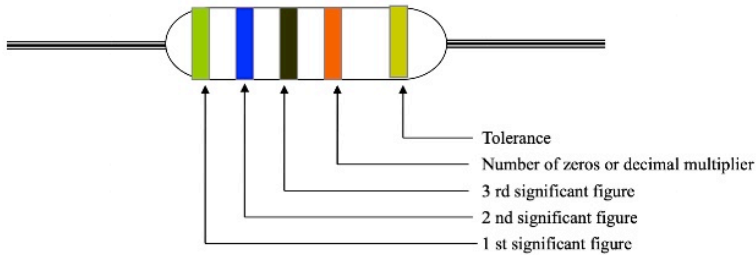


Bundle Item-No.: 23P131 (1) Metal Film Resistors Set 250 mW



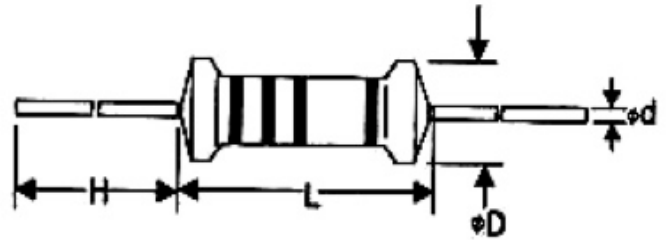
Resistor color code



Color refer

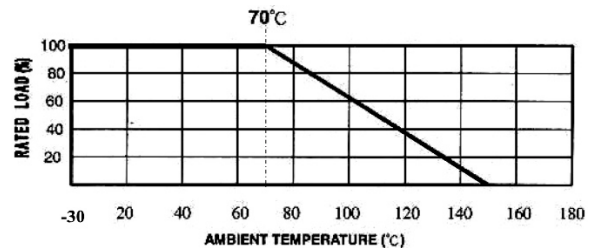
Color	1 st Band	2 nd Band	3 rd Band	4 th Band	Tolerance
Black	0	0	0	10^0	
Brown	1	1	1	10^1	$\pm 1.00\%$
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	$\pm 0.50\%$
Blue	6	6	6	10^6	$\pm 0.25\%$
Violet	7	7	7	10^7	$\pm 0.10\%$
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver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

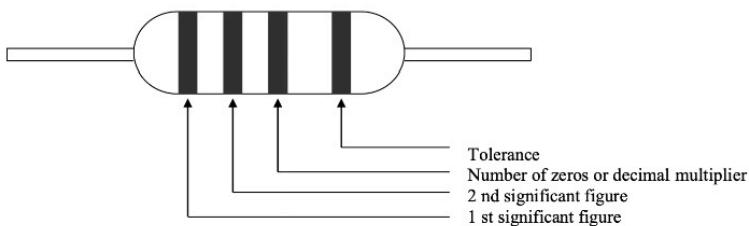
Part No.	Resistor Value	Content
22P035	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P036	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P037	1, 10, 47,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



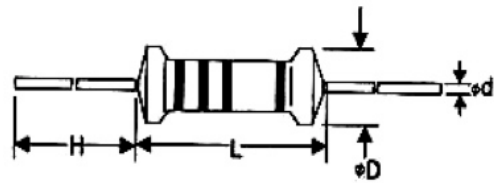
Resistor color code



Color refer

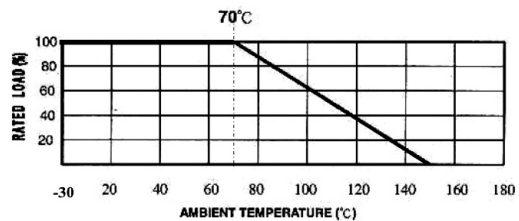
Color	1 st Band	2 nd Band	3 rd Band	4 th Band
Black	0	0	10^0	
Brown	1	1	10^1	
Red	2	2	10^2	$\pm 2.0\%$
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	
Blue	6	6	10^6	
Violet	7	7	10^7	
Grey	8	8	10^8	
White	9	9	10^9	
Gold			10^{-1}	$\pm 5.0\%$
Silver			10^{-2}	$\pm 10.0\%$

Resistor dimensions



$L = 6.0 \pm 0.5$ mm / $D = 2.3 \pm 0.3$ mm / $H = 27 \pm 2$ mm / $d = 0.33$ 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 ± 350 ppm/ $^\circ\text{C}$ ($<100\text{k}\Omega$) / $0 \dots -700$ 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 ± 0.8 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.

