

ATC 100 E Series Porcelain High RF Power Multilayer Capacitors

- Case E Size
(.380" x .380")
- High Q
- Low ESR/ESL
- High RF Power
- Extended WVDC
up to 7200 VDC
- Capacitance Range
1 pF to 5100 pF
- Ultra-Stable Performance
- High RF Current/Voltage
- High Reliability
- Available with
Encapsulation Option*

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 E Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications. High density porcelain construction provides a rugged, hermetic package.

ATC offers an encapsulation option for applications requiring extended protection against arc-over and corona.

Typical functional applications: Bypass, Coupling, Tuning, Impedance Matching and DC Blocking.

Typical circuit applications: HF/RF Power Amplifiers, Transmitters, Antenna Tuning, Plasma Chambers and Medical (MRI coils).

*For leaded styles only

ENVIRONMENTAL TESTS

ATC 100 E Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

MOISTURE RESISTANCE:

MIL-STD-202, Method 106.

LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts DC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.

LIFE TEST:

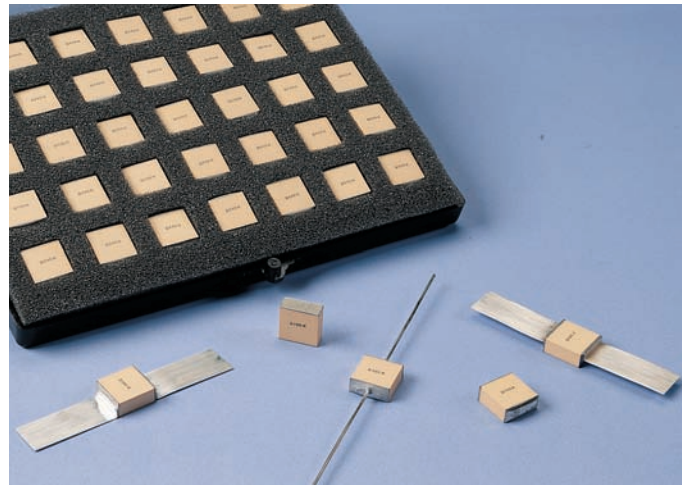
MIL-STD-202, Method 108, for 2000 hours, at 125°C.

Voltage applied.

1 pF to 680 pF: at WVDC

820 pF to 2200 pF: 120% of WVDC

2700 pF to 5100 pF: 200% of WVDC



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q):

Greater than 10,000 (1 pF to 1000 pF) @ 1 MHz.

Greater than 10,000 (1100 pF to 5100 pF) @ 1 KHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

+90 $\pm$ 30 PPM/°C (-55°C to +125°C)

INSULATION RESISTANCE (IR):

1 pF to 5100 pF:

10⁵ Megohms min. @ +25°C at 500 VDC.

10⁴ Megohms min. @ +125°C at 500 VDC.

WORKING VOLTAGE (WVDC):

See Capacitance Values Table, page 2.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

* See page 2.

RETRACE: Less than $\pm$ (0.02% or 0.02 pF), whichever is greater.

AGING EFFECTS: None

PIEZOELECTRIC EFFECTS: None

(No capacitance variation with voltage or pressure).

CAPACITANCE DRIFT: $\pm$ (0.02% or 0.02 pF), whichever is greater.

OPERATING TEMPERATURE RANGE:

From -55°C to +125°C (No derating of working voltage).

TERMINATION STYLES:

Available in various surface mount and leaded styles.

See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets withstand a pull of 10 lbs. min., 25 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.



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www.atceramics.com

ATC # 001-809 Rev. H 6/06

ATC 100 E Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC		CAP. CODE	CAP. (pF)	TOL.	RATED WVDC		CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
			STD.	EXT.				STD.	EXT.				
1R0	1.0	B, C, D	3600	7200	180	18	F, G, J, K, M	3600	7200	331	330	F, G, J, K, M	3600
1R2	1.2				220	22				391	390		
1R5	1.5				270	27				471	470		2500
1R8	1.8				330	33				561	560		
2R2	2.2				390	39				681	680		1000
2R7	2.7				470	47				821	820		
3R3	3.3				560	56				102	1000	500	
3R9	3.9				680	68				122	1200		
4R7	4.7				820	82				152	1500		
5R6	5.6				101	100				182	1800		
6R8	6.8				121	120				222	2200		
8R2	8.2				151	150				272	2700		G, J, K, M
100	10	181	180	332	3300								
120	12	221	220	472	4700								
150	15			271	270		3600	512	5100				

