Features

- Thick film technology
- Power rating up to 1.5 watts @ 70 °C
- High power surge withstanding
- RoHS compliant*
- Halogen free**

Applications

- Power supplies
- Digital meters
- Consumer electronics
- LED lighting
- Industry control boards

CMP Series High Power Anti-Surge Chip Resistors

Electrical Characteristics

Characteristic	Model				
	CMP0603	CMP0805	CMP1206	CMP2010	CMP2512
Power Rating @ 70 °C	0.25 W	0.5 W	0.75 W	1 W	1.5 W
Operating Temperature Range	-55 °C to +155 °C				
Derated to Zero Load at	+155 °C				
Maximum Working Voltage	75 V	200 V	250 V	200 V	300 V
Maximum Overload Voltage	125 V	300 V	500 V	400 V	600 V
Resistance Tolerance	±1 %, ±5 %				
Temperature Coefficient 10 Ω to 1 MΩ (±1 %, E24 & E96 Series)	±100 ppm/°C	±100 ppm/°C	±100 ppm/°C	±100 ppm/°C	±100 ppm/°C
10 Ω to 1 MΩ (±5 %, E24 Series	±200 ppm/°C	±200 ppm/°C	±200 ppm/°C	±200 ppm/°C	±200 ppm/°C

Note: Solder pad and trace size should be evaluated and board surface temperature should not exceed +105 °C when applying full rated power.

Additional Information

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

BOURNS®

Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com
EMEA: Tel: +36 88 885 877 • Email: eurocus@bourns.com
The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com
www.bourns.com

WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

* RoHS Directive 2015/863, Mar 31, 2015 and Annex.
** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

CMP Series High Power Anti-Surge Chip Resistors

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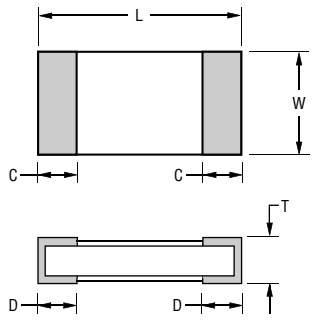
Product Dimensions

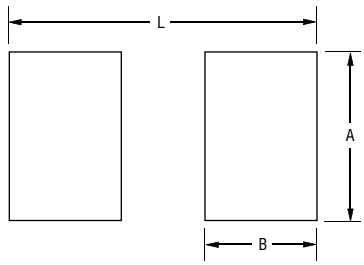
Model	L	W	C	D	T
CMP0603	1.60 ± 0.10 (.063 ± .004)	0.80 ± 0.10 (.031 ± .004)	0.30 ± 0.20 (.012 ± .008)	0.30 ± 0.20 (.012 ± .008)	0.45 ± 0.10 (.018 ± .004)
CMP0805	2.00 ± 0.10 (.079 ± .004)	1.25 ± 0.10 (.049 ± .004)	0.40 ± 0.20 (.016 ± .008)	0.40 ± 0.20 (.016 ± .008)	0.50 ± 0.10 (.020 ± .004)
CMP1206	3.10 ± 0.10 (.122 ± .004)	1.60 ± 0.10 (.063 ± .004)	0.50 ± 0.25 (.020 ± .010)	0.50 ± 0.25 (.020 ± .010)	0.55 ± 0.10 (.022 ± .004)
CMP2010	5.00 ± 0.20 (.197 ± .008)	2.50 ± 0.20 (.098 ± .008)	0.65 ± 0.25 (.026 ± .010)	0.60 ± 0.25 (.023 ± .010)	0.60 ± 0.10 (.024 ± .004)
CMP2512	6.40 ± 0.20 (.252 ± .008)	3.10 ± 0.20 (.122 ± .008)	0.60 ± 0.25 (.024 ± .010)	1.80 ± 0.25 (.071 ± .010)	0.60 ± 0.15 (.024 ± .006)

DIMENSIONS: MM / (INCHES)



