



Micro Commercial Components
 20736 Marilla Street Chatsworth
 CA 91311
 Phone: (818) 701-4933
 Fax: (818) 701-4939

2N7000

DMOS Transistor (N-Channel)

Features

- Low Drain-Source ON-Resistance
- High Input Impedance
- High-Speed Switching
- CMOS Logic Compatible Input
- Marking Code: 2N7000

Maximum Ratings @ $T_A=25^\circ\text{C}$ Unless Otherwise Noted

- Operation Temperature: -55°C to $+150^\circ\text{C}$
- Storage Temperature: -55°C to $+150^\circ\text{C}$
- Maximum Thermal Resistance: 150°C/W Junction to Ambient

Parameter	Symbol	Value	Unit
Drain-Source-Voltage	V_{DSS}	60	V
Drain-Gate-Voltage	V_{DGS}	60	V
Gate-Source-Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	300	mA
Pulsed Drain Current	I_{DM}	1.3	A
Maximum Power Dissipation	P_{TOT}	$830^{(1)}$	mW

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

Electrical Characteristics @ $T_A=25^\circ\text{C}$ Unless Otherwise Noted

Parameter	Symbol	Min	Typ	Max	Test Condition
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60V	90V	---	$I_D=100\mu\text{A}$, $V_{GS}=0$
Gate-Body Leakage Current	I_{GSS}	---	---	$\pm 10\text{nA}$	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$
Drain Cutoff Current	I_{DSS}	---	---	$1.0\mu\text{A}$	$V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.8V	1.5V	3.0V	$V_{GS}=V_{DS}$, $I_D=1.0\text{mA}$
Drain-Source On-State Resistance	$R_{DS(on)}$	---	3.5Ω	5.0Ω	$V_{GS}=10\text{V}$, $I_D=500\text{mA}$
Input Capacitance	C_{iss}	---	60pF	---	$V_{DS}=25\text{V}$, $V_{GS}=0$,
Output Capacitance	C_{oss}	---	25pF	---	$f=1\text{MHz}$
Feedback Capacitance	C_{rss}	---	5pF	---	
Turn-On Time	T_{on}	---	10ns	---	$V_{GS}=10\text{V}$, $V_{DS}=10\text{V}$,
Turn-Off Time	T_{off}	---	10ns	---	$R_D=100\Omega$

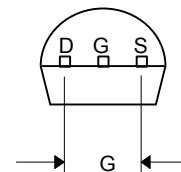
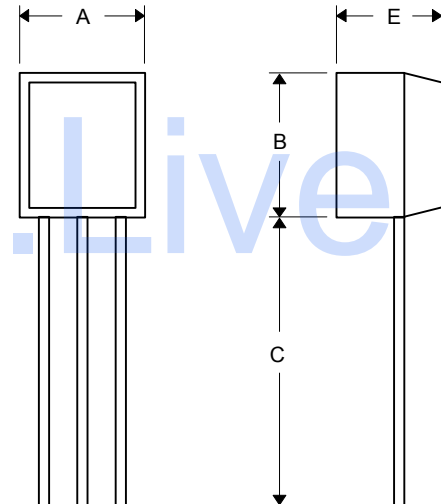
Source-Drain Diode

Parameter	Symbol	Value	Unit
Max. Forward Current	I_F	$500^{(1)}$	mA
Typ. Diode Forward Voltage	V_{SD}	$850^{(2)}$	mV

Note: (1) Tested at $T_{amb} = 25^\circ\text{C}$

(2) Tested at $V_{GS} = 0$, $I_F = 0.5\text{A}$, $T_J = 25^\circ\text{C}$

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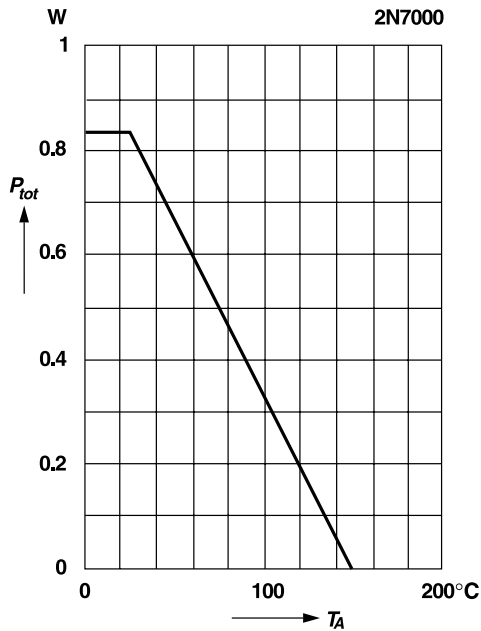


DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.175	.185	4.45	4.70	
B	.175	.185	4.46	4.70	
C	.500	---	12.7	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	

