

CKE/ CKH

+105°C General Purpose Aluminum Electrolytic Capacitors



FEATURES

- Lead Free Leads
 - In Stock
- Standardized Case Sizes
 - Multiple Case Styles

SPECIFICATIONS

Capacitance Tolerance		±20% at 120Hz, 20°C													
Operating Temperature Range		-55°C to 105°C (6.3 to 100WVDC) -40°C to +105°C (160 to 400WVDC) -25°C to +105°C (450WVDC)													
Surge Voltage	WVDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	SVDC	7.9	13	20	32	44	63	79	125	200	250	300	400	450	500
Dissipation Factor 120Hz, 20°C	WVDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	tan δ	.24	.20	.17	.15	.12	.1	.1	.08	.15	.15	.15	.2	.2	.2
Note: For above D.F. specifications, add .02 for every 1,000 µF above 1,000 µF															
Leakage Current	WVDC	6.3 to 100 WVDC								160 to 450 WVDC					
	Time	1 minutes				2 minutes				2 minutes					
		.03 CV or 4 µA, whichever is greater				.01 CV or 3 µA, whichever is greater				0.03CV + 40µA					
Impedance Ratio (Max.) @120Hz	-25°C/20°C	4	3	2	2	2	2	2	2	3	3	3	6	6	15
	-40°C/20°C	10	8	6	4	3	3	3	3	4	4	4	10	10	-
Load Life	2,000 hours at 105°C with rated WVDC														
		Capacitance change						≤ 20% of initial measured value (6.3 to 16 WVDC)							
Shelf Life	1,000 hours at 105°C with no voltage applied.														
		Capacitance change						≤ 20% of initial measured value							
Ripple Current Multipliers		Frequency (Hz)						Temperature (°C)							
	Capacitance	50	120	400	1K	10K	100K	+105	+85	≤60					
	C≤10	0.8	1.0	1.3	1.45	1.65	1.7	1.0	1.4	1.75					
	10<C≤100	0.8	1.0	1.23	1.36	1.48	1.53	1.0	1.4	1.75					
	100<C≤1000	0.8	1.0	1.16	1.25	1.35	1.38	1.0	1.4	1.75					
C>1000	0.8	1.0	1.11	1.17	1.25	1.28	1.0	1.4	1.75						

SPECIAL ORDER OPTIONS

- Special tolerances: ±10% (K), -10% + 30%
- Epoxy end sealed
- Ammo Pack
- Mylar sleeve
- Cut, Formed, Cut and Formed Leads

PHYSICAL DIMENSIONS

WVDC (V) (μF)	6.3 (7.9)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	200 (250)	250 (300)	350 (400)	400 (450)	450 (500)
.1						5x11								
.15						5x11								
.22						5x11								
.33						5x11								
.47						5x11		5x11			6.3x11			
.68						5x11								
1.0						5x11		5x11			6.3x11	6.3x11	8x11.5	10x12.5
1.5						5x11								
2.2						5x11		5x11			6.3x11	6.3x11	8x11.5	10x12.5 10x20 8x11.5
3.3						5x11		5x11		6.3x11	6.3x11 8x11.5	8x11.5	10x12.5 8x11.5	10x13 12.5x20
4.7								5x11	6.3x11	6.3x11	10x12.5 6.3x11 8x11.5	10x12.5 8x11.5	10x12.5 10x16	10x12.5 10x20 12.5x20
6.8						5x11	5x11	6.3x11			10x16			
10						5x11	5x11	5x11 6.3x11	8x11.5	10x12.5 8x11.5	10x12.5 10x16	10x16 10x20	10x16 10x20	10x21 12.5x20
15						5x11	6.3x11	8x11.5	10x16		10x20			
22						5x11	5x11 6.3x11	6.3x11 8x11.5	10x12.5 10x16	10x16 10x20	10x20 12.5x20	12.5x20	12.5x25	13x26 16x25 16x31.5
33						5x11	6.3x11	10x12.5 8x11.5	10x16 10x20	10x20	12.5x20	12.5x25	16x25 16x31.5	16x25 18x35.5
47				5x11	5x11	6.3x11	6.3x11 8x11.5	10x12.5 10x16 8x11.5	10x20 12.5x20	12.5x20	12.5x20 13.5x21	16x25 16x35.5	16x25 16x31.5	16x31.5
68			5x11	6.3x11		8x11.5	10x12.5	10x16		16x25	16x31.5			
100			5x11	5x11	6.3x11	8x11.5	10x12.5 8x11.5	10x16 10x20	12.5x25	16x25	16x25 16x31.5	18x35.5 18x40	18x35.5	
150		6.3x11		8x11.5	10x12.5	10x16	10x20	12.5x20		16x31	16x35.5			
220		5x11	6.3x11	6.3x11	8x11.5	10x12.5 10x16	10x16 10x20	12.5x20 12.5x25 16x25	16x31.5 16x35.5	16x35.5	18x35.5			
330		6.3x11	6.3x11	8x11.5	10x12.5	10x16 10x20	10x20 12.5x20	12.5x25 16x25	18x35.5	18x40				
470		6.3x11	10x12.5 8x11.5	10x12.5	10x16	10x20 12.5x20	12.5x20 12.5x25	16x25 16x31.5						
680	10x12.5		10x16		12.5x20	12.5x25	16x25							
1000	8x11.5	10x12.5	10x12.5 10x16 10x20	10x16 10x20	12.5x20	12.5x25 16x25	16x25 16x31.5	18x35.5 18x40						

