

## Long-life grade capacitors

### Applications

- High reliability equipment in industrial and automotive electronics

### Features

- High reliability and long useful life
- High ripple current capability

### Construction

- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on the insulating sleeve
- Stand off rubber seal
- Case with safety vent from diameter 6,3 mm

### Delivery mode

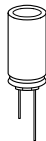
Special terminal configurations and packing:

- Bulk
- Taped, Ammo pack
- Cut
- Kinked
- PAPR (protection against polarity reversal)

Refer to page 503 for further details and ordering example.



KAL0707-F



**B41857 / B43857**

**High Reliability – 105 °C**

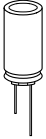
**Specifications and characteristics in brief**

Type	B41857	B43857
Rated voltage $U_R$	10 ... 100 VDC	160 ... 450 VDC
Surge voltage $U_S$	$1,15 \cdot U_R$	$1,1 \cdot U_R$
Rated capacitance $C_R$	0,47 ... 4 700 $\mu$ F	0,47 ... 220 $\mu$ F
Capacitance tolerance	$\pm 20 \% \triangleq M$	$\pm 20 \% \triangleq M$
Useful life		
105 °C; $U_R$ ; $I_{-R}$	<ul style="list-style-type: none"> <li>&gt; 2 000 h for <math>d \leq 6,3</math> mm</li> <li>&gt; 3 000 h for <math>d = 8</math> mm</li> <li>&gt; 5 000 h for <math>d \geq 10</math> mm</li> </ul>	
40 °C; $U_R$ ; $I_{-R}$	<ul style="list-style-type: none"> <li>&gt; 200 000 h for <math>d \leq 6,3</math> mm</li> <li>&gt; 250 000 h for <math>d = 8</math> mm</li> <li>&gt; 350 000 h for <math>d \geq 10</math> mm</li> </ul>	
Requirements:	$\Delta C/C \leq \pm 50 \%$ of initial value $\tan \delta \leq 3$ times initial specified limit $I_L \leq$ initial specified limit Failure percentage: $\leq 1 \%$ Failure rate: $\leq 50$ fit ( $\leq 50 \cdot 10^{-9}/h$ ) (for definiton "fit", refer to chapter "Quality", page 62)	
Voltage endurance test		
105 °C; $U_R$	<ul style="list-style-type: none"> <li>2 000 h for <math>d \leq 6,3</math> mm</li> <li>3 000 h for <math>d = 8</math> mm</li> <li>5 000 h for <math>d \geq 10</math> mm</li> </ul>	
Post test requirements:	$\Delta C/C \leq \pm 30 \%$ of initial value $\tan \delta \leq 2$ times initial specified limit $I_L \leq$ initial specified limit	
Vibration resistance	To IEC 60068-2-6, test Fc: displacement amplitude 0,75 mm, frequency range 10 ... 2000 Hz, acceleration max. 10 g, duration $3 \times 2$ h	
IEC climatic category	To IEC 60068-1: $U_R \leq 250$ VDC: 40/105/56 (– 40 °C/+ 105 °C/56 days damp heat test) $U_R \geq 350$ VDC: 25/105/56 (– 25 °C/+ 105 °C/56 days damp heat test)	
Sectional specification	IEC 60384-4	


**Dimensional drawings**

**Dimensions and weight**

Dimensions (mm)				Approx. weight
$d \times l$	$d_{\max} \times l_{\max}$	$a \pm 0,5$	$b$	g
5 × 11	5,5 × 12	2,0	0,50 ± 0,05	0,5
6,3 × 11	6,8 × 12	2,5	0,50 ± 0,05	0,7
8 × 11	8,5 × 12	3,5	0,60 ± 0,05	1,0
10 × 12,5	10,5 × 13,5	5,0	0,60 ± 0,05	1,6
10 × 16	10,5 × 17	5,0	0,60 ± 0,05	1,9
10 × 20	10,5 × 22	5,0	0,60 ± 0,05	2,6
12,5 × 25	13 × 27	5,0	0,60 ± 0,05	4,5
16 × 20	16,5 × 22	7,5	0,80 ± 0,05	5,5
16 × 25	16,5 × 27	7,5	0,80 ± 0,05	7,5
16 × 31,5	16,5 × 33,5	7,5	0,80 ± 0,05	7,8
18 × 31,5	18,5 × 32,5	7,5	0,80 ± 0,1	11
18 × 35	18,5 × 36	7,5	0,80 ± 0,1	13
18 × 40	18,5 × 41	7,5	0,80 ± 0,1	16



