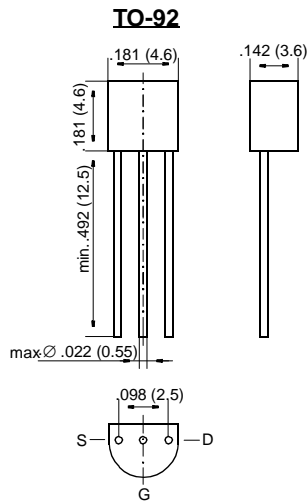


2N7000

DMOS Transistors (N-Channel)



Dimensions in inches and (millimeters)

FEATURES

- ◆ High input impedance
- ◆ Low gate threshold voltage
- ◆ Low drain-source ON resistance
- ◆ 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

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 $T_{amb} = 25\text{ °C}$	P_{tot}	830 ¹⁾	mW
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	500	mA
Forward Voltage Drop (typ.) at $V_{GS} = 0$, $I_F = 0.5\text{ A}$, $T_j = 25\text{ °C}$	V_F	850	mV

2N7000

ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

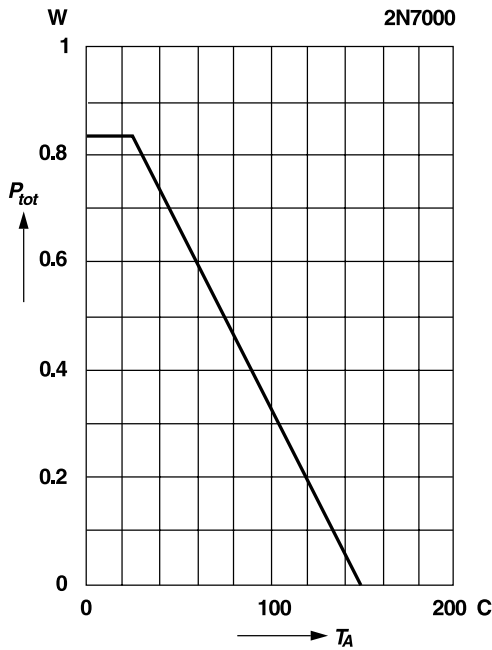
	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage at $I_D = 100\ \mu\text{A}$, $V_{GS} = 0\ \text{V}$	$V_{(BR)DSS}$	60	90	–	V
Gate-Body Leakage Current, Forward at $V_{GSF} = 20\ \text{V}$, $V_{DS} = 0\ \text{V}$	I_{GSSF}	–	–	10	nA
Gate-Body Leakage Current, Reverse at $V_{GSR} = -20\ \text{V}$, $V_{DS} = 0\ \text{V}$	I_{GSSR}	–	–	–10	nA
Drain Cutoff Current at $V_{DS} = 48\ \text{V}$, $V_{GS} = 0\ \text{V}$	I_{DSS}	–	–	1	μA
Gate-Source Threshold Voltage at $V_{GS} = V_{DS}$, $I_D = 1.0\ \text{mA}$	$V_{GS(th)}$	0.8	1.5	3	V
Drain-Source ON Resistance at $V_{GS} = 10\ \text{V}$, $I_D = 500\ \text{mA}$	$R_{DS(ON)}$	–	3.5	5.0	Ω
Capacitance at $V_{DS} = 25\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$ Input Capacitance Output Capacitance Feedback Capacitance	C_{iSS} C_{oSS} C_{rSS}	– – –	60 25 5	– – –	pF pF 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}	– –	10 10	– –	ns ns
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	150 ¹⁾	K/W

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

RATINGS AND CHARACTERISTIC CURVES 2N7000

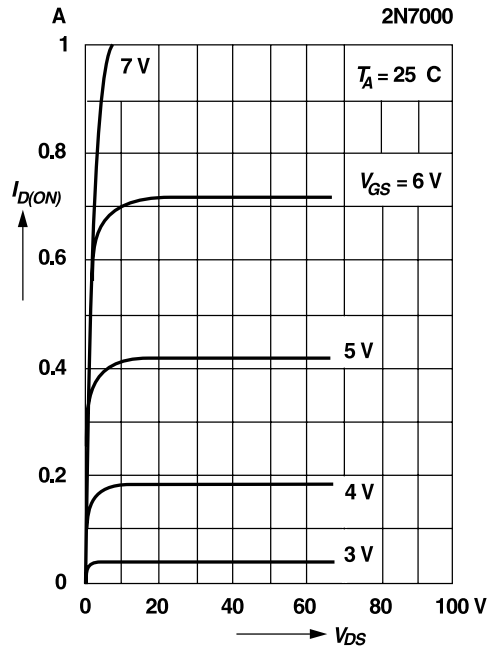
Admissible power dissipation versus temperature

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



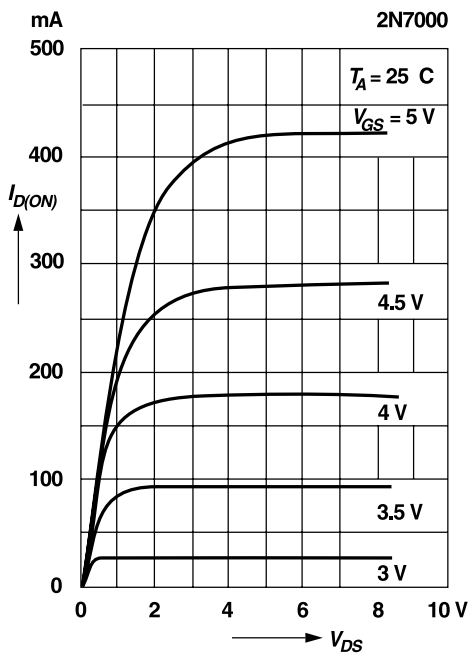
Output characteristics

Pulse test width 80 ms; pulse duty factor 1%.

