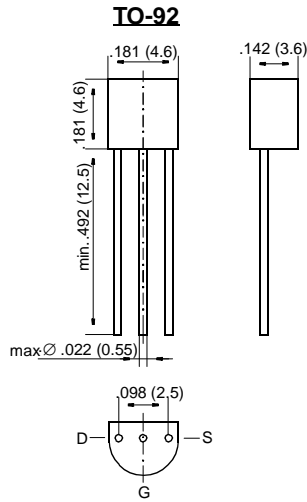


BS250

DMOS Transistors (P-Channel)



Dimensions in inches and (millimeters)

FEATURES

- ◆ High input impedance
- ◆ High-speed switching
- ◆ No minority carrier storage time
- ◆ CMOS logic compatible input
- ◆ No thermal runaway
- ◆ No secondary breakdown



MECHANICAL DATA

Case: TO-92 Plastic Package

Weight: approx. 0.18 g

On special request, this transistor is also manufactured in the pin configuration TO-18.

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

| | Symbol | Value | Unit |
|---|------------|--------------------|------|
| Drain-Source Voltage | $-V_{DSS}$ | 60 | V |
| Drain-Gate Voltage | $-V_{DGS}$ | 60 | V |
| Gate-Source Voltage (pulsed) | V_{GS} | ± 20 | V |
| Drain Current (continuous) | $-I_D$ | 250 | mA |
| Power Dissipation at $T_{amb} = 25\text{ °C}$ | P_{tot} | 0.83 ¹⁾ | W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_S | -65 to +150 | °C |

¹⁾ Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

Inverse Diode

| | Symbol | Value | Unit |
|---|--------|-------|------|
| Max. Forward Current (continuous) at $T_{amb} = 25\text{ °C}$ | I_F | 0.3 | A |
| Forward Voltage Drop (typ.) at $V_{GS} = 0$, $I_F = 0.12\text{ A}$, $T_j = 25\text{ °C}$ | V_F | 0.85 | V |

BS250

ELECTRICAL CHARACTERISTICS

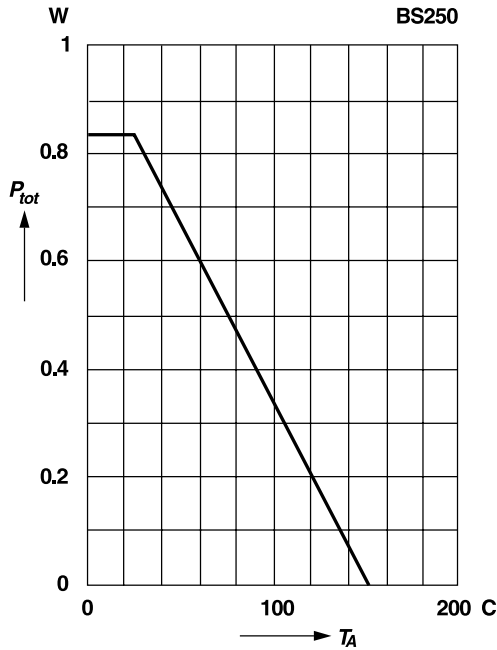
Ratings at 25 °C ambient temperature unless otherwise specified

| | Symbol | Min. | Typ. | Max. | Unit |
|---|-----------------------|--------|---------|-------------------|---------------|
| Drain-Source Breakdown Voltage at $-I_D = 100 \mu\text{A}$, $V_{GS} = 0$ | $-V_{(BR)DSS}$ | 60 | 70 | – | V |
| Gate Threshold Voltage at $V_{GS} = V_{DS}$, $-I_D = 1 \text{ mA}$ | $-V_{GS(th)}$ | 1.0 | 2.0 | 3.0 | V |
| Gate-Body Leakage Current at $-V_{GS} = 15 \text{ V}$, $V_{DS} = 0$ | $-I_{GSS}$ | – | – | 20 | nA |
| Drain Cutoff Current at $-V_{DS} = 25 \text{ V}$, $V_{GS} = 0$ | $-I_{DSS}$ | – | – | 0.5 | μA |
| Drain-Source ON Resistance at $-V_{GS} = 10 \text{ V}$, $-I_D = 0.2 \text{ A}$ | $R_{DS(ON)}$ | – | 3.5 | 5.0 | Ω |
| Thermal Resistance Junction to Ambient Air | R_{thJA} | – | – | 150 ¹⁾ | K/W |
| Forward Transconductance at $-V_{DS} = 10 \text{ V}$, $-I_D = 0.2 \text{ A}$, $f = 1 \text{ MHz}$ | g_m | – | 150 | – | mS |
| Input Capacitance at $-V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$ | C_{iss} | – | 60 | – | pF |
| Switching Times at $-V_{GS} = 10 \text{ V}$, $-V_{DS} = 10 \text{ V}$, $R_D = 100 \Omega$ Turn-On Time Turn-Off Time | t_{on} t_{off} | – – | 5 25 | – – | ns ns |
| ¹⁾ Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case. | | | | | |