**B41857 / B43857**

**High Reliability – 105 °C**

**Overview of available types**

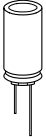
**B41857**

$U_R$ (VDC)	10	16	25	35	50	63	100
$C_R$ (μF)	Case dimensions $d \times l$ (mm)						
0,47					5 × 11		5 × 11
1					5 × 11		5 × 11
2,2					5 × 11		5 × 11
3,3					5 × 11		5 × 11
4,7					5 × 11		5 × 11
10					5 × 11	6,3 × 11	8 × 11
22					6,3 × 11	6,3 × 11	10 × 12,5
33				5 × 11	6,3 × 11	8 × 11	10 × 16
47			5 × 11	6,3 × 11	8 × 11	8 × 11	10 × 20
100	5 × 11	6,3 × 11	6,3 × 11	8 × 11	10 × 12,5	10 × 12,5	12,5 × 25
220	6,3 × 11	8 × 11	10 × 12,5	10 × 12,5	10 × 20	10 × 20	16 × 25
330	8 × 11	10 × 12,5	10 × 12,5	10 × 16	10 × 20	12,5 × 25	16 × 31,5
470	10 × 12,5	10 × 16	10 × 20	10 × 20	12,5 × 25	16 × 20	16 × 31,5
1 000	10 × 16	10 × 20	12,5 × 25	16 × 20	16 × 31,5	18 × 31,5	
2 200	12,5 × 25	16 × 20	16 × 25	16 × 31,5	18 × 40		
3 300	16 × 20	16 × 25	16 × 31,5	18 × 35			
4 700	16 × 25	16 × 31,5	18 × 35				

**B43857**

$U_R$ (VDC)	160	200	250	350	450
$C_R$ (μF)	Case dimensions $d \times l$ (mm)				
0,47	6,3 × 11	6,3 × 11	6,3 × 11	8 × 11	
1	6,3 × 11	6,3 × 11	8 × 11	8 × 11	10 × 12,5
2,2	8 × 11	8 × 11	8 × 11	10 × 12,5	10 × 16
3,3	10 × 12,5	10 × 12,5	10 × 16	10 × 16	10 × 20
4,7	10 × 12,5	10 × 12,5	10 × 16	10 × 20	12,5 × 25
10	10 × 16	10 × 16	10 × 20	10 × 20	16 × 25
22	10 × 20	10 × 20	16 × 20	16 × 25	16 × 31,5
33	10 × 20	12,5 × 25	16 × 25	16 × 31,5	18 × 35
47	12,5 × 25	16 × 20	16 × 31,5	16 × 31,5	18 × 40
100	16 × 25	16 × 31,5	18 × 35	18 × 40	
220	18 × 35	18 × 40			

Other voltage and capacitance ratings are also available upon request.


**Technical data and ordering codes**

$U_R$	$C_R$	Case dimensions	$I_L$	$\tan \delta_{\max}$	$ESR_{\max}$	$I_{\sim R}$	Ordering code <sup>1)</sup>
	120 Hz 20 °C	$d \times l$	5 min 20 °C	120 Hz 20 °C	120 Hz 20 °C	120 Hz 105 °C	
VDC	$\mu\text{F}$	mm	$\mu\text{A}$		$\Omega$	mA	