Convert to inches, divide by 25.4.

DxL(mm)

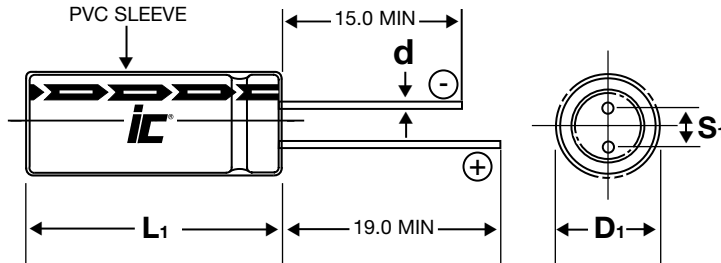
PHYSICAL DIMENSIONS

WVDC (SV) / (μF)	6.3 (7.9)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	200 (250)	250 (300)	350 (400)	400 (450)	450 (500)
1500	10x20	→	12.5x20	12.5x25	16x25	18x31.5								
2200	10x16	10x16 10x20	10x21 12.5x20 12.5x25	12.5x25 16x25	16x25 16x31.5	16x31.5 16x35.5 18x35.5	18x35.5							
3300	10x20	12.5x20	12.5x25 16x25	16x25 16x31.5	16x31.5	16x35.5 18x35.5	18x35.5							
4700	12.5x20	12.5x25 16x25	16x25 16x31.5	16x25 16x31.5	16x35.5 18x35.5	18x31.5								
6800	12.5x25	16x25	16x25 16x31.5	16x35.5 18x35.5	18x40									
10000	16x25 16x31.5	16x31.5 18x35.5	16x35.5 18x31.5	18x40										
15000	16x31.5 16x35.5	16x35.5 18x35.5	18x40											
22000	18x35.5 18x40	18x40												

Convert to inches, divide by 25.4.

DxL(mm)

Aluminum Electrolytic



D	5.0	6.3	8.0	10.0	12.5	16.0	18.0
S	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
B	0.5	0.5	0.5	0.5	0.8	0.5	0.5

L₁=L + 1.5 mm Max.

D₁=D+B Max.

