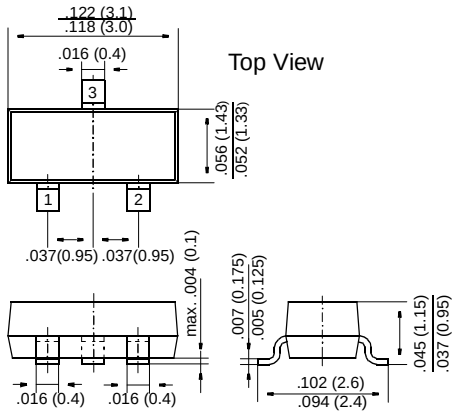
BS850

DMOS Transistors (P-Channel)

SOT-23



Dimensions in inches and (millimeters)

Pin configuration
1 = Gate, 2 = Source, 3 = Drain

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: SOT-23 Plastic Package
Weight: approx. 0.008 g
Marking
S50

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_{SB} = 50 °C	P_{tot}	0.310[1)]	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–65 to +150	°C
[1)] Device on fiberglass substrate, see layout			

Inverse Diode

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

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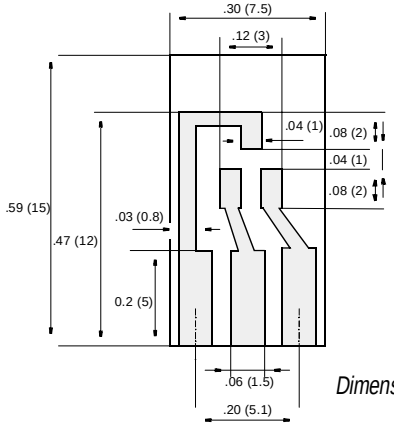
ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage at $-I_D$ = 100 µA, V_{GS} = 0	$-V_{(BR)DSS}$	60	90	–	V
Gate Threshold Voltage at $V_{GS} = V_{DS}$, $-I_D$ = 1 mA	$V_{GS(th)}$	1.0	2	3.0	V
Gate-Body Leakage Current at $-V_{GS}$ = 15 V, V_{DS} = 0	$-I_{GSS}$	–	–	10	nA
Drain Cutoff Current at $-V_{DS}$ = 25 V, V_{GS} = 0	$-I_{DSS}$	–	–	0.5	µA
Drain-Source ON Resistance at $-V_{GS}$ = 10 V, $-I_D$ = 200 mA	$R_{DS(ON)}$	–	3.5	5.0	Ω
Thermal Resistance Junction to Substrate Backside	R_{thSB}	–	–	320[1)]	K/W
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	450[1)]	K/W
Forward Transconductance at $-V_{DS}$ = 10 V, $-I_D$ = 200 mA, f = 1 MHz	g_m	–	200	–	mS
Input Capacitance at $-V_{DS}$ = 10 V, V_{GS} = 0, f = 1 MHz	C_{iss}	–	60	–	pF
Switching Times at $-V_{GS}$ = 10 V, $-V_{DS}$ = 10 V, R_D = 100 Ω Turn-On Time Turn-Off Time	 t_{on} t_{off}	 – –	 5 25	 – –	 ns ns

[1)] Device on fiberglass substrate, see layout



Dimensions in inches (millimeters)

Layout for R_{thJA} test

Thickness: Fiberglass 0.059 in (1.5 mm)
Copper leads 0.012 in (0.3 mm)

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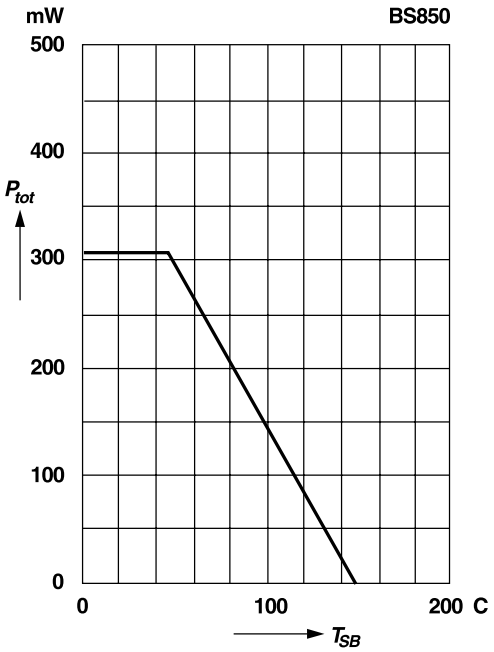
RATINGS AND CHARACTERISTIC CURVES BS850

