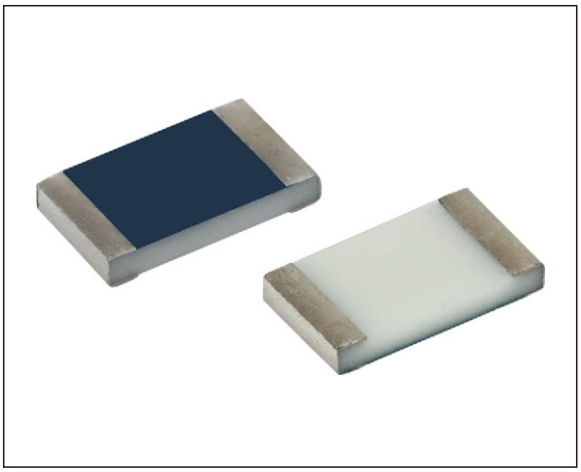
CHP High Stability Resistor Chips

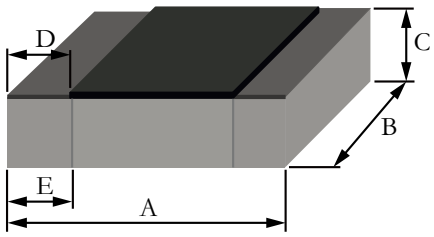


Features

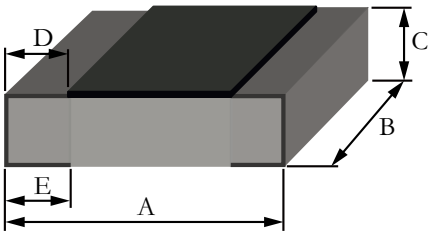
- CHP: standard passivated version for industrial, professional and military applications
- Robust terminations
- Large ohmic value range 0.1 Ω to 100 MΩ
- Tight tolerance to 0.5 %
- HCHP: for high frequency applications
- ESCC approved see CHPHR
- High temperature (245 ℃) see CHPHT
- SMD wraparound chip resistor
- Withstand moisture resistance test of AEC-Q200

Dimensions

(F) and (W)

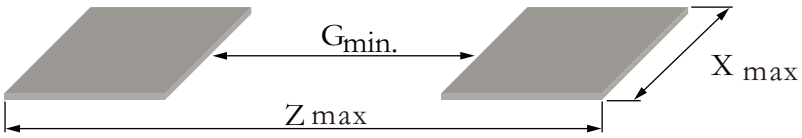


(B), (G), and (N)



Size	Powre Pn W	Dimensions(mm)				
		A±0.2	B±0.15	C±0.15	D±0.15	E±0.15
0502	0.050	1.22	0.70	0.38	0.20	0.31
0505	0.125	1.22	1.25	0.38	0.20	0.31
0603	0.125	1.60	0.90	0.38	0.31	0.40
0805	0.200	1.85	1.25	0.38	0.31	0.50
1005	0.250	2.49	1.25	0.38	0.31	0.50
1010	0.250	2.49	2.64	0.38	0.31	0.50
1020	0.500	2.49	5.18	0.50	0.31	0.50
1206	1.000	3.00	1.73	0.38	0.40	0.50
1505	1.000	3.70	1.25	0.50	0.50	0.50
2010	0.750	5.03	2.64	0.50	0.50	0.50
2208	2.000	5.53	2.05	0.50	0.50	0.50
2512	0.500	6.30	3.30	0.50	0.50	0.50

Recommend Land Pattern



Size	Dimensions(mm)		
	Z max	G min	X max
0502	1.77	0.19	0.83
0505	1.77	0.19	1.38
0603	2.15	0.39	1.03
0805	2.70	0.44	1.38
1005	3.34	1.08	1.38
1010	3.34	1.08	2.77
1020	3.34	1.08	5.31
1206	3.85	1.59	1.85
1505	4.55	2.29	1.38
2010	5.88	3.62	2.77
2208	6.38	4.12	2.18
2512	7.15	4.89	3.43

Ordering Information

Example:

