

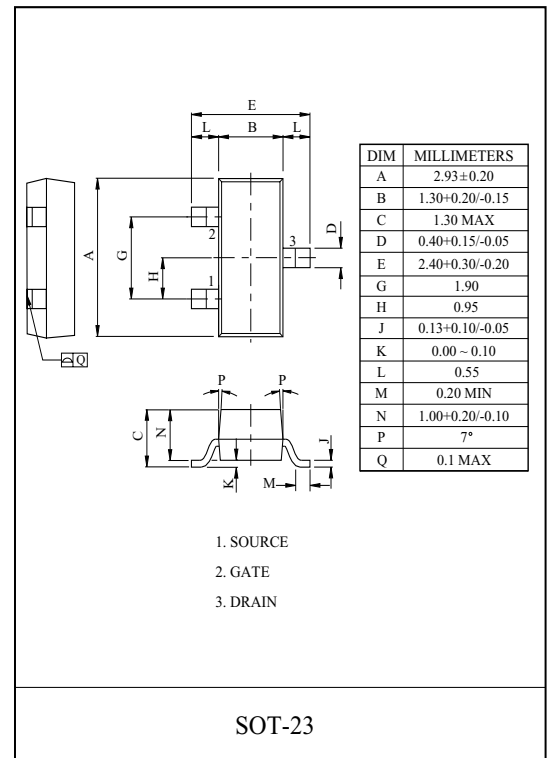
### INTERFACE AND SWITCHING APPLICATION.

### FEATURES

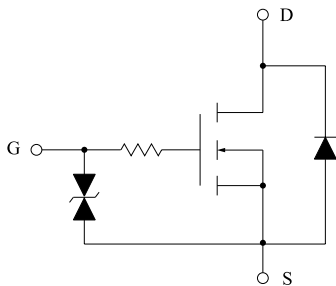
- High density cell design for low  $R_{DS(ON)}$ .
- Voltage controlled small signal switch.
- Rugged and reliable.
- High saturation current capability.

### MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	60	V
Drain-Gate Voltage ( $R_{GS} = 1M\Omega$ )		$V_{DGR}$	60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	115	mA
	Pulsed	$I_{DP}$	800	
Drain Power Dissipation		$P_D$	200	mW
Junction Temperature		$T_j$	150	
Storage Temperature Range		$T_{stg}$	-55 150	



### EQUIVALENT CIRCUIT

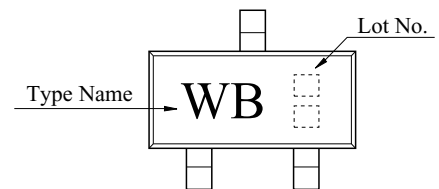


THIS TRANSISTOR IS ELECTROSTATIC SENSITIVE DEVICE.  
PLEASE HANDLE WITH CAUTION.

### ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=10 \mu A$	60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage, Forward	$I_{GSSF}$	$V_{GS}=20V, V_{DS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage, Reverse	$I_{GSSR}$	$V_{GS}=-20V, V_{DS}=0V$	-	-	-1	$\mu A$

### Marking



# 2N7002A

## ELECTRICAL CHARACTERISTICS (Ta=25 ) ON CHARACTERISTICS (Note 1)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}$ , $I_D=250\ \mu A$	1	2.1	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V$ , $I_D=500mA$	-	1.8	5	
		$V_{GS}=5V$ , $I_D=50mA$	-	-	5	
Drain-Source ON Voltage	$V_{DS(ON)}$	$V_{GS}=10V$ , $I_D=500mA$	-	0.9	2.5	V
		$V_{GS}=5V$ , $I_D=50mA$	-	-	0.25	
On State Drain Current	$I_{D(ON)}$	$V_{GS}=10V$ , $V_{DS} \leq 2 V_{DS(ON)}$	500	-	-	mA
Forward Transconductance	$g_{FS}$	$V_{DS}=2V_{DS(ON)}$ , $I_D=200mA$	80	320	-	mS

Note 1) Pulse Test : Pulse Width 300 $\mu$ s, Duty Cycle 2.0%

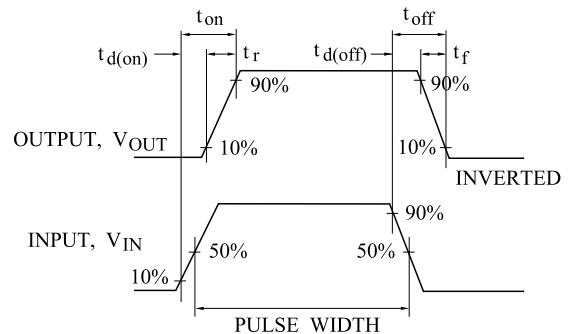
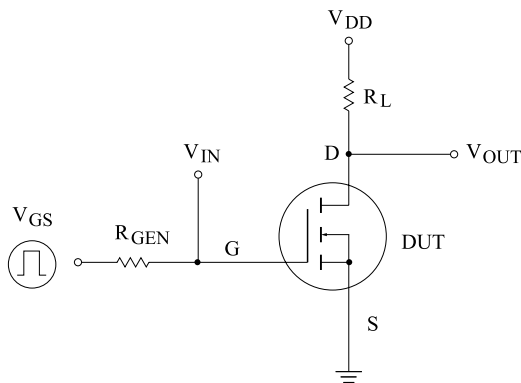
## DYNAMIC CHARACTERISTICS

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	$t_{on}$	$V_{DD}=30V$ , $R_L=150\ \Omega$ , $I_D=200mA$ , $V_{GS}=10V$ , $R_{GEN}=25\ \Omega$	-	-	20	nS
	Turn-Off Time	$t_{off}$		-	-	20	

## DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RANGINGS

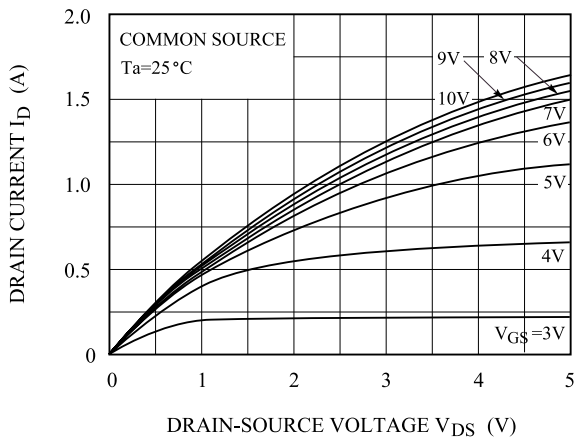
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	-	-	-	115	mA
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$	-	-	-	800	mA
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ , $I_S=115mA$ (Note1)	-	0.88	1.5	V

## SWITCHING TIME TEST CIRCUIT

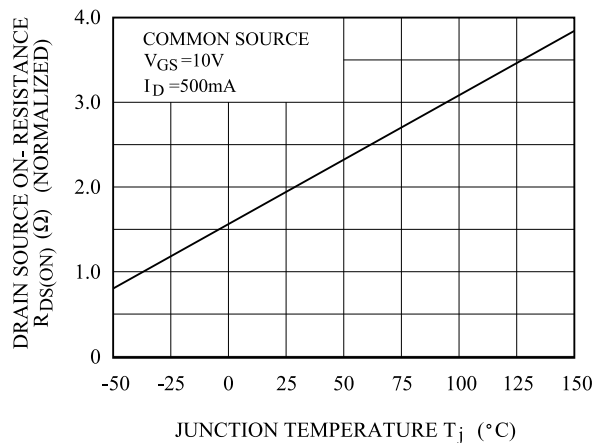


# 2N7002A

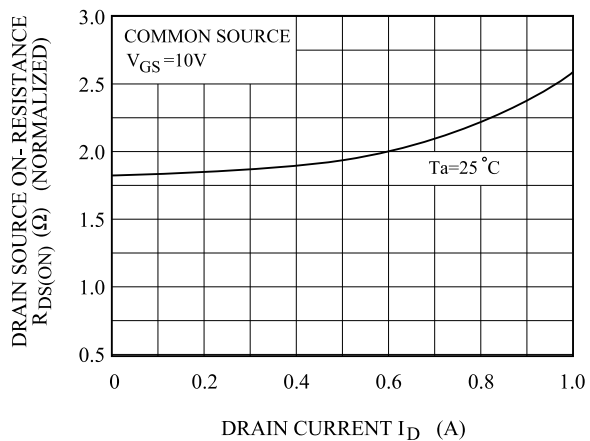
$I_D - V_{DS}$



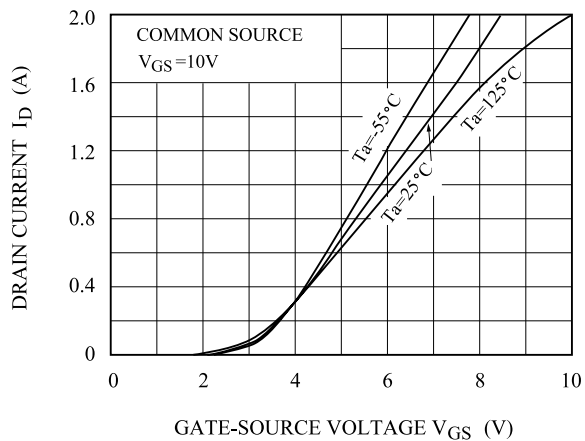
$R_{DS(ON)} - T_j$



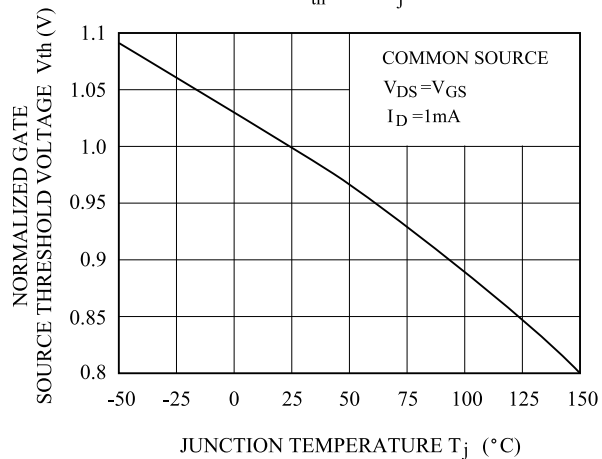
$R_{DS(ON)} - I_D$



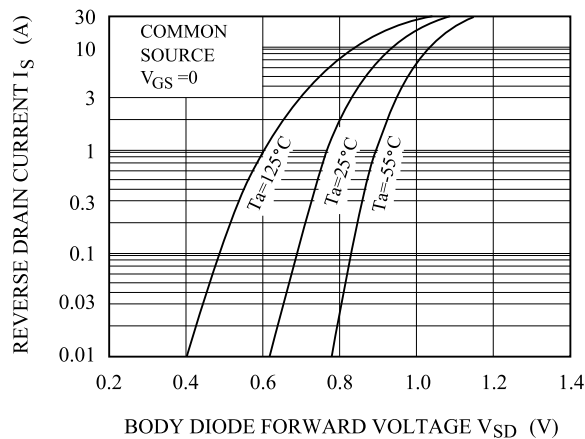
$I_D - V_{GS}$



$V_{th} - T_j$



$I_S - V_{SD}$



# 2N7002A