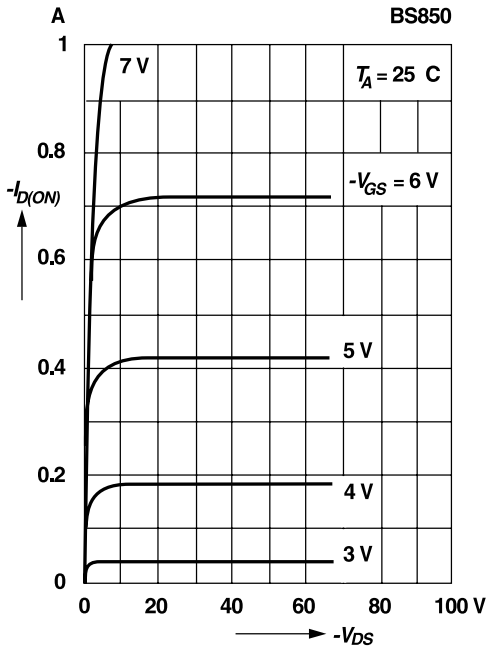
Admissible power dissipation versus temperature of substrate backside

Device on fiberglass substrate, see layout



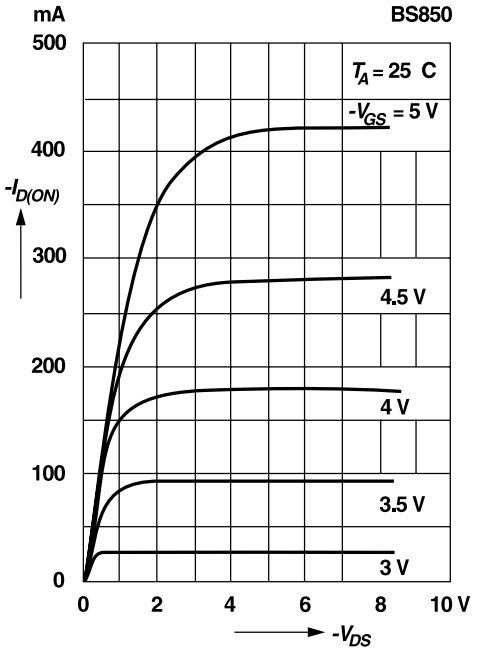
Output characteristics

Pulse test width 80 ms; pulse duty factor 1%

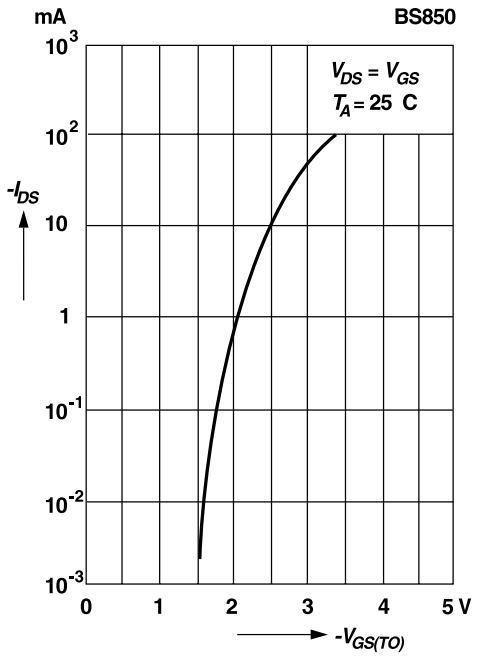


Saturation characteristics

Pulse test width 80 ms; pulse duty factor 1%



