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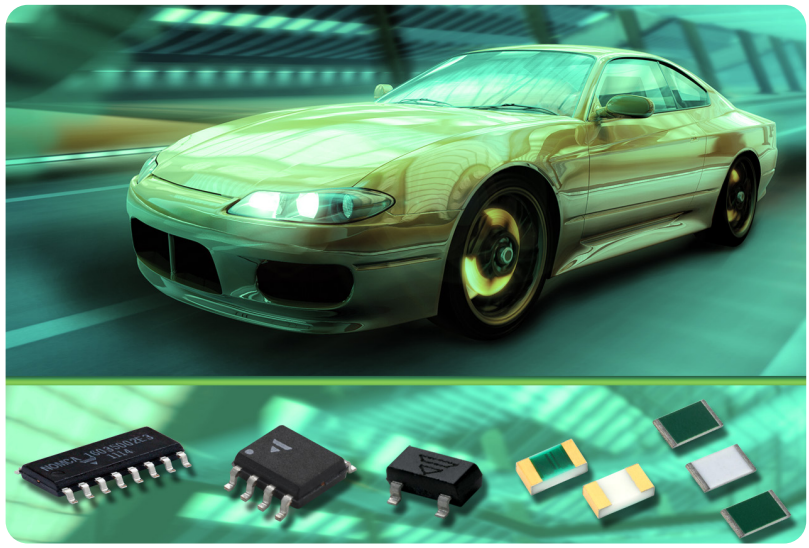
Automotive Products – AEC-Q200

Vishay Dale Thin Film Resistors - Automotive 102

Tantalum Nitride Resistive Film for Automotive Applications



INTRODUCTION

Cutting-edge electronics are an ever-more integral part of automotive systems. Today's motorist expects that cars will serve not only as a means of transportation, but also provide a comfortable and luxurious environment. With manufacturer warranties and liabilities lasting longer and longer, electronic products need to be more and more robust. Vishay Dale Thin Film offers premium automotive products that deliver reliable performance under the extremely harsh environmental conditions present in automotive applications.

RESOURCES

- For technical questions contact thinfilm@vishay.com

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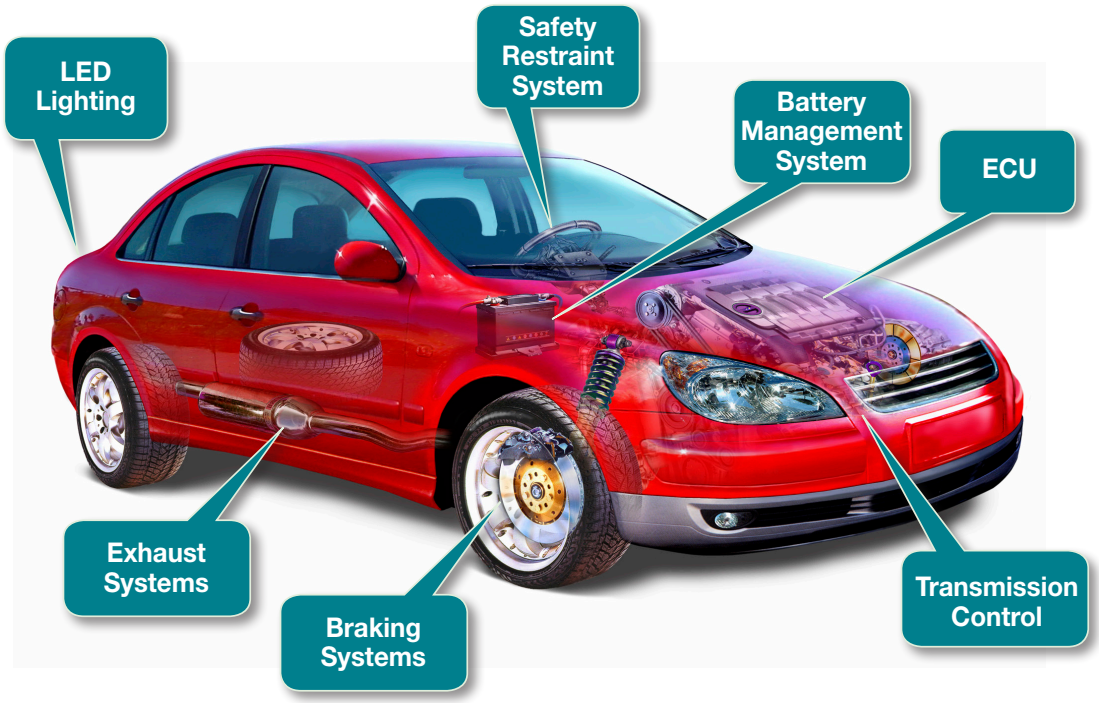
Applications