S₁=S±0.5 mm

NOTE: Case Vent is standard on all diameter ≥8.0mm

STANDARD PART LISTING

Capacitance (µF)	WVDC	IC PART NUMBER	Maximum ESR	Maximum RMS	Dimensions DxL (mm)
			Ω 120Hz,+20°C	Ripple Current (mA) 120Hz,+105°C	
0.1	50	104CKH050M	1657.8640	5	5x11
0.15	50	154CKH050M	1105.2427	5	5x11
0.22	50	224CKH050M	753.5745	7	5x11
0.33	50	334CKH050M	502.3830	8	5x11
0.47	50	474CKH050M	352.7370	10	5x11
0.47	100	474CKH100M	282.1896	10	5x11
0.47	250	474CKH250M	529.1055	11	6.3x11
0.68	50	684CKH050M	243.8035	10	5x11
1	50	105CKH050M	165.7864	13	5x11
1	100	105CKE100M	132.6291	16	5x11
1	250	105CKE250M	248.6796	16	6.3x11
1	350	105CKE350M	331.5728	16	6.3x11
1	400	105CKE400M	331.5728	16	8x11.5
1	450	105CKE450M	331.5728	17	10x12.5
1.5	50	155CKH050M	110.5243	15	5x11
2.2	50	225CKH050M	75.3575	20	5x11
2.2	100	225CKE100M	60.2860	24	5x11
2.2	250	225CKH250M	113.0362	24	6.3x11
2.2	350	225CKE350M	150.7149	21	6.3x11
2.2	400	225CKE400M	150.7149	26	8x11.5
2.2	450	225CKE450M	150.7149	31	10x12.5
2.2	450	225CKH450M	150.7149	31	10x20
2.2	450	225CKE450MJM	150.7149	20	8x11.5
3.3	50	335CKE050M	50.2383	27	5x11
3.3	100	335CKE100M	40.1906	30	5x11
3.3	200	335CKE200M	75.3575	26	6.3x11
3.3	250	335CKE250MGM	75.3575	28	6.3x11
3.3	250	335CKE250M	75.3575	33	8x11.5
3.3	350	335CKE350MJM	100.4766	30	8x11.5
3.3	400	335CKE400M	100.4766	32	10x12.5
3.3	400	335CKE400MJM	100.4766	34	8x11.5
3.3	450	335CKE450MLM	100.4766	28	10x12.5
3.3	450	335CKE450MLM	100.4766	28	10x13
3.3	450	335CKE450M	100.4766	41	12.5x20
4.7	100	475CKE100M	28.2190	35	5x11
4.7	160	475CKE160M	52.9106	29	6.3x11
4.7	200	475CKE200M	52.9106	35	6.3x11
4.7	250	475CKH250M	52.9106	36	10x12.5
4.7	250	475CKE250MGM	52.9106	35	6.3x11
4.7	250	475CKE250M	52.9106	39	8x11.5
4.7	350	475CKE350M	70.5474	37	10x12.5
4.7	350	475CKE350MJM	70.5474	39	8x11.5
4.7	400	475CKE400MLN	70.5474	42	10x12.5
4.7	400	475CKE400M	70.5474	42	10x16
4.7	450	475CKE450MLN	70.5474	32	10x12.5

Capacitance (µF)	WVDC	IC PART NUMBER	Maximum ESR	Maximum RMS	Dimensions DxL (mm)
			Ω 120Hz,+20°C	Ripple Current (mA) 120Hz,+105°C	
4.7	450	475CKE450M	70.5474	43	10x20
4.7	450	475CKH450M	70.5474	49	12.5x20
6.8	50	685CKH050M	24.3804	40	5x11
6.8	63	685CKH063M	24.3804	42	5x11
6.8	100	685CKH100M	19.5043	52	6.3x11
6.8	250	685CKH250M	36.5705	65	10x16
10	50	106CKH050M	16.5786	46	5x11
10	63	106CKE063M	16.5786	46	5x11
10	100	106CKE100MEM	13.2629	50	5x11
10	100	106CKH100M	13.2629	55	6.3x11
10	160	106CKE160M	24.8680	49	8x11.5
10	200	106CKE200M	24.8680	60	10x12.5
10	200	106CKE200MJM	24.8680	57	8x11.5
10	250	106CKE250MLN	24.8680	71	10x12.5
10	250	106CKH250M	24.8680	70	10x16
10	350	106CKE350MLQ	33.1573	64	10x16
10	350	106CKE350M	33.1573	65	10x20
10	400	106CKE400MLQ	33.1573	64	10x16
10	400	106CKE400M	33.1573	73	10x20
10	450	106CKE450MLU	33.1573	27	10x21
10	450	106CKE450M	33.1573	65	12.5x20
15	50	156CKH050M	11.0524	58	5x11
15	63	156CKH063M	11.0524	65	6.3x11
15	100	156CKH100M	8.8419	80	8x11.5
15	160	156CKH160M	16.5786	80	10x16
15	250	156CKH250M	16.5786	90	10x20
22	50	226CKH050M	7.5357	68	5x11
22	63	226CKE063M	7.5357	70	5x11
22	63	226CKH063M	7.5357	70	6.3x11
22	100	226CKE100M	6.0286	85	6.3x11
22	100	226CKH100M	6.0286	96	8x11.5
22	160	226CKE160MLN	11.3036	92	10x12.5
22	160	226CKE160M	11.3036	85	10x16
22	200	226CKE200MLQ	11.3036	105	10x16
22	200	226CKH200M	11.3036	95	10x20
22	250	226CKE250MLU	11.3036	105	10x20
22	250	226CKE250M	11.3036	130	12.5x20
22	350	226CKE350MNU	15.0715	105	12.5x20
22	400	226CKE400M	15.0715	120	12.5x25
22	450	226CKE450MNV	15.0715	100	13x26
22	450	226CKE450M	15.0715	130	16x25
22	450	226CKH450M	15.0715	130	16x31.5
33	50	336CKE050M	5.0238	85	5x11
33	63	336CKE063M	5.0238	95	6.3x11
33	100	336CKH100M	4.0191	140	10x12.5

