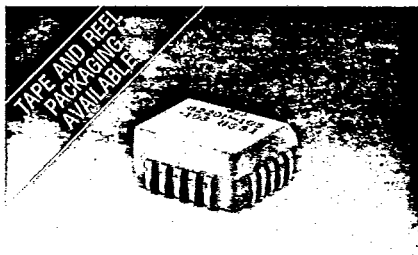


T-62-05


BOURNS
Model 4200P
® 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)..... $\pm 100\text{ppm}/^\circ\text{C}$

$\pm 250\text{ppm}/^\circ\text{C}$ for values less than 50 ohms

Voltage Coefficient

..... $\pm 100\text{ppm}/\text{V}$ typical

TCR Tracking

.....50ppm/ $^\circ\text{C}$ max.; equal values

Operating Temperature

..... -55°C to $+125^\circ\text{C}$

Power Rating.....Derate to zero power from $+70^\circ\text{C}$ to $+125^\circ\text{C}$

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..... $\pm 0.25\%$

Load Life..... $\pm 1.00\%$

Mechanical Shock..... $\pm 0.25\%$

Moisture Resistance..... $\pm 0.50\%$

Resistance to Soldering Heat

..... $\pm 0.25\%$

Thermal Shock..... $\pm 0.25\%$

Insulation Resistance

.....10,000 megohms min.

Dielectric Withstanding Voltage

.....200 VRMS

Lead Solderability/Solvent Resistance

.Meet requirements of MIL-R-83401

Physical Characteristics

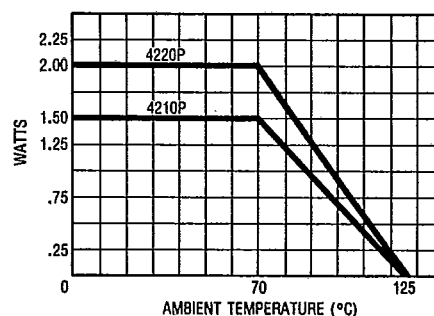
Flammability..Conforms to UL94V-0

Lead Frame Material.....Copper

(OLIN 194) 60/40 reflowed plating

Body Material.....Novolac epoxy

PACKAGE POWER TEMPERATURE DERATING CURVE

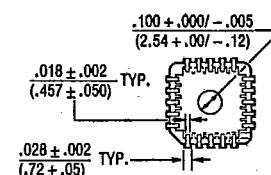
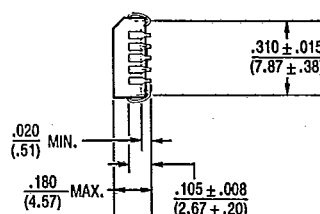
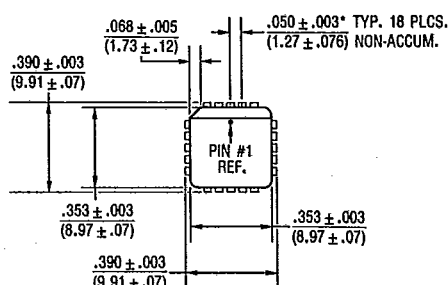


PACKAGE POWER RATING AT 70°C

4220P.....2.00 watts

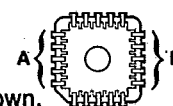
4210P.....1.50 watts

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.

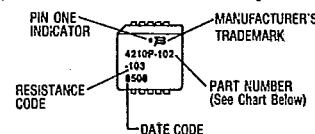


Model 4220P shown.

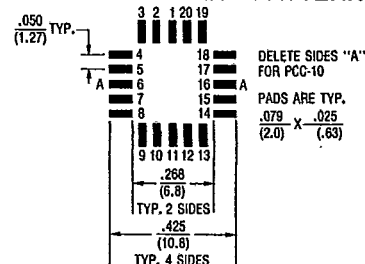
Model 4210 is identical to the Model 4220P package without pin patterns A and B (as indicated above).

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

Model
(42 = PCC Pkg)

Number of Pins

Physical Configuration
Surface Mount Device
(SMD)

Resistance Code

- First 2 digits are significant
- Third digit represents the number of zeroes to follow.

Electrical Configuration

- 102 = Isolated
- 104 = Dual Terminator
- 105 = Bussed

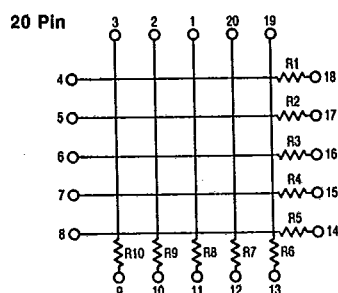
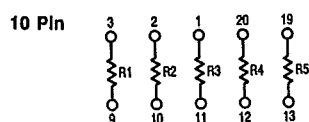
T-62-05

- 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)



