

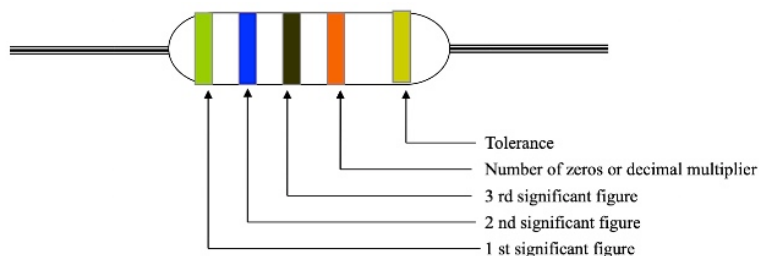
Bundle Item-No.: 23P131 (1) Metal Film Resistors Set 250 mW



RoHS



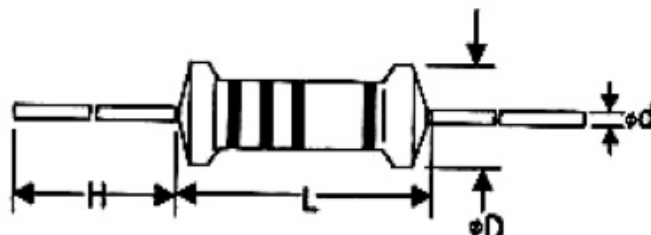
Resistor color code



Color refer

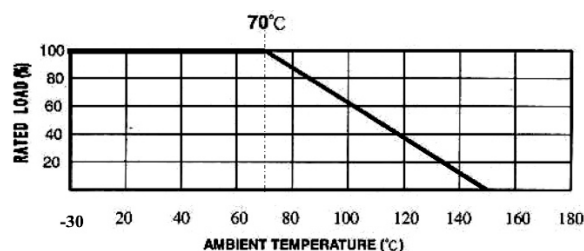
Color	1 st Band	2 nd Band	3 rd Band	4 th Band	Tolerance
Black	0	0	0	10^0	
Brown	1	1	1	10^1	$\pm 1.00 \%$
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	$\pm 0.50 \%$
Blue	6	6	6	10^6	$\pm 0.25 \%$
Violet	7	7	7	10^7	$\pm 0.10 \%$
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver				10^{-2}	

Resistor dimensions



$L = 6.0 \pm 0.5 \text{ mm}$ / $D = 2.3 \pm 0.3 \text{ mm}$ / $H = 27 \pm 2 \text{ mm}$ / $d = 0.48 \text{ mm}$

Derating @ high temperature



Technical data: Rated power: 0.25 W (Derating from $T_a = 70^\circ\text{C}$) • Tolerance: 1% • Temp.-range: $-30 \dots 150^\circ\text{C}$ • Working voltage: 250 V • Dielectric withstanding/overload voltage: max. 500 V • Temp. Coefficient max $\pm 100 \text{ ppm}/^\circ\text{C}$ • Solder ability: Dip the lead in to a solder bath having a Temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $4 \pm 0.8 \text{ mm}$ from the body of the resistor and hold it for 5 ± 0.5 seconds then inspect • Bending tool • Vitrometer • Content: 10 pcs. per value $1\Omega \dots 1\text{M}\Omega$.

Substitute / Refill Packs are available:

Part No.	Resistor Value	Content
22P035	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P036	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P037	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	1000 pcs. (50/each)
22P038	1 Ω	100 pcs.
22P039	10 Ω	100 pcs.
22P040	47 Ω	100 pcs.
22P041	100 Ω	100 pcs.
22P042	150 Ω	100 pcs.
22P043	220 Ω	100 pcs.

Part No.	Resistor Value	Content
22P044	330 Ω	100 pcs.
22P045	470 Ω	100 pcs.
22P046	1 k Ω	100 pcs.
22P047	1.5 k Ω	100 pcs.
22P048	2.2 k Ω	100 pcs.
22P049	4.7 k Ω	100 pcs.
22P050	10 k Ω	100 pcs.
22P051	22 k Ω	100 pcs.
22P052	33 k Ω	100 pcs.
22P053	47 k Ω	100 pcs.
22P054	100 k Ω	100 pcs.
22P055	220 k Ω	100 pcs.
22P056	470 k Ω	100 pcs.
22P057	1 M Ω	100 pcs.

