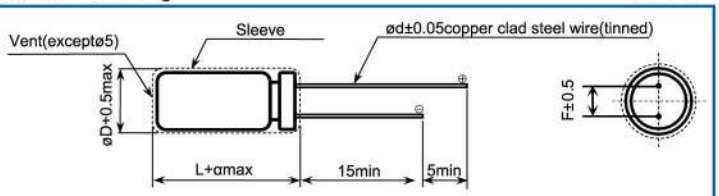
Koshin

KRH Miniature Aluminum Electrolytic Capacitors

105℃ Use, Long Life Capacitors, Series KRH.
Guarantees 5000 hours at 105℃ (Φ5 to 6.3: 3000hours)

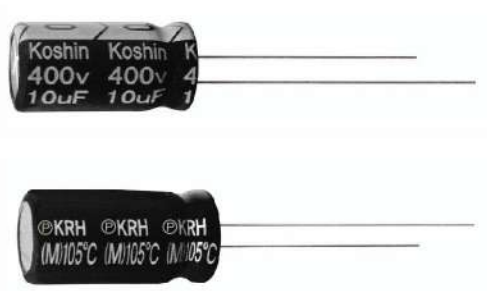
RoHS

Outline Drawing — Unit: mm



øD	5	6.3	8	10	12.5	16	18	22
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8/1.0
α	1.5			1.5 for L16 max. 2.0 for L20 min.				

Photo



Marking color: White print on black sleeve

Specifications

No.	Item	Performance										
1	Temperature range(℃)	-40 to +105(6.3V～100V)					-25 to +105(160V～450V)					
2	Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after one minutes)					Less than 0.03CV or 3 whichever is larger (after one minutes)					
		C: Rated Capacitance (μ F). V: Rated voltage (V) 20℃										
3	Capacitance tolerance (%)	±20(20℃,120Hz)										
4	Tangent of the loss angle (Tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160-250	350-450	20℃ 120Hz
		Tanδ(max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.15	
		0.02 is added to every 1000 μ F increase over 1000 μ F											
5	Low temperature characteristics	Rated voltage (V)		6.3	10	16	25	35	50	63	100	160-250	350-450	120Hz
		Impedance ratio(max)	$Z_{(-25℃)}/Z_{(+20℃)}$	4	3	2	2	2	2	2	2	3	3	
			$Z_{(-40℃)}/Z_{(+20℃)}$	8	6	4	3	3	3	3	3	8	-	
6	Endurance (105℃) (Applied ripple current)	Test time		Φ5 ~ Φ6.3:3000hours, D≥Φ8:5000hours										
		Leakage current		The initial specified value or less										
		Percentage of capacitance change		Within ±20% of initial value										
		Tangent of the loss angle		200% or less of the initial specified value										
7	Shelf life (105℃)	Test time		1000hours										
		Leakage current		The initial specified value or less										
		Percentage of capacitance change		Within ±20% of initial value										
		Tangent of the loss angle		200% or less of the initial specified value										
8	Applicable standards	JIS-C-5101-4(IEC60384)												

Coefficient of Frequency for Ripple Current

Frequency (Hz) / Capacitance (μ F)	120	400	1K	10K	100K
CAP ≤ 10	1.00	1.62	1.91	2.50	2.94
10<CAP ≤ 100	1.00	1.89	1.94	2.54	2.70
100<CAP	1.00	1.34	1.25	1.73	1.92

Coefficient of Temperature for Ripple Current

Temperature(℃)	65	85	105
Coefficient	2.00	1.65	1.00

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KRH Miniature Aluminum Electrolytic Capacitors