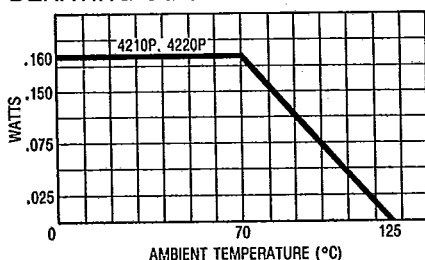
Resistance Tolerance

10 ohms to 49 ohms..... ± 1 ohm
50 ohms to 1.0 megohm..... $\pm 2\%$

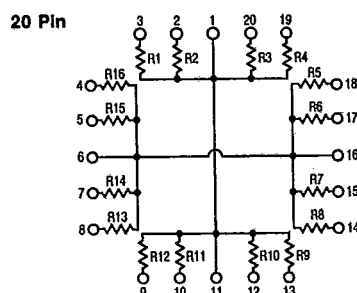
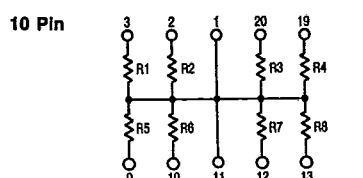
Power Rating per Resistor

10 Pin at 70°C.....0.160 watt
20 Pin at 70°C.....0.160 watt

POWER TEMPERATURE DERATING CURVE



BUSSED RESISTORS (105 CIRCUIT)



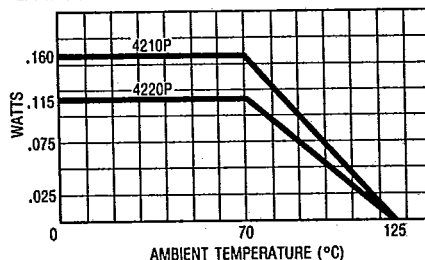
Resistance Tolerance

10 ohms to 49 ohms..... ± 1 ohm
50 ohms to 1.0 megohm..... $\pm 2\%$

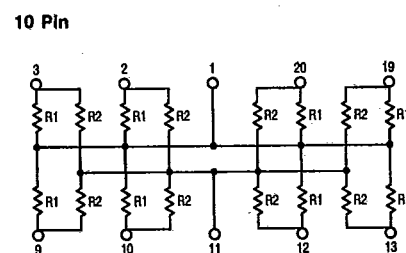
Power Rating per Resistor

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)

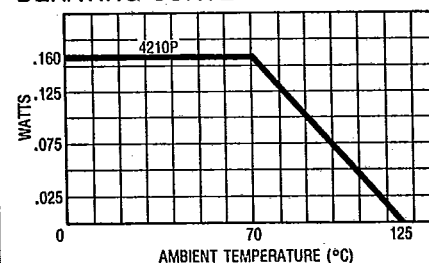
Resistance Tolerance

10 ohms to 49 ohms..... ± 1 ohm
50 ohms to 1.0 megohm..... $\pm 2\%$

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	Resistance (Ohms)	Resistance Code
10	100	330	331
22	220	390	391
27	270	470	471
33	330	560	561
39	390	680	681
47	470	820	821
56	560	1,000	102
68	680	1,200	122
82	820	1,500	152
100	101	1,800	182
120	121	2,000	202
150	151	2,200	222
180	181	2,700	272
220	221	3,300	332
270	271	3,900	392

Resistance (Ohms)	Resistance Code	Resistance (Ohms)	Resistance Code
4,700	472	68,000	683
5,600	562	82,000	823
6,800	682	100,000	104
9,200	922	120,000	124
10,000	103	150,000	154
12,000	123	180,000	184
15,000	153	220,000	224
18,000	183	270,000	274
20,000	203	330,000	334
22,000	223	390,000	394
27,000	273	470,000	474
33,000	333	560,000	564
39,000	393	680,000	684
47,000	473	820,000	824
56,000	563	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.

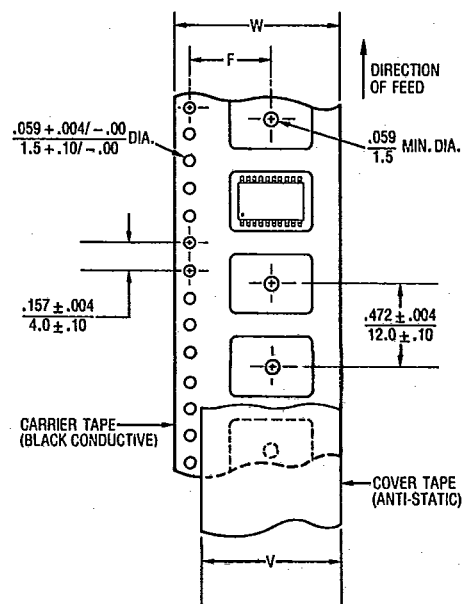
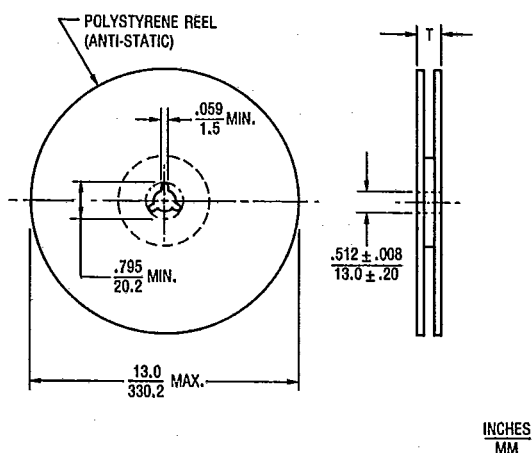
BOURNS

T-90-20

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.