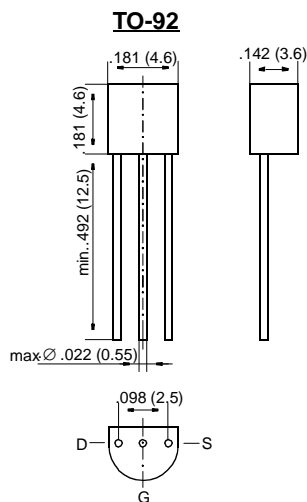


BS170

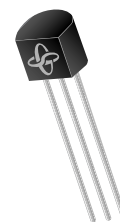
DMOS Transistors (N-Channel)



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	300	mA
Power Dissipation at $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot}	0.83 ¹⁾	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_s	-65 to +150	$^\circ\text{C}$

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 $T_{amb} = 25\text{ }^\circ\text{C}$	I_F	0.5	A
Forward Voltage Drop (typ.) at $V_{GS} = 0$, $I_F = 0.5\text{ A}$, $T_j = 25\text{ }^\circ\text{C}$	V_F	0.85	V

BS170

ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

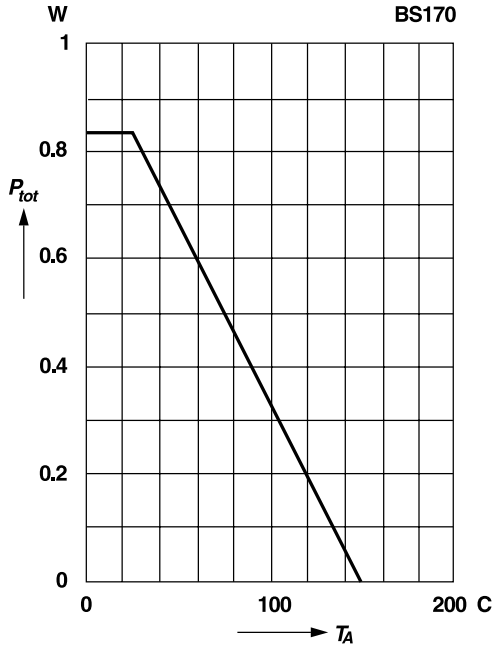
	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage at $I_D = 100 \mu\text{A}$, $V_{GS} = 0$	$V_{(BR)DSS}$	60	80	–	V
Gate Threshold Voltage at $V_{GS} = V_{DS}$, $I_D = 1 \text{ mA}$	$V_{GS(th)}$	1.0	2	3.0	V
Gate-Body Leakage Current at $V_{GS} = 15 \text{ V}$, $V_{DS} = 0$	I_{GSS}	–	–	10	nA
Drain 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	–	200	–	mS
Input Capacitance at $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	C_{iss}	–	30	–	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 15	– –	ns ns

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

RATINGS AND CHARACTERISTIC CURVES BS170

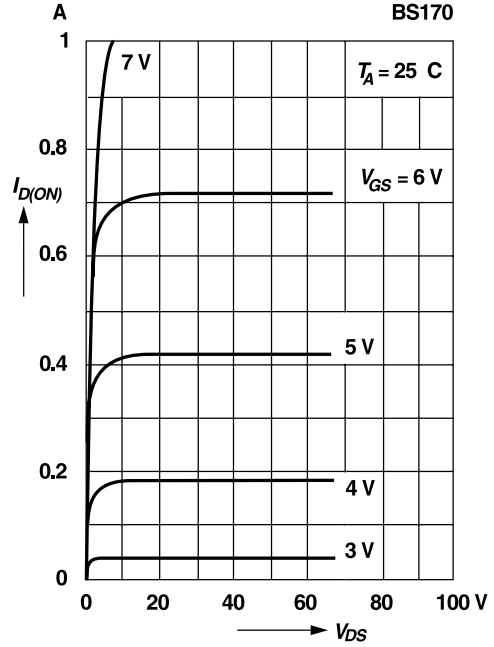
Admissible power dissipation versus temperature

