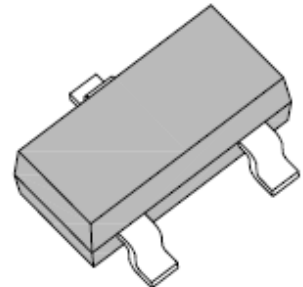


SMD Signal DMOS Transistor (N-Channel)

Features

- Voltage Controlled Small Signal Switch
- High Density Cell Design for Low $R_{DS(ON)}$
- Rugged and Reliable
- High Saturation Current Capability
- RoHS Compliance



Mechanical Data

Case:	SOT-23, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.008 gram

SOT-23



Maximum Ratings ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	2N7002	Unit	Conditions
	Marking Code	WA		
V_{DS}	Drain-Source Voltage	60	V	
V_{GS}	Gate-Source Voltage	± 20	V	
I_D	Drain Current Continuous	300	mA	
I_{DP}	Drain Current Pulsed (Note 1)	1200	mA	
P_D	Drain Power Dissipation (Note 2)	300	mW	
T_J	Junction Temperature	150	$^{\circ}C$	
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}C$	

Electrical Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
BV_{DS}	Drain-Source Breakdown Voltage	60	-	-	V	$V_{GS}=0V, I_D=10\mu A$
I_{DSS}	Zero Gate Voltage Drain Current	-	-	1	μA	$V_{DS}=60V, V_{GS}=0V$
I_{GSSF}	Gate-Body Leakage, Forward	-	-	100	nA	$V_{DS}=0V, V_{GS}=20V$
I_{GSSR}	Gate-Body Leakage, Reverse	-	-	-100		$V_{DS}=0V, V_{GS}=-20V$

SMD Signal DMOS Transistor (N-Channel)

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Electrical Characteristics ($T_{Ambient}=25^{\circ}C$) (Note 3)

Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
V_{th}	Gate Threshold Voltage	1.1	1.8	2.3	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
$R_{DS(ON)}$	Drain-Source ON Resistance	-	1.2	1.8	Ω	$V_{GS}=10V$, $I_D=500mA$
		-	1.5	2.1		$V_{GS}=5V$, $I_D=50mA$
$V_{DS(ON)}$	Drain-Source ON Voltage	-	0.6	0.9	V	$V_{GS}=10V$, $I_D=500mA$
		-	0.075	0.105		$V_{GS}=5V$, $I_D=50mA$
$I_{D(ON)}$	On State Drain Current	500	-	-	mA	$V_{GS}=10V$, $V_{DS} \geq 2V_{DS(ON)}$
g_{FS}	Forward Transconductance	200	580	-	mS	$V_{DS}=10V$, $I_D=500mA$
V_{SD}	Drain-Source Diode Forward Voltage (Note 1)	-	0.78	1.15	V	$V_{GS}=0V$, $I_S=200mA$

Dynamic Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

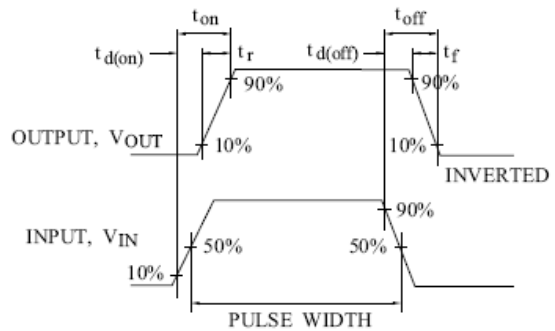
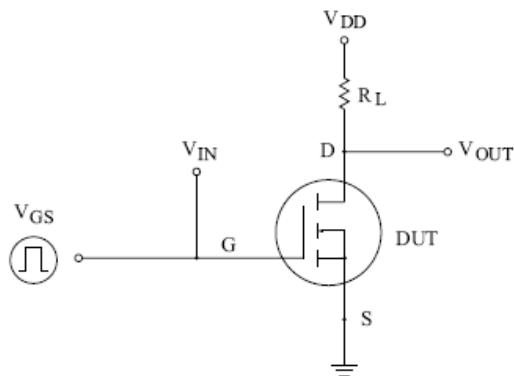
Symbol	Description	Min.	Typ.	Max.	Unit	Conditions
C_{iss}	Input Capacitance	-	47.1	-	pF	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$
C_{rss}	Reverse Transfer Capacitance	-	3.5	-		
C_{oss}	Output Capacitance	-	8.8	-		
t_{on}	Switching Time Turn-On Time	-	8.8	-	nS	$V_{DD}=30V$, $R_L=155\Omega$, $I_D=190mA$, $V_{GS}=10V$
t_{off}	Switching Time Turn-Off Time	-	14.8	-		