Drain-source current versus gate threshold voltage



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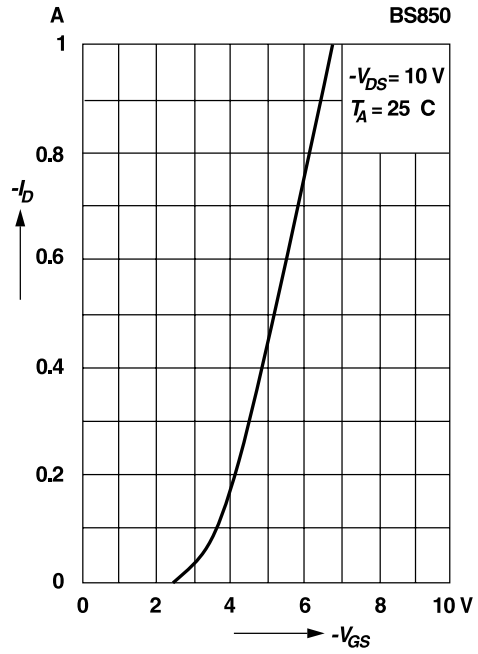
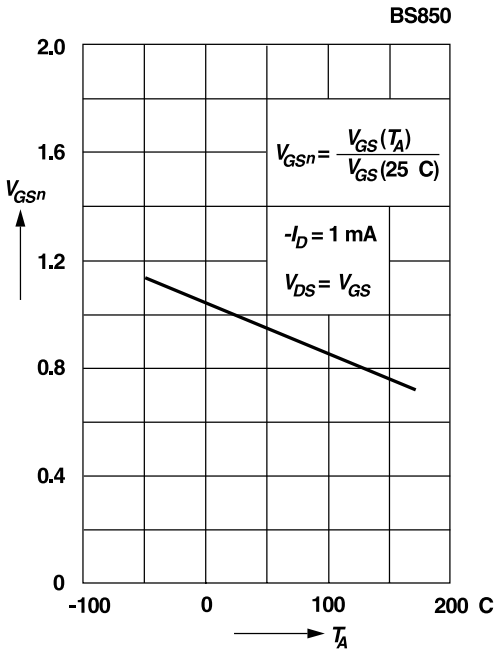
Drain current versus gate-source voltage

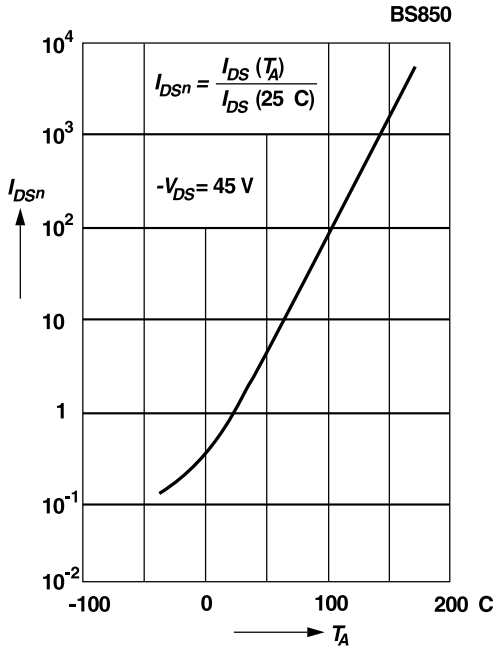
Pulse test width 80 ms; pulse duty factor 1%



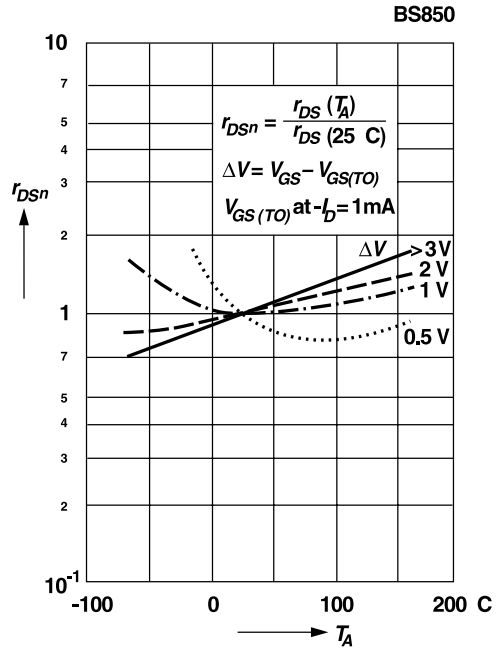
Normalized gate-source voltage versus temperature