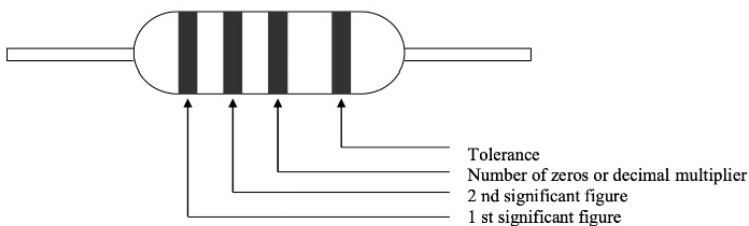
Bundle Item-No.: 23P131 (2) Carbon Film Resistors Set 250 mW



RoHS



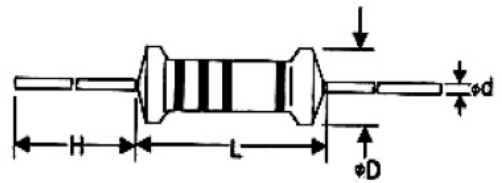
Resistor color code



Color refer

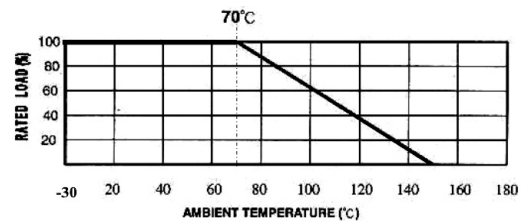
Color	1 st Band	2 nd Band	3 rd Band	4 th Band
Black	0	0	10^0	
Brown	1	1	10^1	
Red	2	2	10^2	$\pm 2.0\%$
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	
Blue	6	6	10^6	
Violet	7	7	10^7	
Grey	8	8	10^8	
White	9	9	10^9	
Gold			10^{-1}	$\pm 5.0\%$
Silver			10^{-2}	$\pm 10.0\%$

Resistor dimensions



$L = 6.0 \pm 0.5 \text{ mm}$ / $D = 2.3 \pm 0.3 \text{ mm}$ / $H = 27 \pm 2 \text{ mm}$ / $d = 0.33 \text{ mm}$

Derating @ high temperature



Technical data: Rated power: 0.25 W (Derating from $T_a = 70^\circ\text{C}$) • Tolerance: 5% • Temp.-range: $-50 \dots 150^\circ\text{C}$ • Working voltage: 300 V • Dielectric withstanding/overload voltage: max. 600 V • Temp. Coefficient max $\pm 350 \text{ ppm}/^\circ\text{C}$ ($< 100 \text{ k}\Omega$) / $0 \dots -700 \text{ ppm}/^\circ\text{C}$ ($100 \text{ k}\Omega \dots 1 \text{ M}\Omega$) • Solder ability: Dip the lead in to a solder bath having a Temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $4 \pm 0.8 \text{ mm}$ from the body of the resistor and hold it for 5 ± 0.5 seconds then inspect • Bending tool • Vitrometer • Content: 10 pcs. per value $1\Omega \dots 1 \text{ M}\Omega$.

Substitute / Refill Packs are available:

Part No.	Resistor Value	Content
22P058	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P059	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P060	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	1000 pcs. (50/each)
22P061	1 Ω	100 pcs.
22P062	10 Ω	100 pcs.
22P063	47 Ω	100 pcs.
22P064	100 Ω	100 pcs.
22P065	150 Ω	100 pcs.
22P066	220 Ω	100 pcs.

Part No.	Resistor Value	Content
22P067	330 Ω	100 pcs.
22P068	470 Ω	100 pcs.
22P069	1 k Ω	100 pcs.
22P070	1.5 k Ω	100 pcs.
22P071	2.2 k Ω	100 pcs.
22P072	4.7 k Ω	100 pcs.
22P073	10 k Ω	100 pcs.
22P074	22 k Ω	100 pcs.
22P075	33 k Ω	100 pcs.
22P076	47 k Ω	100 pcs.
22P077	100 k Ω	100 pcs.
22P078	220 k Ω	100 pcs.
22P079	470 k Ω	100 pcs.
22P080	1 M Ω	100 pcs.

