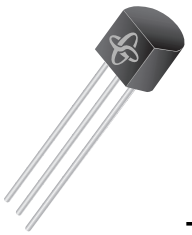
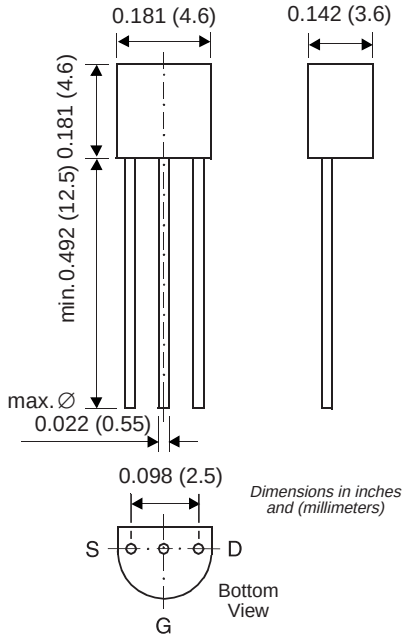
GENERAL SEMICONDUCTOR®

2N7000

DMOS Transistors (N-Channel)



TO-226AA (TO-92)



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 grams

Packaging Codes/Options:

E6/Bulk- 5K per container
E7/4K per Ammo tape

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Limit	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
Peak Drain Current (pulsed)	I_{DM}	1.3	A
Power Dissipation at T_{amb} = 25°C	P_{tot}	830[1)]	mW
Thermal Resistance Junction to Ambiant Air	$R_{\theta JA}$	150[1)]	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	-65 to +150	°C

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

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DMOS Tranistors (N-Channel)

Electrical Characteristics (T_J = 25°C unless otherwise noted)

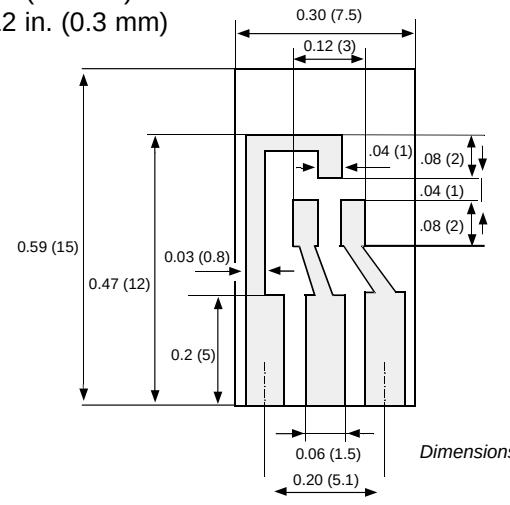
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 100µA, V_{GS} = 0	60	90	—	V
Gate-Body Leakage Current	I_{GSS}	V_{GS} ± 20V, V_{DS} = 0V	—	—	±10	nA
Drain Cutoff Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V	—	—	1	µA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 1.0 mA	0.8	1.5	3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 500 mA	—	3.5	5.0	Ω
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	—	60	—	pF
Output Capacitance	C_{oss}	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	—	25	—	pF
Feedback Capacitance	C_{rss}	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	—	5	—	pF
Turn-On Time	t_{on}	V_{GS} = 10 V, V_{DS} = 10 V	—	10	—	ns
Turn-Off Time	t_{off}	R_D = 100 Ω	—	10	—	ns

Inverse Diode

Parameters	Symbol	Test Condition	Value	Unit
Max. Forward Current (continuous)	I_F	Tamb = 25 °C	500	mA
Forward Voltage Drop (typ.)	V_F	V_{GS}= 0, I_F = 0.5 A T_j = 25 °C	850	mV

