

Aluminum Capacitors +105 °C, Miniature, Radial Lead



QUICK REFERENCE	DATA
DESCRIPTION	VALUE
Nominal case size Ø D x L in inches [mm]	0.394 x 0.472 [10.0 x 12.0] to 0.709 x 1.575 [18.0 x 40.0]
Operating temperature	-55 °C to +105 °C
Rated capacitance range, C _R	4.7 μF to 3300 μF
Tolerance on C _R	-10 %, +50 %
Rated voltage range, U _R	6.3 WV _{DC} to 250 WV _{DC}
Termination	2 and 3 radial leads and axial mount.
Life validation test	$\begin{array}{l} 4000 \text{ h at } +105 \text{ °C } (\geq 13.0 \text{ mm dia.}); \\ 3000 \text{ h at } +105 \text{ °C } (10.0 \text{ mm dia.}); \\ \Delta \text{CAP} \leq 20 \text{ % from initial measurement.} \\ \Delta \text{ESR} \leq 1.15 \text{ x initial specified limit.} \\ \Delta \text{DCL} \leq \text{initial specified limit.} \end{array}$
Shelf life at 105 °C	500 h: $\Delta CAP \le 10$ % from initial measurement. $\Delta ESR \le 1.15$ x initial specified limit. $\Delta DCL \le 2$ x initial specified limit, $(6.3 \text{ WV}_{DC} \text{ to } 100 \text{ WV}_{DC});$ ≤ 3 x initial specified limit, $(150 \text{ WV}_{DC} \text{ to } 250 \text{ WV}_{DC}).$
DC leakage current (after 2 min charge)	I = 0.03 $\sqrt{\text{CV}}$ (6.3 V _{DC} to 100 V _{DC}) I = 0.01 CV (150 V _{DC} to 250 V _{DC}) I in μA, C in μF, V in Volts

FEATURES

- Original SMPS output capacitors
- Minimal ESR change
- High ripple current capability
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912



RIPPLE	CURRE	M TI	ULTII	PLIERS	
	,	TEMPE	RATU	RE	
	MBIENT PERATURE			MULTIPLII	ERS
+	105 °C			0.5	
+	-85 °C			1.0	
≤	+75 °C			1.25	
	F	REQU	ENCY ((Hz)	
WV _{DC}	50 TO 60	100 T	O 120	300 TO 400	1K TO 19K
0 to 75	0.60	0.	70	0.75	0.80
76 to 100	0.40	0.	55	0.70	0.80
101 to 250	0.25	0.	35	0.45	0.65

LOW TEMPERA	W TEMPERATURE PERFORMANCE				
CAPACITANCE RAT	IO C ^{-55°C} /	C+25 °C MI	NIMUM A	T 120 Hz	
MAXIMUM	VOLT	ΓAGE	MULT	IPLIER	
CAPACITANCE	6.3 V to	o 100 V	0.	75	
CHANGE	150 V t	o 250 V	0.	70	
MAXIMUM	VOL	ΓAGE	MULT	IPLIER	
IMPEDANCE	6.3 V to	o 100 V	2	.5	
CHANGE	150 V t	o 250 V	2	.0	
ESL (TYPICAL	VALUES	AT 1 MHz	TO 10 MH	10 MHz)	
NOMINAL DIAMETER	0.394 [10.0]	0.512 [13.0]	0.630 [16.0]	0.709 [18.0]	
TYPICAL ESL (nH)	4.0	7.0	10.0	12.0	

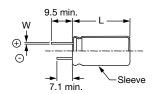




BULK SPECIFICATIONS in millimeters

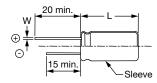
TERMINAL CODE C

S D D



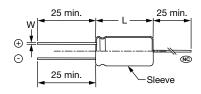
TERMINAL CODE D



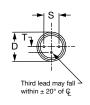


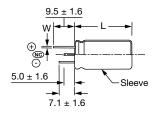
TERMINAL CODE J (1)





TERMINAL CODE O (2)