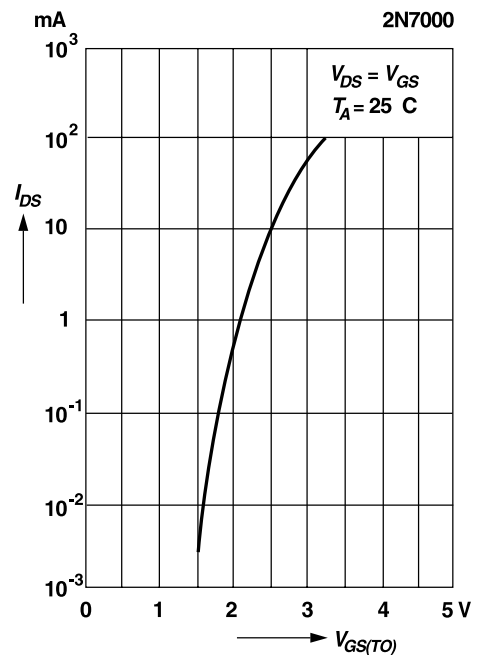


Saturation characteristics

Pulse test width 80 ms; pulse duty factor 1%.



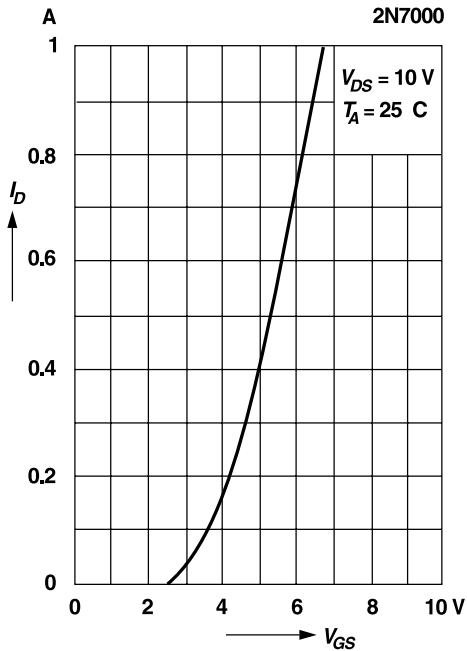
Drain-source current versus gate threshold voltage



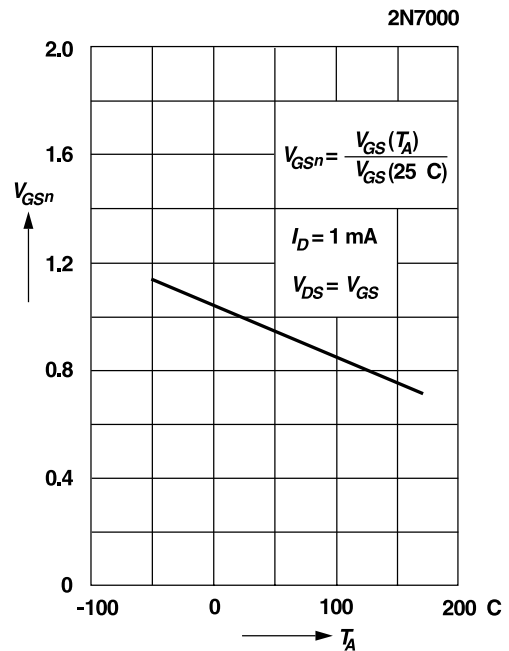
RATINGS AND CHARACTERISTIC CURVES 2N7000

**Drain current
versus gate-source voltage**

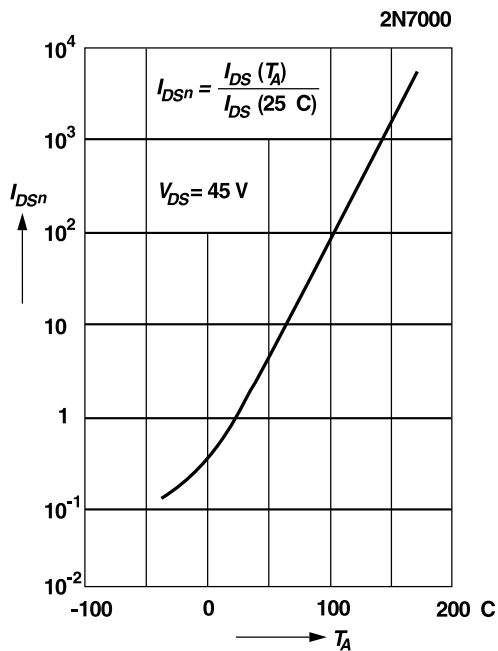
Pulse test width 80 ms; pulse duty factor 1%.