**B41857**

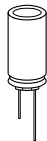
10	100	5 × 11	20	0,20	3,3	98	B41857A3107M00*
	220	6,3 × 11	32	0,20	1,5	167	B41857A3227M00*
	330	8 × 11	43	0,20	1,0	237	B41857A3337M00*
	470	10 × 12,5	57	0,20	0,71	333	B41857A3477M00*
	1 000	10 × 16	110	0,20	0,33	532	B41857A3108M00*
	2 200	12,5 × 25	230	0,22	0,17	1077	B41857A3228M00* <sup>2)</sup>
	3 300	16 × 20	340	0,24	0,12	1375	B41857A3338M00* <sup>2)</sup>
	4 700	16 × 25	480	0,26	0,09	1782	B41857A3478M00* <sup>2)</sup>
16	100	6,3 × 11	26	0,17	2,8	119	B41857A4107M00*
	220	8 × 11	45	0,17	1,3	204	B41857A4227M00*
	330	10 × 12,5	63	0,17	0,85	294	B41857A4337M00*
	470	10 × 16	85	0,17	0,60	385	B41857A4477M00*
	1 000	10 × 20	170	0,17	0,28	612	B41857A4108M00*
	2 200	16 × 20	362	0,19	0,14	1184	B41857A4228M00*
	3 300	16 × 25	538	0,21	0,11	1574	B41857A4338M00* <sup>2)</sup>
	4 700	16 × 31,5	762	0,23	0,08	2055	B41857A4478M00* <sup>2)</sup>
25	47	5 × 11	22	0,15	5,3	75	B41857A5476M00*
	100	6,3 × 11	35	0,15	2,5	126	B41857A5107M00*
	220	10 × 12,5	65	0,15	1,1	255	B41857A5227M00*
	330	10 × 12,5	93	0,15	0,75	312	B41857A5337M00*
	470	10 × 20	128	0,15	0,53	445	B41857A5477M00*
	1 000	12,5 × 25	260	0,15	0,25	812	B41857A5108M00*
	2 200	16 × 25	560	0,17	0,13	1363	B41857A5228M00*
	3 300	16 × 31,5	835	0,19	0,10	1814	B41857A5338M00*
4 700	18 × 35	1185	0,21	0,07	2440	B41857A5478M00*	

Preferred types

1) \* = "0" for bulk version.

For taping versions, other lead configurations and packing information see page 503.

2) Type available upon request

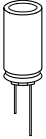

**B41857 / B43857**
**High Reliability – 105 °C**
**Technical data and ordering codes**

$U_R$	$C_R$	Case dimensions	$I_L$	$\tan \delta_{\max}$	$ESR_{\max}$	$I_{\sim R}$	Ordering code <sup>1)</sup>
VDC	120 Hz 20 °C $\mu\text{F}$	$d \times l$ mm	5 min 20 °C $\mu\text{A}$	120 Hz 20 °C	120 Hz 20 °C $\Omega$	120 Hz 105 °C mA	
35	33	5 × 11	22	0,12	6,0	67	B41857A7336M00*
	47	6,3 × 11	26	0,12	4,2	92	B41857A7476M00*
	100	8 × 11	45	0,12	2,0	156	B41857A7107M00*
	220	10 × 12,5	87	0,12	0,90	273	B41857A7227M00*
	330	10 × 16	126	0,12	0,60	366	B41857A7337M00*
	470	10 × 20	175	0,12	0,42	476	B41857A7477M00*
	1 000	16 × 20	360	0,12	0,20	905	B41857A7108M00*
	2 200	16 × 31,5	780	0,14	0,11	1584	B41857A7228M00*
	3 300	18 × 35	1165	0,16	0,08	2185	B41857A7338M00*
	50	0,47	5 × 11	10	0,10	353	8,0
1,0		5 × 11	11	0,10	166	12	B41857A6105M00*
2,2		5 × 11	11	0,10	75	17	B41857A6225M00*
3,3		5 × 11	12	0,10	50	21	B41857A6335M00*
4,7		5 × 11	12	0,10	35	25	B41857A6475M00*
10		5 × 11	15	0,10	17	37	B41857A6106M00*
22		6,3 × 11	21	0,10	7,5	63	B41857A6226M00*
33		6,3 × 11	27	0,10	5,0	77	B41857A6336M00*
47		8 × 11	34	0,10	3,5	107	B41857A6476M00*
100		10 × 12,5	60	0,10	1,7	184	B41857A6107M00*
220		10 × 20	120	0,10	0,75	326	B41857A6227M00*
330		10 × 20	175	0,10	0,50	399	B41857A6337M00*
470		12,5 × 25	245	0,10	0,35	595	B41857A6477M00*
1 000		16 × 31,5	510	0,10	0,17	1068	B41857A6108M00*
2 200		18 × 40	1110	0,12	0,09	1883	B41857A6228M00*

