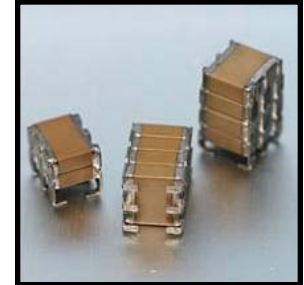


- VERY HIGH CV, CAN REPLACE ALUMINUM ELECTROLYTICS AND TANTALUM
- VERY LOW ESR
- FOR SWITCH MODE POWER SUPPLIES, FILTERS, DC-DC CONVERTERS, SURGE PROTECTION AND SNUBBERS
- FOR HIREL APPLICATIONS
- AVAILABLE WITH J, L AND N STYLE LEADS
- NPO OR X7R TEMPERATURE COEFFICIENT
- RoHS COMPLIANT



PART NUMBERING

Part Number Example: CSML-050/185JNKJ4WF

CSML	-	050	/	185	J	N	K	J	4	W	F
Type		Rated DC Voltage		Capacitance Code (pF)*	Tolerance Code	TC CODE	SIZE CODE	LEAD FORM	# OF CHIPS	PACKAGING ***	RoHs Compliant

* Capacitance Code: First two digits represent significant figures, third digit represents multiplier (number of zeros).

*** PACKAGING CODE: W....WAFFLE PACK
T....TAPE & REEL
B....BULK

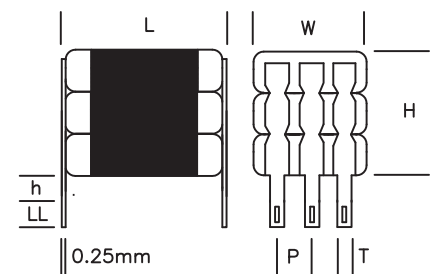
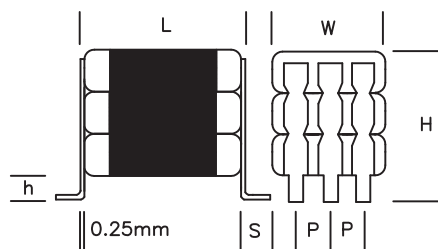
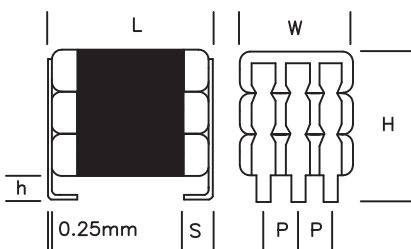
SPECIFICATIONS

RATED VOLTAGE RANGE	50~500VDC
OPERATING TEMPERATURE	-55~+125°C
CAPACITANCE RANGE	(CODE N) NPO: .070uF ~ 9uF
	(CODE X) X7R: .62uF ~ 600uF
TEMPERATURE COEFFICIENT	NPO: $\leq \pm 30\text{ppm}/^\circ\text{C}$ -55~ +125°C (EIA CLASS I)
	X7R: $\leq \pm 15\%$ -55~ +125°C (EIA CLASS II)
CAPACITY TOLERANCE	$\pm 5\%$ J, $\pm 10\%$ K & $\pm 20\%$ M
INSULATION RESISTANCE	10G Ω OR 500 meg ohm x F (WHICHEVER IS LESS)
DISSIPATION FACTOR	(NPO Q ≥ 1000 @ 1KHz) (X7R 2.5% MAX @ 1KHz)
DIELECTRIC WITHSTAND VOLTAGE	$\leq 50\text{VDC}$ RATED : 2.5 X RATED FOR 1 SECOND
	100VDC ~ <500VDC RATED : 2 X RATED FOR 1 SECOND
	500VDC RATED : 1.5 X RATED FOR 1 SECOND
AGING	NPO : 0%, X7R : 2.5% PER DECADE OF TIME