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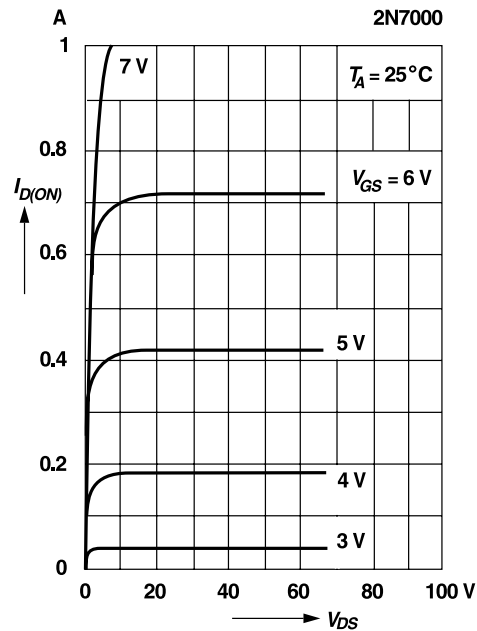
Admissible power dissipation versus temperature

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



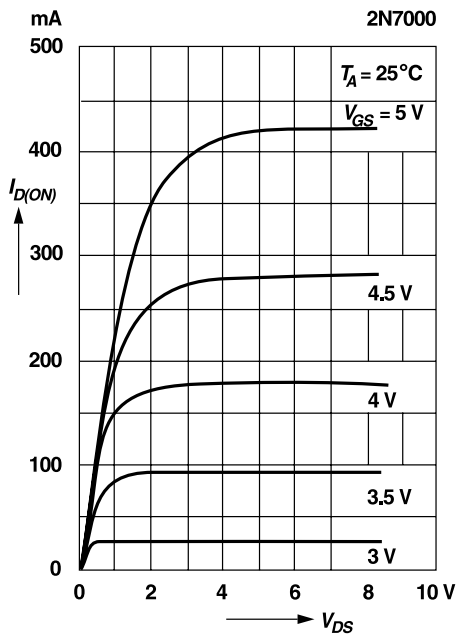
Output characteristics

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

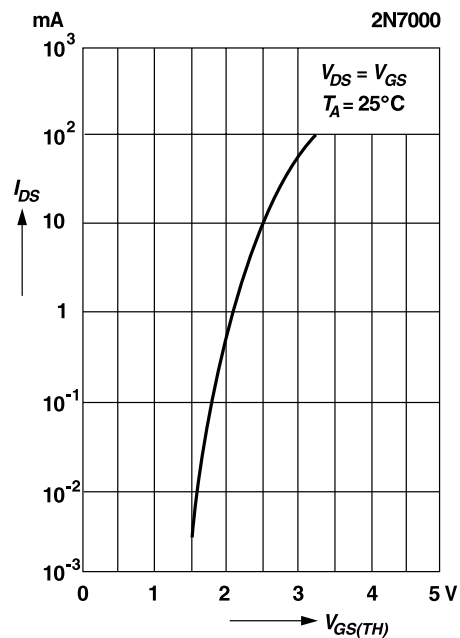


Saturation characteristics

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



Drain-source current versus gate threshold voltage

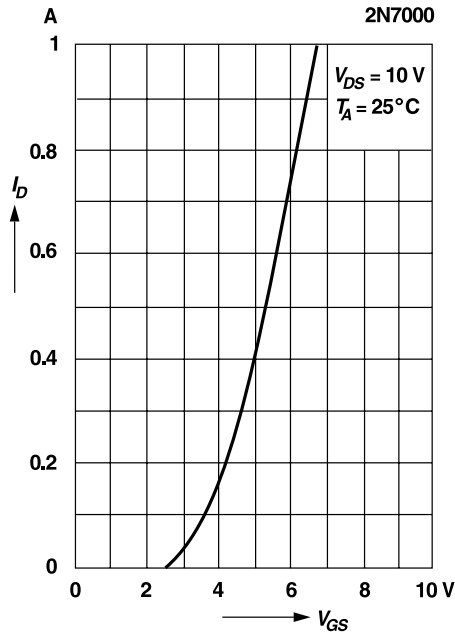


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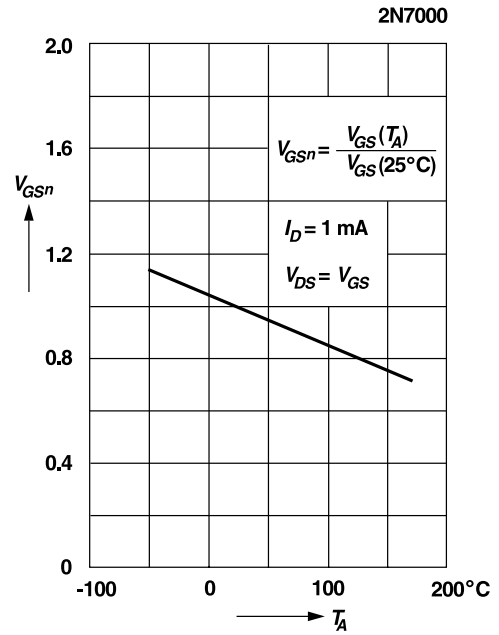


