

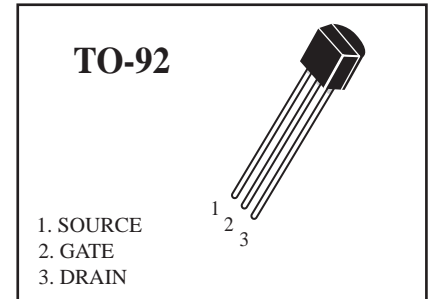
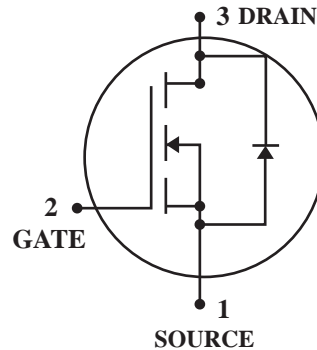
Small Signal MOSFET

N-Channel

(Pb) Lead(Pb)-Free

Features:

- *Low On-Resistance :5Ω
- *Low Input Capacitance: 60PF
- *Low Out put Capacitance : 25PF
- *Low Threshole :1.4V(TYE)
- *Fast Switching Speed : 10ns



Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (TA=25°C)	I_D	200	mA
Pulsed Drain Current ⁽¹⁾	I_{DM}	500	mA
Power Dissipation (TA=25°C)	P_D	350	mW
Maximax Junction-to-Ambient	$R_{\theta JA}$	357	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C

Device Marking

2N7000=7000

Note 1:

Pulse Width Limited by Maximum Junction Temperature

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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Static

Drain-Source Breakdown Voltage $V_{GS}=0V, I_D=10\ \mu\text{A}$	$V_{(BR)DSS}$	60	-	V
Gate-Threshold Voltage $V_{DS}=V_{GS}, I_D=1.0\ \text{mA}$	$V_{GS(th)}$	0.8	3.0	V
Gate-body Leakage $V_{DS}=0V, V_{GS}=15V$	I_{GSS}	-	-10	nA
Zero Gate Voltage Drain Current $V_{DS}=48V, V_{GS}=0V$ $V_{DS}=48V, V_{GS}=0V, T_j=125^{\circ}\text{C}$	I_{DSS}	- -	1.0 1.0	μA mA
On-State Drain Current (2) $V_{GS}=4.5V, V_{DS}=10V$	$I_D(on)$	75	-	mA
Drain-Source On-Resistance (2) $V_{GS}=10V, I_D=500\text{mA}$ $V_{GS}=4.5V, I_D=75\text{mA}$	$r_{DS(on)}$	- -	5.0 6.0	Ω
Forward Transconductance (2) $V_{DS}=10V, I_D=200\text{mA}$	g_{fs}	100	-	μs
Drain-Source On-Voltage $V_{GS}=10V, I_D=500\text{mA}$ $V_{GS}=10V, I_D=75\text{mA}$	$V_{SD(on)}$	- -	2.5 0.45	V

Dynamic(1)

Input Capacitance $V_{DS}=25V, V_{GS}=0V, f=1\text{MHZ}$	C_{iss}	-	60	pF
Output Capacitance $V_{DS}=25V, V_{GS}=0V, f=1\text{MHZ}$	C_{oss}	-	25	
Reverse Transfer Capacitance $V_{DS}=25V, V_{GS}=0V, f=1\text{MHZ}$	C_{rss}	-	5.0	

Switching (1) (3)

Turn-On Time $V_{DD}=15V, R_L=30\Omega, I_D=500\text{mA}$ $V_{GEN}=10V, R_G=25\Omega$	$t_d(on)$	-	10	nS
Turn-Off Time $V_{DD}=15V, R_L=30\Omega, I_D=500\text{mA}$ $V_{GEN}=10V, R_G=25\Omega$	$t_d(off)$	-	10	nS

Note: 1. For Design Aid Only not Subject to Production Testing.