J TYPE

L TYPE

N TYPE



S = 1.65 ± 0.5mm
P = 2.54 ± 0.25mm
h = 1.78mm TYPICAL
LL = 2.54mm MINIMUM

DIMENSIONS

SIZE CODE	W (MAX) mm	L (MAX) mm	MAX (mm) THICKNESS OF ONE CHIP (mm)	LEADS PER SIDE	SIZE CODE	A (MAX) mm	B (MAX) mm	MAX (mm) THICKNESS OF ONE CHIP (mm)	LEADS PER SIDE
A	8.7	9.2	3.1 mm MULTIPLY BY # OF CHIPS FOR "H" (TYPE N ONLY) FOR TYPE J & L ADD 1.78mm	3	M	9.2	7.9	3.1 mm MULTIPLY BY # OF CHIPS FOR "H" (TYPE N ONLY) FOR TYPE J & L ADD 1.78mm	3
B	10.7	10.7		4	N	10.4	9.4		4
C	13.6	14.9		5	P	9.4	10.4		4
D	21.6	16.8		7	Q	10.4	11.7		4
E	16.6	21.6		6	R	25.5	27.3		10
F	38.2	12.0		14	S	28.6	32.5		11
G	38.2	18.9		14	T	11.7	10.4		4
H	40.6	24.0		14	U	13.0	14.3		5
J	15.5	16.8		6	V	14.3	13.0		5
K	16.8	15.5		6	W	16.8	19.3		6
L	7.9	9.2	3	X	19.3	16.8	7		

LOWER PROFILE VERSIONS AVAILABLE, PLEASE CONTACT SALES

MAX CAPACITANCE PER SIZE AND # OF CHIPS

SIZE / # OF CHIPS	NPO (MAXIMUM CAPACITANCE)				X7R (MAXIMUM CAPACITANCE)			
	50VDC	100VDC	200VDC	500VDC	50VDC	100VDC	200VDC	500VDC
A / 1	124	114	983	843	815	495	365	744
A / 2	244	224	194	164	166	985	725	145
A / 3	364	334	294	254	246	146	106	225
A / 4	484	444	394	334	326	196	146	295
A / 5	604	554	394	424	406	246	186	375
B / 1	184	174	154	134	136	795	585	125
B / 2	364	344	304	264	266	156	116	245
B / 3	544	514	454	394	396	236	176	365
B / 4	724	684	604	524	526	316	236	485
B / 5	904	854	754	654	656	396	296	605
C / 1	354	324	304	244	246	146	106	225
C / 2	704	644	604	484	486	286	206	445
C / 3	105	964	904	724	726	426	306	665
C / 4	145	125	125	964	966	566	406	885
C / 5	175	165	155	125	127	706	506	116
D / 1	654	604	554	454	446	266	196	405
D / 2	135	125	115	904	886	526	386	805
D / 3	195	185	165	135	137	786	576	126
D / 4	265	245	225	185	177	107	766	166
D / 5	325	305	275	225	227	137	956	206

