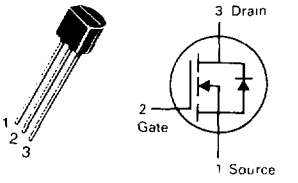
2N7000★

CASE 29-04, STYLE 22
TO-92 (TO-226AA)



TMOS FET TRANSISTOR

N-CHANNEL — ENHANCEMENT

★This is a Motorola designated preferred device.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	Vdc
Drain-Gate Voltage (R_{GS} = 1 MΩ)	V_{DGR}	60	Vdc
Gate-Source Voltage	V_{GS}	±40	Vdc
Drain Current Continuous Pulsed	 I_D I_{DM}	 200 500	mAdc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	350 2.8	mW mW/°C
Operating and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Thermal Resistance Junction to Ambient	$R_{\theta JA}$	312.5	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/16" from case for 10 seconds	T_L	300	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 10 μA)	$V_{(BR)DSS}$	60	—	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 48 V, V_{GS} = 0) (V_{DS} = 48 V, V_{GS} = 0, T_J = 125°C)	I_{DSS}	 — —	 1.0 1.0	 μAdc mA
Gate-Body Leakage Current, Forward (V_{GSF} = 15 Vdc, V_{DS} = 0)	I_{GSSF}	—	−10	nAdc
ON CHARACTERISTICS*				
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1.0 mA)	$V_{GS(th)}$	0.8	3.0	Vdc
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 0.5 Adc) (V_{GS} = 4.5 V, I_D = 75 mA)	$r_{DS(on)}$	 — —	 5.0 6.0	Ohm
Drain-Source On-Voltage (V_{GS} = 10 V, I_D = 0.5 Adc) (V_{GS} = 4.5 V, I_D = 75 mA)	$V_{DS(on)}$	 — —	 2.5 0.45	Vdc
On-State Drain Current (V_{GS} = 4.5 V, V_{DS} = 10 V)	$I_{d(on)}$	75	—	mA
Forward Transconductance (V_{DS} = 10 V, I_D = 200 mA)	g_{fs}	100	—	μmhos
DYNAMIC CHARACTERISTICS				
Input Capacitance	C_{iss}	—	60	pF
Output Capacitance	C_{oss}	—	25	
Reverse Transfer Capacitance	C_{rss}	—	5.0	
SWITCHING CHARACTERISTICS*				
Turn-On Delay Time	t_{on}	—	10	ns
Turn-Off Delay Time	t_{off}	—	10	

(V_{DS} = 25 V, V_{GS} = 0, f = 1.0 MHz)

(V_{DD} = 15 V, I_D = 500 mA, R_{gen} = 25 ohms, R_L = 25 ohms)

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

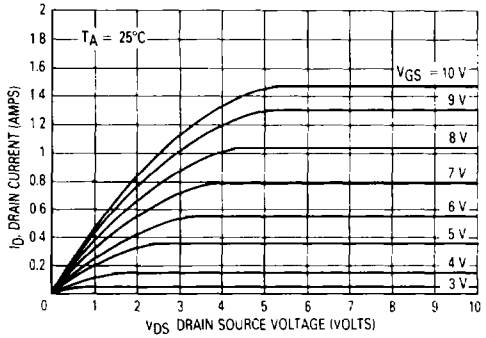


Figure 1. Ohmic Region

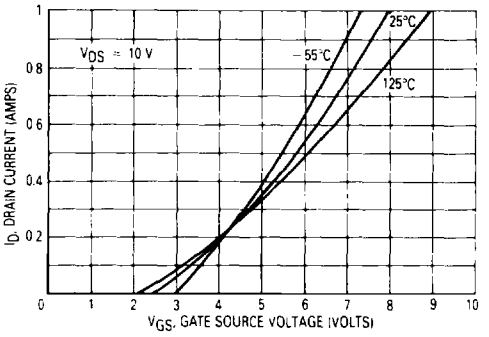


Figure 2. Transfer Characteristics

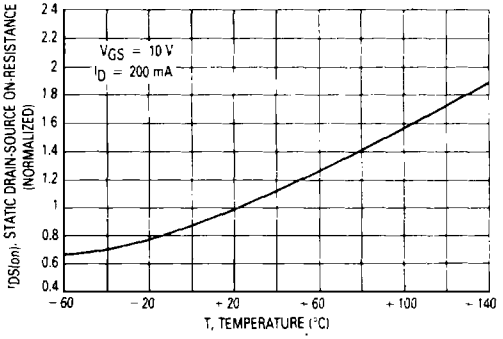


Figure 3. Temperature versus Static Drain-Source On-Resistance

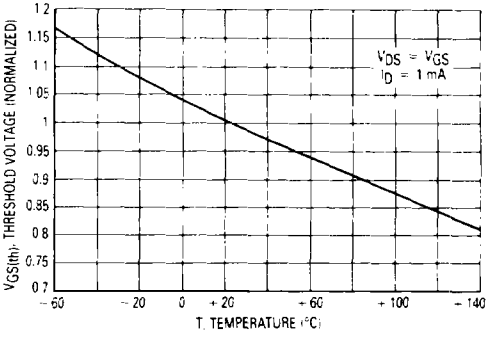


Figure 4. Temperature versus Gate Threshold Voltage

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