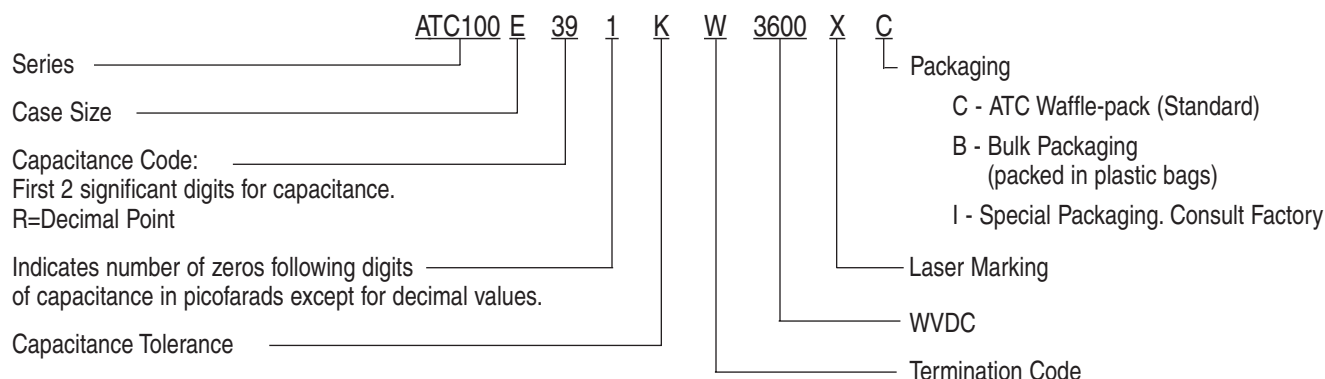
VRMS = 0.707 X WVDC

- SPECIAL VALUES, TOLERANCES AND MATCHING AVAILABLE.
- EXTENDED WORKING VOLTAGES ARE AVAILABLE FOR COMMERCIAL ORDERS ONLY.
- ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

- ★ DWV: 1 pF to 680 pF: 120% of rated WVDC for 5 secs.
- 820 pF to 2200 pF: 150% of rated WVDC for 5 secs.
- 2700 pF to 5100 pF: 250% of rated WVDC for 5 secs.

CAPACITANCE TOLERANCE								
Code	B	C	D	F	G	J	K	M
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±1%	±2%	±5%	±10%	±20%

ATC PART NUMBER CODE



The above part number refers to a 100 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Waffle-packaging.

ATC accepts orders for our parts using designations **with** or **without** the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in specifying or procuring parts from American Technical Ceramics.

For additional information and catalogs contact your ATC representative or call direct at (631) 622-4700.

Consult factory for additional performance data.

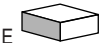
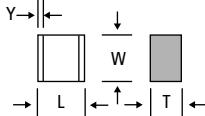
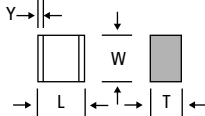
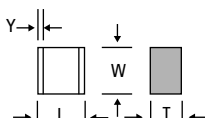
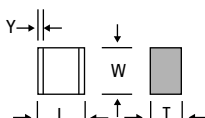
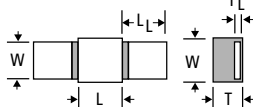
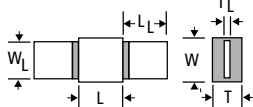
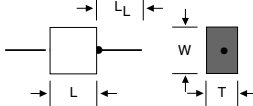
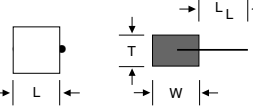
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ATC 100 E Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPECASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
100E	W	E  Solder Plate		.380 +.015 -.010 (9.65 +0.38 -0.25)			.040 (1.02) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination
100E	P	E  Pellet		.380 +.040 -.010 (9.65 +1.02 -0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination
100E	T	E  Solderable Nickel Barrier		.380 +.015 -.010 (9.65 +0.38 -0.25)				RoHS Compliant Tin Plated over Nickel Barrier Termination
100E	CA	E  Gold Chip		.380 +.015 -.010 (9.65 +0.38 -0.25)				RoHS Compliant Gold Plated over Nickel Barrier Termination
100E	MS	E  Microstrip		.380 +.035 -.010 (9.65 +0.89 -0.25)	.380 ±.010 (9.65 ±0.25)	.170 (4.32) max.	N/A	High Purity Silver Leads L _L = .750 (19.05) min. W _L = .350 ±.010 (8.89 ±0.25) T _L = .010 ±.005 (0.25 ±0.13) Leads are Attached with High Temperature Solder.
100E	AR	E  Axial Ribbon						
100E	AW	E  Axial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L _L = 2.25 (57.2) min.
100E	RW	E  Radial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L _L = 1.0 (25.4) min.