Note: (1) Pulse Width $\leq 10\mu s$, Duty Cycle $\leq 1\%$

(2) Package mounted on a glass epoxy PCB 3.94" x 3.94" x 0.04"

(3) Pulse Test: Pulse Width $\leq 80\mu s$, Duty Cycle $\leq 1\%$

Switching Time Test Circuit



SMD Signal DMOS Transistor (N-Channel)

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Typical Characteristics Curves

Fig.1- Output Characteristics

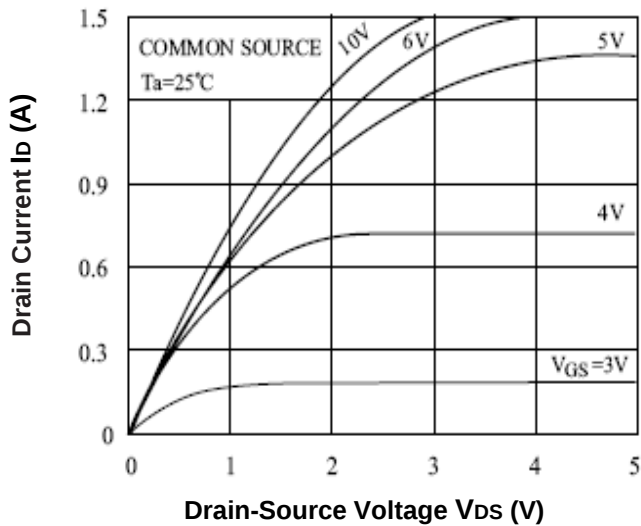


Fig.2- On-Resistance vs. Drain Current

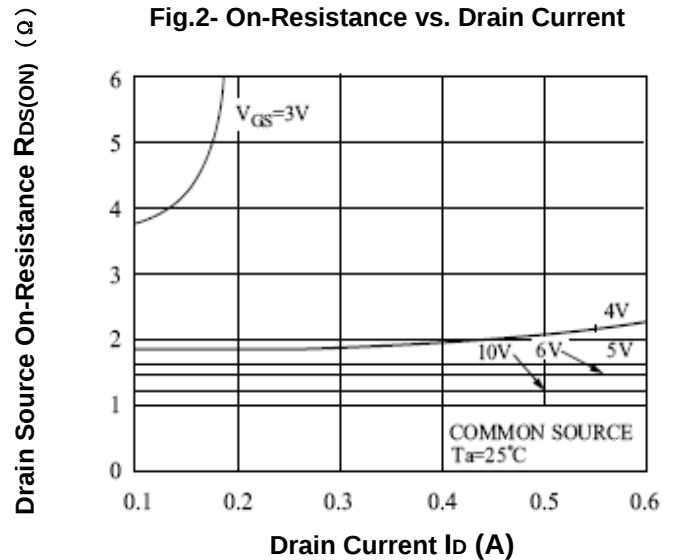


Fig.3- On-Resistance vs. Junction Temperature

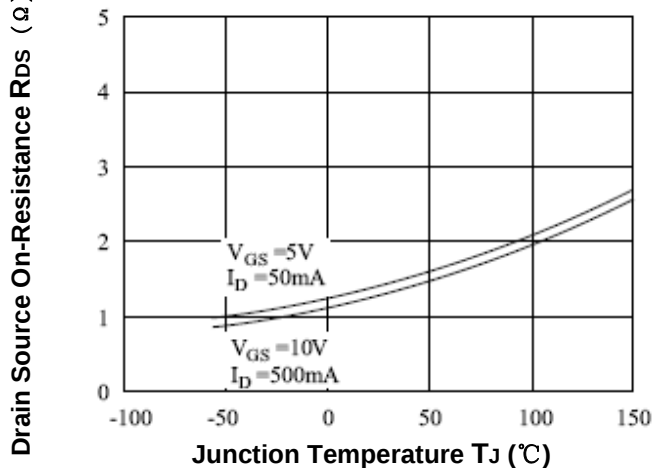
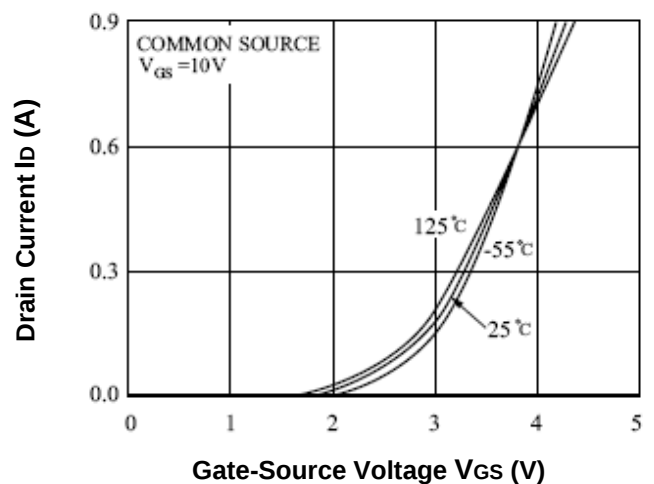


Fig.4- Transfer Characteristics



SMD Signal DMOS Transistor (N-Channel)

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Fig.5- Threshold Characteristics