Preferred types

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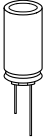

**Technical data and ordering codes**

$U_R$	$C_R$ 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	$I_L$ 5 min 20 °C μA	$\tan \delta_{\max}$ 120 Hz 20 °C	$ESR_{\max}$ 120 Hz 20 °C Ω	$I_{\sim R}$ 120 Hz 105 °C mA	Ordering code <sup>1)</sup>
63	10	6,3 × 11	16	0,10	17	44	B41857A8106M00*
	22	6,3 × 11	24	0,10	7,5	65	B41857A8226M00*
	33	8 × 11	31	0,10	5,0	93	B41857A8336M00*
	47	8 × 11	40	0,10	3,5	111	B41857A8476M00*
	100	10 × 12,5	73	0,10	1,7	191	B41857A8107M00*
	220	10 × 20	149	0,10	0,75	338	B41857A8227M00*
	330	12,5 × 25	218	0,10	0,50	517	B41857A8337M00*
	470	16 × 20	306	0,10	0,35	644	B41857A8477M00*
	1 000	18 × 31,5	640	0,10	0,17	1190	B41857A8108M00*
100	0,47	5 × 11	10	0,08	282	9,1	B41857A9474M00*
	1,0	5 × 11	11	0,08	133	13	B41857A9105M00*
	2,2	5 × 11	12	0,08	60	20	B41857A9225M00*
	3,3	5 × 11	13	0,08	40	24	B41857A9335M00*
	4,7	5 × 11	15	0,08	28	29	B41857A9475M00*
	10	8 × 11	20	0,08	13	56	B41857A9106M00*
	22	10 × 12,5	32	0,08	6,0	97	B41857A9226M00*
	33	10 × 16	43	0,08	4,0	130	B41857A9336M00*
	47	10 × 20	57	0,08	2,8	170	B41857A9476M00*
	100	12,5 × 25	110	0,08	1,3	310	B41857A9107M00*
	220	16 × 25	230	0,08	0,60	520	B41857A9227M00*
	330	16 × 31,5	340	0,08	0,40	692	B41857A9337M00*
	470	16 × 31,5	480	0,08	0,28	826	B41857A9477M00*

Preferred types

1) \* = "0" for bulk version.

For taping versions, other lead configurations and packing information see page 503.


**B41857 / B43857**
**High Reliability – 105 °C**
**Technical data and ordering codes**

$U_R$	$C_R$	Case dimensions	$I_L$	$\tan \delta_{\max}$	$ESR_{\max}$	$I_{\sim R}$	Ordering code <sup>1)</sup>
	120 Hz	$d \times l$	5 min	120 Hz	120 Hz	120 Hz	
VDC	20 °C	mm	20 °C	20 °C	20 °C	105 °C	
	$\mu F$		$\mu A$		$\Omega$	mA	

**B43857**

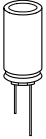
160	0,47	6,3 × 11	52	0,20	706	10	B43857A1474M00*
	1,0	6,3 × 11	55	0,20	332	15	B43857A1105M00*
	2,2	8 × 11	61	0,20	151	25	B43857A1225M00*
	3,3	10 × 12,5	66	0,20	101	36	B43857A1335M00*
	4,7	10 × 12,5	73	0,20	71	43	B43857A1475M00*
	10	10 × 16	98	0,20	33	69	B43857A1106M00*
	22	10 × 20	156	0,20	15	111	B43857A1226M00*
	33	10 × 20	208	0,20	10	136	B43857A1336M00*
	47	12,5 × 25	276	0,20	7,1	203	B43857A1476M00*
	100	16 × 25	530	0,20	3,3	336	B43857A1107M00*
	220	18 × 35	1106	0,20	1,5	609	B43857A1227M00*
200	0,47	6,3 × 11	53	0,20	706	10	B43857A2474M00*
	1,0	6,3 × 11	56	0,20	332	15	B43857A2105M00*
	2,2	8 × 11	63	0,20	151	25	B43857A2225M00*
	3,3	10 × 12,5	70	0,20	101	36	B43857A2335M00*
	4,7	10 × 12,5	78	0,20	71	43	B43857A2475M00*
	10	10 × 16	110	0,20	33	69	B43857A2106M00*
	22	10 × 20	182	0,20	15	111	B43857A2226M00*
	33	12,5 × 25	248	0,20	10	170	B43857A2336M00*
	47	16 × 20	332	0,20	7,1	212	B43857A2476M00*
		100	16 × 31,5	650	0,20	3,3	365
	220	18 × 40	1370	0,20	1,5	643	B43857A2227M00*

Preferred types

1) \* = "0" for bulk version.

