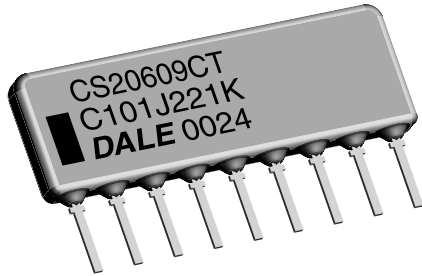


Thick Film Resistor/Capacitor Networks, Single-In-Line, Conformal Coated SIP



FEATURES

- 10K ECL terminators, circuits E and M. 100K ECL terminators, circuit A. Line terminator, circuit T
- 4 to 18 pins available
- X7R and C0G capacitors available
- Low cross talk
- Custom design capability
- "B" 0.250" (6.35 mm), "C" 0.350" (8.89 mm) and "E" 0.325" (8.26 mm) maximum seated height available, dependent on schematic
- Compliant to RoHS directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS*
COMPLIANT
HALOGEN
FREE

STANDARD ELECTRICAL SPECIFICATIONS

| VISHAY DALE MODEL | PROFILE | SCHEMATIC | RESISTOR CHARACTERISTICS | | | | | CAPACITOR CHARACTERISTICS | |
|-------------------|---------|-----------|-----------------------------------------------|---------------------|--------------------|----------------------------------------------|----------------------------------------------|----------------------------|--------------------|
| | | | POWER RATING ELEMENT $P_{70^\circ\text{C}}$ W | RES. RANGE Ω | RES. TOL. $\pm \%$ | TEMP. COEFF. $\pm \text{ppm}/^\circ\text{C}$ | TCR TRACKING $\pm \text{ppm}/^\circ\text{C}$ | CAP. RANGE | CAP. TOL. $\pm \%$ |
| CS206 | B | E, M | 0.125 | 10 to 1M | 2, 5 | 200 | 100 | 0.01 μF | 10, 20 |
| CS206 | C | T | 0.125 | 10 to 1M | 2, 5 | 200 | 100 | 33 pF to 0.1 μF | 10, 20 |
| CS206 | E | A | 0.125 | 10 to 1M | 2, 5 | 200 | 100 | 0.01 μF | 10, 20 |

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CS206 |
|--------------------------------------------------|------------------|--------------------------------|
| Operating Voltage (at + 25 °C) | V_{AC} | 50 maximum |
| Dissipation Factor (maximum) | % | COG = 0.15; X7R = 2.5 |
| Insulation Resistance (at + 25 °C/rated voltage) | $M\Omega$ | 100 000 |
| Dielectric Test | V | 2.5 x rated voltage |
| Operating Temperature Range | $^\circ\text{C}$ | - 55 to + 125 $^\circ\text{C}$ |

Capacitor Temperature Coefficient:

C0G maximum 0.15 %, X7R maximum 2.5 %

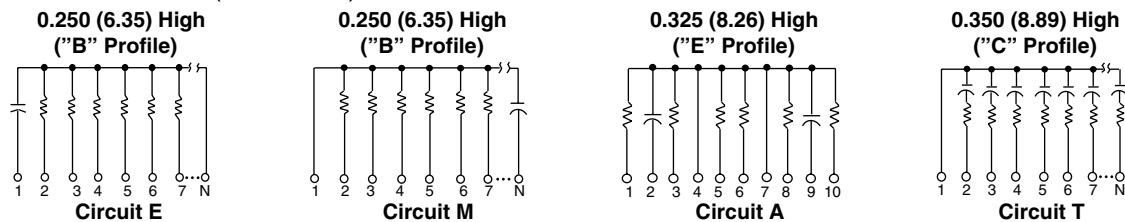
Package Power Rating (maximum at 70 °C):

- 8 pins = 0.80 W
- 9 pins = 0.90 W
- 10 pins = 1.00 W

EIA Characteristics:

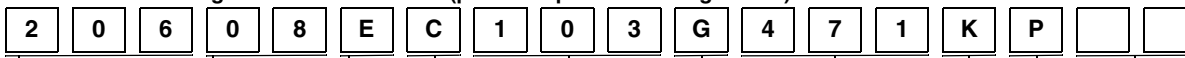
C0G and X7R (C0G capacitors may be substituted for X7R capacitors)

SCHEMATICS in inches (millimeters)



GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: 20608EC103G471KP (preferred part numbering format)