STANDARD PART LISTING

Capacitance (µF)	WVDC	IC [®] PART NUMBER	Maximum ESR Ω 120Hz,+20°C	Maximum RMS Ripple Current (mA) 120Hz,+105°C	Dimensions DxL (mm)
33	100	336CKE100M	4.0191	120	8x11.5
33	160	336CKE160MLQ	7.5357	125	10x16
33	160	336CKE160M	7.5357	120	10x20
33	200	336CKE200MLU	7.5357	140	10x20
33	250	336CKE250M	7.5357	150	12.5x20
33	350	336CKE350MNV	10.0477	170	12.5x25
33	400	336CKE400M	10.0477	160	16x25
33	400	336CKH400M	10.0477	160	16x31.5
33	450	336CKE450MQV	10.0477	33	16x25
33	450	336CKE450M	10.0477	170	18x35.5
47	25	476CKH025M	5.2911	80	5x11
47	35	476CKE035M	4.2328	90	5x11
47	50	476CKE050M	3.5274	110	6.3x11
47	63	476CKE063M	3.5274	110	6.3x11
47	63	476CKH063M	3.5274	135	8x11.5
47	100	476CKE100M	2.8219	160	10x12.5
47	100	476CKH100M	2.8219	180	10x16
47	100	476CKE100MJM	2.8219	140	8x11.5
47	160	476CKE160MLU	5.2911	150	10x20
47	160	476CKE160M	5.2911	160	12.5x20
47	200	476CKE200M	5.2911	170	12.5x20
47	250	476CKE250MNU	5.2911	190	12.5x20
47	250	476CKE250M	5.2911	200	12.5x25
47	250	476CKE250MNU	5.2911	190	13x21
47	350	476CKE350M	7.0547	190	16x25
47	350	476CKH350M	7.0547	190	16x35.5
47	400	476CKE400MQV	7.0547	200	16x25
47	400	476CKE400M	7.0547	210	16x31.5
47	450	476CKE450MQW	7.0547	155	16x31.5
68	16	686CKH016M	4.1447	95	5x11
68	25	686CKH025M	3.6571	105	6.3x11
68	50	686CKH050M	2.4380	165	8x11.5
68	63	686CKH063M	2.4380	190	10x12.5
68	100	686CKH100M	1.9504	255	10x16
68	200	686CKH200M	3.6571	235	16x25
68	250	686CKH250M	3.6571	255	16x31.5
100	16	107CKE016M	2.8184	110	5x11
100	25	107CKE025MEM	2.4868	125	5x11
100	35	107CKE035M	1.9894	150	6.3x11
100	50	107CKH050M	1.6579	180	8x11.5
100	63	107CKH063M	1.6579	210	10x12.5
100	63	107CKE063MJM	1.6579	200	8x11.5
100	100	107CKE100MLQ	1.3263	240	10x16
100	100	107CKE100M	1.3263	290	10x20
100	160	107CKE160M	2.4868	250	12.5x25