Dimension: ΦDXL(mm)
Ripple Current: mA/rms at 120Hz,105℃

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V.DC / Contents μF	6.3V		10V		16V		25V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
4.7							5X11	28
10					5X11	39	5X11	41
22	5X11	47	5X11	53	5X11	58	5X11	62
33	5X11	57	5X11	62	5X11	66	5X11	83
47	5X11	67	5X11	73	5X11	88	5X11	92
100	5X11	103	5X11	116	6.3X11	138	6.3X11	175
220	6.3X11	191	6.3X11	212	8X11.5	279	8X11.5	314
330	6.3X11	238	8X11.5	313	8X11.5	347	10X12.5	433
470	8X11.5	337	8X11.5	373	10X12.5	466	10X16	575
1000	10X12.5	564	10X16	698	10X20	825	12.5X20	1024
2200	12.5X20	1019	12.5X20	1105	12.5X25	1344	16X25	1639
3300	12.5X20	1287	12.5X25	1462	16X25	1755	16X31.5	1960
4700	16X25	1784	16X25	1885	16X31.5	2072	18X35.5	2530
6800	16X25	1964	16X31.5	2172	18X35.5	2743	22X40	3216
10000	16X31.5	2259	18X35.5	2610	18X40	3127		
15000	18X35.5	2752	18X40	2711	22X40	3757		
18000	18X40	3049	22X40	3132				
22000	22X40	3074						

V.DC / Contents μF	35V		50V		63V		100V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
0.1			5X11	1			5X11	4
0.22			5X11	3			5X11	6
0.33			5X11	4			5X11	7
0.47			5X11	8			5X11	9
1			5X11	14			5X11	18
2.2			5X11	22			5X11	23
3.3			5X11	33			5X11	37
4.7	5X11	30	5X11	41	5X11	44	5X11	44
10	5X11	44	5X11	59	5X11	65	6.3X11	67
22	5X11	74	6.3X11	99	6.3X11	96	8X11.5	121
33	5X11	88	6.3X11	127	8X11.5	160	10X12.5	183
47	6.3X11	132	6.3X11	146	8X11.5	191	10X16	243
100	8X11.5	220	8X11.5	252	10X12.5	276	12.5X20	435
220	10X12.5	374	10X16	560	10X20	554	16X25	1011
330	10X16	512	10X20	756	12.5X20	757	16X31.5	1179
470	10X20	664	12.5X20	881	12.5X25	987	18X40	2222
1000	12.5X25	1241	16X25	1626	18X31.5	1843		
2200	16X31.5	1783	18X35.5	2212	18X40	2079		
3300	18X35.5	2274	22X40	2828	22X35	2193		
4700	18X40	2875						

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KRH Miniature Aluminum Electrolytic Capacitors

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: ΦDXL(mm)
Ripple Current: mA/rms at 120Hz,105℃

V.DC / Contents μF	160V		200V		250V		350V		400V		450V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
0.47	6.3X11	14	6.3X11	12	6.3X11	9						
1	6.3X11	21	6.3X11	19	6.3X11	19	6.3X11	24	6.3X11	25	6.3X11	24
2.2	6.3X11	31	6.3X11	27	6.3X11	35	8X11.5	38	8X11.5	38	8X11.5	34
3.3	8X11.5	45	8X11.5	39	8X11.5	38	8X11.5	57	8X11.5	50	8X11.5	44
4.7	8X11.5	54	8X11.5	61	8X11.5	42	10X12.5	61	10X12.5	63	10X12.5	58
10	10X12.5	88	10X12.5	88	10X12.5	100	10X16	100	10X16	110	10X16	102
22	10X20	133	10X20	138	10X20	168	12.5X20	182	12.5X20	206	12.5X25	323
33	10X20	175	10X20	150	10X20	301	12.5X25	238	12.5X25	264	16X25	338
47	12.5X20	429	12.5X20	250	12.5X20	301	16X25	361	16X25	365	18X25	354
100	16X25	500	16X20	400	16X25	530						
150	18X25	830	18X25	680	18X25	550						
220	16X31.5	855	16X35.5	723	18X35.5	633						
270	16X35.5	972	18X35.5	1039								
330	18X35.5	1083										