Notes

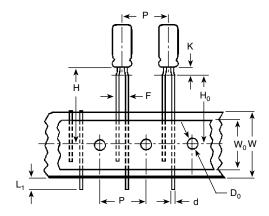
- Positive terminal
- O Negative terminal
- No charge potential
- (1) Available for 12.5 mm, 16 mm, and 18 mm diameter units
- (2) Available for 12.5 mm, 16 mm, and 18 mm diameter units with epoxy end-seal

DIME	NSIONS in	inches [mi	Ilimeters]							
CASE	NOM	INAL	STYLES	2 AND 4	STYLES	3 AND 5	LEAD S	PACING	LEAD DIA	METER
CODE	D	L	D (max.)	L (max.)	D (max.)	L (max.)	S ± 0.024 [0.60]	T ± 0.020 [0.50]	NOMINAL	AWG
CC	0.394 [10.0]	0.512[13.0]	0.413 [10.5]	0.563 [14.3]	0.413[10.5]	0.630 [16.0]	0.197 [5.0]	n/a	0.025 [0.63]	22
CD	0.394 [10.0]	0.630 [16.0]	0.413[10.5]	0.669 [17.0]	0.413 [10.5]	0.740 [18.8]	0.197 [5.0]	n/a	0.025 [0.63]	22
CG	0.394 [10.0]	0.787 [20.0]	0.413 [10.5]	0.846 [21.5]	0.413 [10.5]	0.906 [23.0]	0.197 [5.0]	n/a	0.025 [0.63]	22
DG	0.492 [12.5]	0.787 [20.0]	0.512 [13.0]	0.846 [21.5]	0.512 [13.0]	0.906 [23.0]	0.197 [5.0]	0.098 [2.5]	0.032 [0.81]	20
DK	0.492 [12.5]	0.984 [25.0]	0.512 [13.0]	1.043 [26.5]	0.512 [13.0]	1.142 [29.0]	0.197 [5.0]	0.098 [2.5]	0.032 [0.81]	20
DM	0.492 [12.5]	1.043 [26.5]	0.512[13.0]	1.102 [28.0]	0.512[13.0]	1.161 [29.5]	0.197 [5.0]	0.098 [2.5]	0.032 [0.81]	20
DT	0.492 [12.5]	1.319 [33.5]	0.512[13.0]	1.346 [34.2]	0.512 [13.0]	1.417 [36.0]	0.197 [5.0]	0.098 [2.5]	0.032 [0.81]	20
DS	0.492 [12.5]	1.673 [42.5]	0.512[13.0]	1.720 [43.7]	0.512[13.0]	1.791 [45.5]	0.197 [5.0]	0.098 [2.5]	0.032 [0.81]	20
EK	0.630 [16.0]	0.984 [25.0]	0.650 [16.5]	1.031 [26.2]	0.650 [16.5]	1.098 [27.9]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
EN	0.630 [16.0]	1.260 [32.0]	0.650 [16.5]	1.319 [33.5]	0.650 [16.5]	1.417 [36.0]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
ER	0.630 [16.0]	1.417 [36.0]	0.650 [16.5]	1.476 [37.5]	0.650 [16.5]	1.575 [40.0]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
ET	0.630 [16.0]	1.319 [33.5]	0.650 [16.5]	1.347 [34.2]	0.650 [16.5]	1.417 [36.0]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
EU	0.630 [16.0]	1.575 [40.0]	0.650 [16.5]	1.642 [41.7]	0.650 [16.5]	1.669 [42.4]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
FR	0.709 [18.0]	1.417 [36.0]	0.728 [18.5]	1.476 [37.5]	0.728 [18.5]	1.575 [40.0]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20
FV	0.709 [18.0]	1.575 [40.0]	0.728 [18.5]	1.653 [42.0]	0.728[18.5]	1.693 [43.0]	0.295 [7.5]	0.150 [3.8]	0.032 [0.81]	20



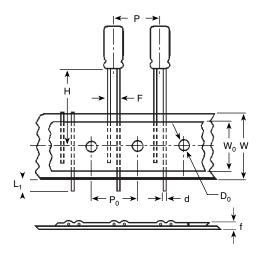
TAPE AND REEL, SPECIFICATIONS TO EIA-468D in inches [millimeters]