2. Pulse Test : $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

3. Switching Time is Essentially Independent of Operating Temperature .

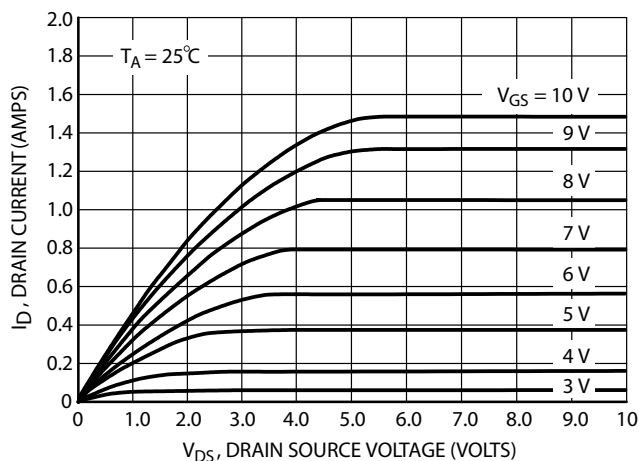


FIG. 1 Ohmic Region

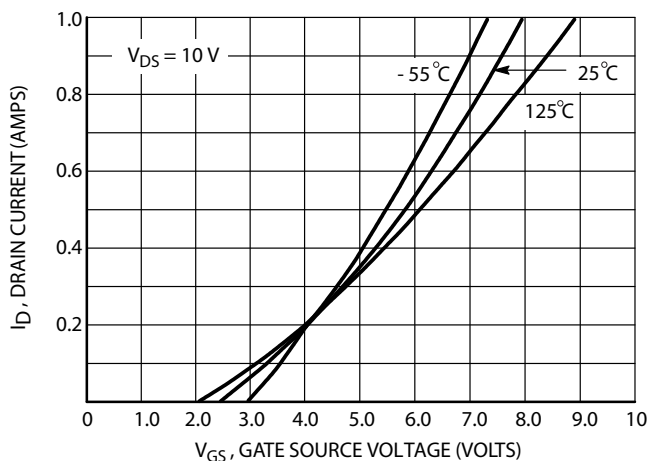


FIG.2 Transfer Characteristics

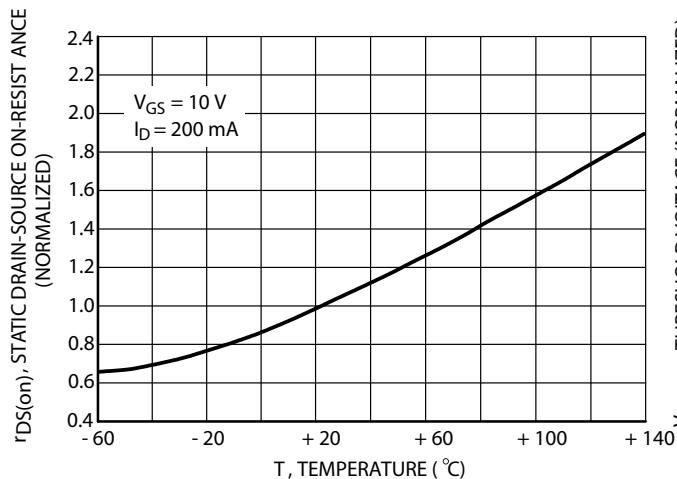


FIG.3 Temperature versus Static Drain-Source On-Resistance

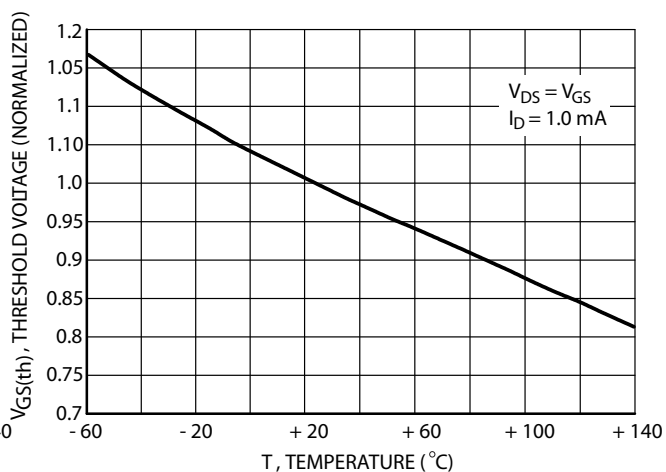


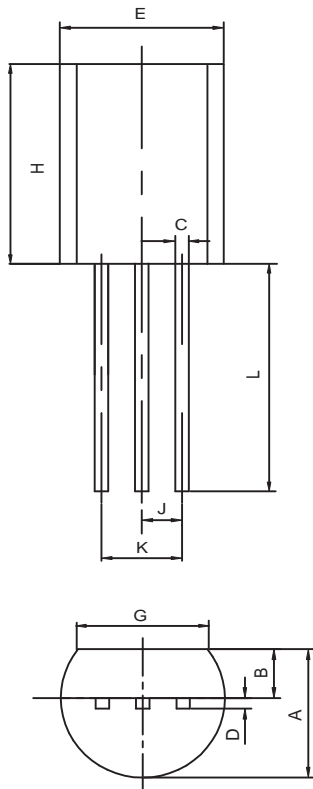
FIG.4 Temperature versus Gate Threshold Voltage

2N7000



TO-92 Outline Dimensions

unit:mm



TO-92		
Dim	Min	Max
A	3.000	5.100
B	1.100	2.030
C	0.380	0.600
D	0.360	1.100
E	4.400	0.500
G	3.430	-
H	4.300	4.700
J	1.270TYP	
K	2.440	2.640
L	14.100	14.500