

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

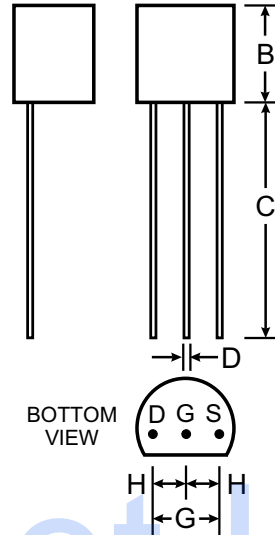
Features

- Efficient High Density Cell Design Approaching 3 Million Cells per Square Inch
- Voltage Controlled Small Signal Switch
- Rugged
- High Saturation Current
- Low $R_{DS(ON)}$
- Fast Switching Speed

Mechanical Data

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

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USE 2N7002**



TO-92		
Dim	Min	Max
A	4.45	4.70
B	4.46	4.70
C	12.5	—
D	0.41	0.55
E	3.43	3.68
G	2.42	2.67
H	1.14	1.40
All Dimensions in mm		

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage $R_{GS} \leq 1.0\text{M}\Omega$	V_{DGR}	60	V
Gate-Source Voltage (pulsed)	V_{GSS}	± 20	V
Drain Current	I_D	115 800	mA
Total Power Dissipation Derating above $T_A = 25^\circ\text{C}$	P_d	200 1.60	mW mW/ $^\circ\text{C}$
Maximum Terminal Temperature for Soldering Purposes	T_L	300	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	K/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 1. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit	Test Condition
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	—	—	V	$V_{GS} = 0V, I_D = 10\mu A$
Drain Cutoff Current	I_{DSS}	—	—	1.0	μA	$V_{DS} = 48V, V_{GS} = 0V$
Gate-Body Leakage Current	I_{GSS}	—	—	± 10	nA	$V_{GS} = \pm 15V, V_{DS} = 0V$
On Characteristics (Note 1)						
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.8	—	3.0	V	$V_{DS} = V_{GS}, I_D = 1.0mA$
Drain-Source On-Resistance	$r_{DS(ON)}$	—	—	5.0	Ω	$V_{GS} = 10V, I_D = 0.5A$
Dynamic Characteristics						
Input Capacitance	C_{ISS}	—	60	—	pF	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	C_{OSS}	—	25	—	pF	
Feedback Capacitance	C_{RSS}	—	5.0	—	pF	
Switching Characteristics						
Turn-On Time	t_{on}	—	10	—	ns	$V_{DS} = 15V, I_D = 0.5A,$ $V_{GS} = 10V, R_{GEN} = 25\Omega,$ $R_L = 25\Omega$
Turn-Off Time	t_{off}	—	10	—	ns	
Thermal Characteristics						
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	—	—	312.5	K/W	—

Notes: 1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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