Capacitance (µF)	WVDC	IC [®] PART NUMBER	Maximum ESR Ω 120Hz,+20°C	Maximum RMS Ripple Current (mA) 120Hz,+105°C	Dimensions DxL (mm)
100	200	107CKE200M	2.4868	260	16x25
100	250	107CKE250MQV	2.4868	310	16x25
100	250	107CKE250M	2.4868	320	16x31.5
100	350	107CKE350MRY	3.3157	370	18x35.5
100	350	107CKE350M	3.3157	330	18x40
100	400	107CKE400M	3.3157	310	18x35.5
150	10	157CKH010M	2.2105	125	6.3x11
150	25	157CKH025M	1.6579	180	8x11.5
150	35	157CKH035M	1.3263	230	10x12.5
150	50	157CKH050M	1.1052	260	10x16
150	63	157CKH063M	1.1052	315	10x20
150	100	157CKH100M	0.8842	410	12.5x20
150	160	157CKH160M	1.6579	330	16x31.5
150	200	157CKH200M	1.6579	350	16x35.5
220	10	227CKE010M	1.5071	150	5x11
220	16	227CKE016M	1.2811	190	6.3x11
220	25	227CKE025MGM	1.1304	200	6.3x11
220	35	227CKE035M	0.9043	260	8x11.5
220	50	227CKE050M	0.7536	310	10x12.5
220	50	227CKH050M	0.7536	345	10x16
220	63	227CKE063M	0.7536	340	10x16
220	63	227CKH063M	0.7536	400	10x20
220	100	227CKE100MNU	0.6029	390	12.5x20
220	100	227CKE100M	0.6029	510	12.5x25
220	100	227CKH100M	0.6029	570	16x25
220	160	227CKE160MQW	1.1304	410	16x31.5
220	160	227CKE160M	1.1304	420	16x35.5
220	200	227CKE200M	1.1304	500	16x35.5
220	250	227CKE250M	1.1304	485	18x35.5
330	10	337CKE010M	1.0048	210	6.3x11
330	16	337CKE016MGM	0.8541	225	6.3x11
330	25	337CKE025M	0.7536	280	8x11.5
330	35	337CKE035M	0.6029	350	10x12.5
330	50	337CKE050M	0.5024	410	10x16
330	50	337CKH050M	0.5024	460	10x20
330	63	337CKE063M	0.5024	470	10x20
330	63	337CKH063M	0.5024	540	12.5x20
330	100	337CKE100M	0.4019	620	12.5x25
330	100	337CKH100M	0.4019	700	16x25
330	160	337CKE160M	0.7536	550	18x35.5
330	200	337CKE200M	0.7536	675	18x40
470	10	477CKE010M	0.7055	260	6.3x11
470	16	477CKH016M	0.5997	370	10x12.5
470	16	477CKE016M	0.5997	320	8x11.5
470	25	477CKE025M	0.5291	370	10x12.5

STANDARD PART LISTING

Capacitance (µF)	WVDC	IC [®] PART NUMBER	Maximum ESR Ω 120Hz,+20°C	Maximum RMS Ripple Current (mA) 120Hz,+105°C	Dimensions DxL (mm)
470	35	477CKE035M	0.4233	450	10x16
470	50	477CKE050M	0.3527	560	10x20
470	50	477CKH050M	0.3527	610	12.5x20
470	63	477CKE063M	0.3527	610	12.5x20
470	63	477CKH063M	0.3527	700	12.5x25
470	100	477CKE100M	0.2822	720	16x25
470	100	477CKH100M	0.2822	880	16x31.5
680	6.3	687CKH6R3M	0.5851	375	10x12.5
680	16	687CKH016M	0.4145	490	10x16
680	35	687CKH035M	0.2926	695	12.5x20
680	50	687CKH050M	0.2438	825	12.5x25
680	63	687CKH063M	0.2438	925	16x25
1000	6.3	108CKE6R3M	0.3979	390	8x11.5
1000	10	108CKE010M	0.3316	470	10x12.5
1000	16	108CKE016MLN	0.2818	500	10x12.5
1000	16	108CKE016M	0.2818	550	10x16
1000	16	108CKH016M	0.2818	640	10x20
1000	25	108CKE025MLQ	0.2487	610	10x16
1000	25	108CKE025M	0.2487	660	10x20
1000	35	108CKH035M	0.1989	820	12.5x20
1000	50	108CKE050M	0.1658	970	12.5x25
1000	50	108CKH050M	0.1658	1100	16x25
1000	63	108CKE063M	0.1658	940	16x25
1000	63	108CKH063M	0.1658	1210	16x31.5
1000	100	108CKE100MRY	0.1326	1000	18x35.5
1000	100	108CKE100M	0.1326	1410	18x40
1500	6.3	158CKH6R3M	0.2874	585	10x20
1500	16	158CKH016M	0.2100	800	12.5x20
1500	25	158CKH025M	0.1879	905	12.5x25
1500	35	158CKH035M	0.1547	1140	16x25
1500	50	158CKH050M	0.1326	1250	18x31.5
2200	6.3	228CKE6R3M	0.2110	660	10x16
2200	10	228CKE010MLQ	0.1809	705	10x16
2200	10	228CKE010M	0.1809	810	10x20
2200	16	228CKE016MLU	0.1583	710	10x21
2200	16	228CKE016M	0.1583	950	12.5x20
2200	16	228CKH016M	0.1583	1000	12.5x25
2200	25	228CKE025M	0.1432	1100	12.5x25
2200	25	228CKH025M	0.1432	1170	16x25
2200	35	228CKE035M	0.1206	1180	16x25
2200	35	228CKH035M	0.1206	1340	16x31.5
2200	50	228CKE050MQW	0.1055	1410	16x31.5
2200	50	228CKE050M	0.1055	1470	16x35.5
2200	50	228CKH050M	0.1055	1530	18x35.5

