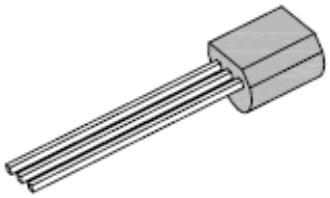
N-Channel Enhancement Mode Field Effect Transistor

Features

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- RoHS compliance



TO-92

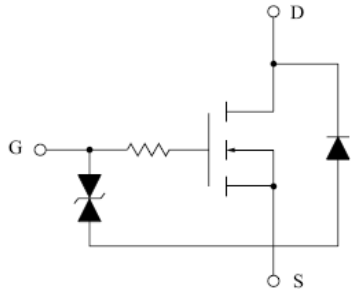
Mechanical Data

Case:	TO-92, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.18 gram

Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description		2N7000	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{DGR}	Drain-Gate Voltage (R_{GS}≤1MΩ)		60	V
V_{GSS}	Gate-Source Voltage	Continuous	±20	V
		Non Repetitive (tp<50µs)	±40	V
I_D	Drain Current	Continuous	200	mA
I_{DP}		Pulsed	500	mA
P_D	Drain Power Dissipation		400	mW
T_J	Junction Temperature		150	° C
T_{STG}	Storage Temperature Range		-55 to +150	° C

Equivalent Circuit



This transistor is electrostatic sensitive device.
Please handle with caution.

Electrical Characteristics *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	60	-	-	V	V_{GS}=0V, I_D=10μA
I_{DSS}	Zero Gate Voltage Drain Current	-	-	1	μA	V_{DS}=48V, V_{GS}=0V
I_{GSSF}	Gate- Body Leakage, Forward	-	-	1	μA	V_{GS}=15V, V_{DS}=0V
I_{GSSR}	Gate- Body Leakage, Reverse	-	-	-1	μA	V_{GS}=-15V, V_{DS}=0V

On Characteristics (Note)

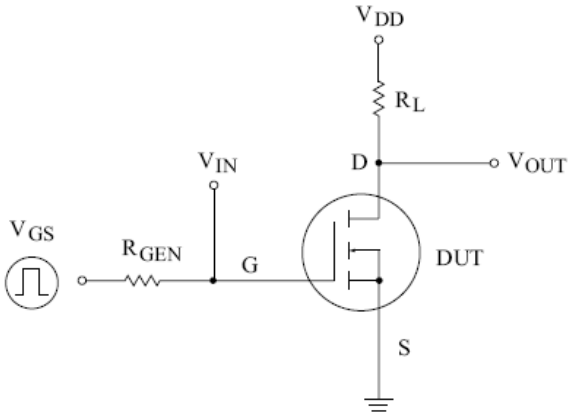
Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
V_{th}	Gate Threshold Voltage	0.8	2.1	3.0	V	V_{DS}=V_{GS}, I_D=1mA
$R_{DS(ON)}$	Drain-Source ON Resistance	-	1.2	5.0	Ω	V_{GS}=10V, I_D=500mA
		-	1.8	5.3	Ω	V_{GS}=4.5V, I_D=75mA
$V_{DS(ON)}$	Drain-Source ON Voltage	-	0.6	2.5	V	V_{GS}=10V, I_D=500mA
		-	0.14	0.4	V	V_{GS}=4.5V, I_D=75mA
$I_{D(ON)}$	On State Drain Current	75	600	-	mA	V_{GS}=4.5V, V_{DS}=10V
g_{FS}	Forward Transconductance	100	320	-	mS	V_{DS}=10V, I_D=200mA

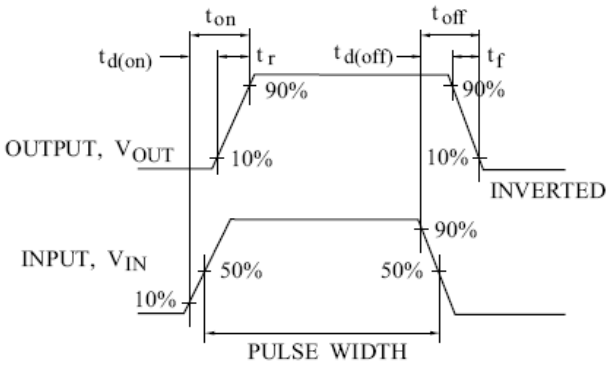
Note: Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Dynamic Characteristics

