

2N7002

**SURFACE MOUNT SILICON  
N-CHANNEL  
ENHANCEMENT-MODE  
MOSFET**



**SOT-23 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N7002 type is an N-Channel enhancement-mode MOSFET manufactured by the N-Channel DMOS Process, designed for high speed pulsed amplifier and driver applications.

**MARKING CODE: 702**

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

Drain-Source Voltage  
Drain-Gate Voltage  
Gate-Source Voltage  
Continuous Drain Current (T<sub>C</sub>=25°C)  
Continuous Drain Current (T<sub>C</sub>=100°C)  
Continuous Source Current (Body Diode)  
Maximum Pulsed Drain Current  
Maximum Pulsed Source Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

**SYMBOL**

V<sub>DS</sub> 60  
V<sub>DG</sub> 60  
V<sub>GS</sub> 40  
I<sub>D</sub> 115  
I<sub>D</sub> 75  
I<sub>S</sub> 115  
I<sub>DM</sub> 800  
I<sub>SM</sub> 800  
P<sub>D</sub> 350  
T<sub>J</sub>, T<sub>stg</sub> -65 to +150  
θ<sub>JA</sub> 357

**UNITS**

V  
V  
V  
mA  
mA  
mA  
mA  
mA  
mW  
°C  
°C/W

**ELECTRICAL CHARACTERISTICS:** (T<sub>A</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>GSSF</sub>	V <sub>GS</sub> =20V			100	nA
I <sub>GSSR</sub>	V <sub>GS</sub> =20V			100	nA
I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0			1.0	μA
I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0, T <sub>A</sub> =125°C			500	μA
I <sub>D(ON)</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V	500			mA
BV <sub>DSS</sub>	I <sub>D</sub> =10μA	60	105		V
V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	2.1	2.5	V
V <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA			3.75	V
V <sub>DS(ON)</sub>	V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA			0.375	V
V <sub>SD</sub>	V <sub>GS</sub> =0, I <sub>S</sub> =11.5mA			1.5	V
r <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA		3.7	7.5	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA, T <sub>A</sub> =100°C			13.5	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA		6.2	7.5	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA, T <sub>A</sub> =100°C			13.5	Ω
g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =200mA	80			mS

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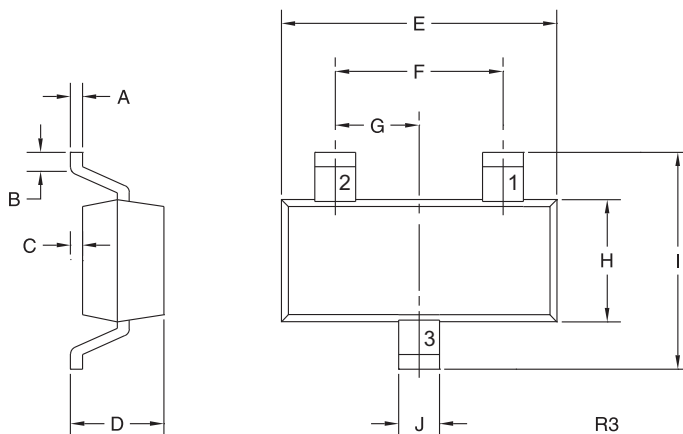
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	MAX	UNITS
$C_{rss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$		5.0	pF
$C_{iss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$		50	pF
$C_{oss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$		25	pF
$Q_{g(\text{tot})}$	$V_{DS}=30\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$	0.592		nC
$Q_{gs}$	$V_{DS}=30\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$	0.196		nC
$Q_{gd}$	$V_{DS}=30\text{V}, V_{GS}=4.5\text{V}, I_D=100\text{mA}$	0.148		nC
$t_{on}$	$V_{DD}=30\text{V}, I_D=200\text{mA}, R_G=25\Omega, R_L=150\Omega$		20	ns
$t_{off}$	$V_{DD}=30\text{V}, I_D=200\text{mA}, R_G=25\Omega, R_L=150\Omega$		20	ns

**SOT-23 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

- 1) Gate
- 2) Source
- 3) Drain

**MARKING CODE: 702**

SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075		1.90	
G	0.037		0.95	
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

SOT-23 (REV: R3)

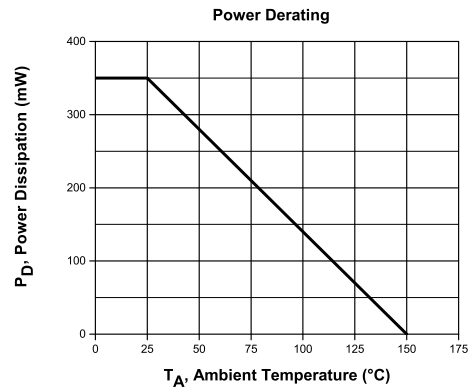
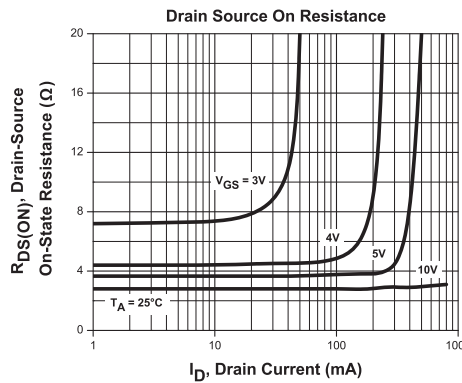
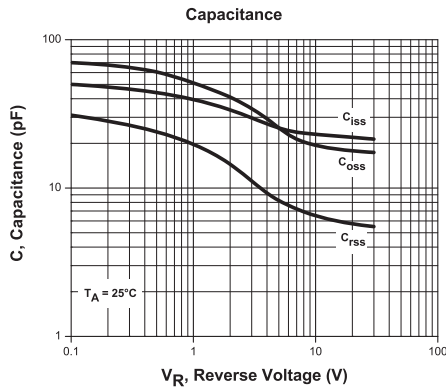
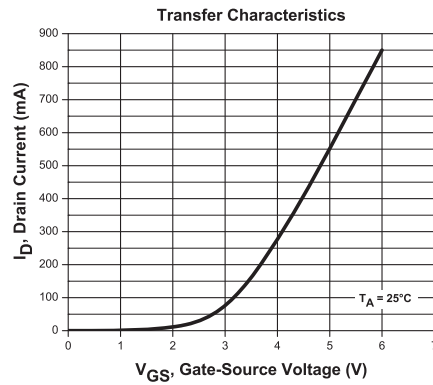
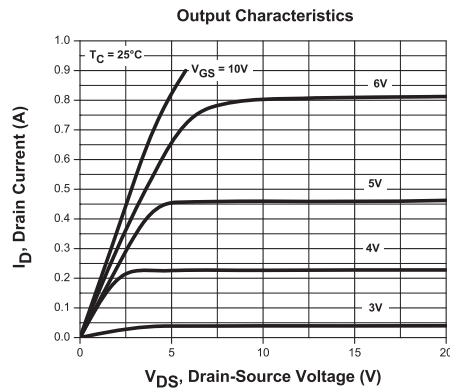
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### TYPICAL ELECTRICAL CHARACTERISTICS



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