Benefits of Tantalum Nitride Resistive Film

- Moisture-impervious
- Self-passivating
- Highly stable

Vishay Dale Thin Film Quality Commitment

- AEC-Q200 qualified
- TS16949-qualified facility
- ISO 14001
- ISO 9001

Why All Vishay Dale Thin Film Automotive Products Are Based on Tantalum Nitride Resistive Film

Among all the electronic industry segments, automotive electronics face the toughest environments and are susceptible to prolonged moisture conditions. Moisture can lead to a shift in the resistive element or, in rare cases, result in open resistors, leading to catastrophic failures. To address this problem, all Vishay Dale Thin Film automotive products are based on tantalum nitride resistive film. One of the major benefits of this film is the intrinsic moisture resistance it provides by means of a controlled, self passivating, protective tantalum pentoxide layer.

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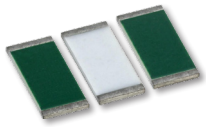
Surface-Mount Chip Resistors

PAT — Precision Thin Film Chip Resistor

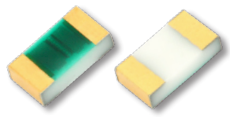


Features:

- Resistance range: 2.5 Ω to 3 MΩ
- Case size 0402 to 2512
- Tolerance as low as ± 0.1 %
- AEC-Q200 ESD rated class 1C (2 kV)

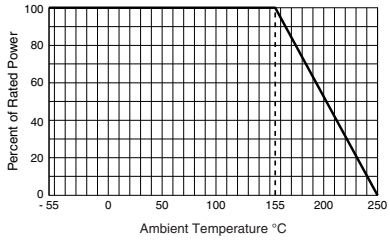
Layer	Vishay PAT
Resistor Film	Tantalum Nitride
1st Passivation	Silicon Nitride
2nd Passivation	SPM

PATT — Precision High Temperature Thin Film Chip Resistor (250 °C)

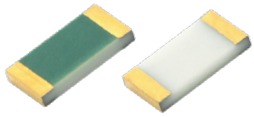


Features:

- Resistance range: 1 Ω to 1M Ω
- Full rated power at 155 °C
- Tolerance as low as ± 0.1 %



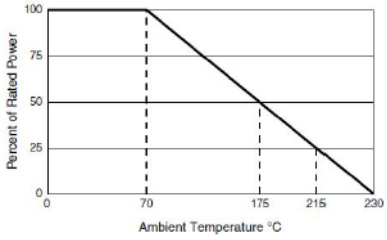
PLTT — Precision High Temperature (230 °C) Low TCR (± 5ppm/°C) Thin Film Chip Resistor



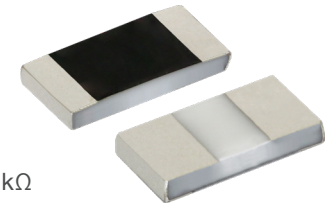
Features:

- Resistance range: 75 Ω to 130 kΩ
- Low TCR down to ± 5ppm °C
- Tolerance as low as ± 0.02 %

** 0603 case size only

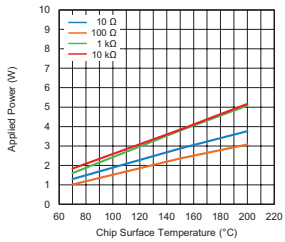


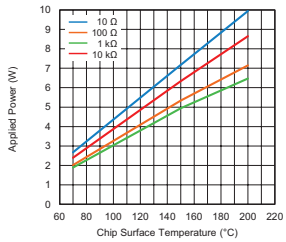
PHPA — Precision High Power Thin Film Chip Resistor



Features:

- Power rating: 1.0 W to 2.5 W
- Moisture-resistant
- Resistance range: 10 Ω to 30.1 kΩ





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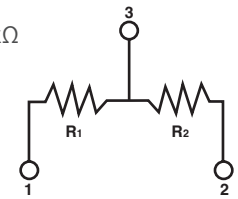
Surface-Mount Resistor Networks

MPMA — SOT-23 Resistor Divider

Features:

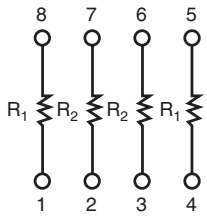
- Compact SOT-23 package
- TCR tracking as low as ± 2 ppm/°C
- Ratio tolerances to ± 0.05 %
- Excellent long term ratio stability
- ± 0.03 % over 1000 h
- Resistance range of 250 Ω to 50 kΩ