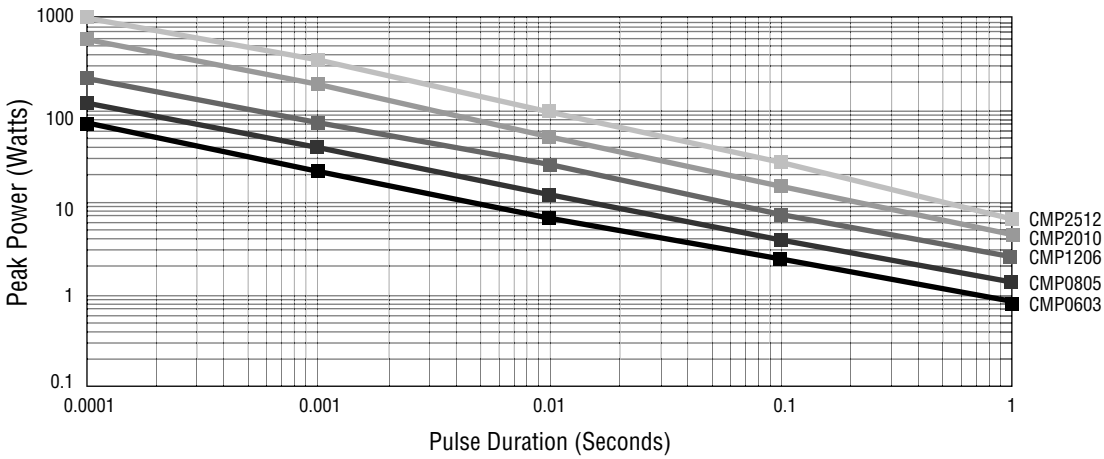
Recommended Solder Pad Layout

Model	A	B	L
CMP0603	0.90 (.035)	1.00 (.039)	3.00 (.118)
CMP0805	1.30 (.051)	1.15 (.045)	3.50 (.138)
CMP1206	1.80 (.071)	1.30 (.051)	4.70 (.185)
CMP2010	3.00 (.118)	1.50 (.059)	6.80 (.268)
CMP2512	3.70 (.146)	2.45 (.096)	7.60 (.299)

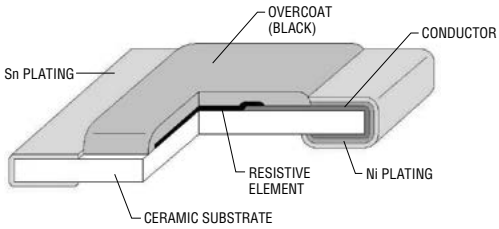


DIMENSIONS: MM / (INCHES)

Surge Performance



Construction



Rated Voltage

The rated voltage is calculated by the following formula:

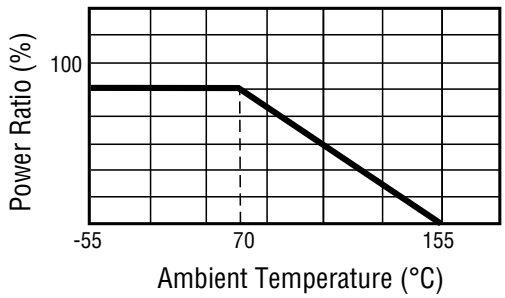
$V = \sqrt{P \times R}$

V: Rated Voltage (V)
P: Rated Power (W)
R: Resistance Value (Ω)

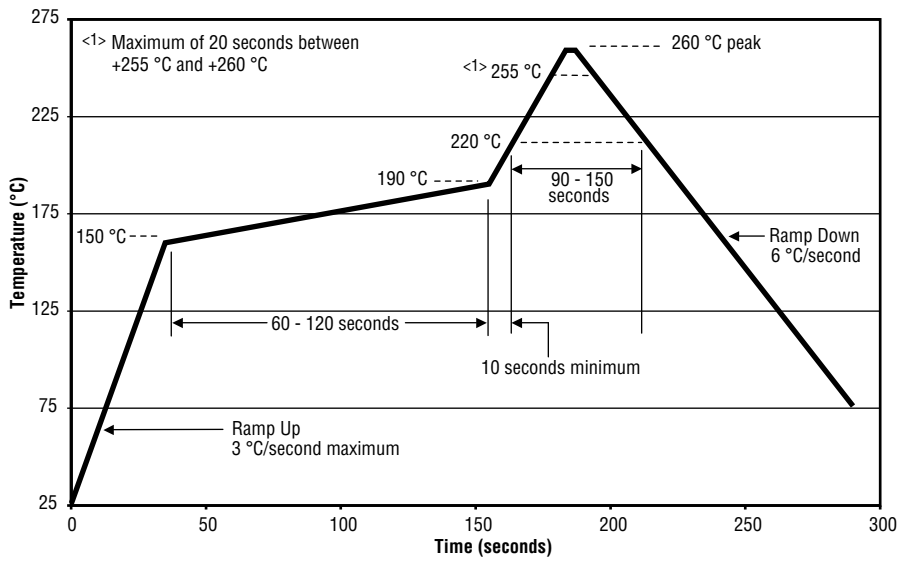
Environmental Characteristics

Moisture Sensitivity Level.....1

Derating Curve



Soldering Profile



CMP Series High Power Anti-Surge Chip Resistors

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How to Order

CMP 0603 - F X - 1002 E LF

Model
- CMP = High Power Anti-Surge Resistor

Size
- 0603 = 0603 Size
- 0805 = 0805 Size
- 1206 = 1206 Size
- 2010 = 2010 Size
- 2512 = 2512 Size