Formed Leads



DIMENSIONS in inches [millimeters	s] AND PACKAGING QUANTITIES	
CASE SIZE	F LEAD SPACING	STD. QTY/REEL
0.236 x 0.453 [6.0 x 11.0]	0.197 [5.0]	800
0.315 x 0.472 [8.0 x 12.0]	0.197 [5.0]	700

Unformed (Straight) Leads



DIMENSIONS in inches [millimeter	s] AND PACKAGING QUANTITIES	
CASE SIZE	F LEAD SPACING	STD. QTY/REEL
0.236 x 0.453 [6.0 x 11.0]	0.098 [2.5]	800
0.315 x 0.472 [8.0 x 12.0]	0.140 [3.5] ⁽¹⁾	700
0.394 x 0.512 [10.0 x 13.0]	0.197 [5.0]	500
0.394 x 0.630 [10.0 x 16.0]	0.197 [5.0]	500
0.394 x 0.787 [10.0 x 20.0]	0.197 [5.0]	500

⁽¹⁾ Available as special order.



DIMENSIONS in inches [millimete	rs]				
		CASE SI	ZE (DIAMETER x I	ENGTH)	
ITEM	0.236 x 0.433 [6.0 x 11.0]	0.315 x 0.472 [8.0 x 12.0]	0.394 x 0.512 [10.0 x 13.0]	0.394 x 0.630 [10.0 x 16.0]	0.394 x 0.787 [10.0 x 20.0]
d - Lead-wire diameter	0.025 [0.63]	0.025 [0.63]	0.025 [0.63]	0.025 [0.63]	0.025 [0.63]
P - Pitch of component	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]
P ₀ - Feed hole pitch	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]
F - Lead-to-lead distance	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]
K - Clinch height	0.098 [2.5]	0.157 [4.0]	n/a	n/a	n/a
H - Height of component from tape center	0.728 [18.5]	0.787 [20.0]	0.906 [23.0]	0.906 [23.0]	0.906 [23.0]
H ₀ - Lead-wire clinch height	0.630 [16.0]	0.630 [16.0]	n/a	n/a	n/a
W - Tape width	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]
W ₀ - Hold down tape width	0.591 [15.0]	0.591 [15.0]	0.591 [15.0]	0.591 [15.0]	0.591 [15.0]
D ₀ - Feed hole diameter	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]
f - Total tape thickness	0.028 [0.7]	0.028 [0.7]	0.028 [0.7]	0.028 [0.7]	0.028 [0.7]
L ₁ - Maximum lead protrusion	0.118 [3.0]	0.118 [3.0]	0.118 [3.0]	0.118 [3.0]	0.118 [3.0]

Note

ORDERING EXAMPLE

Electrolytic capacitor 672D series: 672D 336 F 100 DM 5 D

DESCRIPTION	
CODE	EXPLANATION
672D	Product type
336	Capacitance value (33 μF)
F	Tolerance (F = -10 % / +50 %)
100	Voltage rating at 105 °C (100 = 100 V)
DM	Can size (see Dimensions table)
5	Sleeve and sealing (5 = polyester sleeve w/epoxy end seal)
D	Terminal code / packaging (D = bulk; straight leads)

Note

 For lead (Pb)-free / RoHS compliant products add suffix "E3" to part number. Example: 672D336F100DM5DE3