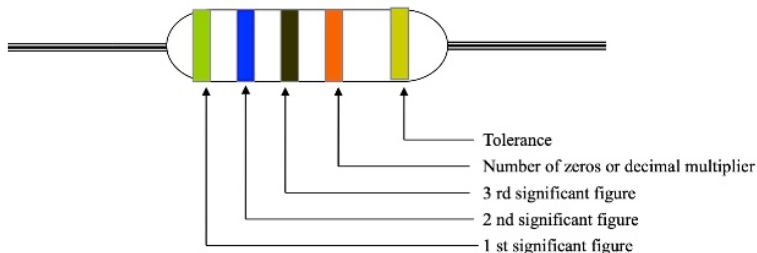
Bundle Item-No.: 23P131 (3) Metal Film Resistors Set 500 mW



RoHS



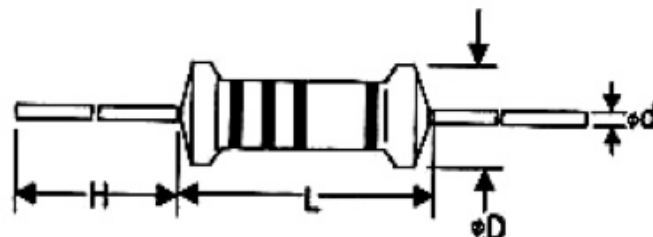
Resistor color code



Color refer

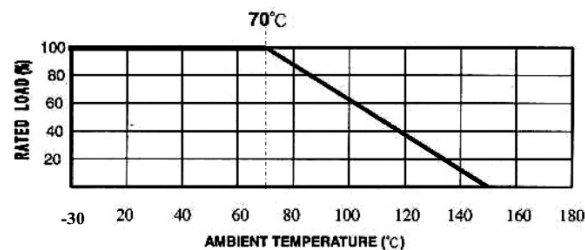
Color	1 st Band	2 nd Band	3 rd Band	4 th Band	Tolerance
Black	0	0	0	10^0	
Brown	1	1	1	10^1	$\pm 1.00\%$
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	$\pm 0.50\%$
Blue	6	6	6	10^6	$\pm 0.25\%$
Violet	7	7	7	10^7	$\pm 0.10\%$
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver				10^{-2}	

Resistor dimensions



$$L = 9.0 \pm 0.1 \text{ mm} / D = 3.5 \pm 0.5 \text{ mm} / H = 26 \pm 2 \text{ mm} / d = 0.58 \text{ mm}$$

Derating @ high temperature



Technical data: Rated power: 0.5 W (Derating from $T_a = 70^\circ\text{C}$) • Tolerance: 1% • Temp.-range: $-30 \dots 150^\circ\text{C}$ • Working voltage: 350 V • Dielectric withstanding/overload voltage: max. 700 V • Temp. Coefficient max $\pm 100 \text{ ppm}/^\circ\text{C}$ • Solder ability: Dip the lead in to a solder bath having a Temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $4 \pm 0.8 \text{ mm}$ from the body of the resistor and hold it for 5 ± 0.5 seconds then inspect • Bending tool • Vitrometer • Content: 10 pcs. per value $1\Omega \dots 1\text{M}\Omega$.

Substitute / Refill Packs are available:

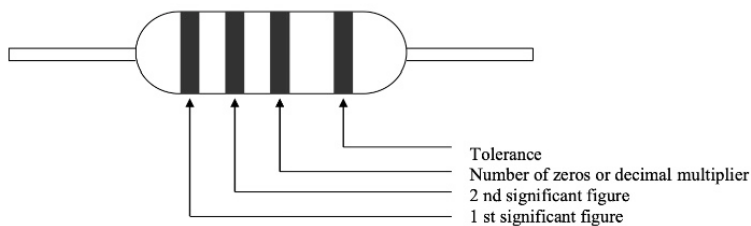
Part No.	Resistor Value	Content
22P081	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P082	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P083	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	1000 pcs. (50/each)
22P084	1 Ω	100 pcs.
22P085	10 Ω	100 pcs.
22P086	47 Ω	100 pcs.
22P087	100 Ω	100 pcs.
22P088	150 Ω	100 pcs.
22P089	220 Ω	100 pcs.