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KLF Miniature Aluminum Electrolytic Capacitors

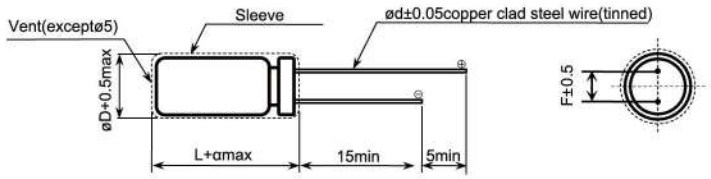
105℃ Use, Long Life Capacitors, Series KLF

Guarantees 5000–10000 hours at 105℃

RoHS

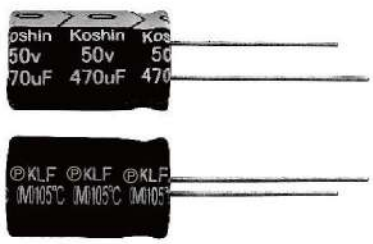
Outline Drawing

Unit: mm



⌀D	5	6.3	8	10	12.5	16
F	2.0	2.5	3.5	5.0	5.0	7.5
⌀d	0.5	0.5	0.6	0.6	0.6	0.8
α	1.5			1.5 for L16 max. 2.0 for L20 min.		

Photo



Marking color: White print on black sleeve

Specifications

No.	Item	Performance								
1	Temperature range(℃)	-40 to +105(10V～50V)					-25 to +105(160V～450V)			
2	Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after one minutes)					Less than 0.03CV or 3 whichever is larger (after one minutes)			
		C: Rated Capacitance (μ F). V: Rated voltage (V) 20℃								
3	Capacitance tolerance (%)	±20 (20℃,120Hz)								
4	Tangent of the loss angle (Tan δ)	Rated voltage (V)	10	16	25	35	50	160-250	350-450	20℃,120Hz
		Tanδ(max)	0.19	0.16	0.14	0.12	0.10	0.15	0.15	
		0.02 is added to every 1000 μ F increase over 1000 μ F								
5	Low temperature characteristics	Rated voltage (V)		10	16	25	35	50	160-250	350-450	120Hz
		Impedance ratio(max)	$Z_{(-25℃)}/Z_{(+20℃)}$	4	3	2	2	2	3	6	
6	Endurance (105℃) (Applied ripple current)	Test time		D<Φ8:5000 hours,Φ8:8000 hours, D≥Φ10:10000hours							
		Leakage current		The initial specified value or less							
		Percentage of capacitance change		Within ±20% of initial value							
		Tangent of the loss angle		200% or less of the initial specified value							
7	Shelf life (105℃)	Test time		1000hours							
		Leakage current		The initial specified value or less							
		Percentage of capacitance change		Within ±20% of initial value							
		Tangent of the loss angle		200% or less of the initial specified value							
8	Applicable standards	JIS–C–5101–4(IEC60384)								

Coefficient of Frequency for Ripple Current

Frequency (Hz)	120	1K	10K	100K～
Coefficient	0.50	0.80	0.85	1.00

Coefficient of Temperature for Ripple Current

Temperature(℃)	60 or less	85	105
Coefficient	2.00	1.40	1.00

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KLF Miniature Aluminum Electrolytic Capacitors

