

T-62-05



BOURNS

Model 4200P
 B® Resistor Networks

**SURFACE MOUNTED RESISTOR NETWORK
 MOLDED PCC STYLE/10 AND 20 PIN**

- JEDEC package compatible with automatic placement equipment
- Compliant leads to reduce solder joint fatiguing
- High temperature design suitable for all popular soldering techniques
- Copper leads for excellent heat dissipation
- Available on tape and reel packaging (see page 172 for dimensions)

Electrical Characteristics

Standard Resistance Range
10 ohms to 1.0 megohm
 Maximum Operating Voltage....50V
 Temperature Coefficient of Resistance (TCR)..... ± 100ppm/°C
 ± 250ppm/°C for values less than 50 ohms
 Voltage Coefficient
 ± 100ppm/V typical
 TCR Tracking
50ppm/°C max.; equal values
 Operating Temperature
 -55°C to + 125°C
 Power Rating.....Derate to zero power from +70°C to + 125°C
 Power Dissipation
 4210P.....0.160 watt/resistor
 1.50 watts/package
 4220P...0.115 to .160 watt/resistor
 2.00 watts/package

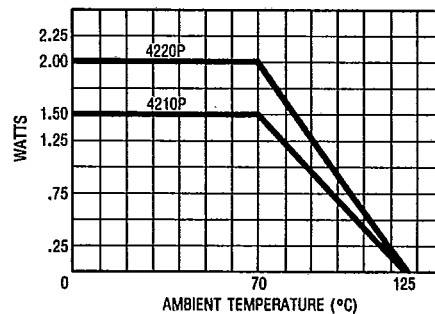
Environmental Characteristics

Tests per MIL-STD-202.....ΔR max.
 Short Time Overload..... ± 0.25%
 Load Life..... ± 1.00%
 Mechanical Shock..... ± 0.25%
 Moisture Resistance..... ± 0.50%
 Resistance to Soldering Heat
 ± 0.25%
 Thermal Shock..... ± 0.25%
 Insulation Resistance
10,000 megohms min.
 Dielectric Withstanding Voltage
200 VRMS
 Lead Solderability/Solvent Resistance
 .Meet requirements of MIL-R-83401

Physical Characteristics

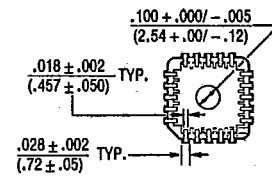
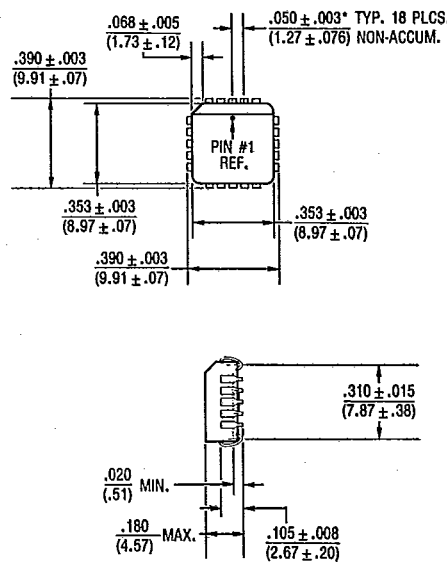
Flammability..Conforms to UL94V-0
 Lead Frame Material.....Copper
 (OLIN 194) 60/40 reflowed plating
 Body Material.....Novolac epoxy

PACKAGE POWER TEMPERATURE DERATING CURVE



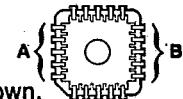
PACKAGE POWER RATING AT 70°C
 4220P.....2.00 watts
 4210P.....1.50 watts

4220P



Governing dimensions are in inches. Dimensions in parentheses are metric (mm) and are approximate.

*Terminal centerline to centerline measurements made at point of emergence of the lead from the body.

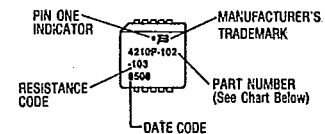


Model 4220P shown.

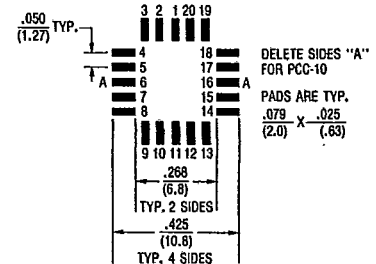
Model 4210 is identical to the Model 4220P package without pin patterns A and B (as indicated above).

TYPICAL PART MARKING

Represents total content. Layout may vary.