Resistance Tolerance
- F = ±1 %
- J = ±5 %

TCR (See Electrical Characteristics chart)
- W = ±200 PPM/°C
- X = ±100 PPM/°C

Resistance Value

1 % Tolerance:
- <100 Ω.....“R” represents decimal point *(example: 24R3 = 24.3 Ω)*
- ≥100 Ω.....First three digits are significant, fourth digit represents number of zeros to follow *(example: 8252 = 82.5K Ω)*

5 % Tolerance:
- ≥10 Ω.....First two digits are significant, third digit represents number of zeros to follow *(example: 474 = 470K Ω)*

Packaging
- E = 5,000 pieces on 180 mm (7 inch) plastic reel, paper tape - CMP0603, CMP0805, CMP1206
  4,000 pieces on 180 mm (7 inch) reel, plastic tape - CMP2010, CMP2512

Termination
- LF = Tin-plated (RoHS Compliant)

Performance Characteristics

Test	Procedure (IEC 60115-1)	Test Limits ΔR
Short Time Overload	5 times rated power for 5 seconds	1 % Tolerance: ≤ ± (1 % + 0.05 Ω) 5 % Tolerance ≤ ± (2 % + 0.05 Ω)
Temperature Cycling	Repeat 5 cycles as follows: -55 °C (30 min.) --> 25 °C (2-3 min.)--> 155 °C (30 min.) --> 25 °C (2~3 min.)	1 % Tolerance ≤ ± (0.5 % + 0.05 Ω) 5 % Tolerance ≤ ± (1 % + 0.05 Ω)
Load Life	1.5 hours at rated voltage followed by a pause of 0.5 hour at 70 ± 2 °C; Cycle repeated for 1000 hours	1 % Tolerance ≤ ± (1 % + 0.05 Ω) 5 % Tolerance ≤ ± (3 % + 0.05 Ω)
Load Life with Humidity	40 ±2 °C with 90~95 % relative humidity; DC rated voltage for 1.5 hours “ON”, 0.5 hour “OFF”; Cycle repeated for 1000 hours	1 % Tolerance ≤ ± (1 % + 0.05 Ω) 5 % Tolerance ≤ ± (3 % + 0.05 Ω)
Resistance to Solder Heat	260 ±5 °C for 10 ±1 seconds	1 % Tolerance ≤ ± (0.5 % + 0.05 Ω) 5 % Tolerance ≤ ± (1 %) + 0.05 Ω
Solderability	After immersing flux, dip in 245 ±2 °C molten solder bath for 3 ± 0.5 seconds	At least 95 % of termination must be covered with solder..
Board Flex	Bending 2 mm	1 % Tolerance ≤ ± (0.5 % + 0.05 Ω) 5 % Tolerance ≤ ± (1 % + 0.05 Ω)

Typical Part Marking

±5 % (E24): **CMP0603, CMP0805, CMP1206, CMP2010, CMP2512**

Resistance value is expressed by 3 digits. The first two digits represent the significant figures of the nominal resistance value in ohms; the third digit represents the exponent for a base of 10.

*Example: **301** = 30 x 10^1 = 300 ohms*

±1 % (E24/E96): **CMP0805, CMP1206, CMP2010, CMP2512**

Resistance value is expressed by 4 digits. The first three digits represent the significant figures of the nominal resistance value in ohms; the third digit represents the exponent for a base of 10.

*Example: **1542** = 154 x 10^2 = 15.4K ohms*

±1 % (E24): **CMP0603**

Resistance value is expressed by 3 digits. The first two digits represent the significant figures of the nominal resistance value in ohms; the third digit represents the exponent for a base of 10.

*Example: **222** = 22 x 10^2 = 2.2K ohms*

±1 % (E96): **CMP0603**

Resistance value is expressed by 2 digits followed by an alpha character multiplier. (Refer to marking table below.)

