	C	D	E	F	G	H		
AA	.450 (11.400)	.750 (19.100)	.100 (2.540)	.070 (1.780)	.500 (12.700)	-	-	-	-	7
A	.560 (14.200)	.960 (24.00)	.100 (2.540)	.070 (1.780)	.600 (15.200)	.200 (5.100)	.100 (2.500)	.250 (6.350)	4 - 40 UNC 5 Threads min.	23
B	.635 (16.100)	1.215 (30.900)	.100 (1.780)	.070 (1.780)	.800 (20.300)	.250 (6.400)	.150 (3.800)	.250 (6.350)	4 - 40 UNC 5 Threads min.	44
C	.720 (18.300)	1.330 (33.800)	.125 (3.200)	.094 (2.400)	.900 (22.900)	.250 (6.400)	.150 (3.800)	.312 (7.920)	6 - 32 UNC 6 Threads min.	60
D	.760 (19.300)	1.500 (38.100)	.125 (3.200)	.094 (2.400)	1.100 (27.900)	.300 (7.600)	.200 (5.100)	.312 (7.920)	6 - 32 UNC 6 Threads min.	80
E	1.100 (27.900)	2.150 (54.600)	.150 (3.800)	.125 (3.200)	1.700 (43.200)	.400 (10.200)	.300 (7.600)	.312 (7.920)	6 - 32 UNC 6 Threads min.	170

NOTES
a. ALL DIMENSIONS ARE IN INCHES, [ ] = MM
b. TERMINALS ARE CLOCKWISE FROM PIN #1



BOX PACKAGING



Dimension		
A	B	C
11.56 [293.624]	8.92 [226.568]	1.4 [35.56]

Pico warrants each product manufactured by us and sold by us or an authorized representative, to be free from defects in material and workmanship. If properly used, it will perform within its applicable specifications for a period of one year after original shipment. Pico's obligation under this guarantee is limited to repairing or replacing our product to the original purchaser. This warranty is in lieu of all other warranties, express or implied and constitutes fulfillment of our obligations to the purchaser. We do not guarantee that the products can be used for a particular purpose other than those solely covered by the product's specifications. Pico must be notified if the product must meet particular certifications and/or standards. We assume no liability, in any event, for consequential damages, for anticipated or lost profits, incidental damages or loss of time or other losses incurred by the purchaser or any third party in connection with products covered by this warranty or otherwise. The purchaser will indemnify and hold Pico harmless for any damages, losses, costs, etc. from usage not within the product's specifications. Pico must be consulted before usage of its products in a nuclear, radioactive or space environment.

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