CHP	0502	J	100KΩ	L	B
(1)	(2)	(3)	(4)	(5)	(6)
Series Name	Size	Resistance Tolerance	Resistance	T.C.R	Termination

(1)Type: CHP、HCHP SERIES

(2)Size:0502,0505,0603,0805,1005,1010,1020,1206,1505,2010,2208,2512

(3)Tolerance: D=±0.5%,F=±1%,J=±5%

(4)Resistance Value:10R0=10Ω、100K0=100KΩ、

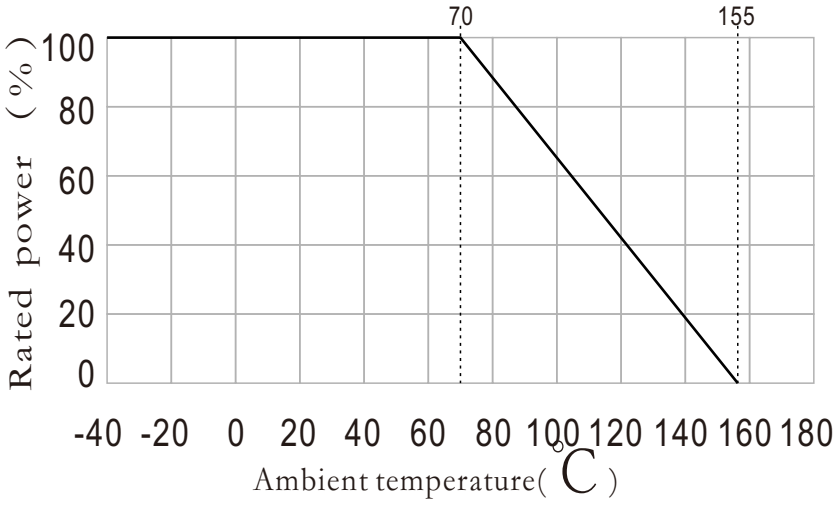
(5)T.C.R:K=±100ppm/℃,L=±200ppm/℃,M=±300ppm/℃,

(6)Termination:B: SnPb over nickel barrier、 N: SnAg over nickel barrier、
F: SnAg over nickel barrier (one face) G: gold over nickel barrier
W: gold over nickel barrier (one face)

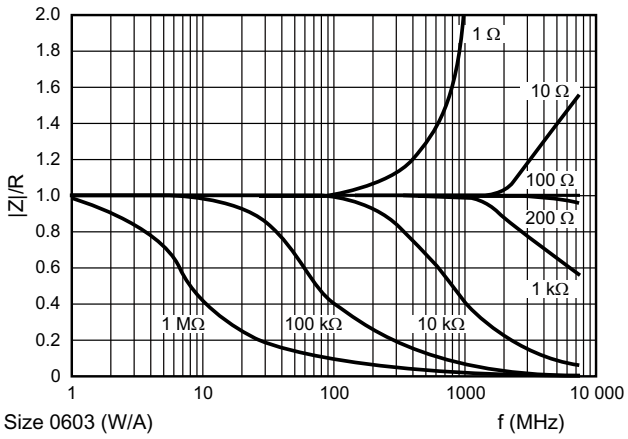
Applications And Ratings

Type	Size	Powre Pn W	Limiting element voltage V	Max. overload voltage V	Resistance range(1) Ω	Tolerance	T.C.R ppm/℃
CHP HCHP	0502	0.050	50	100	0.1~25M	D=±0.5% F=±1% J=±5%	±100 ±200
	0505	0.125	50	100	0.1~10M		
	0603	0.125	50	100	0.1~25M		
	0805	0.200	150	300	0.1~25M		
	1005	0.250	150	300	0.1~50M		
	1010	0.250	200	400	0.1~50M		
	1020	0.500	200	400	0.1~75M		
	1206	1.000	200	400	0.1~100M		
	1505	1.000	200	400	0.1~10M		
	2010	0.750	200	400	0.1~100M		
	2208	2.000	250	500	0.1~100M		
	2512	0.500	250	500	0.1~25M		