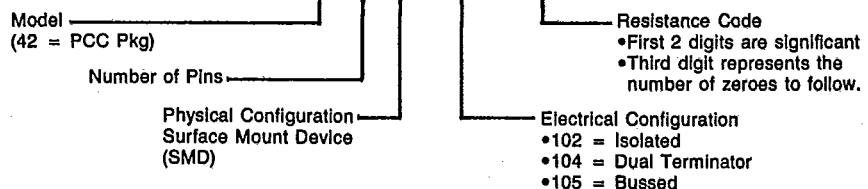
RECOMMENDED LAND PATTERN



NOTE: Land pattern dimensions are based on design rules established by the Institute for Interconnecting and Packaging Electronic Circuits in IPC-SM-782.

HOW TO ORDER SMD PCC PACKAGE NETWORKS

42 20 P - 102 - 103



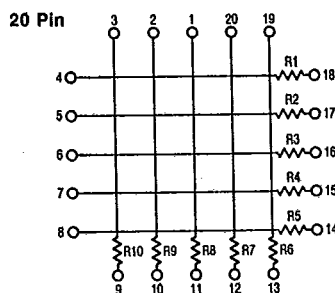
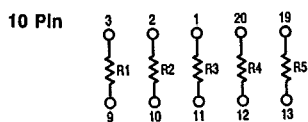
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- Superior package integrity to withstand moisture and contamination
- Laser marking on contrasting background for permanent identification
- Standard electrical schematics: isolated, bussed, dual terminator
- Custom circuits are available

Model 4200P

Resistor Networks

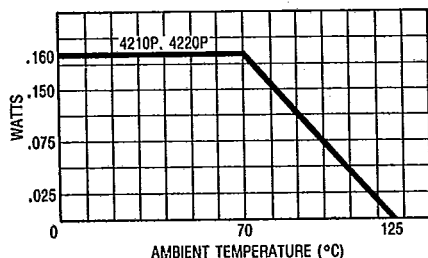
ISOLATED RESISTORS (102 CIRCUIT)



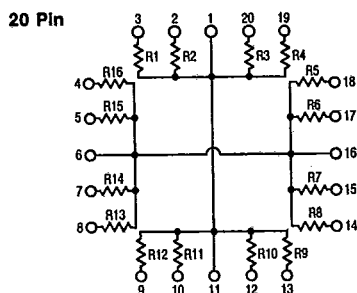
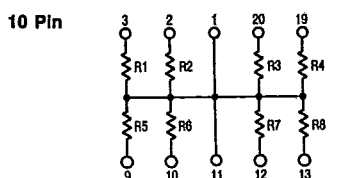
Resistance Tolerance
 10 ohms to 49 ohms..... ± 1 ohm
 50 ohms to 1.0 megohm..... ± 2%

Power Rating per Resistor
 10 Pin at 70°C.....0.160 watt
 20 Pin at 70°C.....0.160 watt

POWER TEMPERATURE DERATING CURVE



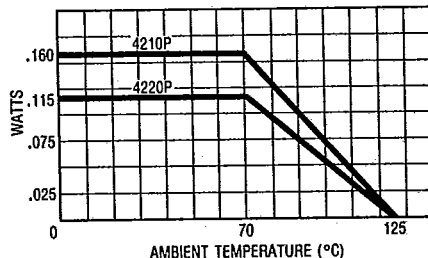
BUSSED RESISTORS (105 CIRCUIT)



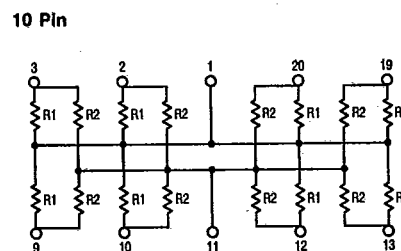
Resistance Tolerance
 10 ohms to 49 ohms..... ± 1 ohm
 50 ohms to 1.0 megohm..... ± 2%

Power Rating per Resistor
 10 Pin at 70°C.....0.160 watt
 20 Pin at 70°C.....0.115 watt

POWER TEMPERATURE DERATING CURVE



DUAL TERMINATOR (104 CIRCUIT)



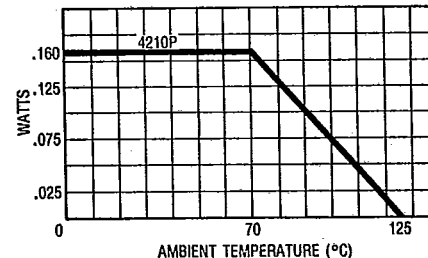
This network terminates 8 lines, convenient for an 8-bit computer bus.

