

Thin film series

Type: **CMF**

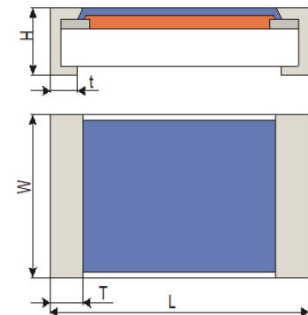
Sizes: **0402, 0603, 0805, 1206, 1210, 1218, 2010, 2512**

Characteristics:

- Chip resistors in thin film technology
- High-precision resistor layers
- Resistance area coated with surface passivation
- Highest stability and reliability
- Very tight tolerances ($\geq 0,05\%$) - low temperature coefficient ($\geq 10\text{ppm/K}$)
- Low current noise, good pulse strength
- R-Value-Matching available
- RoHS-conform and Halogen-free according to IEC 61249-2-21 / IPC 4101B
- Sulfur resistance verified according to ASTM B 809
- Order quantities from 1000 pieces for $<1\%$ and $<TCR 50$ available by extra charge
- Customer specific barcodes available - also in 2D
- All sizes can be manufactured with the following contact variants
 - ⇒ Electroplated pure tin
 - ⇒ Contact with low rest permeability -N, suitable only for reflow soldering method (The recommended storage time should not exceed 1 year after date code)
 - ⇒ Epoxy bondable contact -K

Dimensions (in mm):

Size	L Length		W Width		H Depth		t Contact back		T Contact front	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0402	0,95	1,05	0,45	0,55	0,25	0,40	0,10	0,35	0,05	0,35
0603	1,50	1,70	0,75	0,95	0,35	0,55	0,10	0,50	0,10	0,50
0805	1,85	2,15	1,10	1,40	0,35	0,65	0,15	0,60	0,15	0,60
1206	2,90	3,35	1,45	1,75	0,35	0,65	0,25	0,75	0,15	0,75
1210	3,00	3,30	2,35	2,65	0,50	0,75	0,35	0,85	0,25	0,85
1218	3,00	3,30	4,50	4,80	0,50	0,75	0,35	0,85	0,25	0,85
2010	4,80	5,20	2,30	2,70	0,50	0,75	0,35	0,85	0,25	0,85
2512	6,10	6,50	3,00	3,30	0,50	0,75	0,35	0,85	0,25	0,85



Packaging units:

Reel Ø	Card tape	Blister tape
	acc. EN 60286-3	
180 mm	5 T pcs. 10 T pcs. for size 0402	4 T pcs.
330 mm	10 T pcs. 20 T pcs.	8 T pcs. 16 T pcs.
Samples on request		

Ordering information:

CMF	- N	0603	10k	0,1%	10ppm/K	K	P	5 (optional)
Type	Contact	Size	R-Value	± Tolerance	± TCR	Marking	Packaging	pcs. / Reel (T pcs.)
CMF	Standard (without add.) -N (non magnetic) -K (epoxy bondable)	0402 . to . 2512	1R . to . 4M7	0,05 0,1 0,25 0,5 1	10 15 25 50	K- with (from size 0603) N- without (only size 0402)	P- Card tape B- Blister tape S- Bulk	Depends on size and packaging unit

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Technical data – depending on size:

Size	Precision application		Professional application		R-Range	R-Tolerance (± %)	TCR (± ppm/K)	Packaging		
	U _{max} (V)	P ₇₀ (W)	U _{max} (V)	P ₇₀ ³⁾ (W)				P	B	S
0402	12,5	0,016	50	0,063	100R – 47k0	0,1 / 0,25 / 0,5 / 1	15 ⁵⁾	x		x
					100R – 221k	0,1 / 0,25 / 0,5 / 1	25	x		x
					100R – 511k	0,1 / 0,25 / 0,5 / 1	50	x		x
					10R0 – 1M00	1	50	x		x
0603	25,0	0,032	75	0,100	100R – 332k	0,05 / 0,1 / 0,25 / 0,5 / 1	10 / 15 ⁴⁾	x		x
					10R0 – 511k ¹⁾	0,05 / 0,1 / 0,25 / 0,5 / 1	25	x		x
					1R00 – 1M50 ^{1) 2) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	50	x		x
0805	35,0	0,050	150	0,125	100R – 511k	0,05 / 0,1 / 0,25 / 0,5 / 1	10 / 15 ⁴⁾	x		x
					10R0 – 1M00 ¹⁾	0,05 / 0,1 / 0,25 / 0,5 / 1	25	x		x
					1R00 – 2M00 ^{1) 2) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	50	x		x
1206	50,0	0,100	200	0,250	100R – 1M00	0,05 / 0,1 / 0,25 / 0,5 / 1	10 ⁴⁾	x		x
					35R0 – 1M00 ¹⁾	0,05 / 0,1 / 0,25 / 0,5 / 1	15	x		x
					10R0 – 2M00 ^{1) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	25	x		x
					1R00 – 4M70 ^{1) 2) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	50	x		x
1210	50,0	0,100	200	0,500	100R – 1M00	0,05 / 0,1 / 0,25 / 0,5 / 1	10 / 15 ⁴⁾	x		x
2010	100,0	0,150	300	0,500	10R0 – 2M00 ^{1) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	25		x	x
2512	100,0	0,250	500	1,000	10R0 – 4M70 ^{1) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	50		x	x
1218	50,0	0,300	200	1,000	100R – 1M00	0,05 / 0,1 / 0,25 / 0,5 / 1	10 / 15 ⁴⁾		x	x
					10R0 – 2M00 ^{1) 6)}	0,05 / 0,1 / 0,25 / 0,5 / 1	25 / 50		x	x

¹⁾ 10R – 100R from ± 0,1% tolerance ²⁾ 1R – 10R from ± 0,5% tolerance ³⁾ For continuous operation sufficient heat dissipation must be ensured
⁴⁾ TCR ± 5 on request ⁵⁾ TCR ± 10 on request ⁶⁾ > 1M from ± 0,1% tolerance

Technical data - general:

Technical data	Precision application	Professional application
Operating temperature range	-10°C ... +85°C	-55°C ... +155°C
Climatic category acc. EN 60068	10 / 85 / 56	55 / 155 / 56
Solderability acc. EN 60068-2-58	245°C 3s	245°C 3s
Soldering heat resistance acc. EN 60068-2-58	± (0,05% +0,01R) at 260°C 10s	± (0,05% +0,01R) at 260°C 10s
Long time stability		
Storage 85°C / 155°C / 1000 h	± (0,1% +0,02R)	± (0,25% +0,05R)
Endurance P ₇₀ / 70°C / 1000 h	± (0,1% +0,02R)	± (0,25% +0,05R)
Endurance P ₇₀ / 70°C / 8000 h	± (0,25% +0,02R)	± (0,5% +0,05R)
Endurance P ₇₀ / 70°C / 225000 h ¹⁾	± (1,0% +0,02R)	± (1,5% +0,05R)
Damp heat, steady state (56d / 40°C / 93%)	± (0,1% +0,02R)	± (0,25% +0,05R)

¹⁾ calculated acc. Arrhenius

Data, unless specified, acc. EN 140401-801.