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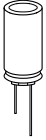


$U_R$	$C_R$ 120 Hz 20 °C $\mu\text{F}$	Case dimensions $d \times l$ mm	$I_L$ 5 min 20 °C $\mu\text{A}$	$\tan \delta_{\text{max}}$ 120 Hz 20 °C	$ESR_{\text{max}}$ 120 Hz 20 °C $\Omega$	$I_{-R}$ 120 Hz 105 °C mA	Ordering code 1)
250	0,47	6,3 × 11	54	0,20	706	10	B43857F2474M00*
	1,0	8 × 11	58	0,20	332	17	B43857F2105M00*
	2,2	8 × 11	67	0,20	151	25	B43857F2225M00*
	3,3	10 × 16	75	0,20	101	39	B43857F2335M00*
	4,7	10 × 16	85	0,20	71	47	B43857F2475M00*
	10	10 × 20	125	0,20	33	75	B43857F2106M00*
	22	16 × 20	215	0,20	15	145	B43857F2226M00*
	33	16 × 25	298	0,20	10	193	B43857F2336M00*
	47	16 × 31,5	403	0,20	7,1	250	B43857K2476M00*
100	18 × 35	800	0,20	3,3	411	B43857F2107M00*	
350	0,47	8 × 11	55	0,24	847	11	B43857A4474M00*
	1,0	8 × 11	61	0,24	398	16	B43857A4105M00*
	2,2	10 × 12,5	73	0,24	181	28	B43857A4225M00*
	3,3	10 × 16	85	0,24	121	38	B43857A4335M00*
	4,7	10 × 20	99	0,24	85	49	B43857A4475M00*
	10	10 × 20	155	0,24	40	72	B43857A4106M00*
	22	16 × 25	281	0,24	18	151	B43857A4226M00*
	33	16 × 31,5	397	0,24	12	201	B43857A4336M00*
	47	16 × 31,5	544	0,24	8,5	240	B43857A4476M00*
	100	18 × 40	1100	0,24	4,0	417	B43857A4107M00*
450	1,0	10 × 12,5	64	0,24	398	18	B43857A5105M00*
	2,2	10 × 16	80	0,24	181	30	B43857A5225M00*
	3,3	10 × 20	95	0,24	121	40	B43857A5335M00*
	4,7	12,5 × 25	113	0,24	85	60	B43857A5475M00*
	10	16 × 25	185	0,24	40	98	B43857A5106M00*
	22	16 × 31,5	347	0,24	18	159	B43857A5226M00*
	33	18 × 35	496	0,24	12	219	B43857A5336M00*
47	18 × 40	685	0,24	8,5	275	B43857A5476M00*	

Preferred types

1) \* = "0" for bulk version.

For taping versions, other lead configurations and packing information see page 503.