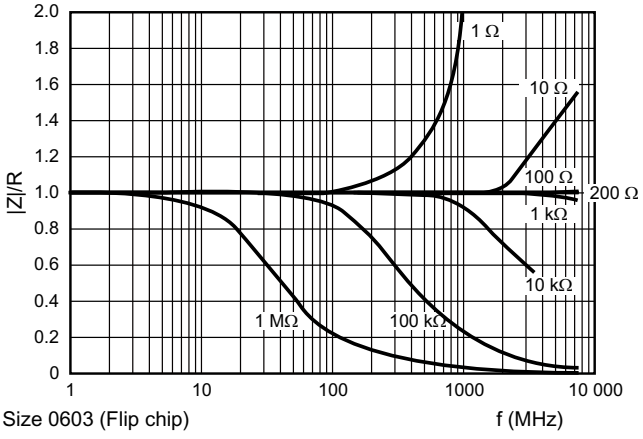
Derating Curve



Typical hf performance of HCHP



Size 0603 (W/A)

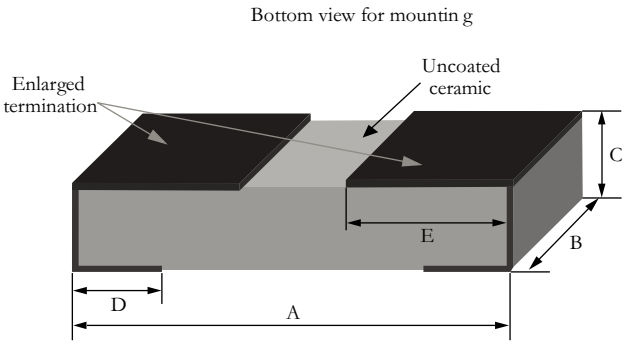


Size 0603 (Flip chip)

Popular options

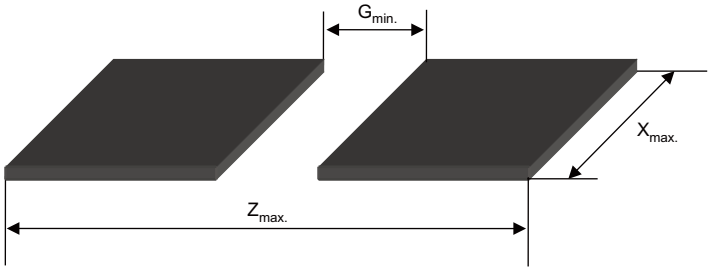
For any option it is recommended to consult KWX for availability first.
Option: Enlarged terminations: 0063
For stringent and special power dissipation requirements, the thermal resistance between the resistive layer and the solder joint can be reduced using enlarged terminations chip resistors which are soldered on large and thick copper pads acting as heat sinks (see application note: 53048 Power Dissipation in High Precision KWX Chip Resistors and Arrays (P Thin Film,PRA Arrays, CHP Thick Film) 53048.
Option to order: 0063 (applies to size 1206 / 1505 / 1020 / 2010 / 2512).

Dimensions(Option 0063)



Size	Dimensions(mm)				
	A±0.2	B±0.15	C±0.15	D±0.15	E±0.15
1206	3.00	1.73	0.38	0.40	1.19
1505	3.70	1.25	0.50	0.50	1.54
2010	5.03	2.64	0.50	0.50	2.20
1020	2.49	5.18	0.50	0.31	0.93
2208	5.53	2.05	0.50	0.50	2.45
2512	6.30	3.30	0.50	0.50	2.84

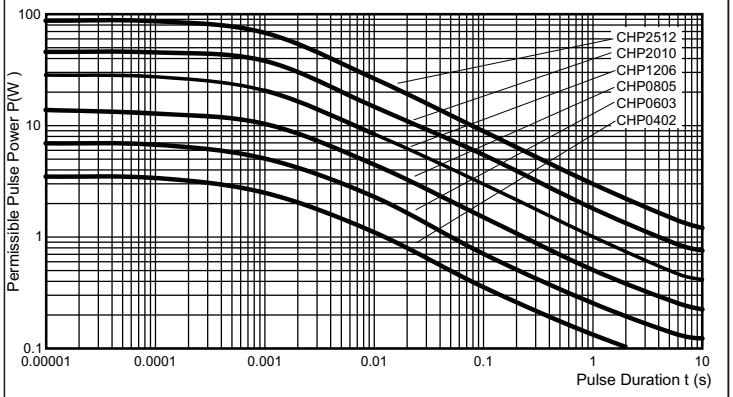
Recommend Land Pattern(Option 0063)



