



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 60 Volts CURRENT 115 mAmpere

2N7002ESGP

Halogens free devices

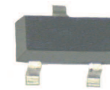
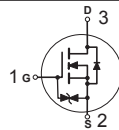
APPLICATION

- * Relay driver
- * High speed line driver
- * Logic level transistor

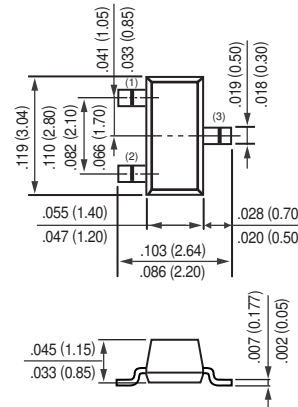
FEATURE

- * Small surface mounting type. (SOT-23)
- * High density cell design for low $R_{DS(ON)}$.
- * Suitable for high packing density.
- * Rugged and reliable.
- * High saturation current capability.
- * ESD protect in input gate 2.0KV

CIRCUIT



SOT-23



Dimensions in inches and (millimeters)

SOT-23

Absolute Maximum Ratings

$T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	2N7002ESGP	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Maximum Drain Current - Continuous	115	mA
	- Pulsed (Note 1)	800	
P_D	Maximum Power Dissipation (Note 2)	225	mW
T_J	Operating Temperature Range	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$

Note : 1. $P_w \leq 10\text{uS}$, Duty $\leq 1\%$

2. When mounted on a 1"0.75"0.062 inch glass epoxy board.

2009-09

ELECTRICAL CHARACTERISTIC (2N7002ESGP)

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
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OFF CHARACTERISTICS

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 10\text{ }\mu\text{A}$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$T_J = 125^\circ\text{C}$			0.5	mA
I_{GSSF}	Gate - Body Leakage, Forward	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$			10	μA
I_{GSSR}	Gate - Body Leakage, Reverse	$V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$			-10	μA

ON CHARACTERISTICS (Note 1)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0	1.85	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance (Note 3)	$V_{GS} = 5\text{ V}, I_D = 50\text{ mA}$			7.5	Ω
		$V_{GS} = 10\text{ V}, I_D = 500\text{ mA}$			7.5	
g_{FS}	Forward Transconductance (Note 3)	$V_{DS} = 10\text{ V}, I_D = 200\text{ mA}$	80			mS

DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		25	50	pF
C_{oss}	Output Capacitance			10	25	
C_{rss}	Reverse Transfer Capacitance			3.0	5	
t_{on}	Turn-On Time (Note 3)	$V_{DD} = 30\text{ V}, R_L = 150\text{ }\Omega,$ $I_D = 200\text{ mA}, V_{gen} = 10\text{ V},$ $R_{GEN} = 10\text{ }\Omega$		12	20	nS
t_r	Turn-Off Time (Note 3)			20	30	

Note:
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1.0\%$.

RATING CHARACTERISTIC CURVES (2N7002ESGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

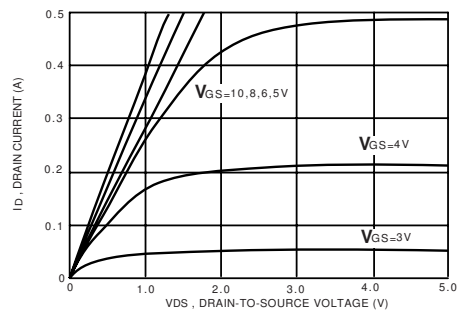


Figure 2. Transfer Characteristics

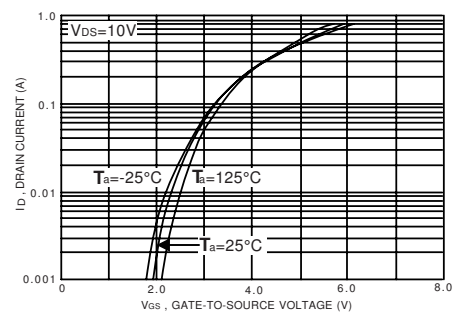


Figure 3. On-Resistance Variation with Temperature