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

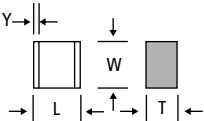
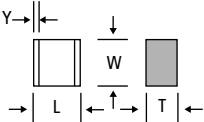
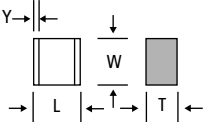
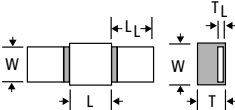
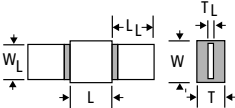
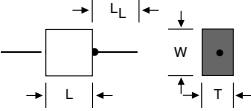
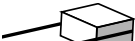
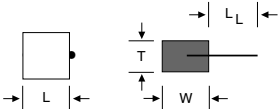
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ATC 100 E Capacitors: Non-Magnetic Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS		
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS	
100E	WN	E  Non-Mag Solder Plate		.380 +.015 -.010 (9.65 +0.38 -0.25)	.380 +.015 -.010 (9.65 +0.38 -0.25)	.170 (4.32) max.	.040 (1.02) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination	
100E	PN	E  Non-Mag Pellet		.380 +.040 -.010 (9.65 +1.02 -0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination	
100E	TN	E  Non-Mag Solderable Barrier		.380 +.015 -.010 (9.65 +0.38 -0.25)				RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination	
100E	MN	E  Non-Mag Microstrip		.380 +.015 -.010 (9.65 +0.38 -0.25)				N/A	High Purity Silver Leads L _L = .750 (19.05) min. W _L = .350 ±.010 (8.89 ±0.25) T _L = .010 ±.005 (0.25 ±0.13) Leads are Attached with High Temperature Solder.
100E	AN	 Non-Mag Axial Ribbon							Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L _L = 2.25 (57.2) min.
100E	BN	E  Non-Mag Axial Wire							Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L _L = 1.0 (25.4) min
100E	RN	E  Non-Mag Radial Wire							

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

Suggested Mounting Pad Dimensions

Horizontal
Electrode Orientation

Vertical
Electrode Orientation

Case E

	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.185	.050	.325	.425
	High Density	.165	.030	.325	.385
Horizontal Mount	Normal	.405	.050	.325	.425
	High Density	.385	.030	.325	.385