Symbol	Description		Min.	Typ.	Max.	Unit	Conditions
C_{ISS}	Input Capacitance		-	20	50	pF	V_{DS}=25V, V_{GS}=0V, f=1MHz
C_{RSS}	Reverse Transfer Capacitance		-	4	5	pF	
C_{OSS}	Output Capacitance		-	11	25	pF	
t_{on}	Switching Time	Turn-on Time	-	-	10	nS	V_{DD}=15V, R_L=25Ω, I_D=200mA, V_{GS}=10V, R_{GEN}=25Ω
t_{off}		Turn-off Time	-	-	10	nS	

Switching Time Test Circuit





Typical Characteristics Curves

Fig.1- I_D - V_{DS}

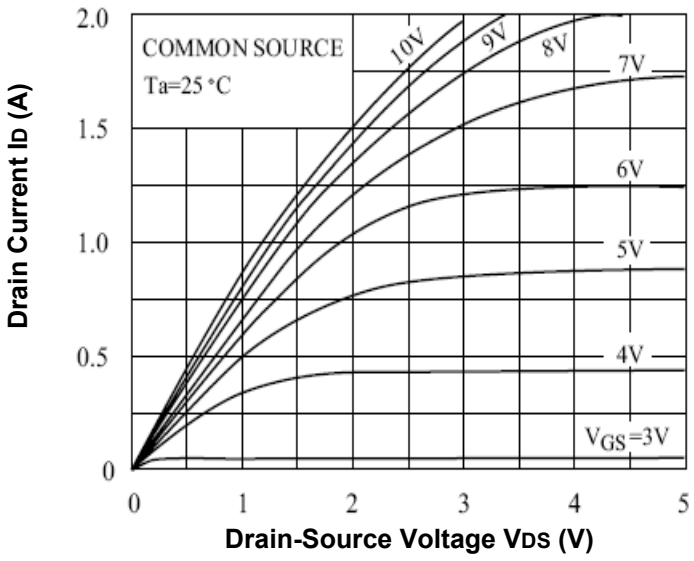


Fig.2- $R_{DS(ON)}$ - I_D

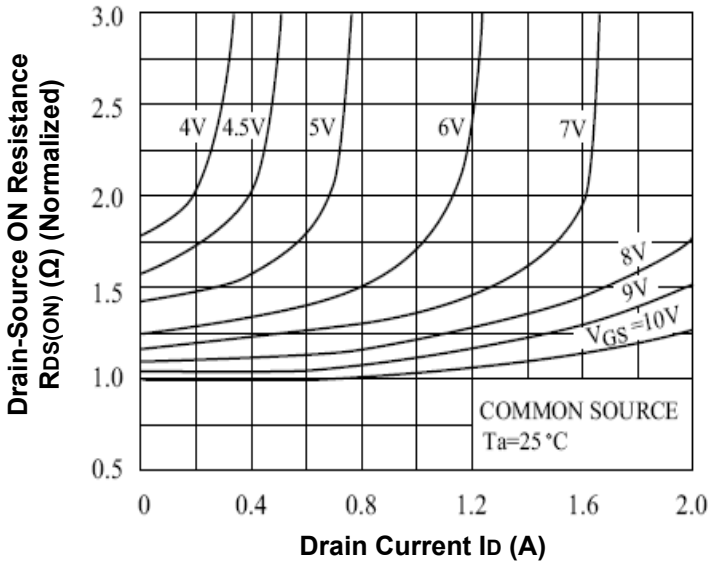