MAX CAPACITANCE PER SIZE AND # OF CHIPS

SIZE / # OF CHIPS	NPO (MAXIMUM CAPACITANCE)				X7R (MAXIMUM CAPACITANCE)			
	50VDC	100VDC	200VDC	500VDC	50VDC	100VDC	200VDC	500VDC
E / 1	654	604	554	454	446	266	196	405
E / 2	135	125	115	904	886	526	386	805
E / 3	195	185	165	135	137	786	576	126
E / 4	265	245	225	185	177	107	766	166
E / 5	325	305	275	225	227	137	956	206
F / 1	774	714	654	564	556	336	246	505
F / 2	155	145	135	115	117	666	486	106
F / 3	235	215	195	165	167	996	726	156
F / 4	305	285	265	225	227	137	966	206
F / 5	385	355	325	285	277	167	127	256
G / 1	145	135	125	984	986	596	436	865
G / 2	285	265	245	195	197	117	866	176
G / 3	425	395	365	295	297	177	127	256
G / 4	566	435	485	395	397	237	177	346
G / 5	705	655	605	495	497	297	217	436
H / 1	185	165	155	125	127	766	566	116
H / 2	365	325	305	245	247	157	117	226
H / 3	545	485	455	365	367	227	167	336
H / 4	725	645	605	485	487	307	227	446
H / 5	905	805	755	605	607	387	287	556
J / 1	454	424	394	324	316	186	136	285
J / 2	904	844	784	644	626	366	266	565
J / 3	135	125	115	964	936	546	396	845
J / 4	185	165	155	125	127	726	536	116
J / 5	225	215	195	165	137	906	656	146
K / 1	454	424	394	324	316	186	136	285
K / 2	904	844	784	644	626	366	266	565
K / 3	135	125	115	964	936	546	396	845
K / 4	185	165	155	125	127	726	536	116
K / 5	225	215	195	165	137	906	656	146
L / 1	104	923	853	703	715	435	315	624
L / 2	204	184	174	144	146	865	625	125
L / 3	304	274	254	214	216	126	935	185
L / 4	404	364	344	284	286	176	126	245
L / 5	504	464	424	354	356	216	156	315
M / 1	104	923	853	703	715	435	315	624
M / 2	204	184	174	144	146	865	625	125
M / 3	304	274	254	214	216	126	935	185
M / 4	404	364	344	284	286	176	126	245
M / 5	504	464	424	354	356	216	156	315
N / 1	154	134	124	104	106	635	465	944
N / 2	304	264	244	204	206	126	925	185
N / 3	454	394	364	304	306	186	136	285
N / 4	604	524	484	404	406	256	186	375
N / 5	754	654	604	504	506	316	236	475

MAX CAPACITANCE PER SIZE AND # OF CHIPS

SIZE / # OF CHIPS	NPO (MAXIMUM CAPACITANCE)				X7R (MAXIMUM CAPACITANCE)			
	50VDC	100VDC	200VDC	500VDC	50VDC	100VDC	200VDC	500VDC
P / 1	154	134	124	104	106	635	465	944
P / 2	304	264	244	204	206	126	925	185
P / 3	454	394	364	304	306	186	136	285
P / 4	604	524	484	404	406	256	186	375
P / 5	754	654	604	504	506	316	236	475
Q / 1	204	184	174	144	146	855	635	125
Q / 2	404	364	344	284	286	176	126	245
Q / 3	604	544	514	424	426	256	186	365
Q / 4	804	724	684	564	566	346	256	485
Q / 5	105	904	854	704	706	426	316	605
R / 1	125	115	105	914	896	546	396	785
R / 2	243	225	205	185	177	107	786	156
R / 3	365	335	305	275	267	167	117	236
R / 4	485	445	405	365	357	217	157	216
R / 5	605	555	505	455	447	277	197	396
S / 1	185	165	155	125	127	766	566	116
S / 2	365	325	305	245	247	157	117	226
S / 3	545	485	455	365	367	227	167	336
S / 4	725	645	605	485	487	307	227	446
S / 5	905	805	755	605	607	387	287	556
T / 1	204	184	174	144	146	855	635	126
T / 2	404	364	344	284	286	176	126	245
T / 3	604	544	514	424	426	256	186	365
T / 4	804	724	684	564	566	346	256	485
T / 5	105	904	854	704	706	426	316	605
U / 1	304	274	254	214	206	116	905	185
U / 2	604	544	505	424	406	226	186	365
U / 3	904	814	754	634	606	336	276	545
U / 4	125	105	105	844	806	446	366	725
U / 5	155	135	125	105	127	556	456	905
V / 1	304	274	254	214	206	116	905	185
V / 2	604	544	505	424	406	226	186	365
V / 3	904	814	754	634	606	336	276	545
V / 4	125	105	105	844	806	446	366	725
V / 5	155	135	125	105	127	556	456	905
W / 1	564	504	464	394	386	226	176	345
W / 2	115	105	924	784	766	446	346	685
W / 3	165	155	135	115	117	666	516	106
W / 4	225	205	185	155	157	886	686	136
W / 5	285	255	235	195	197	117	856	176
X / 1	564	504	464	394	386	226	176	345
X / 2	115	105	924	784	766	446	346	685
X / 3	165	155	135	115	117	666	516	106
X / 4	225	205	185	155	157	886	686	136
X / 5	285	255	235	195	197	117	856	176