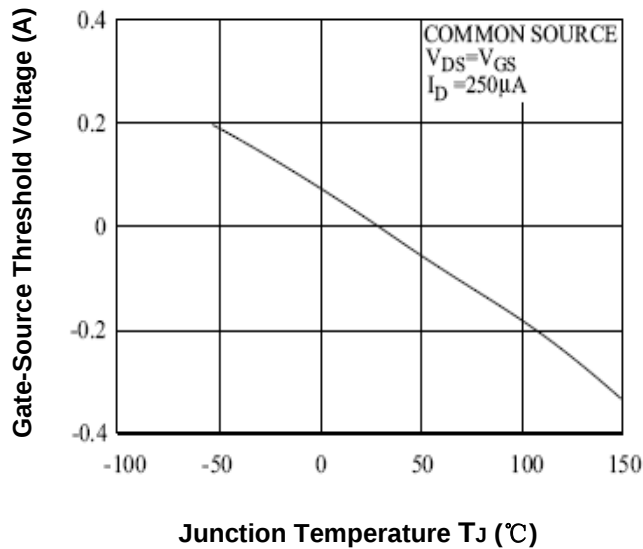


Fig.6- Source-Drain Diode Forward Voltage

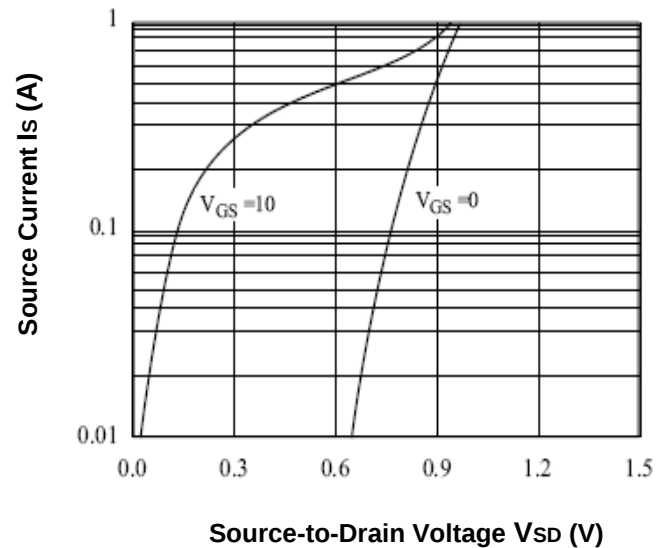


Fig.7- Capacitance

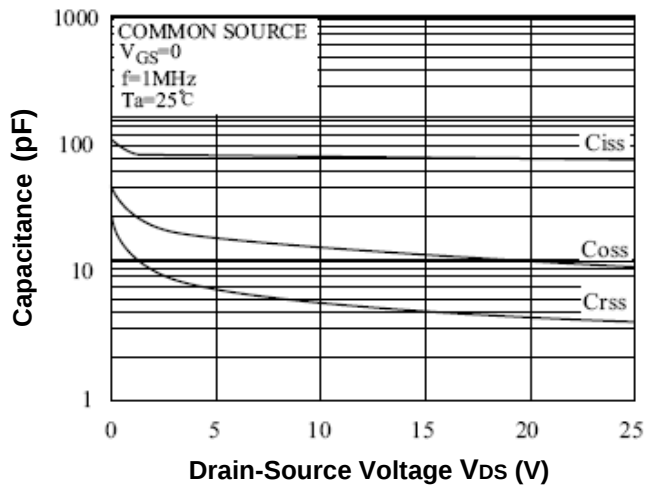
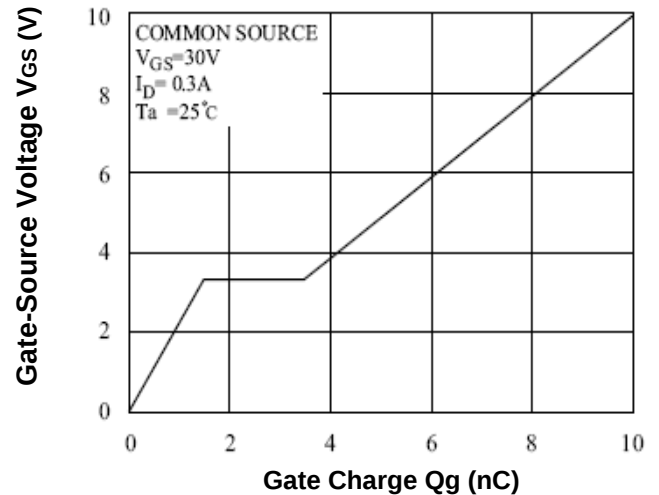


Fig.8- Gate Charge



SMD Signal DMOS Transistor (N-Channel)