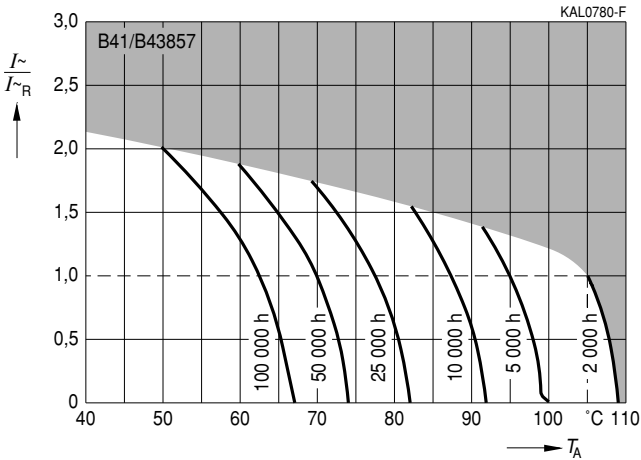


B41857 / B43857

High Reliability – 105 °C

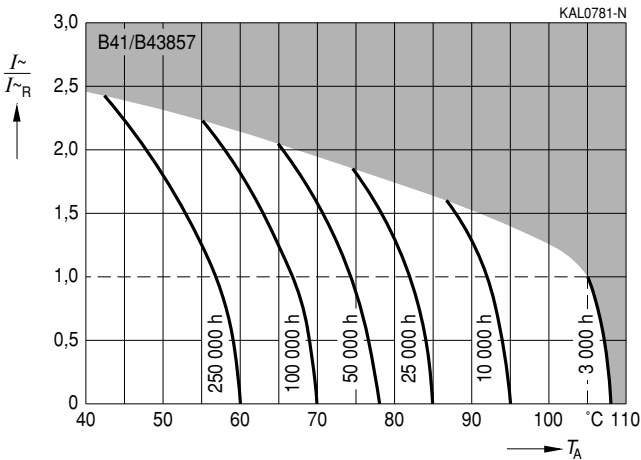
### Useful life

depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1)</sup>  
for diameter  $\leq 6,3$  mm



### Useful life

depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1)</sup>  
for diameter = 8 mm

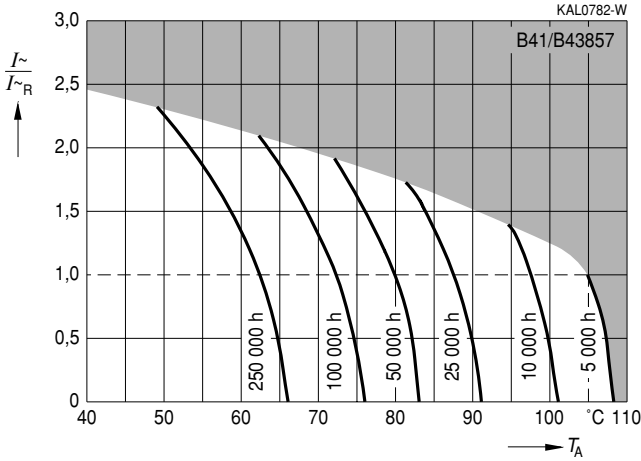


1) Refer to page 40 for an explanation on how to interpret the useful life graphs.

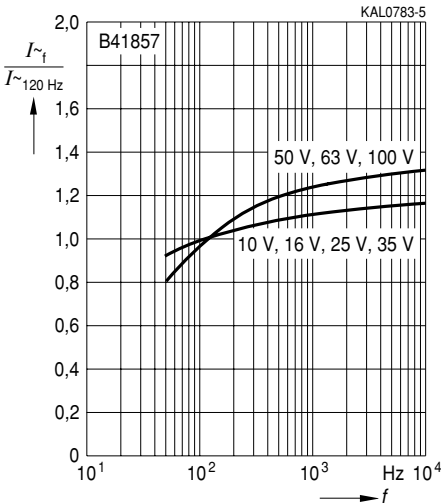


**Useful life**

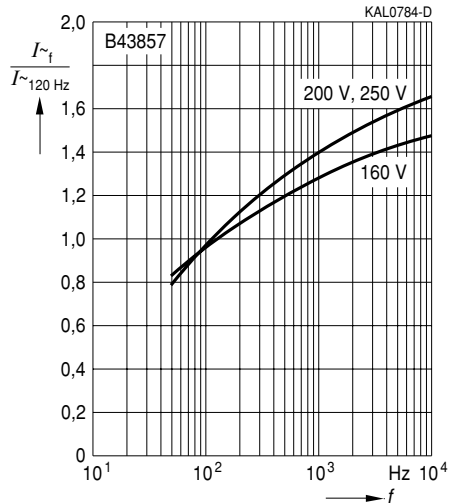
depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1)</sup>  
for diameter  $\geq 10$  mm



**Frequency factor of permissible ripple current  $I_{\sim}$  versus frequency  $f$**   
 $U_R \leq 100$  VDC



**Frequency factor of permissible ripple current  $I_{\sim}$  versus frequency  $f$**   
 $U_R \geq 160$  VDC



1) Refer to page 40 for an explanation on how to interpret the useful life graphs.

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