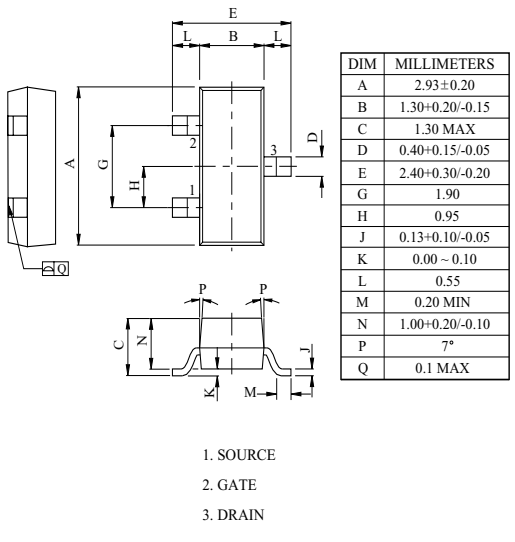
2N7002KA

N Channel MOSFET
ESD Protected 2000V

INTERFACE AND SWITCHING APPLICATION.

FEATURES

- ESD Protected 2000V.
- High density cell design for low $R_{DS(ON)}$.
- Voltage controlled small signal switch.
- Rugged and reliable.
- High saturation current capablity.



DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.40+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°
Q	0.1 MAX

1. SOURCE
2. GATE
3. DRAIN

SOT-23

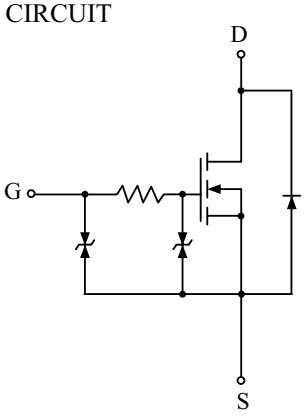
MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	300	mA
	Pulsed (Note 1)	I_{DP}	1200	
Drain Power Dissipation (Note 2)		P_D	350	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 150	℃

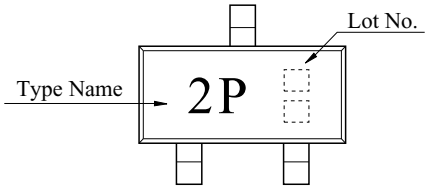
Note 1) Pulse Width≤10μs, Duty Cycle≤1%

Note 2) Package mounted on 99% Alumina 10×8×0.6mm

EQUIVALENT CIRCUIT



Marking



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}=60V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage, Forward	I_{GSSF}	V_{GS}=20V, V_{DS}=0V	-	-	10	μA
Gate-Body Leakage, Reverse	I_{GSSR}	V_{GS}=-20V, V_{DS}=0V	-	-	-10	μA
ESD-Capability*	-	C=100pF, R=1.5KΩ Both forward and reverse direction 3 pulse	2000	-	-	V

*Failure cirterion : I_{DSS} > 1 μA at V_{DS}=60V, I_{GSSF}>10 μA at V_{GS}=20V, I_{GSSR}>-10 μA at V_{GS}=-20V.

ELECTRICAL CHARACTERISTICS (Ta=25°C)

ON CHARACTERISTICS (Note 3)

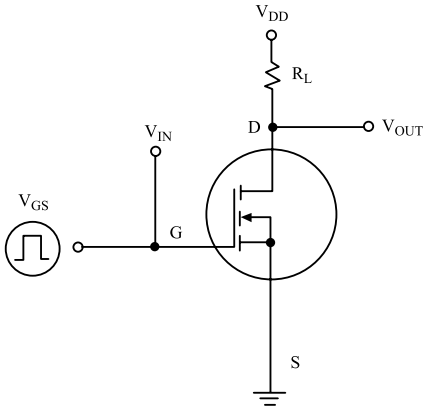
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Threshold Voltage	V_{th}	V_{DS}=V_{GS}, I_D=250 μA	1.1	-	2.35	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=500mA	-	-	2.3	Ω
		V_{GS}=5V, I_D=50mA	-	1.7	2.7	
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=200mA (Note 1)	-	-	1.15	V