Fig.3- $R_{DS(ON)}$ - T_J

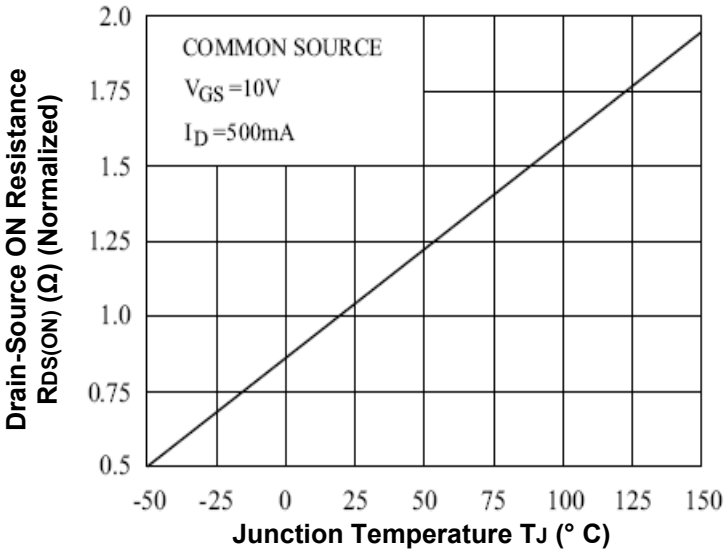


Fig.4- $R_{DS(ON)}$ - I_D

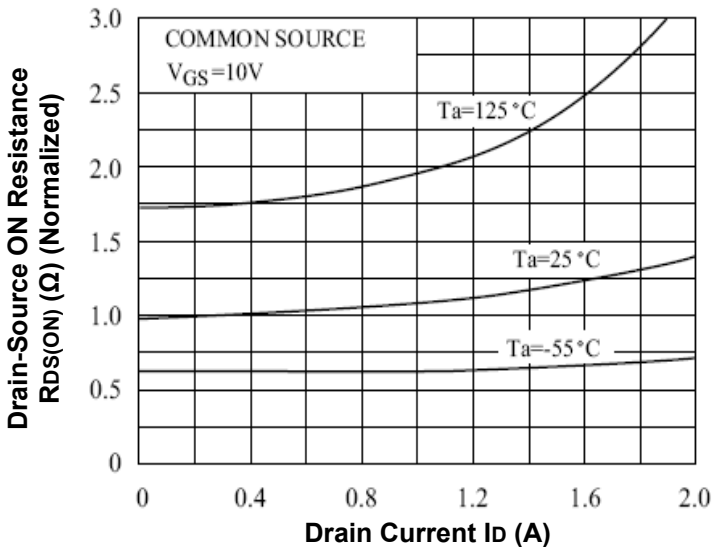


Fig.5- I_D - V_{GS}

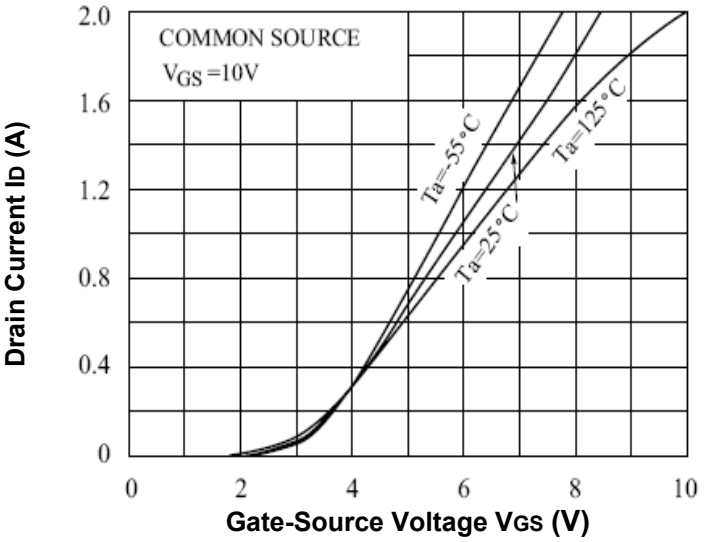


Fig.6- Vth - T_J

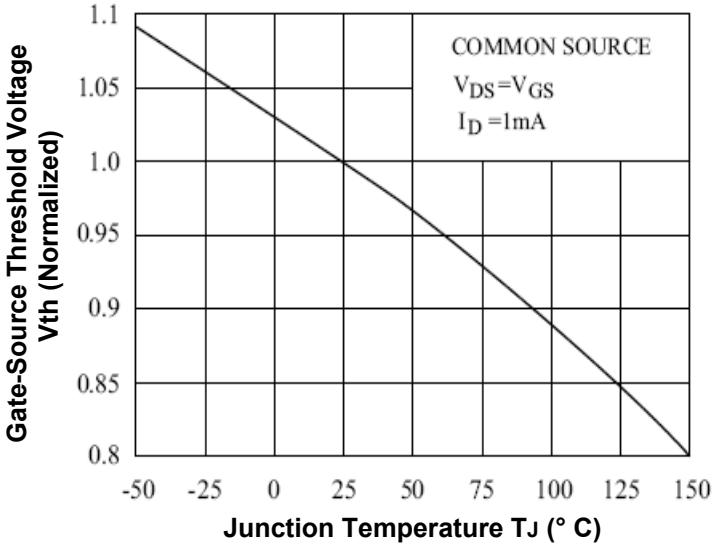


Fig.7- I_S - V_{SD}