Normalized drain-source current versus temperature



Normalized drain-source resistance versus temperature



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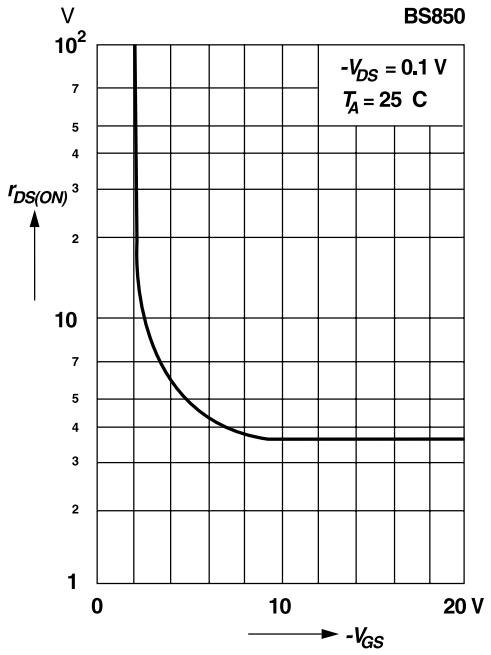
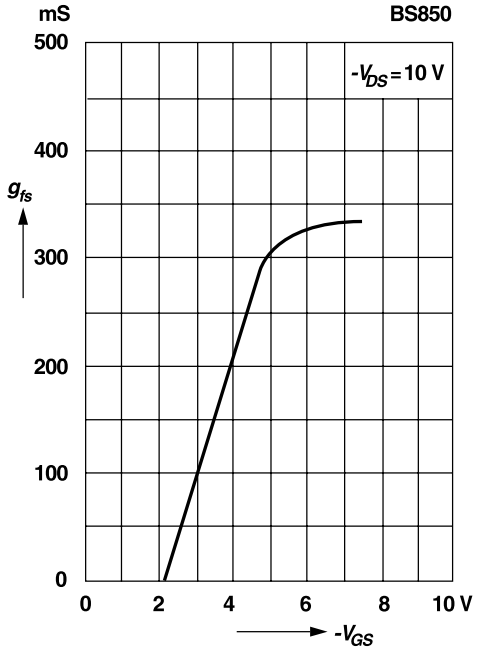
RATINGS AND CHARACTERISTIC CURVES BS850

Drain-source resistance versus gate-source voltage



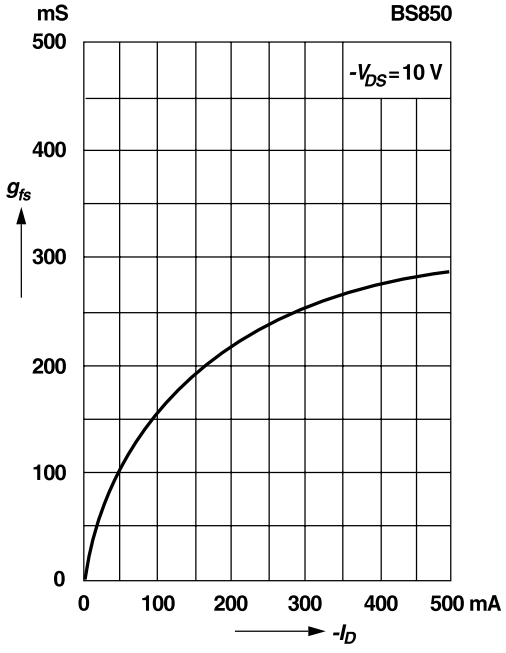
Transconductance versus gate-source voltage

Pulse test width 80 ms; pulse duty factor 1%

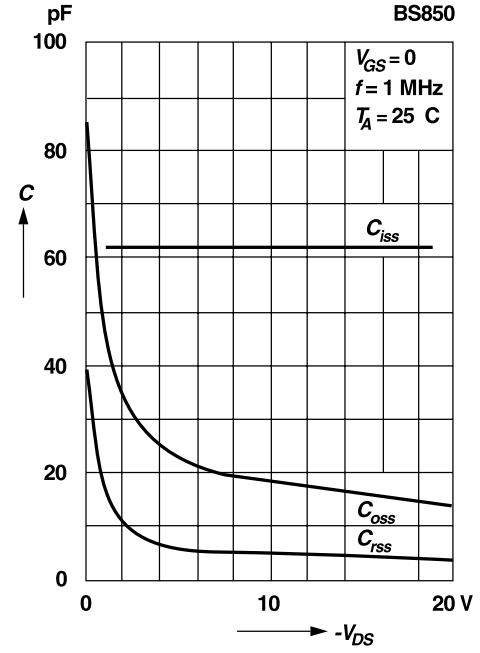


Transconductance versus drain current

Pulse test width 80 ms; pulse duty factor 1%



Capacitance versus drain-source voltage



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