Dimension:ΦDXL(mm)
Ripple Current: mA/rms at 100KHz,105℃

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V.DC / Con tents μF	10V		16V		25V		35V		50V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
6.8									5X11	75
10							5X11	65	5X11	85
22					5X11	105	5X11	120	6.3X11	130
33			5X11	100	5X11	125	6.3X11	155	8X11.5	210
47	5X11	90	5X11	150	6.3X11	200	8X11.5	235	8X11.5	250
68	5X11	115	6.3X11	190	8X11.5	255	8X11.5	280	10X12.5	310
100	6.3X11	185	8X11.5	230	8X11.5	285	10X12.5	360	10X16	450
150	6.3X11	245	8X11.5	260	10X12.5	400	10X16	550	10X20	650
220	6.3X11	310	10X12.5	400	10X16	535	10X20	700	12.5X20	850
330	8X11.5	415	10X1 6	510	10X20	700	12.5X20	900	12.5X25	1000
470	10X12.5	500	10X20	700	12.5X20	950	12.5X25	1020	16X25	1350
1000	10X16	920	12.5X20	1020	12.5X25	1350	16X31.5	1680	18X31.5	1820
2200	12.5X20	1450	16X25	1820	16X31.5	2280				
3300	16X25	1800								

V.DC / Contents μF	160V		200V		250V		350V		400V		450V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
6.8							10X20	180	10X20	180	12.5 X20	120
10	10X16	220	10X20	220	10X20	240	12.5X20	220	12.5X20	220	12.5X25	270
22	10X20	350	10X20	350	12.5X20	420	12.5X25	300	16X25	370	16X25	460
33	12.5X20	400	12.5X20	470	12.5X25	580	16X21	350	18X21	420	18X25	500
47	12.5X20	520	12.5X20	520	16X21	650	18X21	500	18X25	600	18X31.5	630
68	12.5X25	700	16X25	700	18X21	830	18X25	630	18X31.5	780		
100	18X21	920	18X21	920	18X25	1020						
150	18X25	1070	18X25	1070	18X31.5	1220						
220	18X25	1130	18X31.5	1300								

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KLJ Miniature Aluminum Electrolytic Capacitors

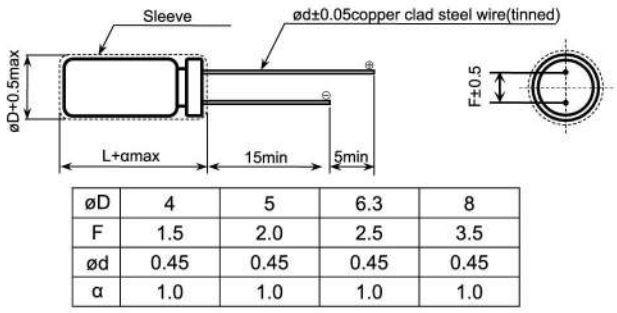
7mm L, 105℃ Miniature Capacitors, Long Life Series KLJ.

Diameter from Φ4 to Φ8 and height of 7mm

Guaranteed 2000 hours at 105℃

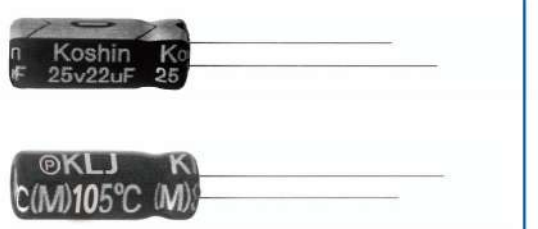
RoHS

Outline Drawing Unit: mm



øD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
ød	0.45	0.45	0.45	0.45
α	1.0	1.0	1.0	1.0

Photo



Marking color: black print on purple sleeve

Specifications

No.	Item	Performance								
1	Temperature range(℃)	-40 to +105								
2	Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after two minutes) C: Rated Capacitance(μ F); V: Rated voltage(V) 20℃								
3	Capacitance tolerance (%)	±20 (20˚C,120Hz)								
4	Tangent of the loss angle (Tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	20˚C ,120Hz
		Tanδ(max)	0.24	0.20	0.16	0.14	0.12	0.10	0.09	
5	Low temperature characteristics	Rated voltage (V)	6.3	10	16	25	35	50	63	120Hz
		Impedance ratio(max) $Z_{(-25°C)}/Z_{(+20°C)}$	4	3	2	2	2	2	2	
		Impedance ratio(max) $Z_{(-40°C)}/Z_{(+20°C)}$	8	6	4	4	3	3	3	
6	Endurance (105℃) (Applied ripple current)	Test time	2000hours							
		Leakage current	The initial specified value or less							
		Percentage of capacitance change	Within ± 20% of initial value							
		Tangent of the loss angle	200% or less of the initial specified value							
7	Shelf life (105℃)	Test time	1000hours							
		Leakage current	The initial specified value or less							
		Percentage of capacitance change	Within ± 20% of initial value							
		Tangent of the loss angle	200% or less of the initial specified value							
8	Applicable standards	JIS–C–5101–4(IEC60384)								

