KEC

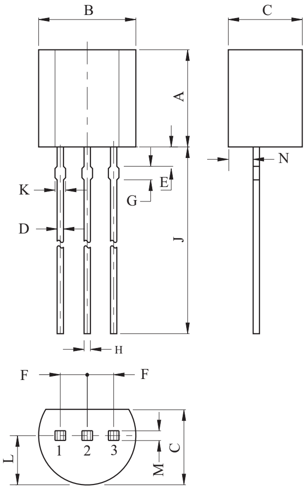
SEMICONDUCTOR
TECHNICAL DATA

2N7000A
N CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

INTERFACE AND SWITCHING APPLICATION.

FEATURES

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



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

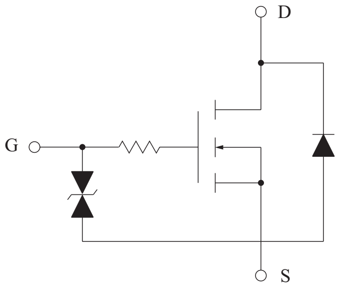
1. SOURCE
2. GATE
3. DRAIN

TO-92

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} \leq 1M\Omega$)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	200	mA
	Pulsed	I_{DP}	500	
Drain Power Dissipation		P_D	400	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 150	℃

EQUIVALENT CIRCUIT



THIS TRANSISTOR IS ELECTROSTATIC SENSITIVE DEVICE.
PLEASE HANDLE WITH CAUTION.

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=10 μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage, Forward	I_{GSSF}	V_{GS}=15V, V_{DS}=0V	-	-	1	μA
Gate-Body Leakage, Reverse	I_{GSSR}	V_{GS}=-15V, V_{DS}=0V	-	-	-1	μA

ELECTRICAL CHARACTERISTICS (Ta=25℃)

ON CHARACTERISTICS (Note 1)

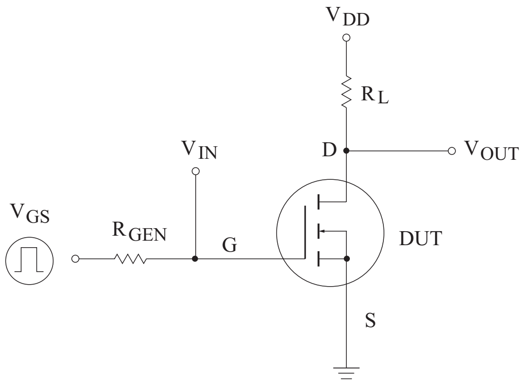
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}$, $I_D=1mA$	0.8	2.1	3	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=500mA$	-	1.2	5	Ω
		$V_{GS}=4.5V$, $I_D=75mA$	-	1.8	5.3	
Drain-Source ON Voltage	$V_{DS(ON)}$	$V_{GS}=10V$, $I_D=500mA$	-	0.6	2.5	V
		$V_{GS}=4.5V$, $I_D=75mA$	-	0.14	0.4	
On State Drain Current	$I_{D(ON)}$	$V_{GS}=4.5V$, $V_{DS}=10V$	75	600	-	mA
Forward Transconductance	g_{FS}	$V_{DS}=10V$, $I_D=200mA$	100	320	-	mS
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$, $I_S=200mA$	-	0.76	1.15	V

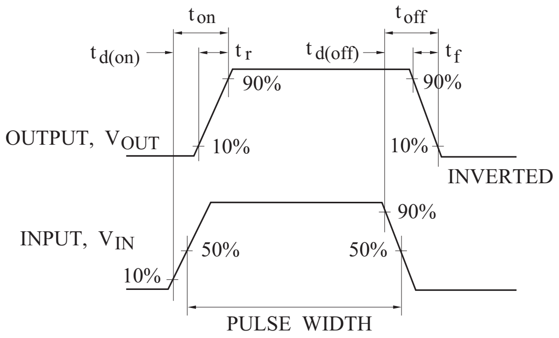
Note 1) Pulse Test : Pulse Width≦300㎲, Duty Cycle≦2.0%

DYNAMIC CHARACTERISTICS

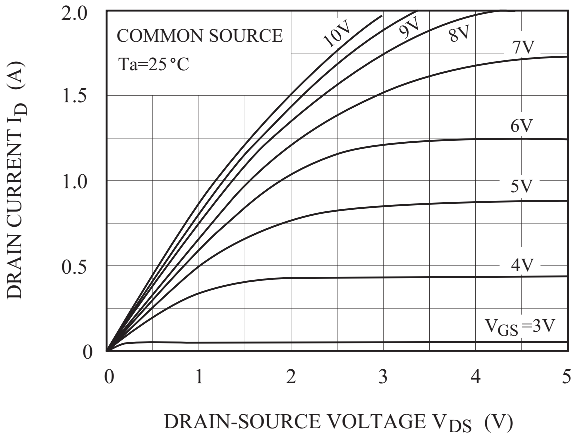
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Capacitance		C_{iss}	$V_{DS}=25V$, $V_{GS}=0V$, f=1MHz	-	20	50	pF
Reverse Transfer Capacitance		C_{rss}		-	4	5	
Output Capacitance		C_{oss}		-	11	25	
Switching Time	Turn-On Time	t_{on}	$V_{DD}=15V$, $R_L=25Ω$, $I_D=200mA$, $V_{GS}=10V$, $R_{GEN}=25Ω$	-	-	10	nS
	Turn-Off Time	t_{off}		-	-	10	