ELECTRICA	L DATA AND OR	DERING INFORMATI	ON			
CAPACITANCE	PART NUMBER	NOMINAL CASE SIZE		. ESR 5 °C (Ω)	MAX. RIPPLE AT +85 °C (A)	MAX. IMPEDANCE
(μ F)		DXL	120 Hz	20 kHz	20 kHz TO 100 kHz	AT +25 °C (Ω) 100 kHz
		6.3 WV _{DC} AT 105	°C, SURGE =	9 V		
150.0	672D157F6RCD5D	0.394 x 0.630 [10.0 x 16.0]	1.10	0.70	0.50	0.60
220.0	672D227F6RCG5D	0.394 x 0.787 [10.0 x 20.0]	0.75	0.40	0.70	0.33
1000.0	672D108F6REK5D	0.630 x 0.984 [16.0 x 25.0]	0.16	0.09	2.05	0.085
1500.0	672D158F6RET5D	0.630 x 1.319 [16.0 x 33.5]	0.105	0.06	2.90	0.055
3300.0	672D338F6RFV5D	0.709 x 1.575 [18.0 x 40.0]	0.075	0.045	3.40	0.045
		12 WV _{DC} AT 105 °	C, SURGE = 1	16 V		
100.0	672D107F012CC5D	0.394 x 0.512 [10.0 x 13.0]	1.60	0.90	0.40	0.70
470.0	672D477F012DM5D	0.492 x 1.043 [12.5 x 26.5]	0.31	0.16	1.35	0.12
1000.0	672D108F012DS5D	0.492 x 1.673 [12.5 x 42.5]	0.15	0.08	2.35	0.06
2200.0	672D228F012FV5D	0.709 x 1.575[18.0 x 40.0]	0.08	0.05	3.30	0.05
		15 WV _{DC} AT 105 °	C, SURGE = 2	20 V		
100.0	672D107F015CD5D	0.394 x 0.630 [10.0 x 16.0]	1.35	0.70	0.50	0.50
470.0	672D477F015DT5D	0.492 x 1.319 [12.5 x 35.5]	0.25	0.12	1.75	0.11
1000.0	672D108F015ET5D	0.630 x 1.319 [16.0 x 33.5]	0.12	0.06	2.90	0.055
		20 WV _{DC} AT 105 °	C, SURGE = 3	30 V		
100.0	672D107F020CG5D	0.394 x 0.787 [10.0 x 20.0]	1.25	0.40	0.70	0.35
470.0	672D477F020EK5D	0.630 x 0.984 [16.0 x 25.0]	0.24	0.09	2.00	0.085
1000.0	672D158F020FV5D	0.709 x 1.575 [18.0 x 40.0]	0.09	0.05	3.25	0.05

[•] Positive leader is standard. Negative leader is available by special order.