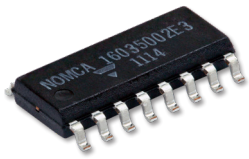
AORN — 8-PIN SOIC Resistor Network

Features:

- 8-pin rugged SOIC package
- TCR tracking as low as ± 5 ppm/°C
- Ratio tolerances to ± 0.05 %
- Excellent long term ratio stability: ± 0.015 % over 1000 h
- Resistance range 1 kΩ to 100 kΩ

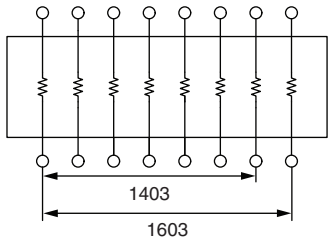


NOMCA — Precision Thin Film Resistor Network



Features:

- 14- and 16-pin narrow-body SOIC
- Low TCR tracking ± 5 ppm/°C with 0.05 % ratio tolerance
- Excellent long term ratio stability (ΔR ± 0.015 %)
- Standard resistance range of 1 kΩ to 50 kΩ per resistor



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SEMICONDUCTORS

MOSFETs Segment

MOSFETs
- Low Voltage TrenchFET® Power MOSFETs
- Medium Voltage Power MOSFETs
- High Voltage Planar MOSFETs
- High Voltage Superjunction MOSFETs
- Automotive Grade MOSFETs

ICs
- Power Management and Power Control ICs
- Smart Load Switches
- Analog Switches and Multiplexers

Diodes Segment

Rectifiers
- Schottky Rectifiers
- Ultrafast Recovery Rectifiers
- Standard and Fast Recovery Rectifiers
- High Power Rectifiers / Diodes
- Bridge Rectifiers

Small Signal Diodes
- Schottky and Switching Diodes
- Zener Diodes
- Tuner / Capacitance Diodes
- Bandswitching Diodes
- RF PIN Diodes

Protection Diodes
- TVS Diodes or TRANSZORB® (unidirectional, bidirectional)
- ESD Protection Diodes (including arrays)

Thyristors / SCRs
- Phase-Control Thyristors
- Fast Thyristors

IGBTs

Power Modules
- Input Modules (diodes and thyristors)
- Output and Switching Modules (contain MOSFETs, IGBTs, and diodes)
- Custom Modules

Optoelectronic Components Segment

Infrared Emitters and Detectors

Optical Sensors

Infrared Remote Control Receivers

Optocouplers
- Phototransistor, Photodarlington
- Linear
- Phototriac
- High Speed
- IGBT and MOSFET Driver

Solid-State Relays

LEDs and 7-Segment Displays

Infrared Data Transceiver Modules

Custom Products

PASSIVE COMPONENTS

Resistors and Inductors Segment

Film Resistors
- Metal Film Resistors
- Thin Film Resistors
- Thick Film Resistors
- Power Thick Film Resistors
- Metal Oxide Film Resistors
- Carbon Film Resistors

Wirewound Resistors
- Vitreous, Cemented, and Housed Resistors
- Braking and Neutral Grounding Resistors
- Custom Load Banks

Power Metal Strip® Resistors

Battery Management Shunts

Crowbar and Steel Blade Resistors

Thermo Fuses

Chip Fuses

Pyrotechnic Initiators / Igniters

Variable Resistors
- Cermet Variable Resistors
- Wirewound Variable Resistors
- Conductive Plastic Variable Resistors
- Contactless Potentiometers
- Hall Effect Position Sensors
- Precision Magnetic Encoders

Networks / Arrays

Non-Linear Resistors
- NTC Thermistors
- PTC Thermistors
- Varistors

Magnetics
- Inductors
- Wireless Charging Coils
- Transformers

Connectors

Capacitors Segment

Tantalum Capacitors
- Molded Chip Tantalum Capacitors
- Molded Chip Polymer Tantalum Capacitors
- Coated Chip Tantalum Capacitors
- Solid Through-Hole Tantalum Capacitors
- Wet Tantalum Capacitors

Ceramic Capacitors
- Multilayer Chip Capacitors
- Multilayer Chip RF Capacitors
- Disc Capacitors

Film Capacitors

Power Capacitors

Heavy Current Capacitors

Aluminum Capacitors

ENYCAP™ Energy Storage Capacitors