Layout for R_{thJA} test

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

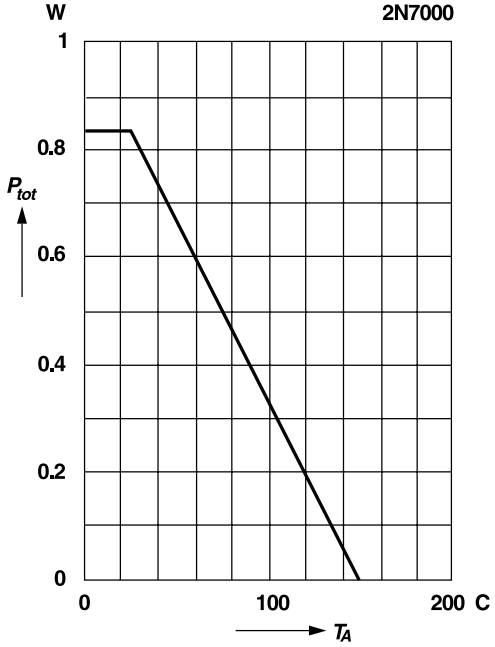


Dimensions in inches and (millimeters)

DMOS Transistors (N-Channel)

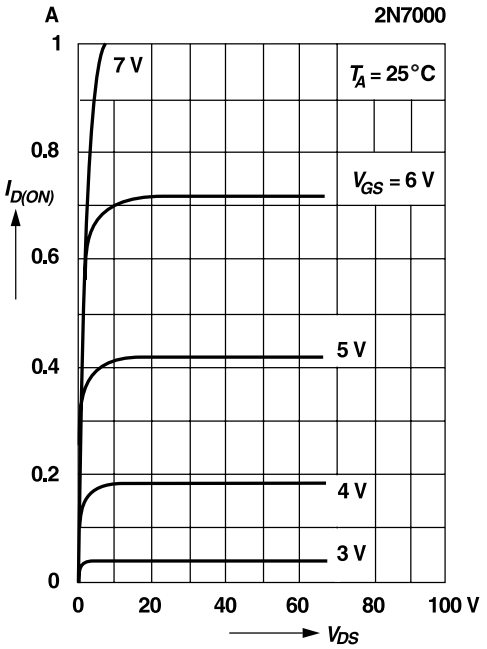
Admissible power dissipation versus temperature