SWITCHING TIME TEST CIRCUIT

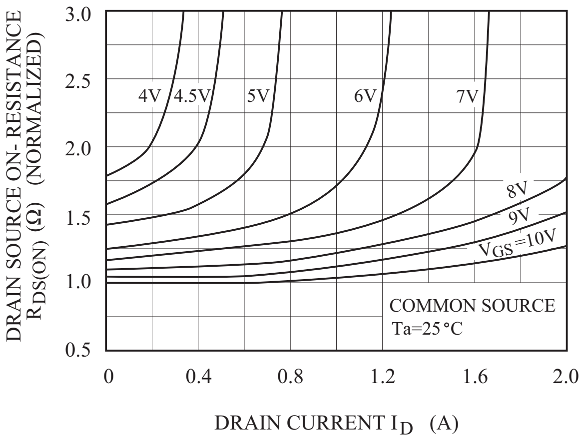




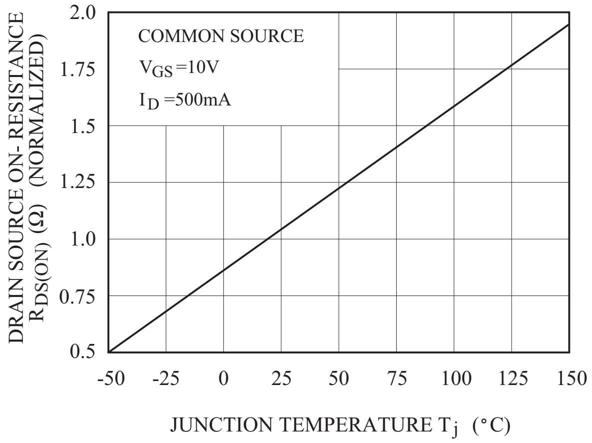
I_D - V_{DS}



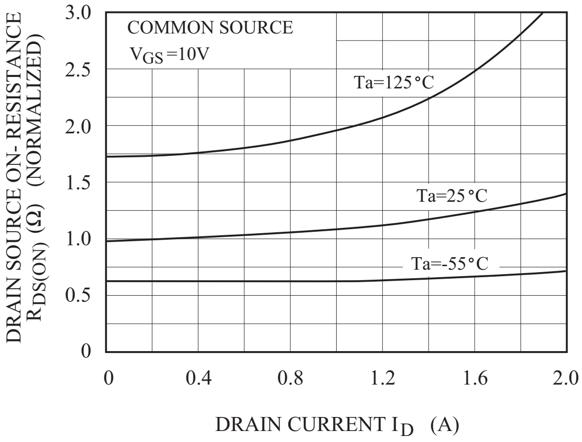
$R_{DS(ON)}$ - I_D



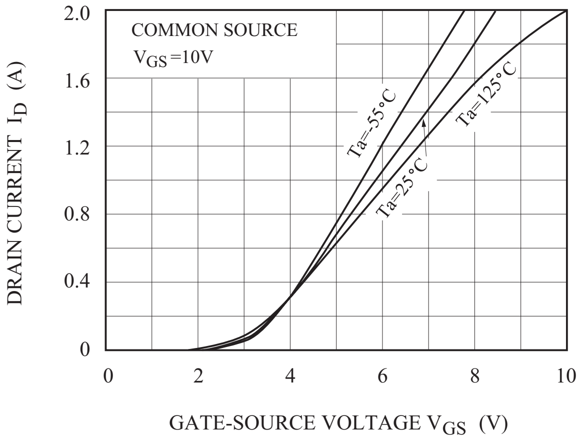
$R_{DS(ON)}$ - T_j



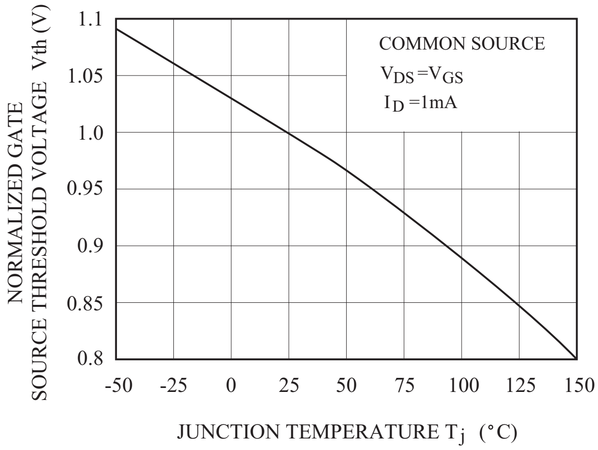
$R_{DS(ON)}$ - I_D

