DC COMPONENTS CO., LTD.

DISCRETE SEMICONDUCTORS

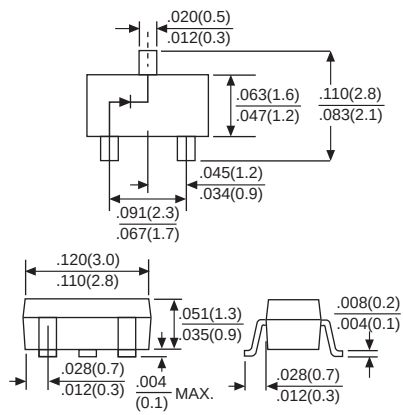
2N7002

TECHNICAL SPECIFICATIONS OF N-CHANNEL SMALL SIGNAL MOSFET

Description

Designed for low voltage and low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

SOT-23



Dimensions in inches and (millimeters)

Pinning

1 = Gate
2 = Source
3 = Drain

Absolute Maximum Ratings(T_A=25°C)

Characteristic	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage (R_{GS}=1MΩ)	V_{DGR}	60	V
Gate-Source Voltage (Continuous)	V_{GS}	±20	V
Drain Current (Continuous, T_C=25°C)(1)	I_D	115	mA
Drain Current (Pulsed)(2)	I_{DM}	800	mA
Total Power Dissipation Derate above 25°C	P_D	200 1.8	mW mW/°C
Operating Junction Temperature	T_J	-55 to+150	°C
Storage Temperature	T_{STG}	-55 to+150	°C
Maximum Lead Temperature, for 10 Seconds Solding Purpose	T_L	260	°C

Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-	-	V	I_D=10μA, V_{GS}=0
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=60V, V_{GS}=0
Gate-Sourse Forward Leakage Current	I_{GSSF}	-	-	100	nA	V_{GSF}=20V, V_{DS}=0
Gate-Sourse Reverse Leakage Current	I_{GSSR}	-	-	-100	nA	V_{GSR}=-20V, V_{DS}=0
Gate Threshold Voltage(2)	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=2.5V, I_D=0.25mA
On-State Drain Current(2)	$I_{D(on)}$	500	-	-	mA	V_{DS}>2$V_{DS(on)}$, V_{GS}=10V
Static Drain-Source On-State Voltage(2)	$V_{DS(on)1}$	-	-	0.375	V	I_D=50mA, V_{GS}=5V
	$V_{DS(on)2}$	-	-	3.75	V	I_D=500mA, V_{GS}=10V
Static Drain-Source On-State Resistance(2)	$R_{DS(on)1}$	-	-	7.5	Ω	I_D=50mA, V_{GS}=5V
	$R_{DS(on)2}$	-	-	7.5	Ω	I_D=500mA, V_{GS}=10V
Forward Transconductance(2)	g_{FS}	80	-	-	mS	V_{DS}>2$V_{DS(on)}$, I_D=200mA
Input Capacitance	Ciss	-	-	50	pF	V_{DS}=25V, V_{GS}=0, f=1MHZ
Output Capacitance	Coss	-	-	25	pF	
Reverse Transfer Capacitance	Crss	-	-	5	pF	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	-	-	625	°C/W	-

(1)The Power Dissipation of the package may result in a lower continuous drain current.
(2)Pulse Test: Pulse Width≦380μs, Duty Cycle≦2%

Electrical Characteristic Curves

Fig. 2 Max Power Dissipation vs. Ambient Temperature

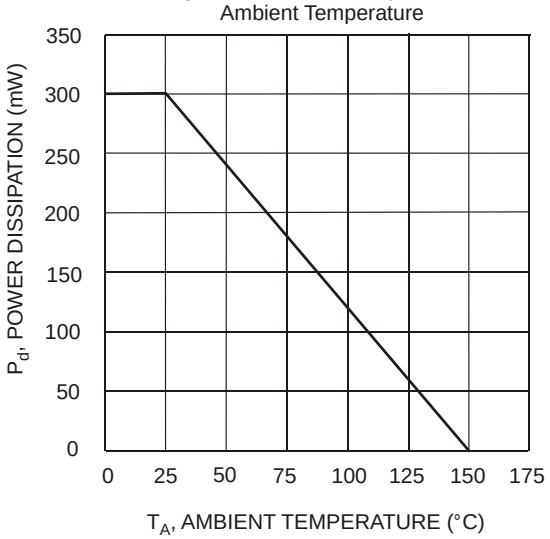


Fig. 2 On-Region Characteristics

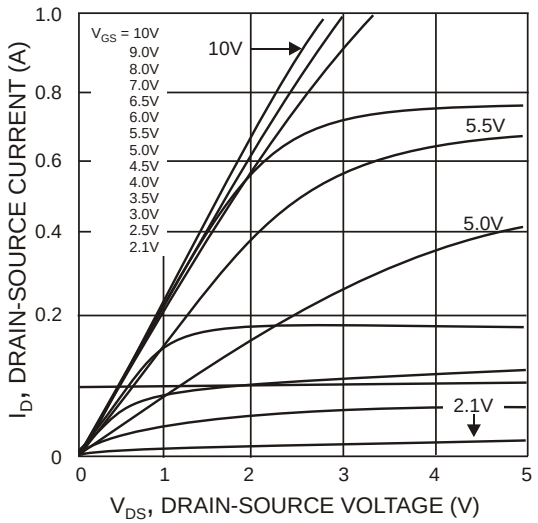


Fig. 3 On-Resistance vs Drain Current

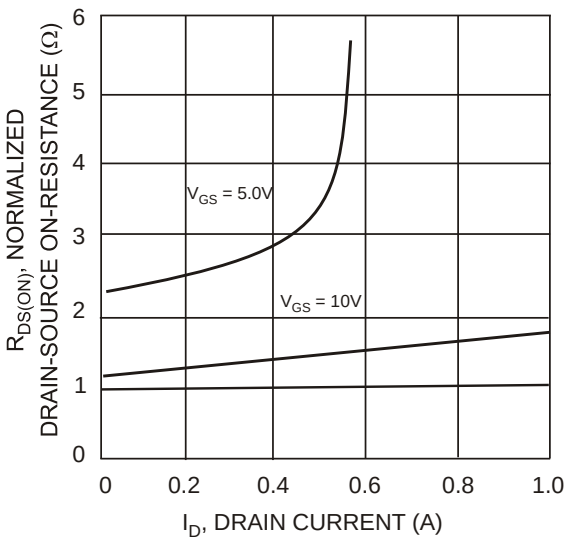


Fig. 4 On-Resistance vs. Gate-Source Voltage