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



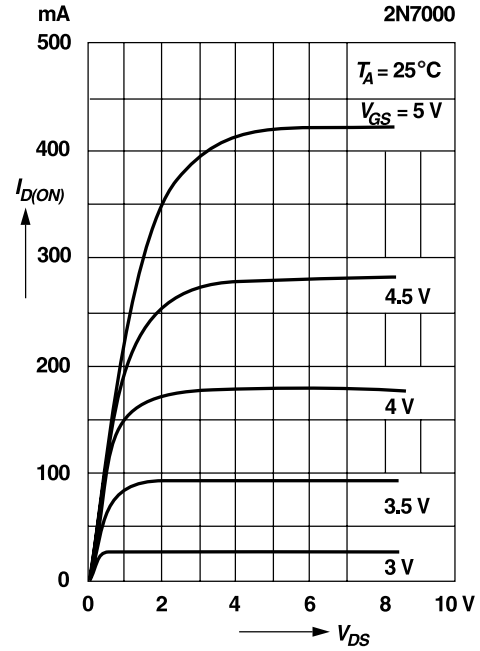
Output characteristics

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

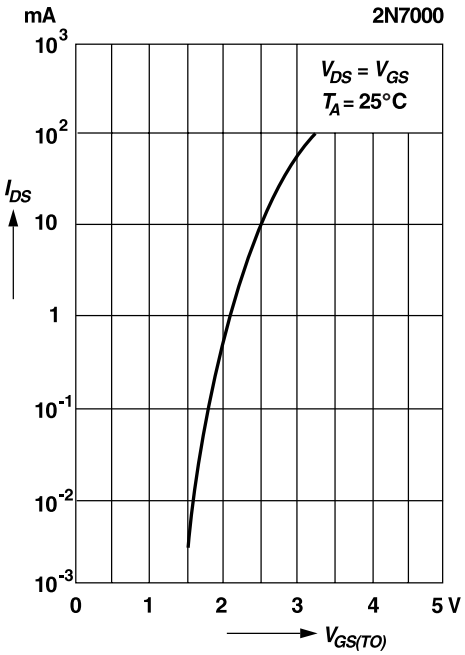


Saturation characteristics

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

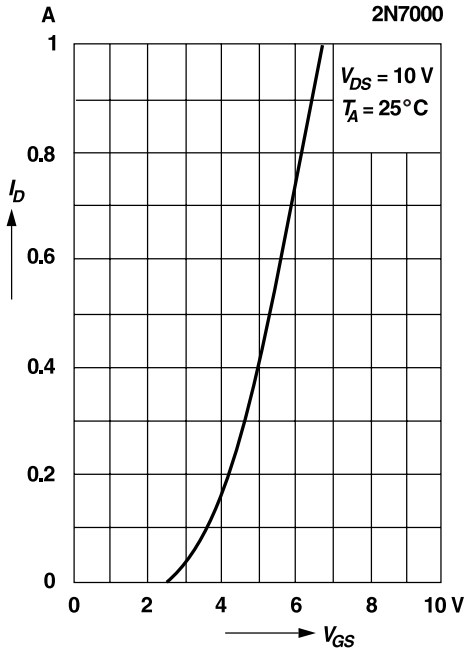


Drain-source current versus gate threshold voltage

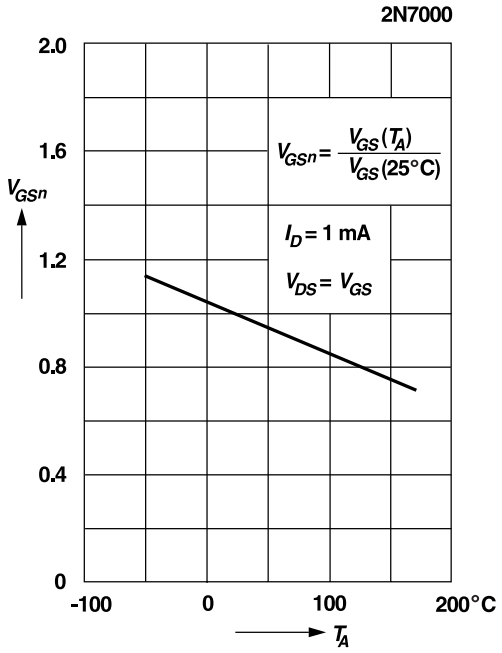


Drain current versus gate-source voltage

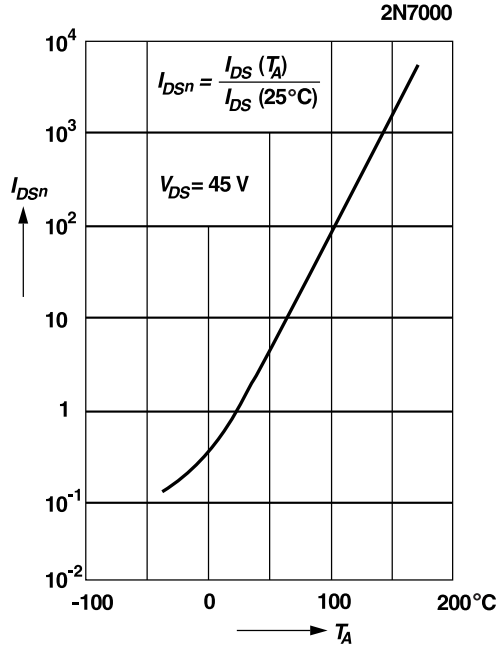
Pulse test width 80 ms; pulse duty factor 1%.