RATINGS AND CHARACTERISTIC CURVES BS250

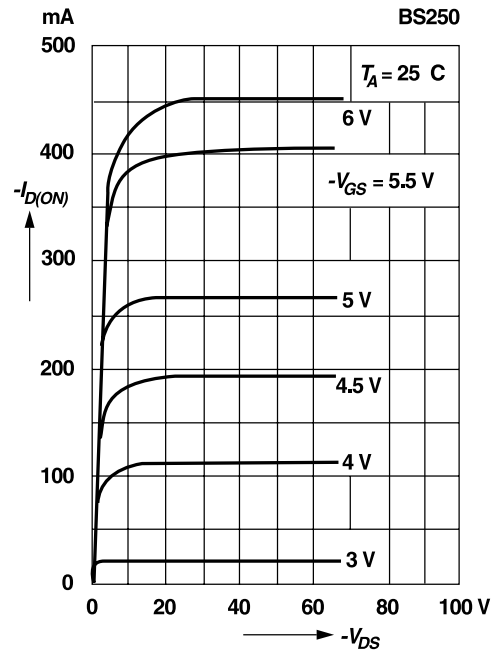
Admissible power dissipation versus temperature

Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



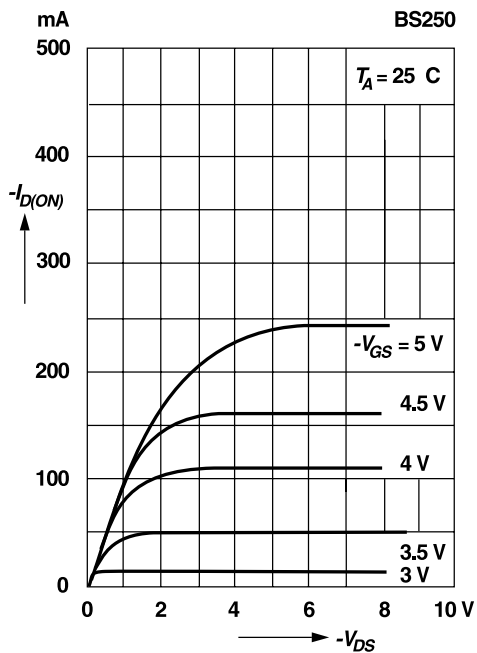
Output characteristics

Pulse test width 80 ms; pulse duty factor 1%

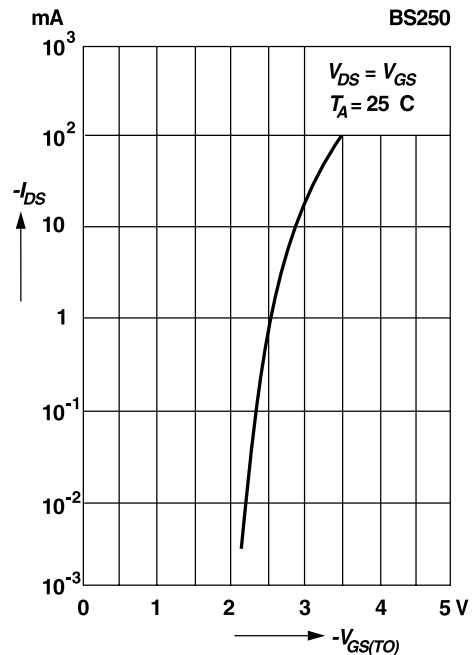


Saturation characteristics

Pulse test width 80 ms; pulse duty factor 1%