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Fig.9- Safe Operating Area

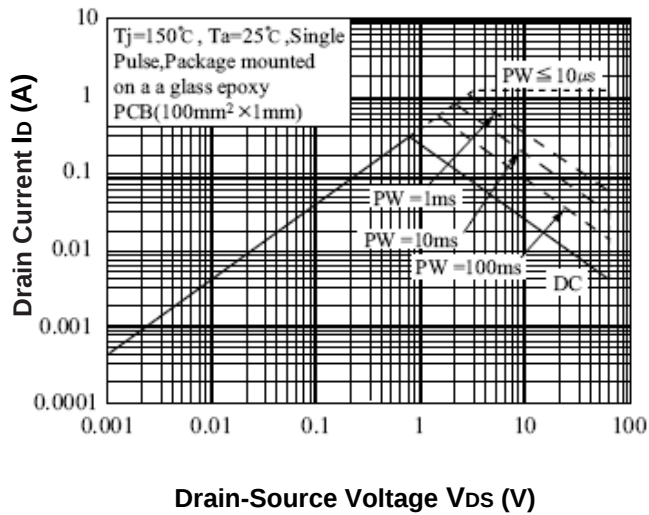
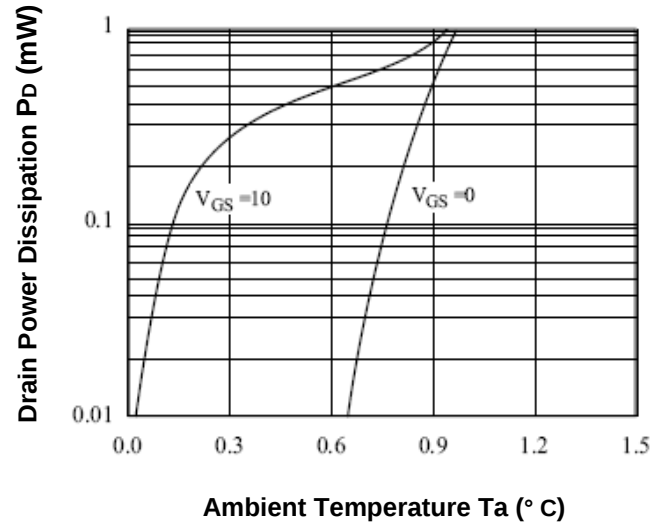
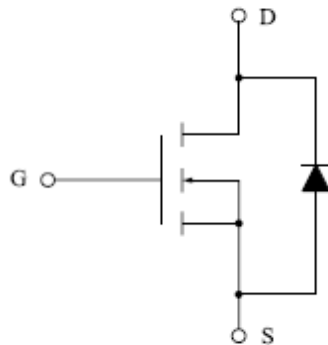


Fig.10- Power Dissipation vs. Ambient Temperature



Equivalent Circuit

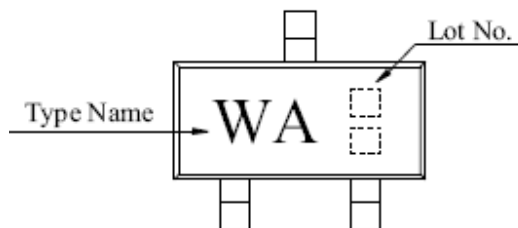


This transistor is electrostatic sensitive device.
Please handle with caution.

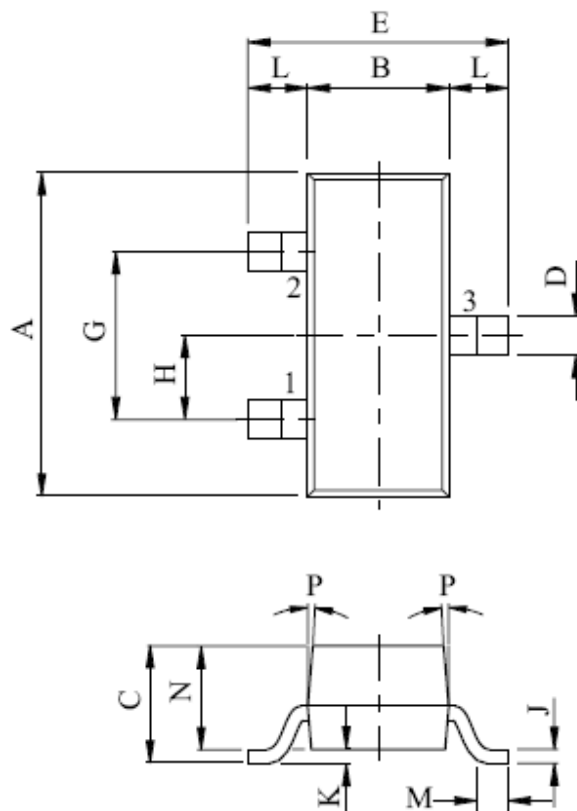
SMD Signal DMOS Transistor (N-Channel)

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Marking



Dimensions in mm



DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.45+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°

1. Source
2. Gate
3. Drain

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SMD Signal DMOS Transistor (N-Channel)

2N7002

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