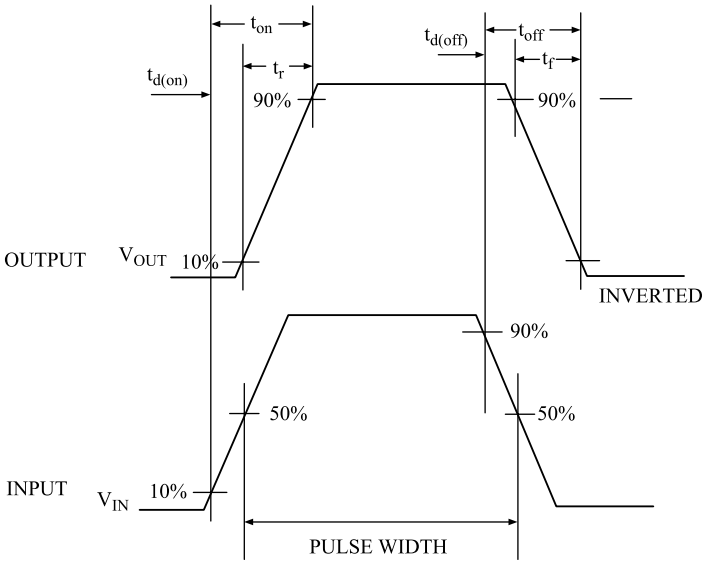
Note 3) Pulse Test : Pulse Width≤80μS, Duty Cycle≤1%

DYNAMIC CHARACTERISTICS

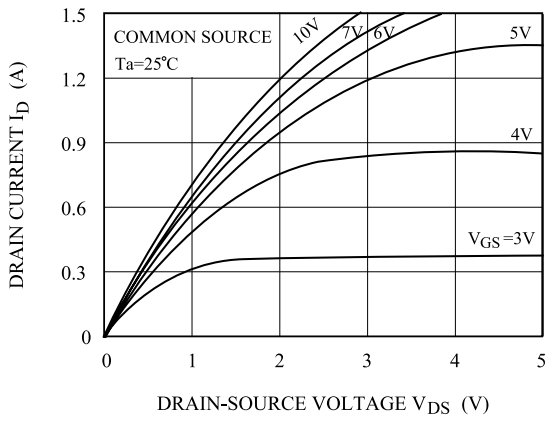
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Capacitance		C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz	-	18.0	-	pF
Reverse Transfer Capacitance		C_{rss}		-	3.0	-	
Output Capacitance		C_{oss}		-	7.0	-	
Switching Time	Turn-On Time	t_{on}	V_{DD}=30V, R_L=155Ω, I_D=190mA, V_{GS}=10V	-	15	-	nS
	Turn-Off Time	t_{off}		-	40	-	

SWITCHING TIME TEST CIRCUIT

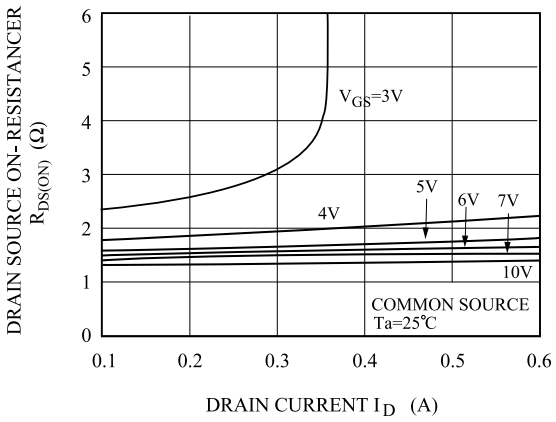




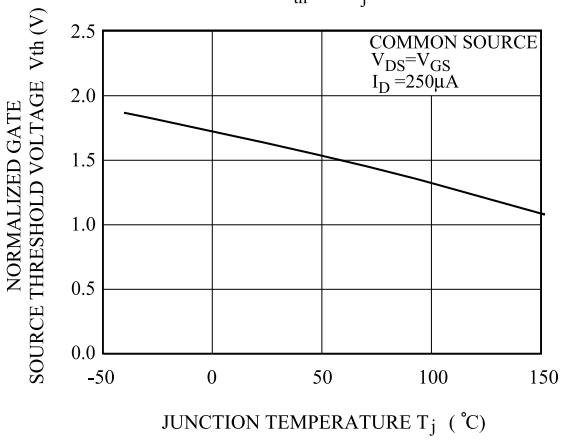
I_D - V_{DS}



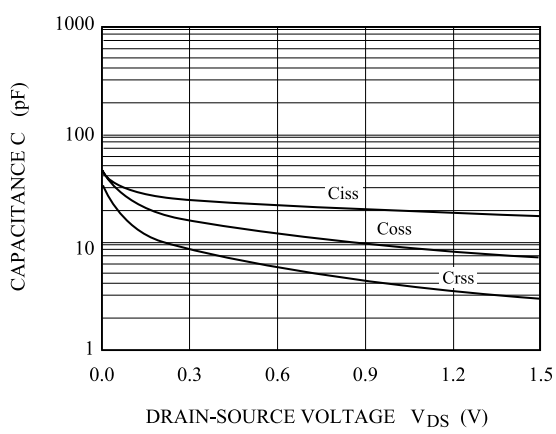
$R_{DS(ON)}$ - I_D



V_{th} - T_j



C - V_{DS}



P_D - T_a