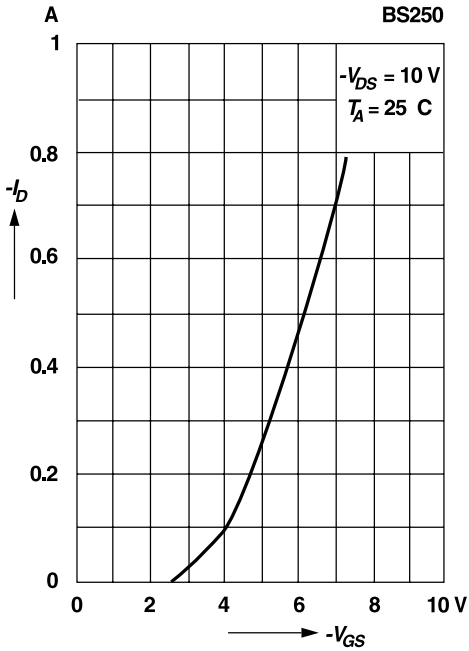
Drain-source current versus gate threshold voltage



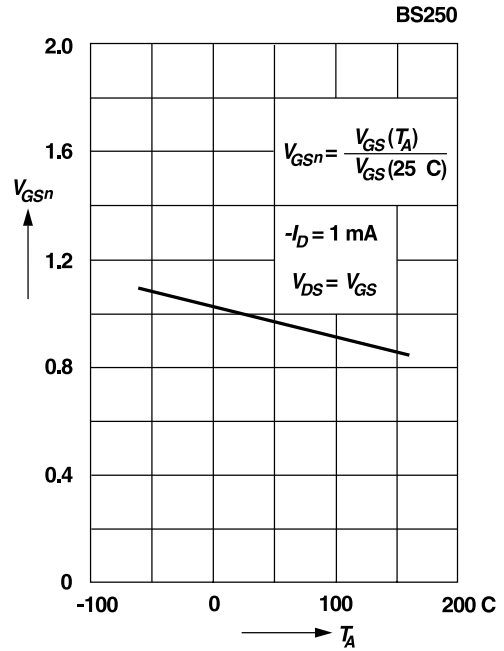
RATINGS AND CHARACTERISTIC CURVES BS250

Drain current versus gate-source voltage

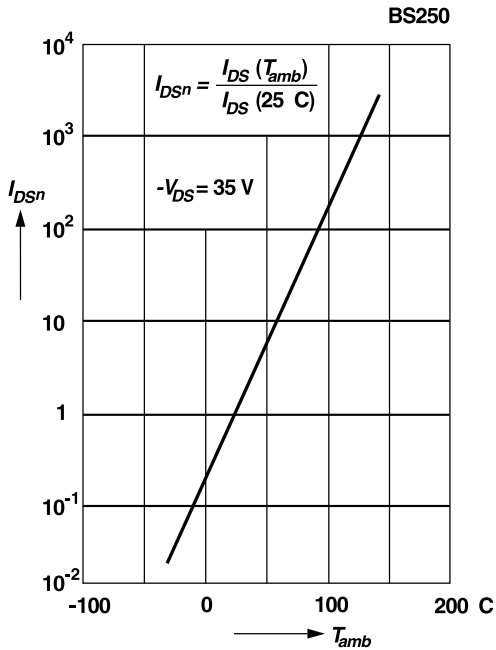
Pulse test width 80 ms; pulse duty factor 1%



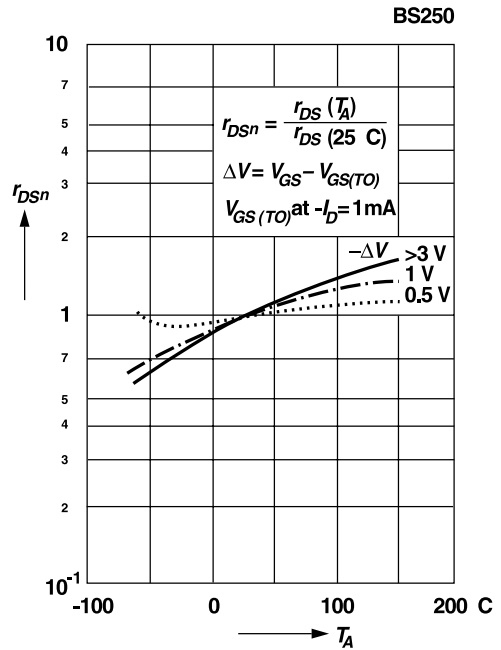
Normalized gate-source voltage versus temperature