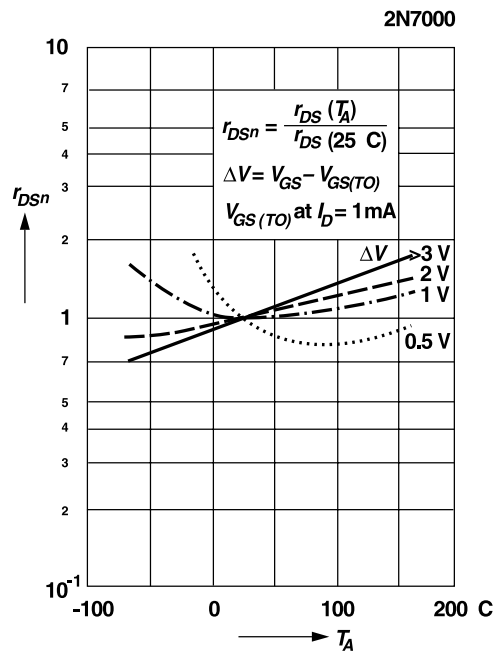
**Normalized gate-source voltage
versus temperature**



**Normalized drain-source current
versus temperature**

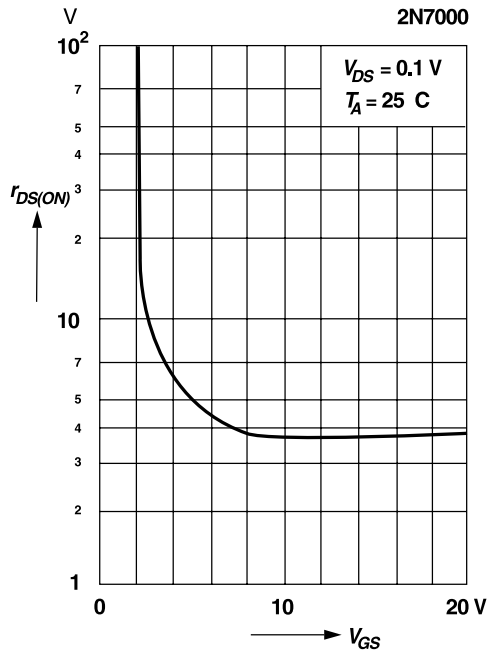


**Normalized drain-source resistance
versus temperature**



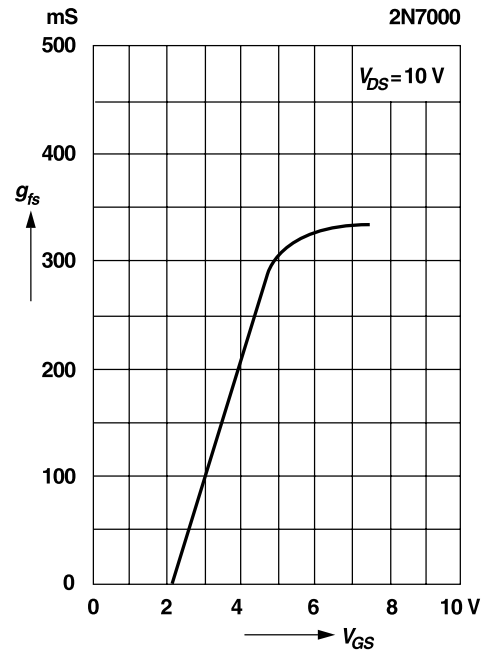
RATINGS AND CHARACTERISTIC CURVES 2N7000

**Drain-source resistance
versus gate-source voltage**



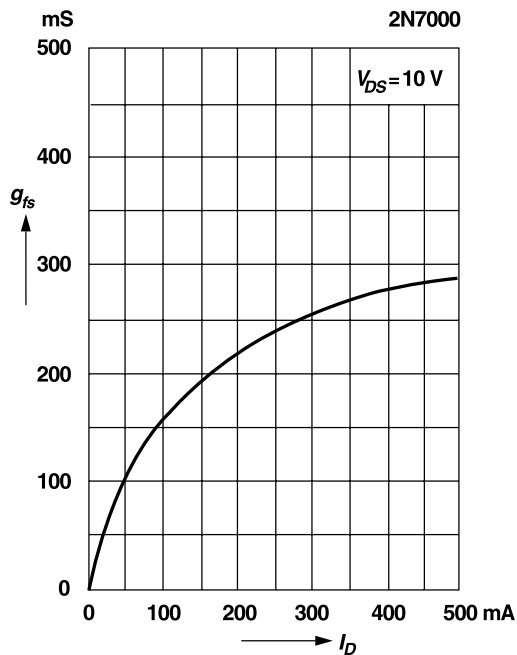
**Transconductance
versus gate-source voltage**

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**