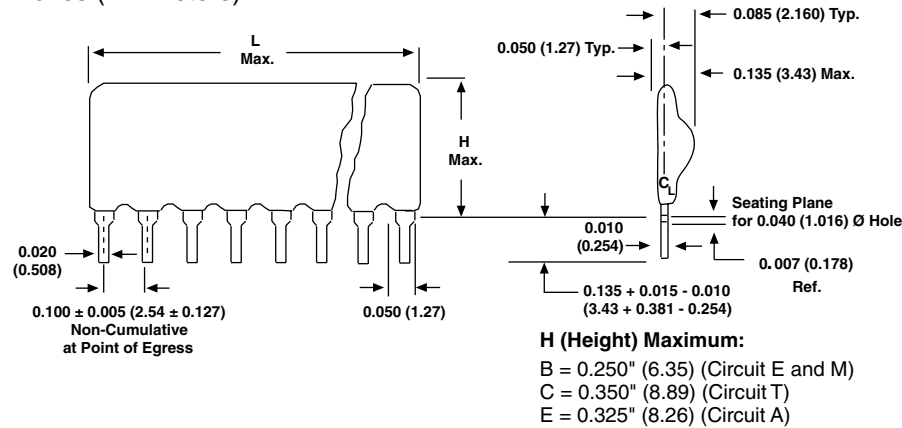


| GLOBAL MODEL | PIN COUNT | PACKAGE/SCHEMATIC | CHARACTERISTIC | RESISTANCE VALUE | RES. TOLERANCE | CAPACITANCE VALUE | CAP. TOLERANCE | PACKAGING | SPECIAL |
|--------------|-------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------|-------------------------------------------------|
| 206 = CS206 | 04 to 18 pin available 04 = 4 Pin 08 = 8 Pin 18 = 18 Pin | E = BE M = BM A = EA T = CT S = Special | C = C0G X = X7R S = Special | 2 digit significant figure, followed by a multiplier 100 = 10 Ω 333 = 33 k Ω 105 = 1 M Ω | G = $\pm 2 \%$ J = $\pm 5 \%$ S = Special | (in pF) 2 digit significant figure, followed by a multiplier 330 = 33 pF 392 = 3900 pF 104 = 0.1 μF | K = $\pm 10 \%$ M = $\pm 20 \%$ S = Special | E = Lead (Pb)-free, bulk P = Tin/lead, bulk | Blank = Standard (Dash Number) (Up to 2 digits) |

Historical Part Number example: CS20608BEC103G471KP03 (will continue to be accepted)

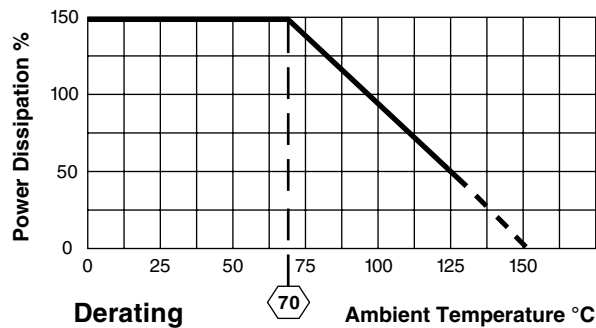
| CS206 | 08 | B | E | C | 103 | G | 471 | K | P03 |
|------------------|-----------|----------------|-----------|----------------|------------------|----------------------|-------------------|-----------------------|-----------|
| HISTORICAL MODEL | PIN COUNT | PACKAGE HEIGHT | SCHEMATIC | CHARACTERISTIC | RESISTANCE VALUE | RESISTANCE TOLERANCE | CAPACITANCE VALUE | CAPACITANCE TOLERANCE | PACKAGING |

* Pb containing terminations are not RoHS compliant, exemptions may apply

DIMENSIONS in inches (millimeters)


Pin #1 is extreme left-hand terminal on side with marking.

| NUMBER OF PINS | L MAXIMUM | NUMBER OF PINS | L MAXIMUM | NUMBER OF PINS | L MAXIMUM | NUMBER OF PINS | L MAXIMUM | NUMBER OF PINS | L MAXIMUM |
|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| 4 pin | 0.400 (10.16) | 7 pin | 0.700 (17.78) | 10 pin | 1.000 (25.40) | 13 pin | 1.300 (33.02) | 16 pin | 1.600 (40.64) |
| 5 pin | 0.500 (12.70) | 8 pin | 0.800 (20.32) | 11 pin | 1.100 (27.94) | 14 pin | 1.400 (35.56) | 17 pin | 1.700 (43.18) |
| 6 pin | 0.600 (15.24) | 9 pin | 0.900 (22.86) | 12 pin | 1.200 (30.48) | 15 pin | 1.500 (38.10) | 18 pin | 1.800 (45.72) |


TECHNICAL SPECIFICATIONS

| | |
|---------------------|----------------------------------------------------------------------------------------|
| Flammability | UL 94 V-0 |
| Lead Material | Phosphorus-bronze, solder plated |
| Body Material | Epoxy coated |
| Solderability | Per MIL-STD-202, method 208E |
| Part Marking | Pin #1 identification, part number (abbreviated as space allows), DALE or D, date code |
| Moisture Resistance | Meets requirements of MIL-STD-202, method 106 |

PERFORMANCE

| TEST | CONDITION | MAX. ΔR (Typical Test Lots) |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Thermal Shock | Subject to 5 cycles from - 65 °C to + 125 °C | ± 0.5 % ΔR |
| Short Time Overload | 2.5 x rated working voltage for 5 s at + 25 °C | ± 0.25 % ΔR |
| Moisture Resistance | Cycle from + 25 °C to + 65 °C to + 25 °C over 8 h at 90 % to 98 % relative humidity, with 10 % of rated power applied, for 20 cycles. Stop cycling after an even number of cycles and stabilize networks at high humidity for 1 h to 4 h. Condition networks at - 10 °C for 3 h, then return to temperature cycling. On completion of cycling condition networks at + 25 °C at 50 % R.H. for 22 h to 24 h | ± 0.5 % ΔR |
| Resistance to Soldering Heat | Immerse pins in melted solder to the lead standoffs at + 350 °C for 3 s max. | ± 0.25 % ΔR |
| Mechanical Shock | 18 shocks of 100 g's and 6 ms | ± 0.25 % ΔR |
| Vibration | 12 cycles varied logarithmically from 10 Hz to 2000 Hz to 10 Hz over 20 min | ± 0.25 % ΔR |
| Load Life | 1000 h at + 70 °C, rated power applied 1.5 h "ON", 0.5 h "OFF" | ± 1.0 % ΔR |
| Resistance to Solvents | Immerse and scrub samples with isopropyl alcohol, trichlorethylene and Freon TMC | Marking remains legible |
| Solderability | Immerse leads in 60/40 tin-lead solder using R flux at + 245 °C for 5 s maximum | Minimum 95 % solder coverage |
| Terminal Strength | Withstand 2.2 kg pull 1 min | ± 0.25 % ΔR |
| Case Insulation Resistance | 100 V applied between case and terminals tied together | IR = 10 000 MΩ minimum |



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