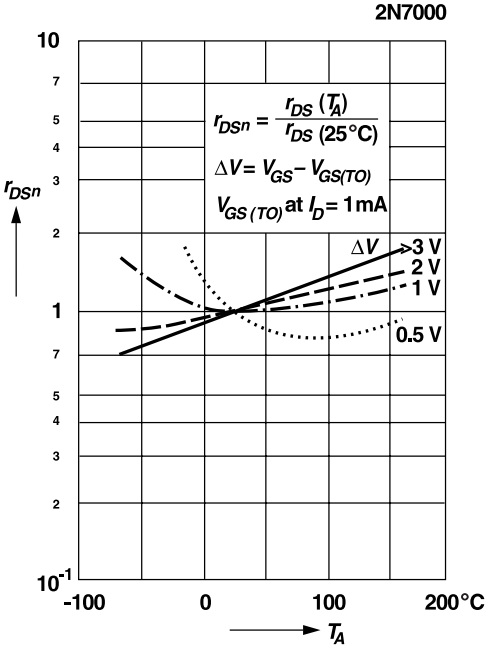
Normalized gate-source voltage versus temperature



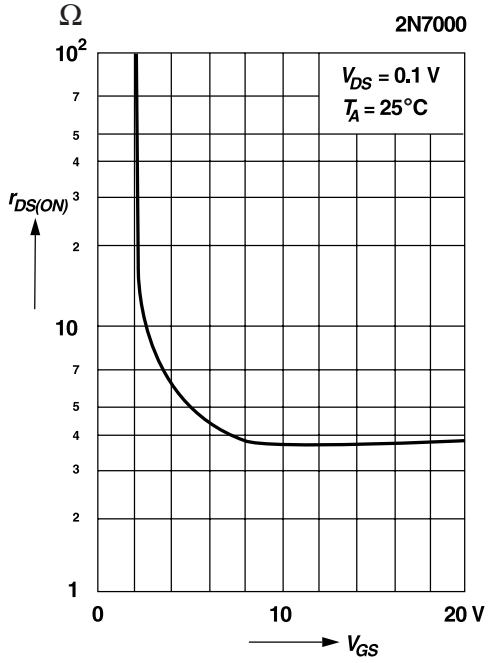
Normalized drain-source current versus temperature



Normalized drain-source resistance versus temperature

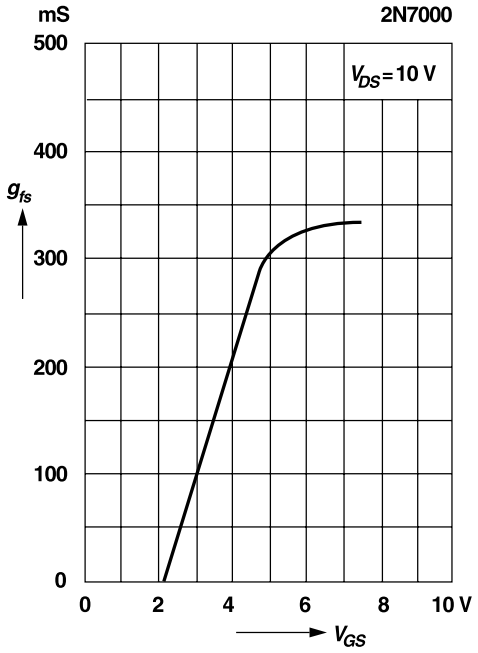


Drain-source resistance versus gate-source voltage



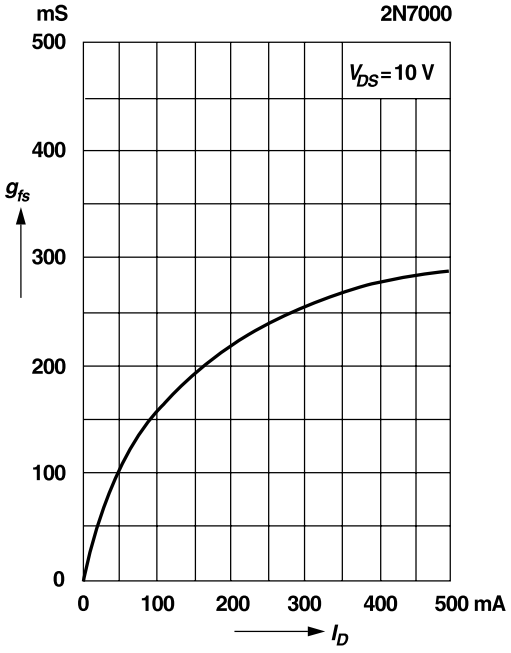
Transconductance versus gate-source voltage

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