



# State of the Art, Inc.

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## REACH<sup>1</sup>

State of the Art, Inc. produces various resistor products classified as articles per Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) entered into force on 1 June 2007. Some of our products contain substances of very high concern (SVHC) as listed on the Candidate List 241 (last updated on 27 June 2024) published in accordance with Article 59(10) of the REACH Regulation and maintained by the European Chemicals Agency (ECHA). A link to the Candidate List is provided for your convenience.

<https://echa.europa.eu/candidate-list-table>

Our products may contain substances of very high concern (SVHC). Lead is contained in the tin-lead (SnPb) solder finish found on some surface mount chips. Cadmium, as cadmium oxide, is found in some high-power resistor stock and some resistors with platinum/gold termination finish. Lead oxide is found in all semi-precision thick film product. Lead chromate is found in some semi-precision thick film stock.

The REACH status of our products is determined by several codes in our product's part number. Our part identification numbers have various formats, examples are shown below:

*Semi-precision thick film chip resistors:* S1206CPX1000F10, S1206CPY102G30

*Precision thin film chip resistors:* S1206CA1000BEB, S1206CA1001FKW

*Precision silicon chip resistors:* S0303AS1000FKW

*Zero ohm chip resistors (jumpers):* S0402CPX000

*Chip attenuators:* S0303AC10B0B, S0706CW6B0B, S1512CT3B0BN7

*MIL-PRF-55342 chip resistors:* M55342K06B100BR, D55342K07W100DT

*MIL-PRF-32159 zero ohm chip resistors:* M32159C12M, M32159B06T.

*MIL-PRF-914 surface mount resistor networks:* M914D04K1002FMM

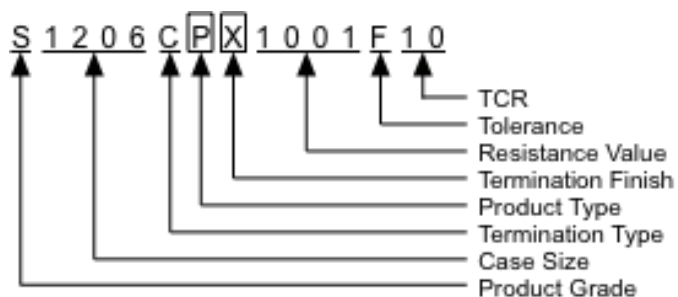
*Surface mount resistor networks:* SJCB20L1001FA, SD1516K1001FB.

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<sup>1</sup> Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

## Semi-Precision Thick Film Chip Resistors

The REACH SVHC content in semi-precision thick film products is determined by the product and termination finish codes in our part number. These codes are boxed in the part number example below, the boxed P is product type code and the boxed X is the termination finish code.



Semi-precision thick film chip resistors with product codes B or R (high power resistors) may contain the SVHC material cadmium as cadmium oxide. Current production does not contain cadmium oxide but stock with date codes prior to year 2020 may.

Semi-precision thick film chip resistors with termination finish code P (platinum/gold) contain the SVHC material cadmium as cadmium oxide.

Semi-precision thick film chip resistors with resistance values less than 0.500 ohms may contain cadmium oxide.

Semi-precision thick film chip resistors with termination finish code X (tin-lead solder over nickel barrier) contain the SVHC material lead.

All semi-precision thick film chip resistors contain the SVHC material lead oxide in the resistive and glass materials.

Some semi-precision thick film chip resistor stock with date codes prior to year 2021 may contain the SVHC material lead chromate.

Due to the presence of these materials, semi-precision thick film chip resistors **ARE NOT** REACH compliant.

## Zero Ohm Chip Resistors (Jumpers)

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Zero ohm chip resistors contain the SVHCs lead and lead oxide. These products may also contain the SVHCs cadmium and lead chromate. These products **ARE NOT** REACH compliant. Additional REACH SVHC content can be determined by using the product and termination codes found in the previous section.

Zero ohm chip resistors with termination finish code X (tin-lead solder over nickel barrier) contain the SVHC material lead.

Zero ohm chip resistors with termination finish code P (platinum gold) contain the SVHC material cadmium as cadmium oxide.

