



# DC COMPONENTS CO., LTD.

## DISCRETE SEMICONDUCTORS

2N7000

### TECHNICAL SPECIFICATIONS OF N-CHANNEL SMALL SIGNAL MOSFET

#### Description

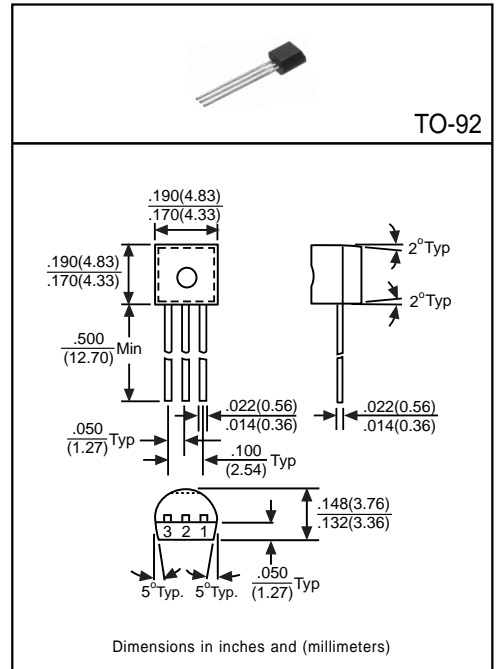
Designed for low voltage and low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

#### Pinning

- 1 = Source
- 2 = Gate
- 3 = Drain

#### Absolute Maximum Ratings (T<sub>A</sub>=25°C)

Characteristic	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DSS</sub>	60	V
Drain-Gate Voltage (R <sub>GS</sub> =1MΩ)	V <sub>DGR</sub>	60	V
Gate-Source Voltage (Continuous)	V <sub>GS</sub>	±20	V
Drain Current (Continuous, T <sub>c</sub> =25°C)	I <sub>D</sub>	200	mA
Drain Current (Pulsed) <sup>(1)</sup>	I <sub>DM</sub>	500	mA
Total Power Dissipation Derate above 25°C	P <sub>D</sub>	350 2.8	mW mW/°C
Operating Junction Temperature	T <sub>J</sub>	-55 to +150	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C
Maximum Lead Temperature, for 10 Seconds Soldering Purpose	T <sub>L</sub>	300	°C



#### Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	60	-	-	V	I <sub>D</sub> =10μA, V <sub>GS</sub> =0
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> =48V, V <sub>GS</sub> =0
Gate-Source Forward Leakage Current	I <sub>GSSF</sub>	-	-	10	nA	V <sub>GSF</sub> =15V, V <sub>DS</sub> =0
Gate-Source Reverse Leakage Current	I <sub>GSSR</sub>	-	-	-10	nA	V <sub>GSR</sub> =-15V, V <sub>DS</sub> =0
Gate Threshold Voltage <sup>(1)</sup>	V <sub>GS(th)</sub>	0.8	-	3	V	V <sub>DS</sub> =3V, I <sub>D</sub> =1mA
On-State Drain Current <sup>(1)</sup>	I <sub>D(on)</sub>	75	-	-	mA	V <sub>DS</sub> =4.5V, V <sub>BS</sub> =10V
Static Drain-Source On-State Voltage <sup>(1)</sup>	V <sub>DS(on)1</sub>	-	-	0.45	V	I <sub>D</sub> =75mA, V <sub>GS</sub> =4.5V
	V <sub>DS(on)2</sub>	-	-	2.5	V	I <sub>D</sub> =500mA, V <sub>GS</sub> =10V
Static Drain-Source On-State Resistance <sup>(1)</sup>	R <sub>DS(on)1</sub>	-	-	6	Ω	I <sub>D</sub> =75mA, V <sub>GS</sub> =4.5V
	R <sub>DS(on)2</sub>	-	-	5	Ω	I <sub>D</sub> =500mA, V <sub>GS</sub> =10V
Forward Transconductance <sup>(1)</sup>	g <sub>FS</sub>	100	-	-	μS	V <sub>DS</sub> =10V, I <sub>D</sub> =200mA
Input Capacitance	C <sub>iss</sub>	-	-	60	pF	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1MHZ
Output Capacitance	C <sub>oss</sub>	-	-	25	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	-	5	pF	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	-	-	357	°C/W	-

(1) Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%