Coefficient of Frequency for Ripple Current

Frequency (Hz) / Capacitance (μ F)	50•60	120	1K	10K	50K-100K
CAP≤100	0.80	1.00	1.45	1.65	1.70
100<CAP≤220	0.80	1.00	1.36	1.48	1.53

Coefficient of Temperature for Ripple Current

Temperature(℃)	45	60	70	85	105
Coefficient	2.10	1.90	1.65	1.40	1.00

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KLJ Miniature Aluminum Electrolytic Capacitors

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension:ΦDXL(mm)
Ripple Current: mA/rms at 120Hz,105℃

V.DC / μF Contents	6.3V		10V		16V		25V		35V		50V		63V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
0.1											4X7	1.5	4X7	1.5
0.22											4X7	2.5	4X7	2.5
0.33											4X7	3.5	4X7	3.5
0.47											4X7	5	4X7	6
1											4X7	10	4X7	12
2.2											4X7	20	4X7	20
3.3											4X7	26	5X7	28
4.7							4X7	17			4X7	27	5X7	29
											5X7	29	6.3X7	33
10					4X7	28	4X7	28	5X7	35	6.3X7	38	6.3X7	40
							5X7	33						
22	4X7	28	4X7	32	4X7	35	5X7	43						
					5X7	42	6.3X7	45	6.3X7	50	8X7	63	8X7	65
33	4X7	32	5X7	48	5X7	50	6.3X7	62	6.3X7	60	8X7	78		
	5X7	35							8X7	68				
47	5X7	47	5X7	51	6.3X7	67	8X7	75	8X7	80				
68	5X7	50	6.3X7	68	6.3X7	70	8X7	80	8X7	85				
					8X7	78								
100	6.3X7	75	6.3X7	80	8X7	110	8X7	115						
			8X7	95										
220	8X7	92	8X7	130										

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Koshin

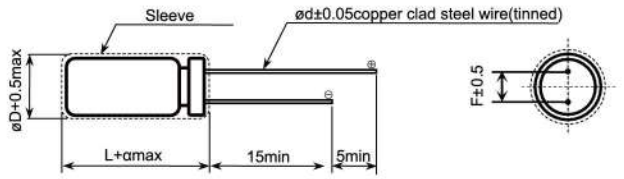
KSJ Miniature Aluminum Electrolytic Capacitors

7mm L, 85℃, Long Life, Series KSJ.

Conventional KSJ is further reduced in size
Diameter from Φ4 to Φ8 and height of 7mm
Guaranteed 2000 hours at 85℃

