CHENMKO ENTERPRISE CO.,LTD

2N7002EGP

SURFACE MOUNT
N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 60 Volts CURRENT 115 mAmpere

Halogens free devices

APPLICATION

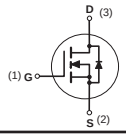
* Servo motor control.
* Power MOSFET gate drivers.
* Other switching applications.

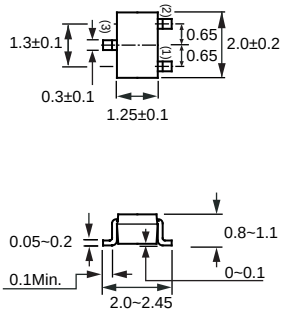
FEATURE

* Small surface mounting type. (SC-70/SOT-323)
* High density cell design for low $R_{DS(ON)}$.
* Suitable for high packing density.
* Rugged and reliable.
* High saturation current capability.
* Voltage controlled small signal switch.

SC-70/SOT-323

CIRCUIT





Dimensions in millimeters

SC-70/SOT-323

Absolute Maximum Ratings

T_A = 25°C unless otherwise noted

Symbol	Parameter	2N7002EGP	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Maximum Drain Current - Continuous T_A= 25°C	115	mA
P_D	Maximum Power Dissipation T_A= 25°C	200	mW
T_J	Operating Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	625	°C/W

2009-09

ELECTRICAL CHARACTERISTIC (2N7002EGP)

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 10 µA	60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60 V, V_{GS} = 0 V			1	µA
		T_J=125°C			0.5	mA
I_{GSSF}	Gate - Body Leakage, Forward	V_{GS} = 15 V, V_{DS} = 0 V			10	nA
I_{GSSR}	Gate - Body Leakage, Reverse	V_{GS} = -15 V, V_{DS} = 0 V			-10	nA
ON CHARACTERISTICS (Note 1)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA	1.0	1.5	2.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 5 V, I_D = 50 mA T_C=25°C		3.2	7.5	Ω
		V_{GS} = 10 V, I_D = 500 mA T_C=125°C		4.4	13.5	
$I_{D(ON)}$	On-State Drain Current	V_{GS} = 10V, V_{DS} = 7.5 $V_{DS(on)}$	500	1000		mA
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 200 mA	80			mS
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz		22	50	pF
C_{oss}	Output Capacitance			11	25	
C_{rss}	Reverse Transfer Capacitance			2.0	5	
t_{on}	Turn-On Time (Note 4)	V_{DD} = 30 V, R_L = 150 Ω, I_D = 200 mA, V_{gen} = 10 V, R_{GEN} = 25 Ω		7.0	20	nS
t_r	Turn-Off Time (Note 4)			11	20	

Note:
1. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2.0%.

RATING CHARACTERISTIC CURVES (2N7002EGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

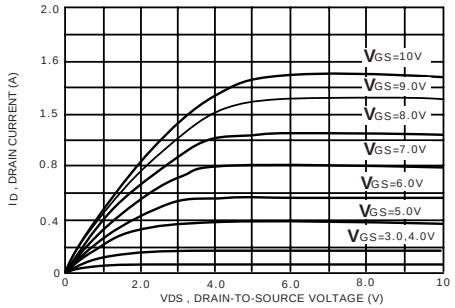


Figure 2. Transfer Characteristics

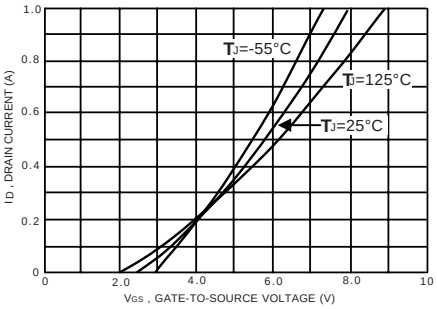


Figure3. On-Resistance Variation with Temperature