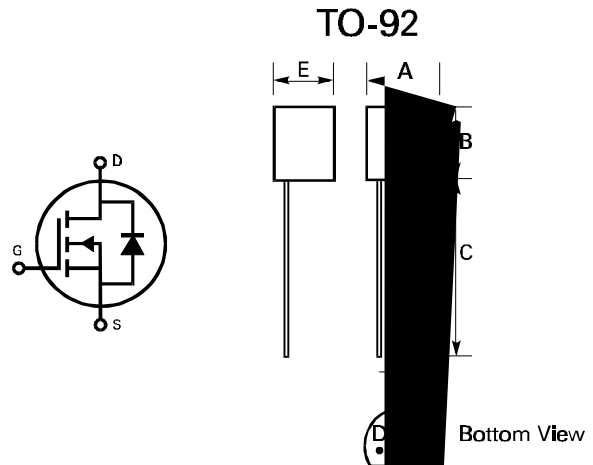


N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Efficient high density cell design approaching 3 million per square inch
- Voltage controlled small signal switch
- Rugged
- High saturation current
- Low $R_{DS(ON)}$
- Fast Switching Speed



Mechanical Data

- TO-92 Plastic Case
- Leads: Solderable per MIL-STD-202, Method 208
- Pin Connections: See Diagram
- Marking: Type Number
- Weight: 0.18 gram (approx.)

	Min	Max
A	4.45	4.70
B	4.46	4.70
C	12.7	—
D	0.41	0.63
E	3.43	3.68
G	2.42	2.67
All dimension		mm

Maximum Ratings @ TA = 25°C unless otherwise noted

Symbol	Parameter	2N7000	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{DGR}	Drain-Gate Voltage $R_{GS} \leq 1M\Omega$	60	V
V_{GSS}	Gate-Source Voltage	± 40	V
I_D	Drain Current—Continuous —Pulsed*	200 500	mA mA
P_D	Total Power Dissipation Derating above 25°C	400 3.2	mW mW/°C
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T_L	Maximum Lead Temperature for Soldering Purposes, 1.5mm from Case for 10 seconds	300	°C

*Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$

Electrical CharacteristicsT_A = 25°C Unless otherwise specified

Symbol	Parameter	Conditions	Min	Max	Units
Off Characteristics					
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 10μA	60		V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 48V, V _{GS} = 0V (T _J = 125°C)		1 1	μA mA
I _{GSS}	Gate-Body Leakage	V _{GS} = ±15V, V _{DS} = 0V		±10	nA
On Characteristics*					
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 1mA	0.8	3	V
r _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10V, I _D = 0.5A (T _J = 125°C)		5 9	Ω Ω
V _{DS(on)}	Drain-Source On-Voltage	V _{GS} = 10V, I _D = 0.5A V _{GS} = 4.5V, I _D = 75mA		2.5 0.4	V V
I _{D(on)}	On-State Drain Current	V _{GS} = 4.5V, V _{DS} = 10V	75		mA
g _{FS}	Forward Transconductance	V _{DS} = 10V, I _D = 200mA	100		millimhos
Dynamic Characteristics					
C _{ISS}	Input Capacitance	V _{DS} = 25, V _{GS} = 0V, f = 1.0MHz		50	pF
C _{OSS}	Output Capacitance			25	pF
C _{RSS}	Reverse Transfer Capacitance			5	pF
Switching Characteristics*					
t _{on}	Turn-On Time	V _{DD} = 15V, I _D = 0.5A, V _{GS} = 10V, R _{GEN} = 25Ω, R _L = 25Ω		10	ns
t _{off}	Turn-Off Time			10	ns
Body-Drain Diode Ratings					
I _S	Maximum Continuous Drain-Source Diode Forward Current			200	mA
I _{SM} *	Maximum Pulsed Drain-Source Diode Forward Current			500	mA
V _{SD} *	Drain-Source Diode Forward Voltage	V _{GS} = 0V, I _S = 200mA		1.5	V
Thermal Characteristics					
R _{θJA}	Thermal Resistance, Junction to Ambient			312.5	°C/W

* Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.