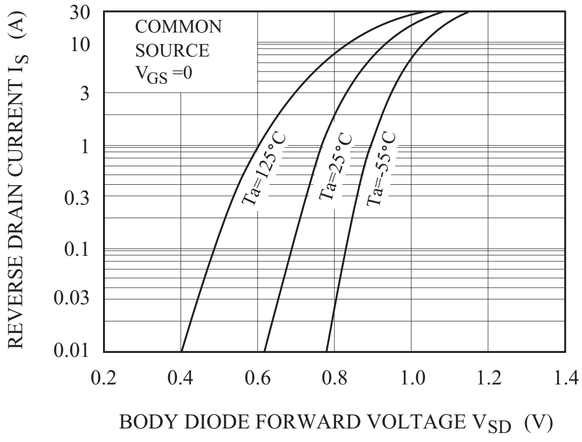


I_D - V_{GS}

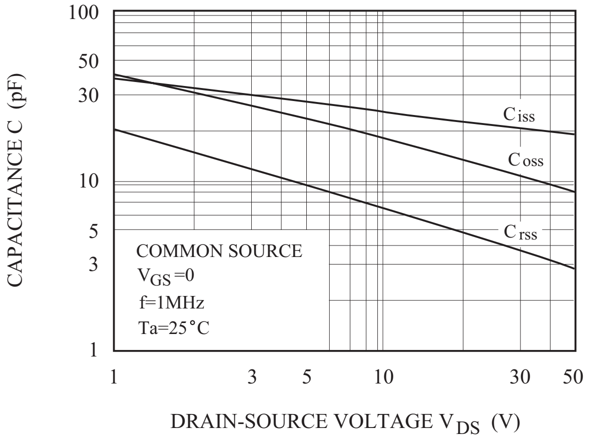


V_{th} - T_j

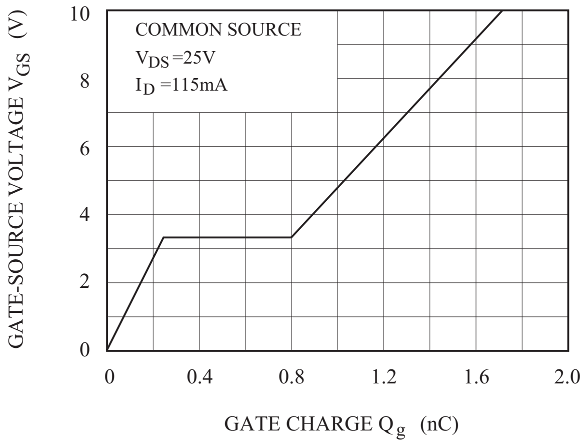




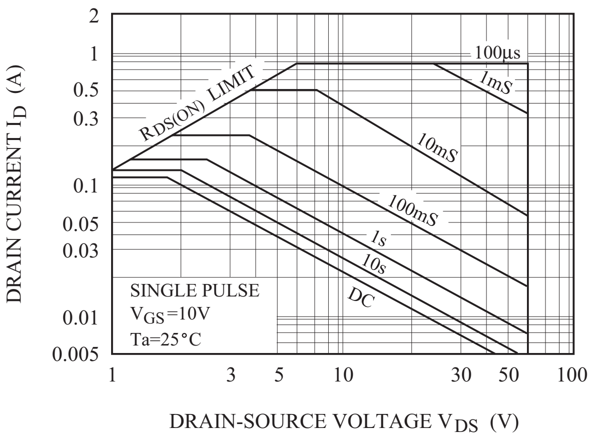
I_S - V_{SD}



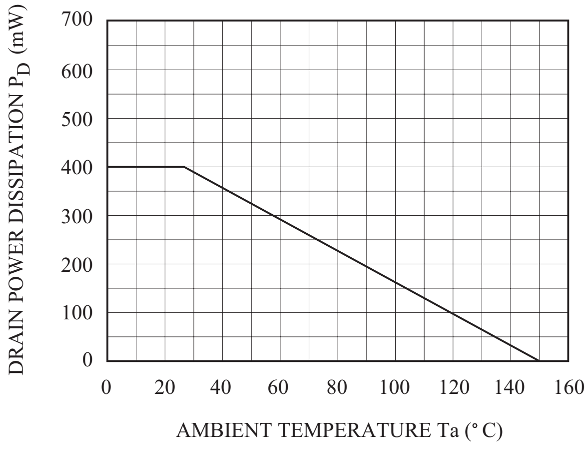
C - V_{DS}



V_{GS} - Q_g



I_D - V_{DS}



P_D - Ta