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



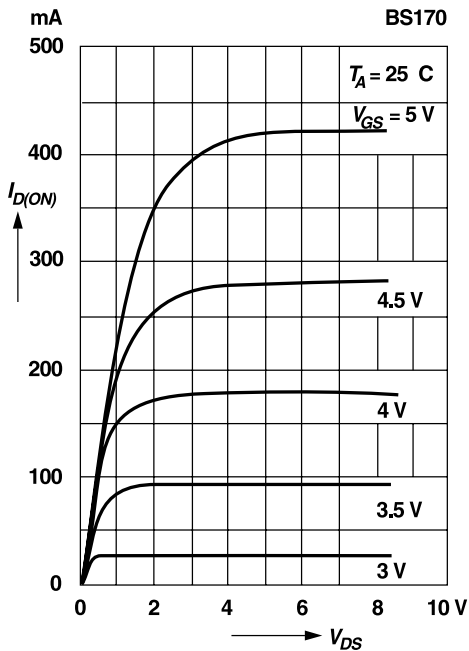
Output characteristics

Pulse test width 80 ms; pulse duty factor 1%

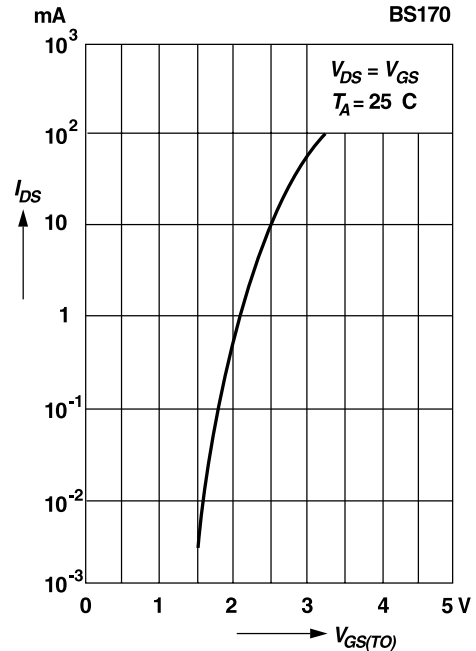


Saturation characteristics

Pulse test width 80 ms; pulse duty factor 1%



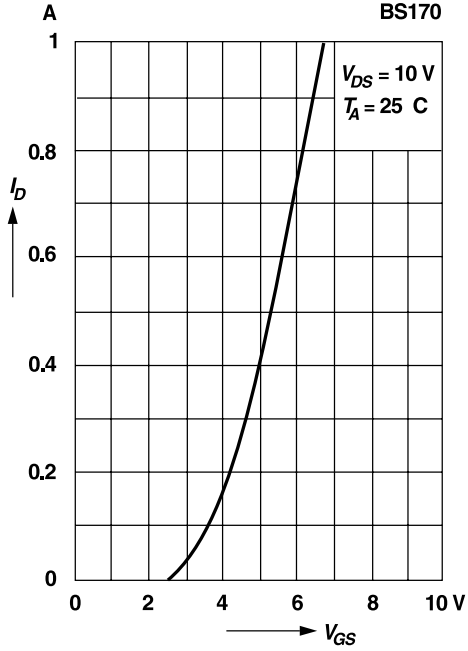
Drain-source current versus gate threshold voltage



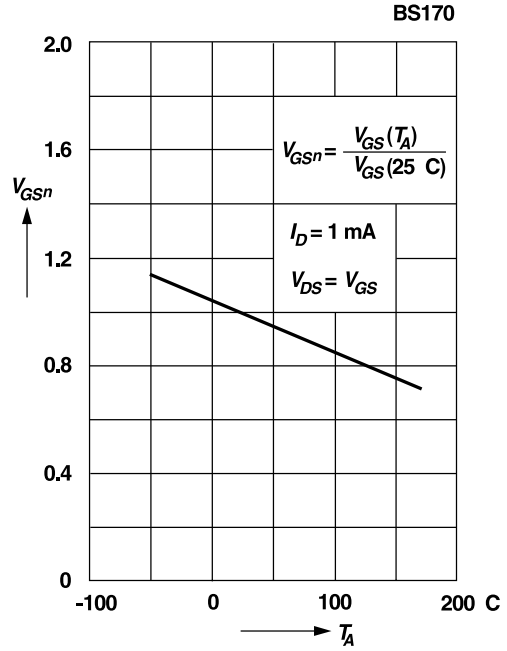
RATINGS AND CHARACTERISTIC CURVES BS170

Drain current versus gate-source voltage

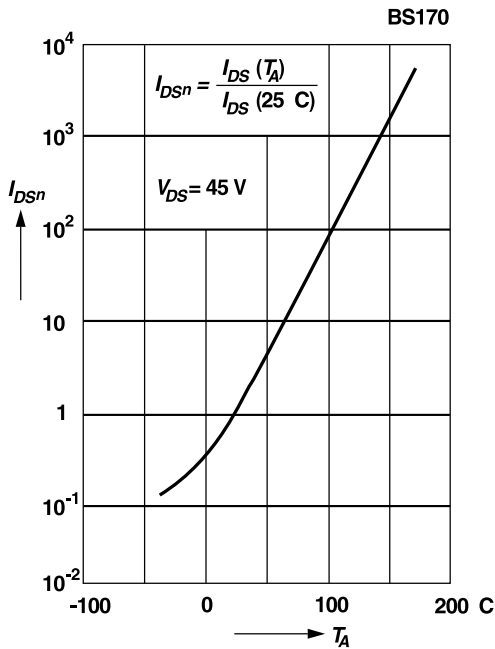
Pulse test width 80 ms; pulse duty factor 1%