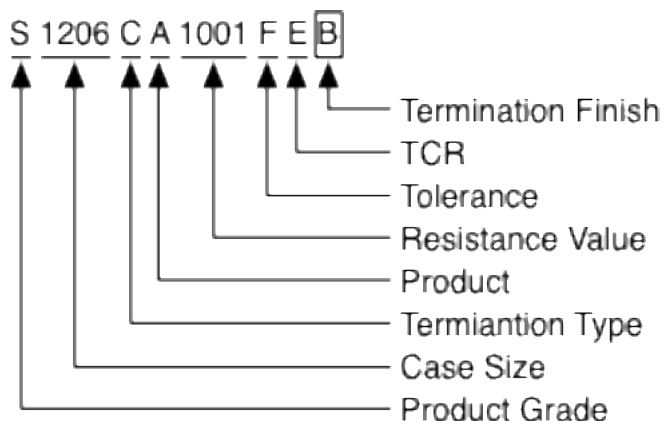
All zero ohm chip resistors contain the SVHC material lead oxide in the glass materials.

Some older zero ohm chip resistor stock may contain the SVHC material lead chromate in the base metal.

## Precision Thin Film Chip Resistors

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The REACH status of precision thin film chip resistors is determined by the termination finish code. This code is boxed in the part number example below, the boxed B is the termination finish code.

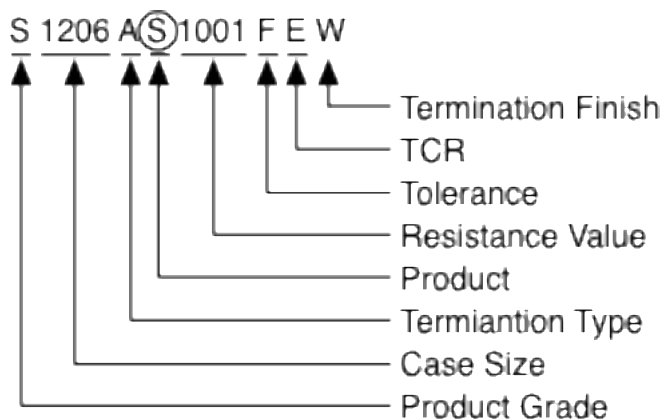


Precision thin film chip resistors with termination finish code B (tin-lead solder over nickel barrier) contain the SVHC material lead. Resistors with termination finish code B **DO NOT** comply with REACH.

## Precision Silicon Resistors

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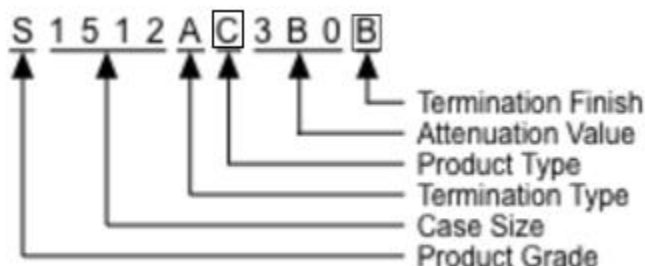
Precision silicon resistors do not contain SVHC materials. Silicon resistors are identified by the product code S in the part number.



## Fixed Attenuators

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Fixed chip attenuators may contain SVHCs and are identified by termination finish code or product type boxed in the attenuator part number format:



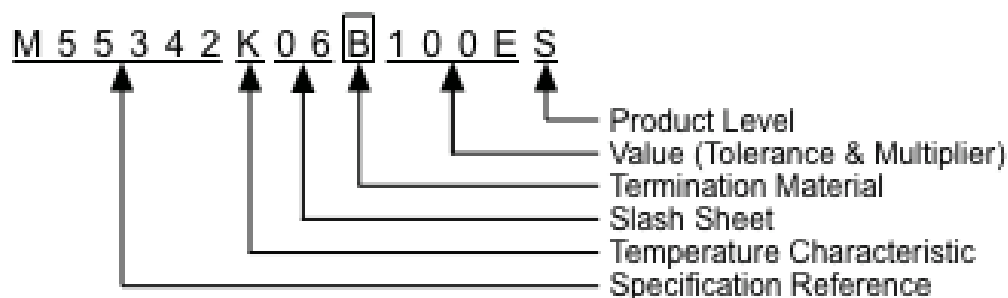
Fixed chip attenuators with termination finish code B (tin-lead solder over nickel barrier) contain the SVHC material lead. Attenuators with termination finish code B **DO NOT** comply with REACH.

Fixed chip attenuators with product type code W contain the SVHC material lead oxide in the resistive and glass materials. Attenuators with product code W **DO NOT** comply with REACH.

## MIL-PRF-55342 Resistors

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REACH compliance of MIL-PRF-55342 is determined by the termination material code in the MIL-PRF-55342 part number. The termination material code location is boxed in the part number example.



MIL-PRF-55342 chip resistors with termination material U (Platinum/Gold) contain the SVHC material cadmium as cadmium oxide and lead oxide.