Drain current versus gate-source voltage

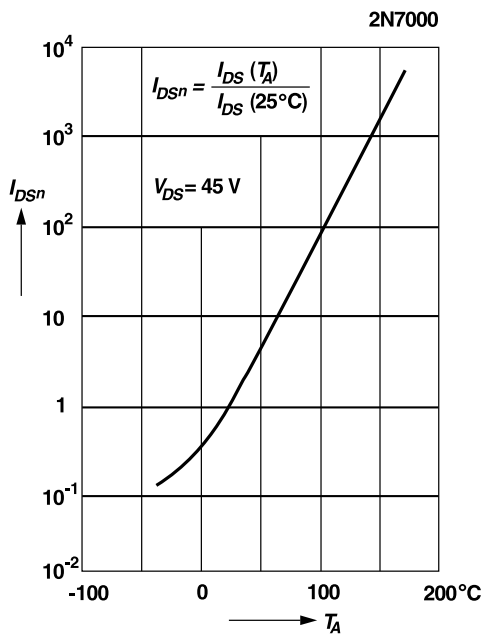
Pulse test width 80 ms; pulse duty factor 1%.



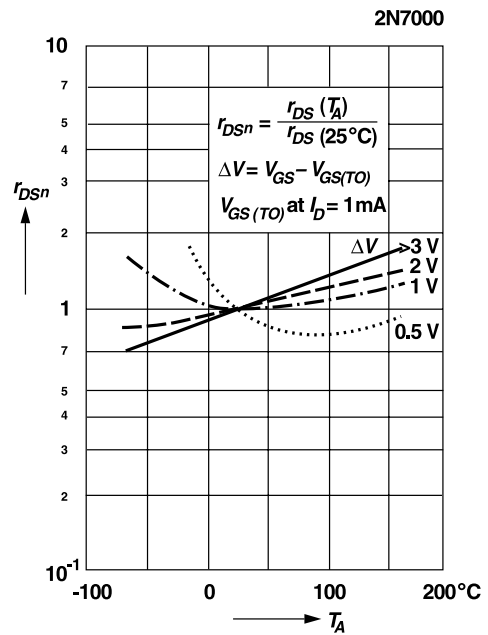
Normalized gate-source voltage versus temperature



Normalized drain-source current versus temperature



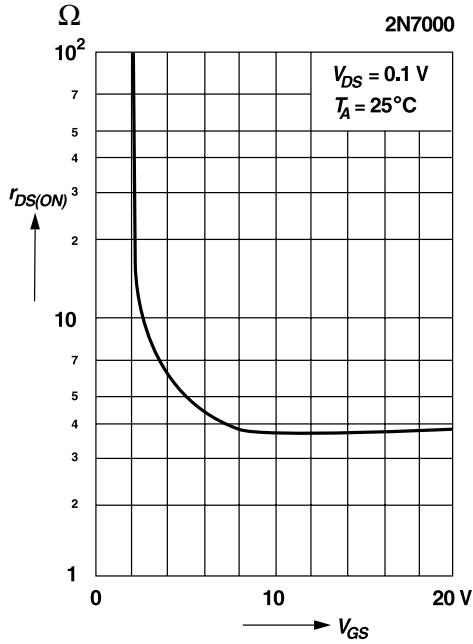
Normalized drain-source resistance versus temperature



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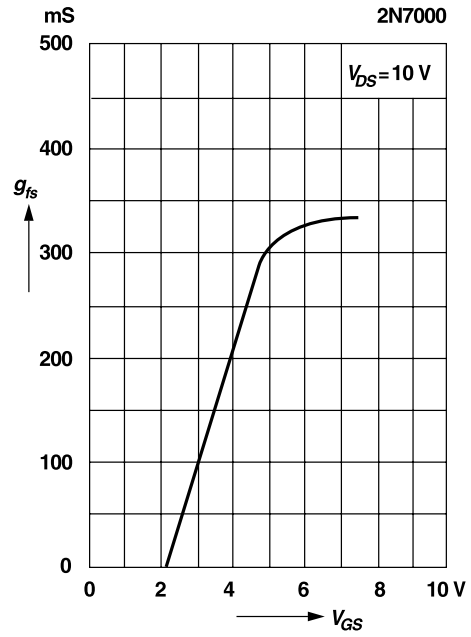


Drain-source resistance versus gate-source voltage



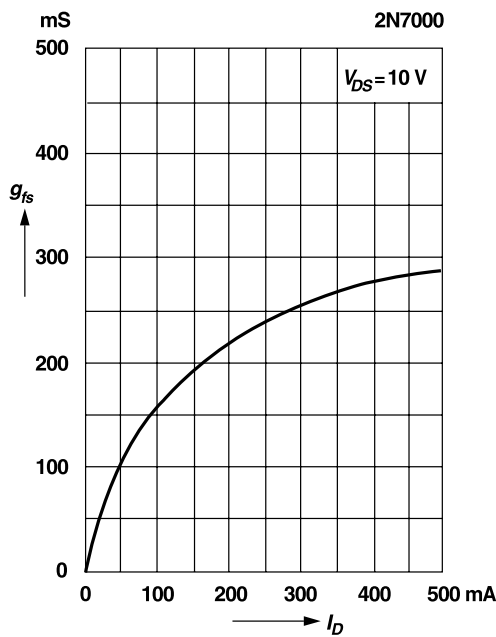
Transconductance versus gate-source voltage

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