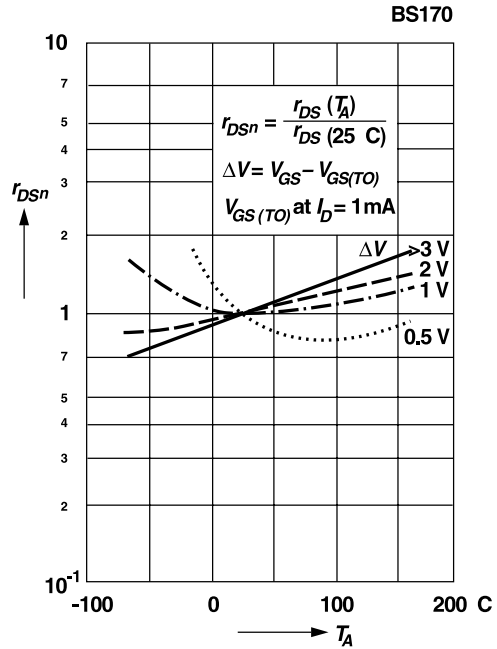
Normalized gate-source voltage versus temperature



Normalized drain-source current versus temperature

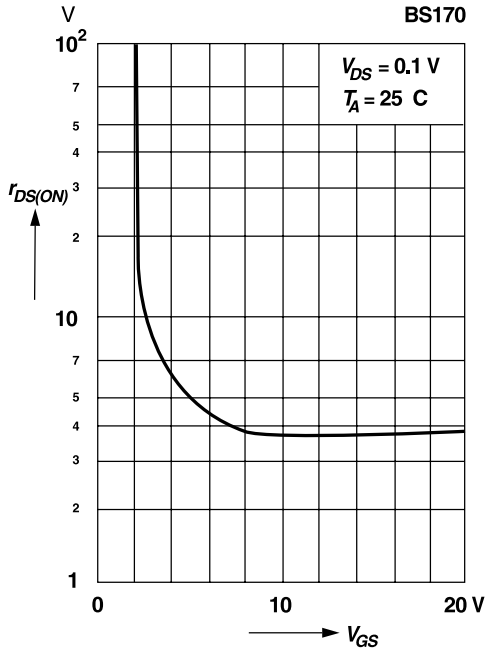


Normalized drain-source resistance versus temperature



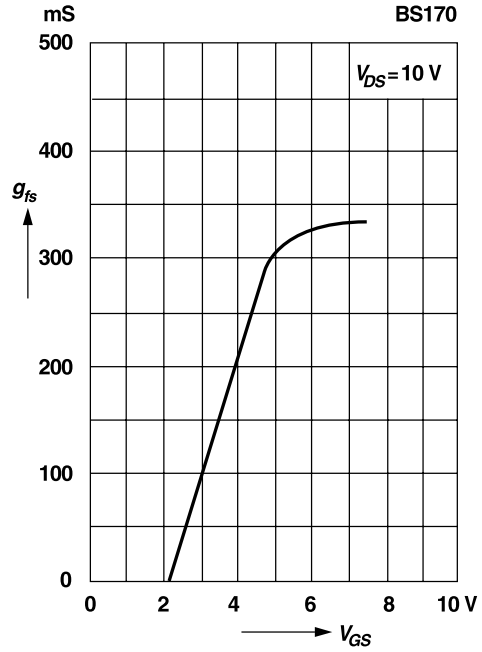
RATINGS AND CHARACTERISTIC CURVES BS170

Drain-source resistance versus gate-source voltage



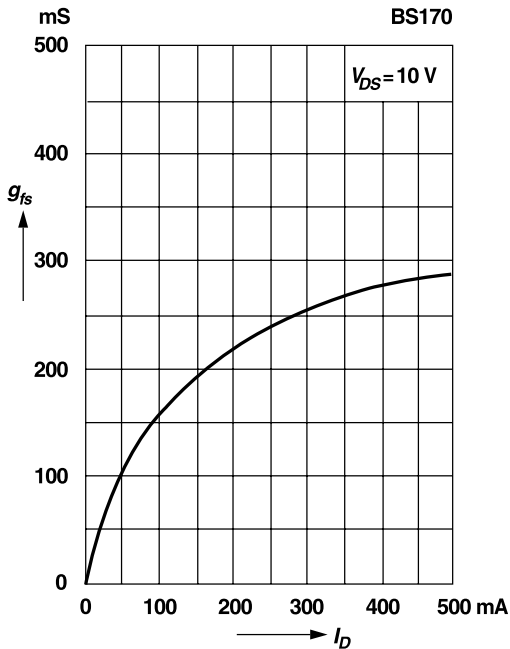
Transconductance versus gate-source voltage

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