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		DERING INFORMATI	~	FOR	MAY DIDDLE	MAN
CAPACITANCE	PART NUMBER	NOMINAL CASE SIZE		. ESR 5 °C (Ω)	MAX. RIPPLE AT +85 °C (A)	MAX. IMPEDANCE
(μ F)	PART NUMBER	DxL	120 Hz	20 kHz	20 kHz TO 100 kHz	AT +25 °C (Ω) 100 kHz
'		25 WV _{DC} AT 105 °	C, SURGE = 3	35 V	•	
47.0	672D476F025CC5D	0.394 x 0.512 [10.0 x 13.0]	2.35	0.90	0.40	0.85
330.0	672D337F025DT5D	0.492 x 1.319 [12.5 x 33.5]	0.29	0.12	1.75	0.10
470.0	672D477F025DS5D	0.492 x 1.673 [12.5 x 42.5]	0.22	0.08	2.35	0.07
1200.0	672D128F025FV5D	0.709 x 1.575 [18.0 x 40.0]	0.10	0.05	3.20	0.055
		40 WV _{DC} AT 105 °	C, SURGE =	55 V		
220.0	672D227F040EK5D	0.630 x 0.984 [16.0 x 25.0]	0.48	0.14	1.65	0.12
330.0	672D337F040ET5D	0.630 x 1.319 [16.0 x 33.5]	0.32	0.12	2.25	0.08
		50 WV _{DC} AT 105 °	C, SURGE = 7	75 V		
100.0	672D107F050DT5D	0.492 x 1.319 [12.5 x 33.5]	0.80	0.26	1.15	0.22
150.0	672D157F050EK5D	0.630 x 0.984[16.0 x 25.0]	0.55	0.22	1.30	0.18
220.0	672D227F050ET5D	0.630 x 1.319 [16.0 x 33.5]	0.40	0.15	1.85	0.12
470.0	672D477F050FV5D	0.709 x 1.575 [18.0 x 40.0]	0.25	0.09	2.40	0.095
		60 WV _{DC} AT 105 °	C, SURGE = 8	35 V		
15.0	672D156F060CD5D	0.394 x 0.512 [10.0 x 13.0]	7.00	2.00	0.28	1.70
22.0	672D226F060CG5D	0.394 x 0.787 [10.0 x 20.0]	4.60	1.20	0.40	1.00
100.0	672D107F060EK5D	0.630 x 0.984 [16.0 x 25.0]	0.90	0.28	1.20	0.24
150.0	672D157F060ET5D	0.630 x 1.319 [16.0 x 33.5]	0.60	0.18	1.65	0.15
		75 WV _{DC} AT 105 °C	C, SURGE = 1	00 V		
12.0	672D126F075CD5D	0.394 x 0.512 [10.0 x 13.0]	8.50	2.20	0.26	1.75
120.0	672D127F075ET5D	0.630 x 1.319 [16.0 x 33.5]	0.68	0.18	1.50	0.16
		100 WV _{DC} AT 105 °	C, SURGE =	125 V		
10.0	672D106F100CD5D	0.394 x 0.630 [10.0 x 16.0]	10.00	2.30	0.26	1.80
33.0	672D336F100DM5D	0.492 x 1.043 [12.5 x 26.5]	2.55	0.55	0.72	0.39
120.0	672D127F100ET5D	0.630 x 1.319 [16.0 x 33.5]	0.68	0.19	1.50	0.17
•		200 WV _{DC} AT 105 °	C, SURGE = 2	250 V		
4.7	672D475F200CG5D	0.394 x 0.787 [10.0 x 20.0]	22.50	1.95	0.31	1.75
15.0	672D156F200DT5D	0.492 x 1.319 [12.5 x 33.5]	7.00	0.58	0.76	0.55
47.0	672D476F200FV5D	0.709 x 1.575 [18.0 x 40.0]	2.30	0.18	1.90	0.165
•		250 WV _{DC} AT 105 °	C, SURGE = 3	300 V		
10.0	672D106F250DT5D	0.492 x 1.319 [12.5 x 33.5]	12.00	1.50	0.48	1.60

ELECTRICAL DATA AND ORDE	RING INFORMATION - Original rating	gs
CAPACITANCE (μF)	CASE CODE	PART NUMBER
	$6.3 \text{ WV}_{DC} \text{ AT } 105 ^{\circ}\text{C}, \text{ SURGE} = 9 \text{V}$	
150.0	CD	672D157H6R3CD5C
220.0	CG	672D227H6R3CG5C
680.0	DM	672D687H6R3DM5C
1000.0	EK	672D108H6R3EK5C
1200.0	DS	672D158H6R3ET5C
3300.0	FV	672D338H6R3FV5C
	7.5 WV _{DC} AT 105 °C, SURGE = 10 V	
100.0	CC	672D107H7R5CC5C
150.0	CD	672D157H7R5CD5C
680.0	DT	672D687H7R5DT5C
1000.0	ET	672D108H7R5ET5C
2700.0	FV	672D278H7R5FV5C

Capacitance tolerance code H, -10 %, +100 %; lead code C, cut leads. C lead = negative lead: 0.281" [7.1 mm], ± 0.062" [1.6 mm]; positive lead: 0375" [9.5 mm], ± 0.062" [1.6 mm]. D lead = 1.0" [25.4 mm] minimum.