Capacitance (µF)	WVDC	IC [®] PART NUMBER	Maximum ESR Ω 120Hz,+20°C	Maximum RMS Ripple Current (mA) 120Hz,+105°C	Dimensions DxL (mm)
2200	63	228CKE063M	0.1055	1650	18x35.5
3300	6.3	338CKE6R3M	0.1507	880	10x20
3300	10	338CKE010M	0.1306	1040	12.5x20
3300	16	338CKH016M	0.1155	1220	12.5x25
3300	16	338CKH016M	0.1155	1300	16x25
3300	25	338CKE025M	0.1055	1240	16x25
3300	25	338CKH025M	0.1055	1460	16x31.5
3300	35	338CKE035MQW	0.0904	1500	16x31.5
3300	35	338CKE035M	0.0904	1560	16x35.5
3300	35	338CKH035M	0.0904	1650	18x35.5
3300	50	338CKE050M	0.0804	1780	18x35.5
4700	6.3	478CKE6R3M	0.0847	1090	12.5x20
4700	10	478CKE010M	0.0847	1280	12.5x25
4700	10	478CKH010M	0.0988	1410	16x25
4700	16	478CKE016M	0.0741	1310	16x25
4700	16	478CKH016M	0.0882	1600	16x31.5
4700	25	478CKE025MQV	0.0811	1570	16x25
4700	25	478CKE025M	0.0811	1530	16x31.5
4700	25	478CKH025M	0.0811	1780	18x31.5
4700	35	478CKE035MQY	0.0705	1780	16x35.5
4700	35	478CKE035M	0.0705	1830	18x35.5
6800	6.3	688CKE6R3M	0.0585	1350	12.5x25
6800	10	688CKE010M	0.0488	1390	16x25
6800	16	688CKE016MQV	0.0707	1600	16x25
6800	16	688CKE016M	0.0707	1630	16x31.5
6800	25	688CKE025MQY	0.0658	1850	16x35.5
6800	25	688CKE025M	0.0658	1880	18x35.5
6800	35	688CKE035M	0.0585	2000	18x40
10000	6.3	109CKE6R3M	0.0398	1450	16x25
10000	6.3	109CKH6R3M	0.0696	1790	16x31.5
10000	10	109CKE010MLQ	0.0630	1820	16x31.5
10000	10	109CKE010M	0.0630	1760	16x35.5
10000	10	109CKH010M	0.0630	1965	18x35.5
10000	16	109CKE016MQY	0.0580	1930	16x35.5
10000	16	109CKE016M	0.0580	1960	18x31.5
10000	25	109CKE025M	0.0547	2000	18x40
15000	6.3	159CKE6R3MQW	0.0575	1820	16x31.5
15000	6.3	159CKE6R3M	0.0575	1850	16x35.5
15000	10	159CKE010MQY	0.0531	2050	16x35.5
15000	10	159CKE010M	0.0531	2050	18x35.5
15000	16	159CKE016M	0.0497	2210	18x40
22000	6.3	229CKE6R3MRY	0.0497	2280	18x35.5
22000	6.3	229CKE6R3M	0.0497	2300	18x40
22000	10	229CKE010M	0.0467	2420	18x40