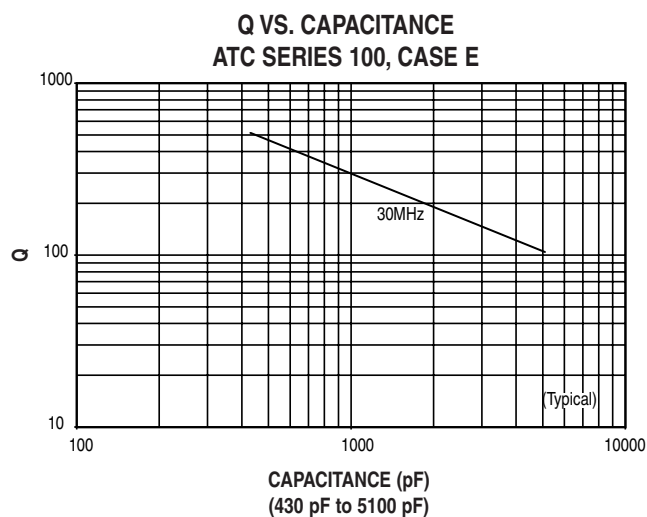
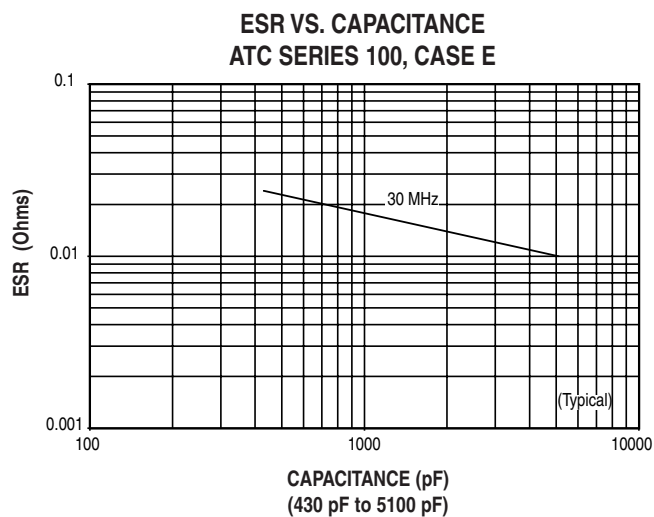
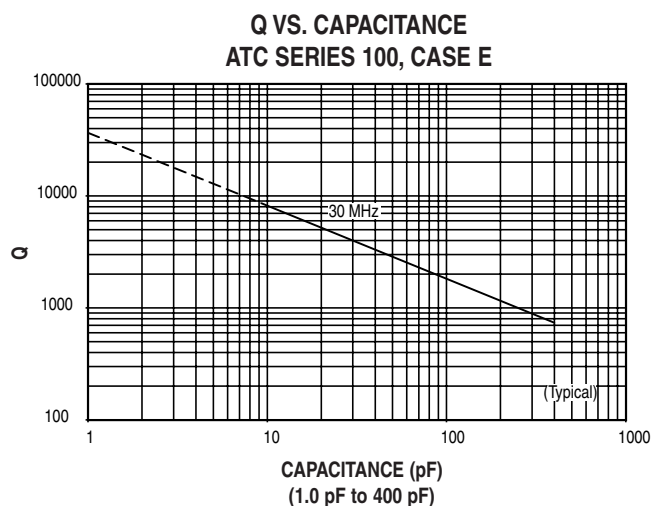
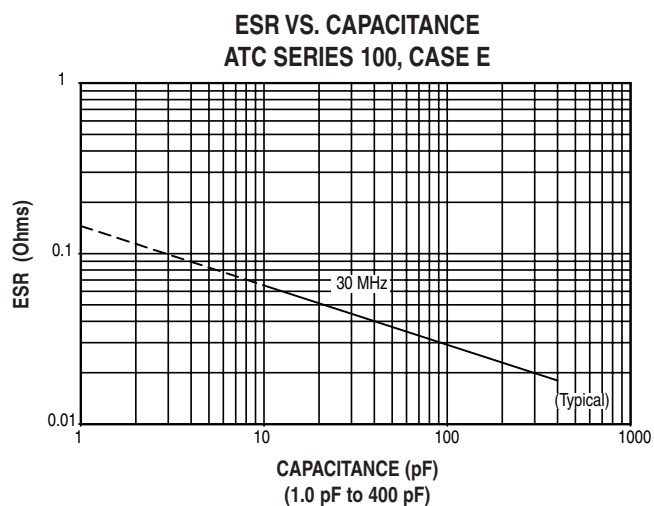
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ATC 100 E Performance Data