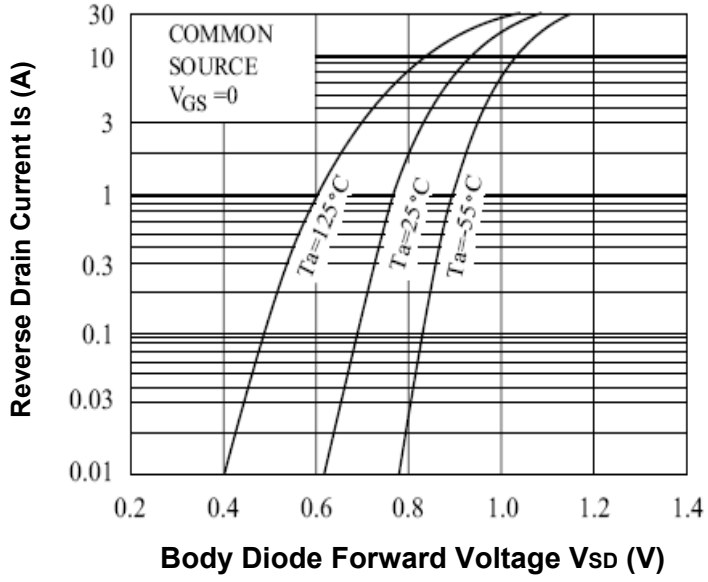


Fig.8- C - V_{DS}

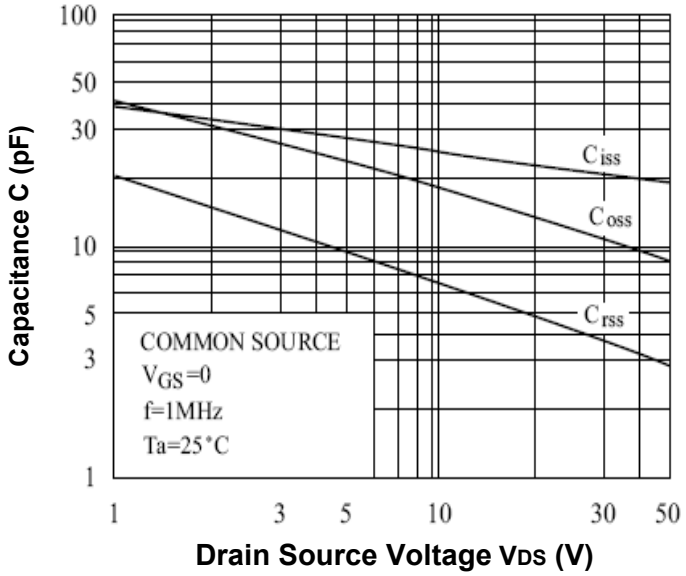


Fig.9- V_{GS} - Q_g

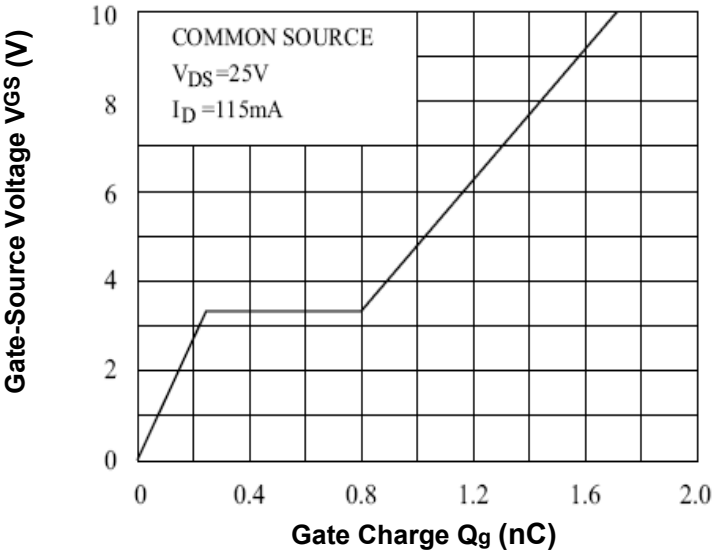


Fig.10- I_D - V_{DS}

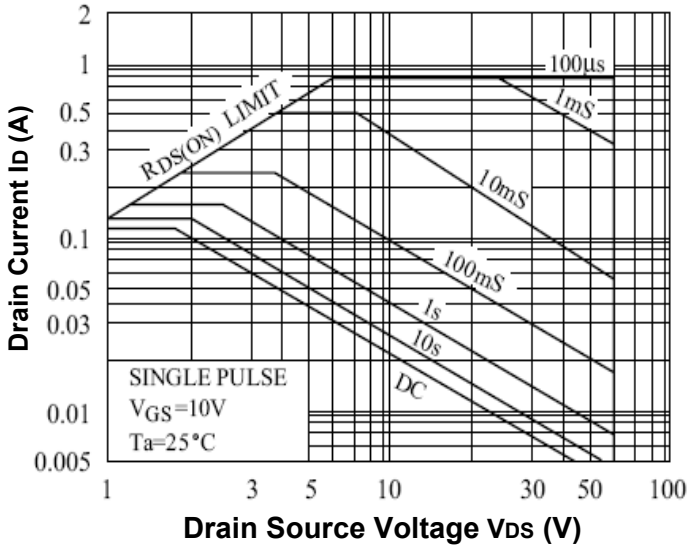
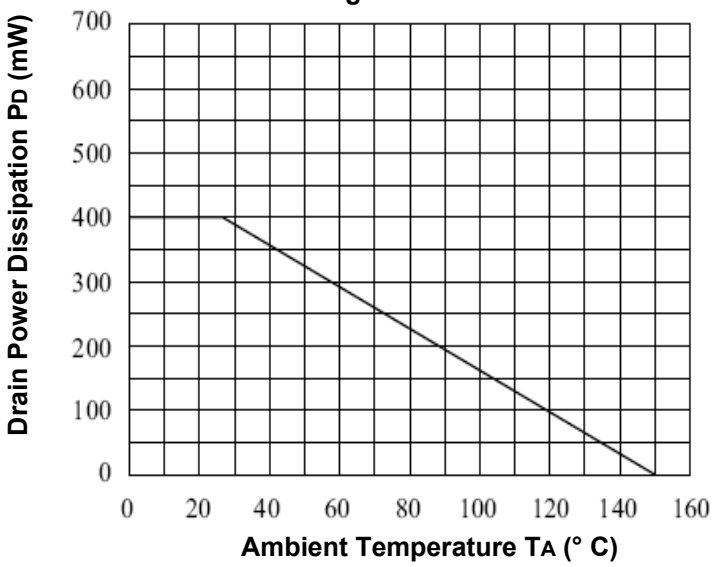