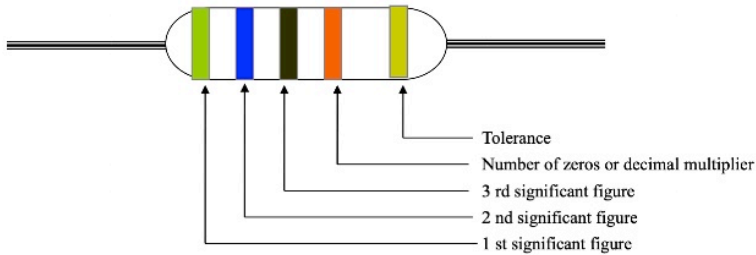
Bundle Item-No.: 23P131 (3) Metal Film Resistors Set 500 mW



RoHS



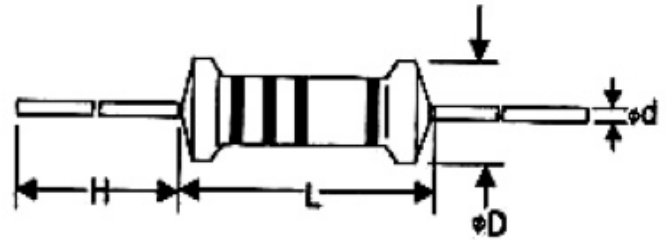
Resistor color code



Color refer

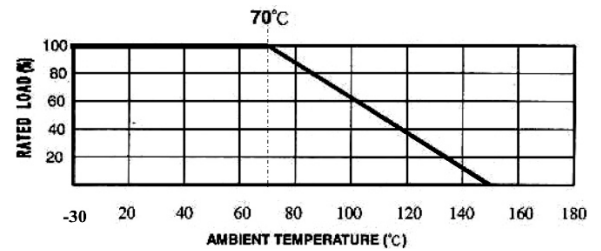
Color	1 st Band	2 nd Band	3 rd Band	4 th Band	Tolerance
Black	0	0	0	10^0	
Brown	1	1	1	10^1	±1.00 %
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	±0.50 %
Blue	6	6	6	10^6	±0.25 %
Violet	7	7	7	10^7	±0.10 %
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver				10^{-2}	

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 ... 150 °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:

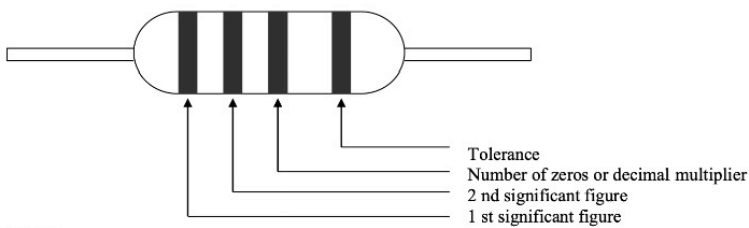
Part No.	Resistor Value	Content
22P081	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	200 pcs. (10/each)
22P082	1, 10, 47, 100, 150, 220, 330, 470, 1k, 1.5k, 2.2k, 4.7k, 10k, 22k, 33k, 47k, 100k, 220k, 470k, 1M Ω	500 pcs. (25/each)
22P083	1, 10, 47,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



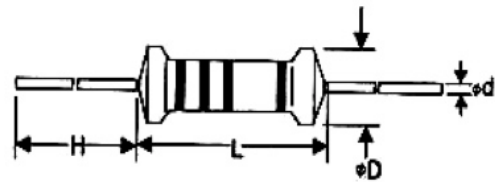
Resistor color code



Color refer

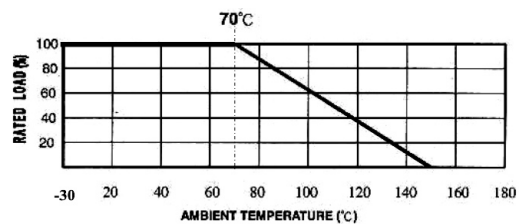
Color	1 st Band	2 nd Band	3 rd Band	4 th Band
Black	0	0	10 ⁰	
Brown	1	1	10 ¹	
Red	2	2	10 ²	±2.0%
Orange	3	3	10 ³	
Yellow	4	4	10 ⁴	
Green	5	5	10 ⁵	
Blue	6	6	10 ⁶	
Violet	7	7	10 ⁷	
Grey	8	8	10 ⁸	
White	9	9	10 ⁹	
Gold			10 ⁻¹	±5.0%
Silver			10 ⁻²	±10.0%

Resistor dimensions



L = 9.0 ± 0.5 mm / D = 3.2 ± 0.3 mm / H = 26 ± 2 mm / d = 0.4 mm

Derating @ high temperature



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

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 kΩ	100 pcs.
22P116	1.5 kΩ	100 pcs.
22P117	2.2 kΩ	100 pcs.
22P118	4.7 kΩ	100 pcs.
22P119	10 kΩ	100 pcs.
22P120	22 kΩ	100 pcs.
22P121	33 kΩ	100 pcs.
22P122	47 kΩ	100 pcs.
22P123	100 kΩ	100 pcs.
22P124	220 kΩ	100 pcs.
22P125	470 kΩ	100 pcs.
22P126	1 MΩ	100 pcs.