MIL-PRF-55342 chip resistors with termination material C (Palladium/Silver) and G (Gold Epoxy Bondable) contain the SVHC material lead oxide.

MIL-PRF-55342 chip resistors with termination material B (tin-lead solder over nickel barrier) contain the SVHC material lead and may contain lead oxide, or lead chromate.

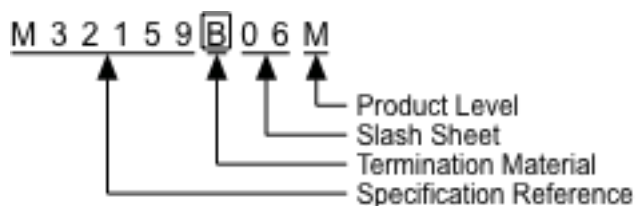
Resistors with termination material B, U, G, and C **DO NOT** comply with REACH.

MIL-PRF-55342 resistors with termination material W (Gold Wire Bondable) **MAY BE** REACH compliant. Contact sales for more information.

## MIL-PRF-32159 Zero Ohm Jumper Resistors

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MIL-PRF-32159 zero ohm jumpers contain SVHCs. SVHC content is determined by the termination material code in the MIL-PRF-32159 part number. The termination material code location is boxed in the part number example.



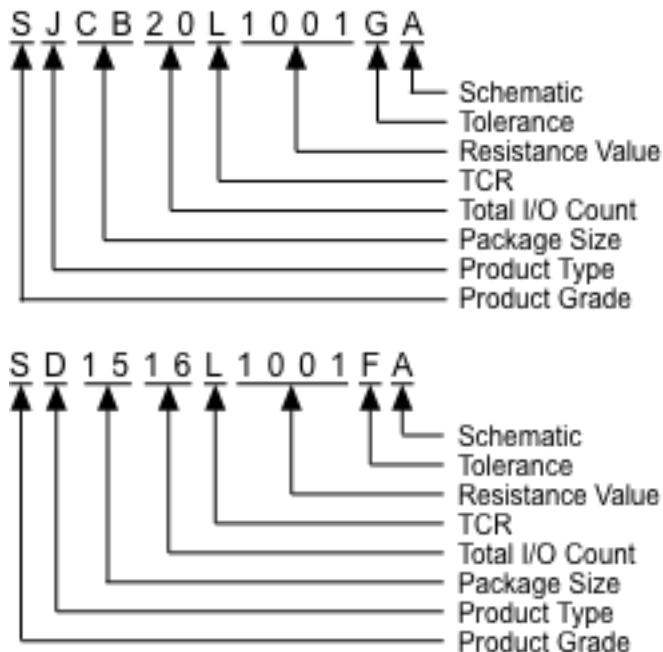
MIL-PRF-32159 zero ohm chip resistors with termination material code U (platinum gold) contain the SVHC material cadmium as cadmium oxide and lead compounds.

All other MIL-PRF-32159 resistors contain the SVHC materials lead and lead oxide. Older stock may contain the SVHC material lead chromate.

MIL-PRF-32159 zero ohm chip resistors **DO NOT** comply with REACH.

## Surface Mount Thick Film Resistor Networks

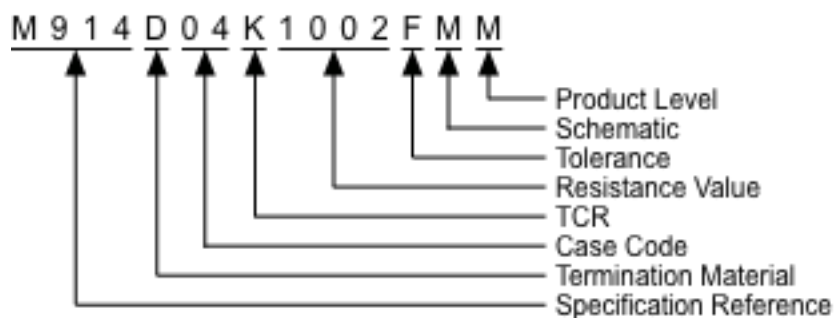
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All surface mount resistor network products contain the SVHC lead in the tin-lead solder termination finish and contain lead oxide in the resistor and glass materials. These products **DO NOT** comply with REACH.

## MIL-PRF-914 Surface Mount Resistor Networks

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All MIL-PRF-914 surface mount resistor network products contain lead in the tin-lead solder termination finish and contain lead oxide in the resistor and glass materials. These products **DO NOT** comply with REACH.