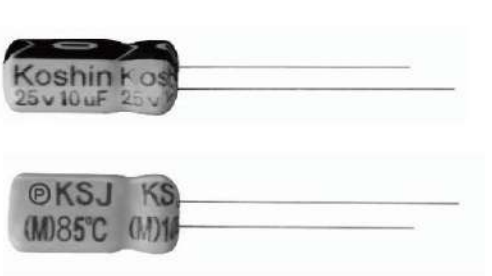
RoHS

Outline Drawing Unit: mm



øD	4	5	6.3	8
F	1.5	2.0	2.5	3.5
ød	0.45	0.45	0.45	0.45
α	1.0	1.0	1.0	1.0

Photo



Marking color: white print on gray sleeve

Specifications

No.	Item	Performance									
1	Temperature range(℃)	-40 to +85									
2	Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after two minutes) C: Rated Capacitance(μ F); V: Rated voltage(V) 20℃									
3	Capacitance tolerance (%)	±20 (20℃,120Hz)									
4	Tangent of the loss angle (Tan δ)	Rated voltage (V)	4	6.3	10	16	25	35	50	63	20℃,120Hz
		Tan δ (max)	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.09	
5	Low temperature characteristics	Rated voltage (V)	4	6.3	10	16	25	35	50	63	120Hz
		Impedance ratio(max) $Z_{(-25℃)}/Z_{(+20℃)}$	7	4	3	2	2	2	2	2	
		Impedance ratio(max) $Z_{(-40℃)}/Z_{(+20℃)}$	15	8	6	4	4	3	3	3	
6	Endurance (85℃) (Applied ripple current)	Test time	2000hours								
		Leakage current	The initial specified value or less								
		Percentage of capacitance change	Within ± 20% of initial value								
		Tangent of the loss angle	200% or less of the initial specified value								
7	Shelf life (85℃)	Test time	1000hours								
		Leakage current	The initial specified value or less								
		Percentage of capacitance change	Within ± 20% of initial value								
		Tangent of the loss angle	200% or less of the initial specified value								
8	Applicable standards	JIS-C-5101-4(IEC60384)									

Coefficient of Frequency for Ripple Current

Frequency (Hz) / Capacitance (μ F)	50•60	120	400	1K	50K•100K
CAP≤10	0.80	1.00	1.30	1.45	1.70
10<CAP≤100	0.80	1.00	1.23	1.36	1.53
100<CAP	0.80	1.00	1.16	1.25	1.38

Coefficient of Temperature for Ripple Current

Temperature(℃)	45 or less	60	70	85
Coefficient	1.80	1.50	1.35	1.00

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Koshin

KSJ Miniature Aluminum Electrolytic Capacitors

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: ΦDXL(mm)
Ripple Current: mA/rms at 120Hz,85℃

V.DC / Contents μF	4V		6.3V		10V		16V		25V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
4.7									4X7	17
10							4X7	30	4X7	30
									5X7	33
22	4X7	23	4X7	31	4X7	35	4X7	37	5X7	45
							5X7	42	6.3X7	48
33	4X7	26	4X7	32	4X7	40	4X7	45	5X7	52
			5X7	35	5X7	45	5X7	50	6.3X7	60
47	4X7	35	4X7	40	4X7	47	5X7	61	6.3X7	68
			5X7	47	5X7	51	6.3X7	67	8X7	72
68	5X7	55	5X7	55	5X7	60	6.3X7	72	6.3X7	75
					6.3X7	68				
100	5X7	58	5X7	65	5X7	80	6.3X7	95	8X7	115
			6.3X7	75	6.3X7	90	8X7	105		
220	6.3X7	65	6.3X7	90	6.3X7	105				
			8X7	120	8X7	150				
330	6.3X7	90	8X7	120						
470	8X7	120								

V.DC / Contents μF	35V		50V		63V	
	ΦDXL	mA	ΦDXL	mA	ΦDXL	mA
0.1			4X7	1.5	4X7	1.5
0.22			4X7	2.5	4X7	2.5
0.33			4X7	3.5	4X7	3.5
0.47			4X7	5	4X7	6
1			4X7	10	4X7	12
2.2			4X7	19	4X7	19
3.3			4X7	24	4X7	25
4.7	4X7	22	4X7	27	5X7	29
			5X7	29	6.3X7	33
10	4X7	30	5X7	35	6.3X7	40
	5X7	35	6.3X7	38		
22	5X7	50	6.3X7	60	8X7	65
	6.3X7	58	8X7	63		
33	6.3X7	54	8X7	78		
	8X7	68				
47	8X7	80				
68	8X7	85				

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