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CAPACITANCE (µF)	CASE CODE	PART NUMBER
CAPACITANCE (µF)	12 WV _{DC} AT 105 °C, SURGE = 16 V	PART NUMBER
100.0	CC	672D107H012CC5C
150.0	CG	672D157H012CG5C
470.0	DM	672D477H012CG5C
680.0	DT	672D687H012DT5C
1000.0 2200.0	DS FV	672D108H012DS5C 672D228H012FV5C
2200.0		672D226H012FV3C
100.0	15 WV _{DC} AT 105 °C, SURGE = 20 V	672D107H015CD5C
100.0 150.0	CG	672D157H015CD5C
470.0	DT	672D477H015DT5C
680.0	EK	672D687H015EK5C
820.0	DS	672D827H015DS5C
1000.0	ET	672D108H015ET5C
1800.0	FV	672D188H015FV5C
00.0	20 WV _{DC} AT 105 °C, SURGE = 30 V	0700000110000
68.0	CD	672D868H020CD5C
100.0	CG	672D107H020CG5C
330.0	DM	672D337H020DM5C
470.0	EK	672D477H020EK5C
560.0	DS	672D567H020DS5C
680.0	ET	672D687H020ET5C
1500.0	FV	672D158H020FV5C
	25 WV _{DC} AT 105 °C, SURGE = 35 V	
47.0	CC	672D476H025CC5C
68.0	CD	672D686H025CD5C
330.0	DT	672D337H025DT5C
470.0	DS	672D477H025DS5C
680.0	EU	672D687H025EU5C
1200.0	FV	672D128H025FV5C
	40 WV _{DC} AT 105 °C, SURGE = 55 V	
47.0	CD	672D476H040CD5C
220.0	EK	672D227H040EK5C
330.0	ET	672D337H040ET5C
390.0	DS	672D397H040DS5C
820.0	FV	672D827H040FV5C
	50 WV _{DC} AT 105 °C, SURGE = 75 V	
22.0	CD	672D226H050CD5C
100.0	DT	672D107H050DT5C
150.0	EK	672D157H050EK5C
180.0	DS	672D187H050DS5C
220.0	ET	672D227H050ET5C
470.0	FV	672D477H050FV5C
	60 WV _{DC} AT 105 °C, SURGE = 85 V	
15.0	CD CD	672D156H060CD5C
22.0	CG	672D226H060CG5C
68.0	DM	672D686H060DM5C
100.0	EK EK	672D107H060EK5C
120.0	DS	672D127H060DS5C
150.0	ET	672D157H060ET5C
100.0	LI	012D13111000E130

[•] Capacitance tolerance code H, -10 %, +100 %; lead code C, cut leads. C lead = negative lead: 0.281" [7.1 mm], ± 0.062" [1.6 mm]; positive lead: 0375" [9.5 mm], ± 0.062" [1.6 mm]. D lead = 1.0" [25.4 mm] minimum.



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CAPACITANCE (μF)	CASE CODE	PART NUMBER
CAPACITANCE (µF)	75 WV _{DC} AT 105 °C, SURGE = 100 V	FART NUMBER
12.0	CD	672D126H075CD50
18.0	CG	672D186H075CG50
82.0	EK	672D826H075EK50
120.0	ET	672D127H075ET5C
270.0	FV	672D277H075FV5C
270.0	100 WV _{DC} AT 105 °C, SURGE = 125 V	0.252.7710701.400
8.2	CC	672D825H100CC50
10.0	CD	672D106H100CD50
33.0	DM	672D336H100DM50
68.0	EK	672D686H100EK50
120.0	ET	672D127H100ET50
180.0	FV	672D187H100FV50
-	150 WV _{DC} AT 105 °C, SURGE = 200 V	-
6.8	CG	672D685H150CG50
22.0	DT	672D226H150DT50
39.0	ET	672D396H150ET50
68.0	FV	672D686H150FV50
·	200 WV _{DC} AT 105 °C, SURGE = 250 V	·
4.7	CG	672D475H200CG50
15.0	DT	672D156H200DT50
27.0	ET	672D276H200ET50
47.0	FV	672D476H200FV50
	250 WV _{DC} AT 105 °C, SURGE = 300 V	
8.2	DM	672D825H250DM50
10.0	DT	672D106H250DT50
22.0	ET	672D226H250ET50
39.0	FV	672D396H250FV5C

Capacitance tolerance code H, -10 %, +100 %; lead code C, cut leads. C lead = negative lead: 0.281" [7.1 mm], ± 0.062" [1.6 mm]; positive lead: 0375" [9.5 mm], ± 0.062" [1.6 mm]. D lead = 1.0" [25.4 mm] minimum.



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