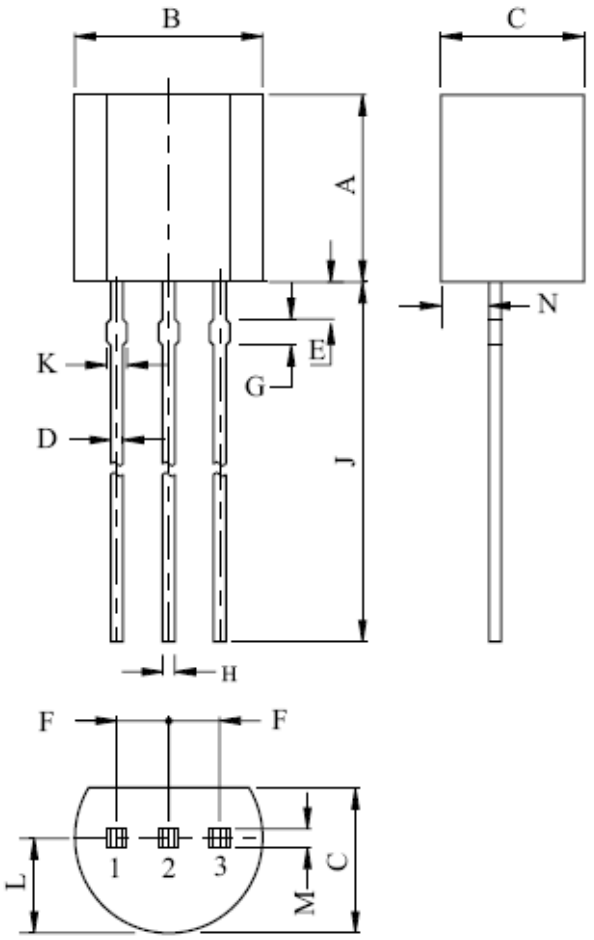
Fig.11- P_D - T_A



2N7000

Dimensions in mm

TO-92



DIM	MILLIMETERS
A	4.70 MAX
B	4.80 MAX
C	3.70 MAX
D	0.45
E	1.00
F	1.27
G	0.85
H	0.45
J	14.00±0.50
K	0.55 MAX
L	2.30
M	0.45 MAX
N	1.00

1. SOURCE
2. GATE
3. DRAIN

How to contact us:

US HEADQUARTERS

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162
Tel: (800) TAITRON (800) 824-8766 (661) 257-6060
Fax: (800) TAITFAX (800) 824-8329 (661) 257-6415
Email: taitron@taitroncomponents.com
Http://www.taitroncomponents.com

TAITRON COMPONENTS MEXICO, S.A .DE C.V.

BOULEVARD CENTRAL 5000 INTERIOR 5 PARQUE INDUSTRIAL ATITALAQUIA, HIDALGO C.P. 42970 MEXICO
Tel: +52-55-5560-1519
Fax: +52-55-5560-2190

TAITRON COMPONENTS INCORPORATED REPRESENTAÇÕES DO BRASIL LTDA

RUA DOMINGOS DE MORAIS, 2777, 2.ANDAR, SALA 24 SAÚDE - SÃO PAULO-SP 04035-001 BRAZIL
Tel: +55-11-5574-7949
Fax: +55-11-5572-0052

TAITRON COMPONENTS INCORPORATED, SHANGHAI REPRESENTATIVE OFFICE

METROBANK PLAZA, 1160 WEST YAN' AN ROAD, SUITE 1503, SHANGHAI, 200052, CHINA
Tel: +86-21-5424-9942
Fax: +86-21-5424-9931