Normalized drain-source current versus temperature

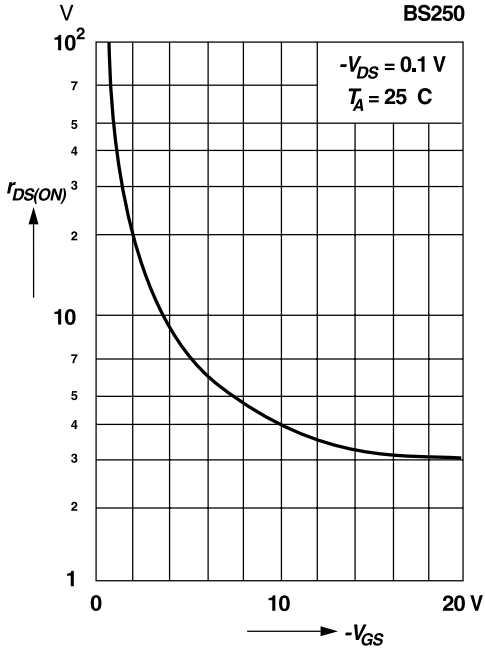


Normalized drain-source resistance versus temperature



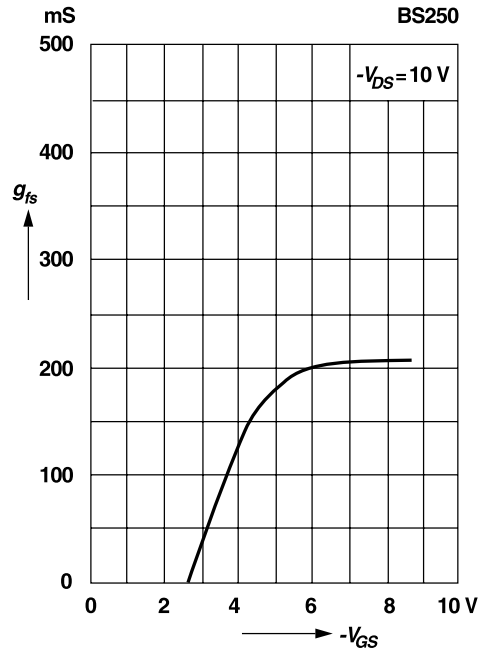
RATINGS AND CHARACTERISTIC CURVES BS250

Drain-source resistance versus gate-source voltage



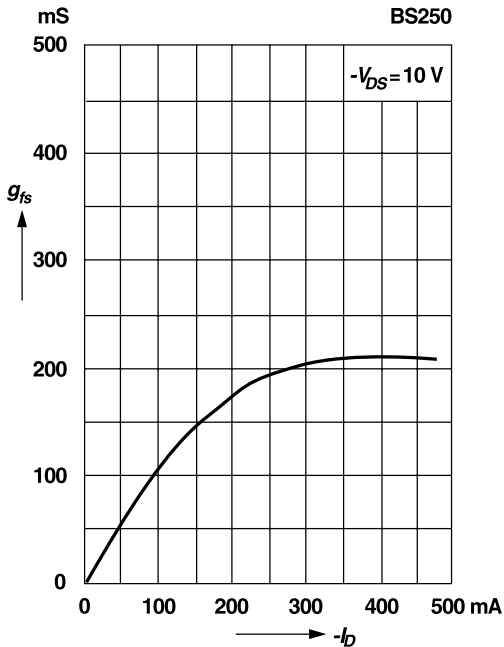
Transconductance versus gate-source voltage

Pulse test width 80 ms; pulse duty factor 1%



Transconductance versus drain current

Pulse test width 80 ms; pulse duty factor 1%



Capacitance versus drain-source voltage