20 Pin
 (Consult Factory)

Resistance Tolerance
 10 ohms to 49 ohms..... ± 1 ohm
 50 ohms to 1.0 megohm..... ± 2%

Power Rating per Resistor
 10 Pin at 70°C.....0.160 watt

POWER TEMPERATURE DERATING CURVE



STANDARD RESISTANCE VALUES (102, 105 CIRCUITS)

Resistance (Ohms)	Resistance Code
10	100
22	220
27	270
33	330
39	390
47	470
56	560
68	680
82	820
100	101
120	121
150	151
180	181
220	221
270	271

Resistance (Ohms)	Resistance Code
330	331
390	391
470	471
560	561
680	681
820	821
1,000	102
1,200	122
1,500	152
1,800	182
2,000	202
2,200	222
2,700	272
3,300	332
3,900	392

Resistance (Ohms)	Resistance Code
4,700	472
5,600	562
6,800	682
9,200	922
10,000	103
12,000	123
15,000	153
18,000	183
20,000	203
22,000	223
27,000	273
33,000	333
39,000	393
47,000	473
56,000	563

Resistance (Ohms)	Resistance Code
68,000	683
82,000	823
100,000	104
120,000	124
150,000	154
180,000	184
220,000	224
270,000	274
330,000	334
390,000	394
470,000	474
560,000	564
680,000	684
820,000	824
1,000,000	105

STANDARD RESISTANCE VALUES (104 CIRCUITS)

Resistance			
(Ohms)		Code	
R ₁	R ₂	R ₁	R ₂
160	240	161	241
180	390	181	391
220	270	221	271
220	330	221	331
330	390	331	391
330	470	331	471
3,000	6,200	302	622

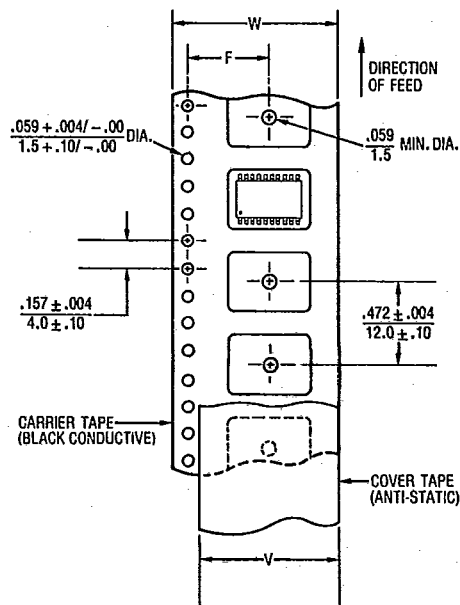
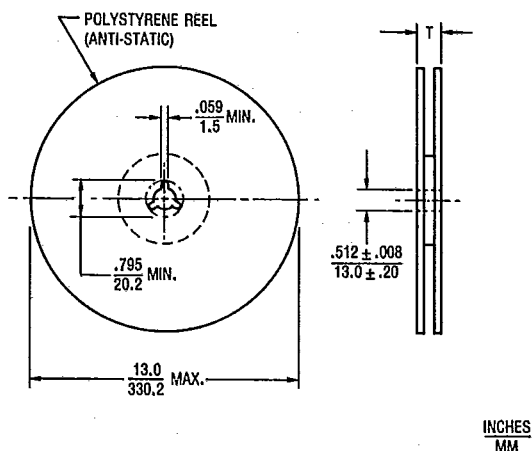
Specifications are subject to change without notice.



RESISTOR NETWORKS SURFACE MOUNT TAPE AND REEL SPECIFICATIONS

Model	Standard Quantity Per Reel	Carrier Tape Width (W)	Cover Tape Width (V)	Reel Width (T)	Pocket Center (F)
4210P 4220P	1,000	$\frac{.630 \pm .012}{16.0 \pm .30}$	$\frac{.524}{13.3}$ NOM.	$\frac{.882}{22.4}$ MAX.	$\frac{.295 \pm .004}{7.5 \pm .10}$
4416P 4416J	1,500				
4814P	2,000				
4420P 4420J	1,500	$\frac{.945 \pm .012}{24.0 \pm .30}$	$\frac{.827}{21.0}$ NOM.	$\frac{1.43}{36.4}$ MAX.	$\frac{.453 \pm .004}{11.5 \pm .10}$
4816P	2,000				

Leader Length = 530 ± 30 mm } Empty Component Pockets
 Trailer Length = 500mm Min. } Sealed With Cover Tape



NOTE: Dimensions not specified are per EIA RS-481.
 Governing dimensions are in millimeters.