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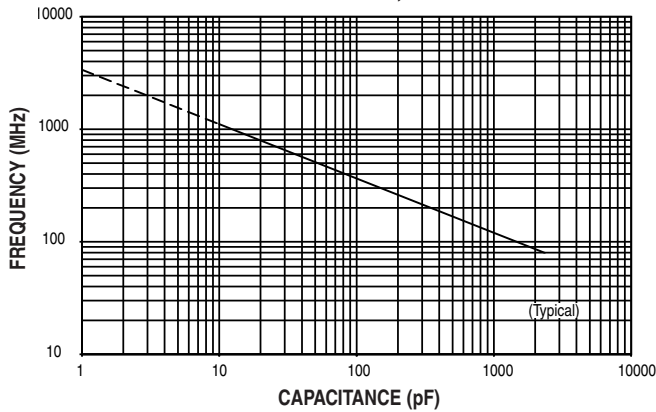
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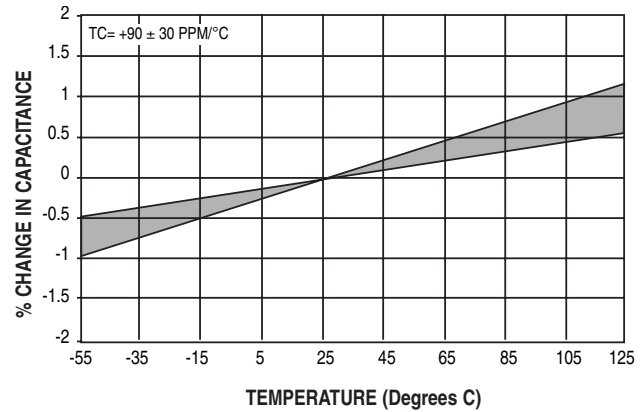
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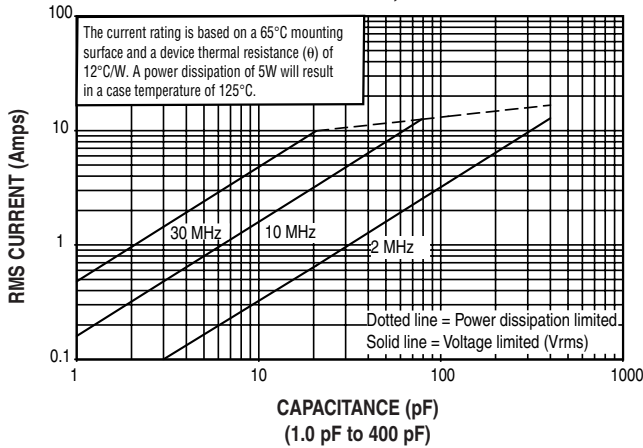
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE E



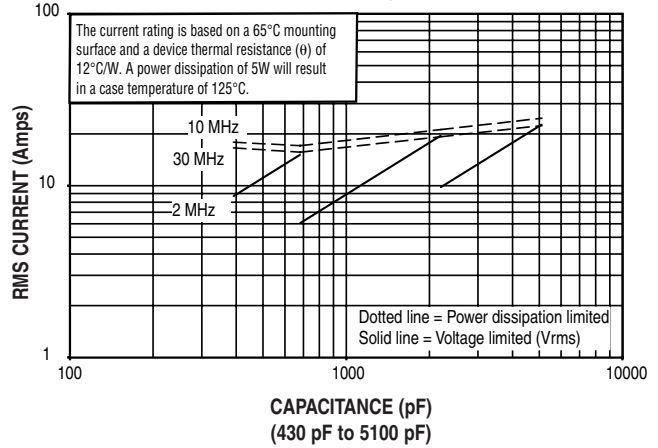
CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE E



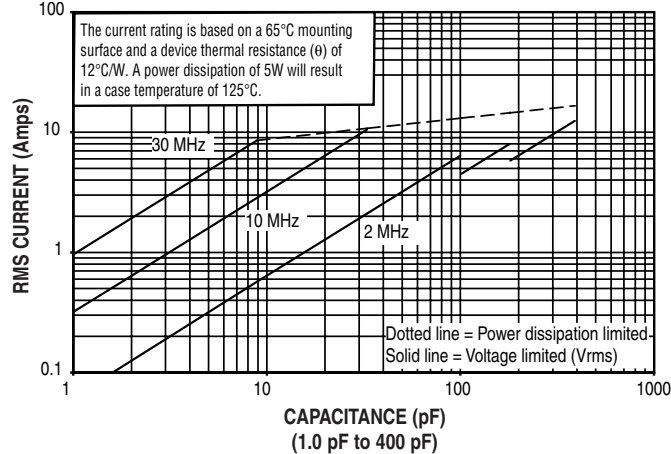
CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE E, EXTENDED VOLTAGE



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