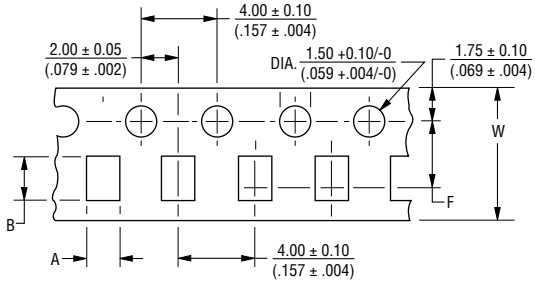
*Example: **01B** = 100 x 10^1 = 1K ohms*

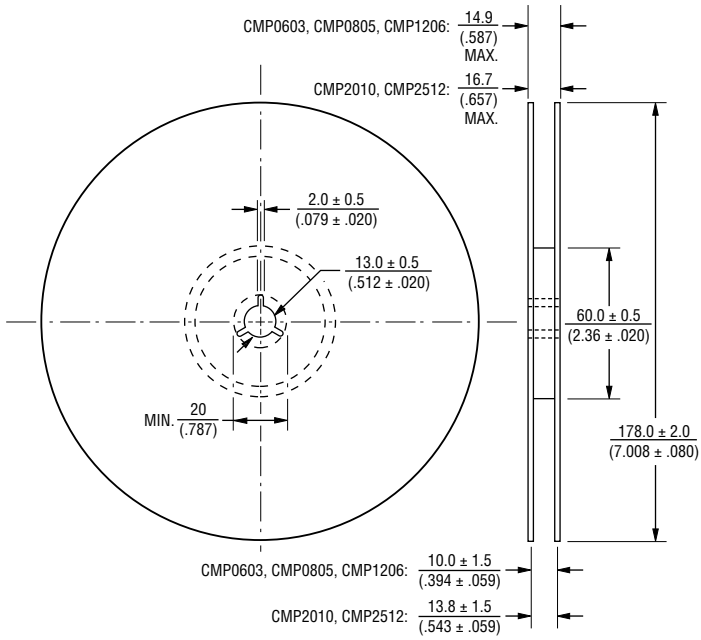
This table shows the first two digits for the three-digit E96 part marking scheme. The third character is a letter multiplier:

A=10^0
B=10^1
C=10^2
D=10^3
E=10^4
F=10^5
G=10^6
H=10^7
X=10^{-1}
Y=10^{-2}
Z=10^{-3}

Code	R Value	Code	R Value	Code	R Value	Code	R Value	Code	R Value
01	100	21	162	41	261	61	422	81	681
02	102	22	165	42	267	62	432	82	698
03	105	23	169	43	274	63	442	83	715
04	107	24	174	44	280	64	453	84	732
05	110	25	178	45	287	65	464	85	750
06	113	26	182	46	294	66	475	86	768
07	115	27	187	47	301	67	487	87	787
08	118	28	191	48	309	68	499	88	806
09	121	29	196	49	316	69	511	89	825
10	124	30	200	50	324	70	523	90	845
11	127	31	205	51	332	71	536	91	866
12	130	32	210	52	340	72	549	92	887
13	133	33	215	53	348	73	562	93	909
14	137	34	221	54	357	74	576	94	931
15	140	35	226	55	365	75	590	95	953
16	143	36	232	56	374	76	604	96	976
17	147	37	237	57	383	77	619		
18	150	38	243	58	392	78	634		
19	154	39	249	59	402	79	649		
20	158	40	255	60	412	80	665		

Packaging Dimensions (Conforms to EIA RS-481A)





Model	Tape Type	Pieces per Reel	A	B	W	F
CMP0603	Paper	5,000	1.10 ± 0.20 (.043 ± .008)	1.90 ± 0.20 (.075 ± .008)	8.00 ± 0.30 (.315 ± .012)	3.50 ± 0.05 (.138 ± .020)
CMP0805			1.65 ± 0.20 (.065 ± .008)	2.40 ± 0.20 (.094 ± .008)		
CMP1206			2.00 ± 0.20 (.079 ± .008)	3.60 ± 0.20 (.142 ± .008)		
CMP2010	Plastic	4,000	2.80 ± 0.20 (.110 ± .008)	5.50 ± 0.20 (.216 ± .008)	12.00 ± 0.30 (.472 ± .012)	5.50 ± 0.05 (.217 ± .020)
CMP2512			3.50 ± 0.20 (.138 ± .008)	6.70 ± 0.20 (.264 ± .008)		

DIMENSIONS: MM / (INCHES)

REV. 05/26/20

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