

Product Summary

| | | |
|------------|----------------------|------------------------------|
| BV_{DSS} | $R_{DS(ON)}$ | I_D $T_A = +25^\circ C$ |
| 450V | 50Ω @ $V_{GS} = 10V$ | 140mA |

Description and Applications

This MOSFET is designed to minimize the on-state resistance yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Features and Benefits

- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>

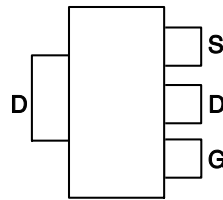
Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.112 grams (Approximate)

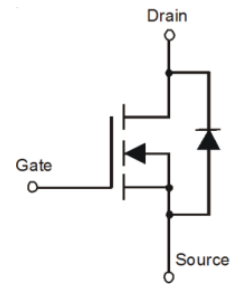
SOT223 (Type DN)



Top View



Pin Out - Top View



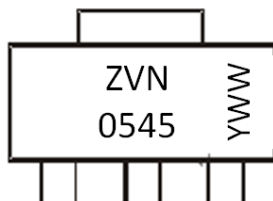
Equivalent Circuit

Ordering Information (Note 4)

| Part Number | Package | Packing | |
|-------------|------------------|---------|-------------|
| | | Qty. | Carrier |
| ZVN0545GTA | SOT223 (Type DN) | 1,000 | Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



ZVN0545 = Product Type Marking Code
 YWW = Date Code Marking
 Y or Y = Last Digit of Year (ex: 1 = 2021)
 WW or WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|------------------|-------|------|
| Drain-Source Voltage | V _{DSS} | 450 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V |
| Continuous Drain Current V _{GS} = 10V | I _D | 140 | mA |
| Pulsed Drain Current | I _{DM} | 600 | mA |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Total Power Dissipation | P _D | 2 | W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------------|-----|-----|-----------|----------|--|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 450 | — | — | V | V _{GS} = 0V, I _D = 1mA |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | 10 400 | μA μA | V _{DS} = 450V, V _{GS} = 0V V _{DS} = 405V, V _{GS} = 0V, T _J = +125°C (Note 6) |
| Gate-Source Leakage | I _{GSS} | — | — | ±20 | nA | V _{GS} = ±20V, V _{DS} = 0V |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | 1 | — | 3 | V | V _{DS} = V _{GS} , I _D = 1mA |
| Static Drain-Source On-State Resistance (Note 5) | R _{DS(ON)} | — | — | 50 | Ω | V _{GS} = 10V, I _D = 100mA |
| On-State Drain Current (Note 5) | I _{D(ON)} | 150 | — | — | mA | V _{DS} = 25V, V _{GS} = 10V |
| Forward Transconductance (Notes 5 and 6) | g _{fs} | 100 | — | — | mS | V _{DS} = 25V, I _D = 100mA |
| DYNAMIC CHARACTERISTICS (Note 6) | | | | | | |
| Input Capacitance | C _{iss} | — | — | 70 | pF | V _{DS} = 25V, V _{GS} = 0V, f = 1MHz |
| Output Capacitance | C _{oss} | — | — | 10 | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | — | 4 | pF | |
| Turn-On Delay Time (Note 7) | t _{D(ON)} | — | — | 7 | ns | V _{DD} = 25V, I _D = 100mA |
| Turn-On Rise Time (Note 7) | t _R | — | — | 7 | ns | |
| Turn-Off Delay Time (Note 7) | t _{D(OFF)} | — | — | 16 | ns | |
| Turn-Off Fall Time (Note 7) | t _F | — | — | 10 | ns | |

Notes: 5. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%.

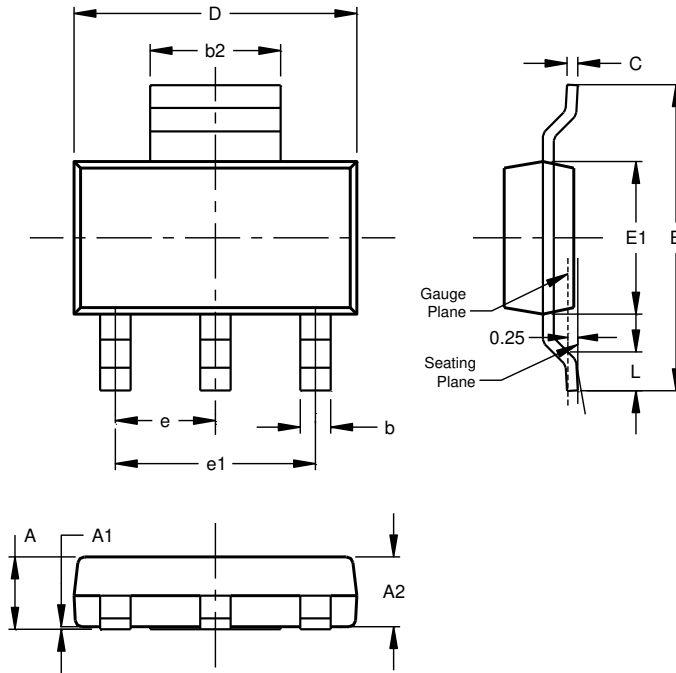
6. Sample test.

7. Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator.

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)

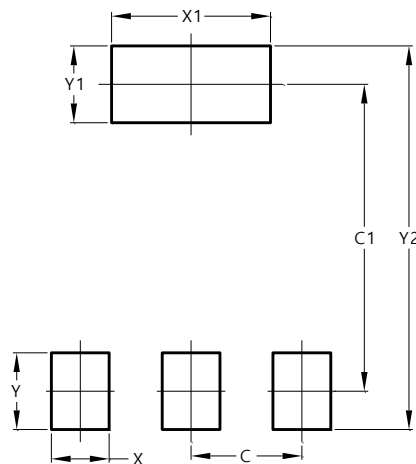


| SOT223 (Type DN) | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | -- | 1.70 | -- |
| A1 | 0.01 | 0.15 | -- |
| A2 | 1.50 | 1.68 | 1.60 |
| b | 0.60 | 0.80 | 0.70 |
| b2 | 2.90 | 3.10 | -- |
| c | 0.20 | 0.32 | -- |
| D | 6.30 | 6.70 | -- |
| E | 6.70 | 7.30 | -- |
| E1 | 3.30 | 3.70 | -- |
| e | -- | -- | 2.30 |
| e1 | -- | -- | 4.60 |
| L | 0.85 | -- | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 2.30 |
| C1 | 6.40 |
| X | 1.20 |
| X1 | 3.30 |
| Y | 1.60 |
| Y1 | 1.60 |
| Y2 | 8.00 |

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