Part No.	Resistor Value	Content
22P090	330 Ω	100 pcs.
22P091	470 Ω	100 pcs.
22P092	1 k Ω	100 pcs.
22P093	1.5 k Ω	100 pcs.
22P094	2.2 k Ω	100 pcs.
22P095	4.7 k Ω	100 pcs.
22P096	10 k Ω	100 pcs.
22P097	22 k Ω	100 pcs.
22P098	33 k Ω	100 pcs.
22P099	47 k Ω	100 pcs.
22P100	100 k Ω	100 pcs.
22P101	220 k Ω	100 pcs.
22P102	470 k Ω	100 pcs.
22P103	1 M Ω	100 pcs.

Bundle Item-No.: 23P131 (4) Carbon Film Resistors Set 500 mW



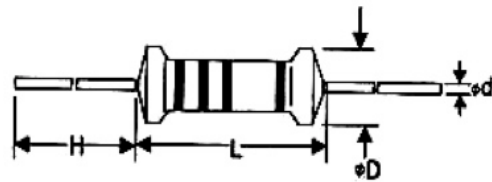
Resistor color code



Color refer

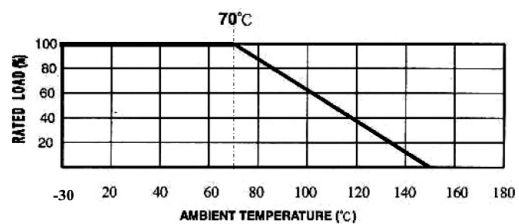
Color	1 st Band	2 nd Band	3 rd Band	4 th Band
Black	0	0	10^0	
Brown	1	1	10^1	
Red	2	2	10^2	$\pm 2.0\%$
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	
Blue	6	6	10^6	
Violet	7	7	10^7	
Grey	8	8	10^8	
White	9	9	10^9	
Gold			10^{-1}	$\pm 5.0\%$
Silver			10^{-2}	$\pm 10.0\%$

Resistor dimensions



$L = 9.0 \pm 0.5 \text{ mm}$ / $D = 3.2 \pm 0.3 \text{ mm}$ / $H = 26 \pm 2 \text{ mm}$ / $d = 0.4 \text{ mm}$

Derating @ high temperature



Technical data: Rated power: 0.5 W (Derating from $T_a = 70^\circ\text{C}$) • Tolerance: 5% • Temp.-range: $-50 \dots 150^\circ\text{C}$ • Working voltage: 350 V • Dielectric withstanding/overload voltage: max. 700 V • Temp. Coefficient max $\pm 350 \text{ ppm}/^\circ\text{C}$ ($< 100 \text{ k}\Omega$) / $0 \dots -700 \text{ ppm}/^\circ\text{C}$ ($100 \text{ k}\Omega \dots 1 \text{ M}\Omega$) • Solder ability: Dip the lead in to a solder bath having a Temperature of $260^\circ\text{C} \pm 5^\circ\text{C}$ up to $4 \pm 0.8 \text{ mm}$ from the body of the resistor and hold it for 5 ± 0.5 seconds then inspect • Bending tool • Vitrometer • Content: 10 pcs. per value $1\Omega \dots 1 \text{ M}\Omega$.

Substitute / Refill Packs are available:

Part No.	Resistor Value	Content
22P104	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P105	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P106	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	1000 pcs. (50/each)
22P107	1 Ω	100 pcs.
22P108	10 Ω	100 pcs.
22P109	47 Ω	100 pcs.
22P110	100 Ω	100 pcs.
22P111	150 Ω	100 pcs.
22P112	220 Ω	100 pcs.

Part No.	Resistor Value	Content
22P113	330 Ω	100 pcs.
22P114	470 Ω	100 pcs.
22P115	1 k Ω	100 pcs.
22P116	1.5 k Ω	100 pcs.
22P117	2.2 k Ω	100 pcs.
22P118	4.7 k Ω	100 pcs.
22P119	10 k Ω	100 pcs.
22P120	22 k Ω	100 pcs.
22P121	33 k Ω	100 pcs.
22P122	47 k Ω	100 pcs.
22P123	100 k Ω	100 pcs.
22P124	220 k Ω	100 pcs.
22P125	470 k Ω	100 pcs.
22P126	1 M Ω	100 pcs.