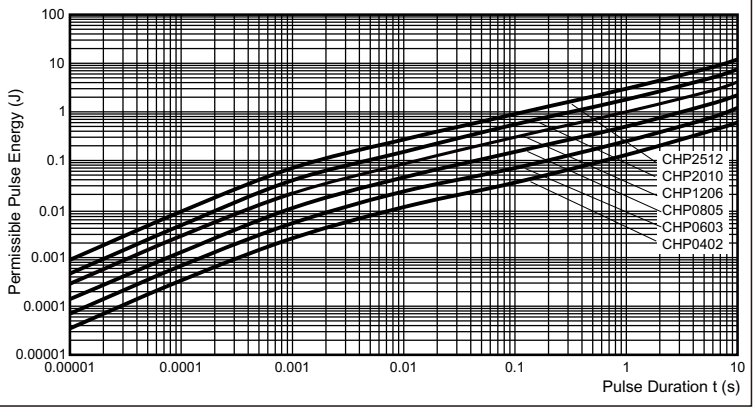
Size	Dimensions(mm)		
	Z max	G min	X max
1206	3.85	0.50	1.85
1505	4.55	0.50	1.38
2010	5.88	0.50	2.77
1020	3.34	0.50	5.31
2208	6.38	0.50	2.18
2512	7.15	0.50	3.43

Pulse Voltage Overload Test Curve

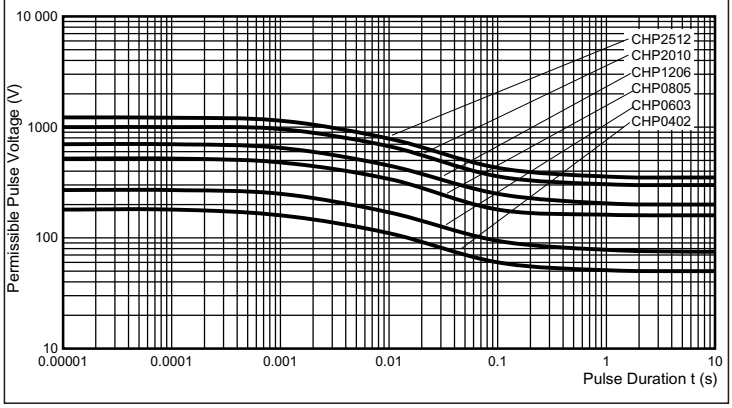
Maximum permissible pulse load Pi max. for single pulse (1)



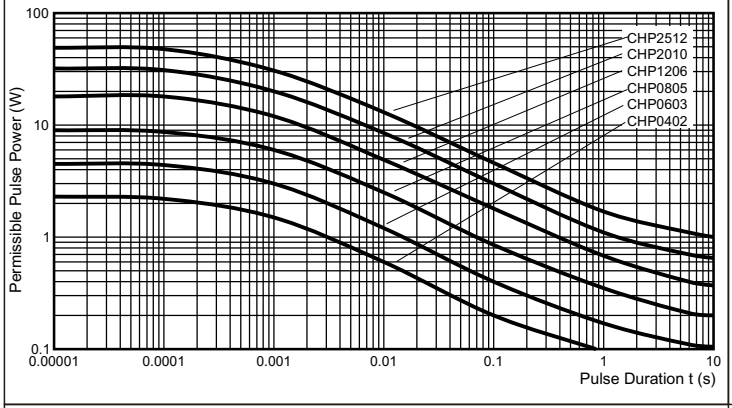
Energy for single pulse (1)



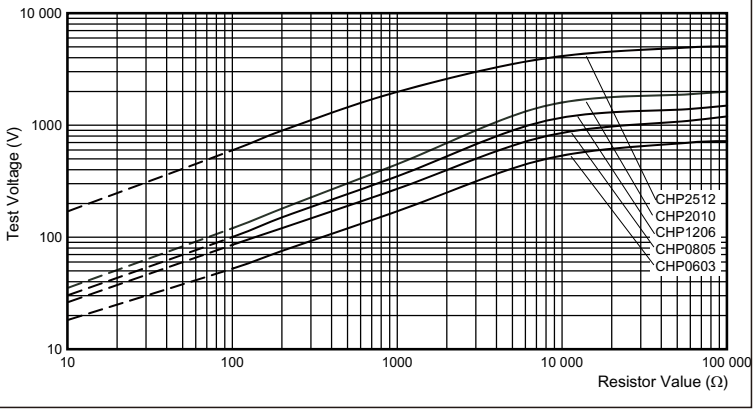
Maximum permissible pulse voltage Ui max. for single pulse (1)



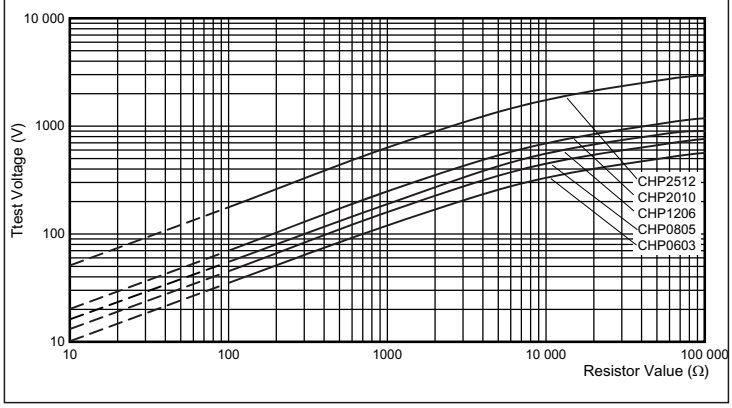
Maximum permissible pulse load Pi max.



1.2/50 μs lightning surge



10/700 μs lightning surge



Mechanical specifications

Test Items	Test Methods(JIS C 5201-1)
Substrate	Alumina
Technology	Thick film (ruthenium oxide)
Protection	0.5 Ω < R < 100 MΩ: epoxy coatingR ≤ 0.5 Ω: overglaze protection(no epoxy coating)
Operating temperature range	-55℃ ~+155℃
Terminations	B (W/A):SnPb over nickel barrier for solder reflow N (W/A):SnAg over nickel barrier for solder reflow F (Flip Chip):SnAg over nickel barrier for solder reflow W (one face) and G (W/A) type:gold over nickel barrier for other applications

Performance

TESTS	CONDITIONS	REQUIREMENTS	TYPICAL VALUES AND DRIFTS
Termination adhesion	5N for 10 s	± (0.25 % + 0.05 Ω)	< ± 0.1 %
Resistance to solder heat	Immersion 10 s in Sn/Pb 60/40 at +260℃	± (0.25 % + 0.05 Ω)	< ± 0.1 %
Rapid temperature change	5 cycles -55 ℃ +155 ℃	± (0.25 % + 0.05 Ω)	< ± 0.1 %
Climatic sequence	Phase A dry heat Phase B damp heat Phase C cold -55℃ Phase D damp heat 5 cycles	± (1 % + 0.05 Ω)	< ± 0.2 %
Humidity (steady state)	56 days	± (1 % + 0.05 Ω)	< ± 0.2 %
Moisture resistance	AEC-Q200 85 ℃ / 85 % RH / Pn / 10 1000 h	± (5 % + 0.05 Ω	Max. < 3 % + 0.05 Ω
Short time overload	6.25 Pr for 2 s	± (0.25 % + 0.05 Ω)	< ± 0.1 %
Load life	1000 h at rated power 90'/30' at +70 ℃	1000 h ± (1 % + 0.05 Ω)	1000 h< 0.25 % 2000 h < 0.5 % 10 000 h< 1 %