CHENMKO ENTERPRISE CO.,LTD

2N7002SGP

SURFACE MOUNT
Dual N-Channel Enhancement MOS FET

VOLTAGE 60 Volts CURRENT 115 mAmpere

Halogens free devices

APPLICATION

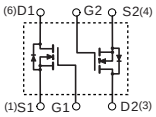
* Servo motor control.
* Power MOSFET gate drivers.
* Other switching applications.

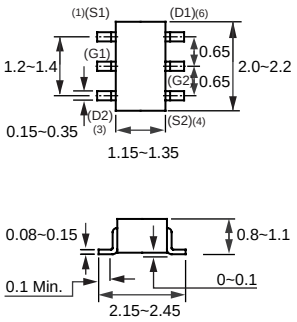
FEATURE

* Small surface mounting type. (SC-88/SOT-363)
* 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-88/SOT-363

CIRCUIT





Dimensions in millimeters

SC-88/SOT-363

Absolute Maximum Ratings

T_A = 25°C unless otherwise noted

Symbol	Parameter		2N7002SGP	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1 MΩ)		60	V
V_{GSS}	Gate-Source Voltage - Continuous		±20	V
	- Non Repetitive (tp < 50μs)		±40	
I_D	Maximum Drain Current -Continuous (Note1)	TC= 25°C	115	mA
	-Continuous (Note1)	TC= 100°C	75	
	- Pulsed (Note2)	TC= 25°C	800	
P_D	Maximum Power Dissipation (Note3)	TA= 25°C	250	mW
T_J,T_{STG}	Operating and Storage Temperature Range		-55 to 150	°C

Note:
1. The Power Dissipation of the package may result in a lower continuous drain current
2. Pulse Test: Pulse Width < 300μs, Duty Cycle < 2.0%.
3. for FR-5 board 1.0*0.75*0.062in.

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	328	°C/W

ELECTRICAL CHARACTERISTIC (2N7002SGP)

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			100	nA
I_{GSSR}	Gate - Body Leakage, Reverse	V_{GS} = -15 V, V_{DS} = 0 V			-100	nA
ON CHARACTERISTICS (Note 4)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA	1.0		2.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 500 mA T_C=25°C			7.5	Ω
		V_{GS} = 10 V, I_D = 500 mA T_C=125°C			13.5	
		V_{GS} = 5 V, I_D = 50 mA T_C=25°C			7.5	
		V_{GS} = 5 V, I_D = 50 mA T_C=125°C			13.5	
$V_{DS(ON)}$	Drain-Source On-Voltage	V_{GS} = 10 V, I_D = 500mA			3.75	V
		V_{GS} = 5.0 V, I_D = 50 mA			0.375	
$I_{D(ON)}$	On-State Drain Current	V_{GS} = 10V, V_{DS} = 2.0 $V_{DS(on)}$	500			mA
g_{FS}	Forward Transconductance	V_{DS} = 2.0 $V_{DS(on)}$, I_D = 200 mA	80			mS
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz			50	pF
C_{oss}	Output Capacitance				25	
C_{rss}	Reverse Transfer Capacitance				5	
t_{on}	Turn-On Time (Note 4)	V_{DD} = 25 V, R_L = 50 Ω, I_D = 500 mA, V_{gen} = 10 V, R_{GEN} = 25 Ω			20	nS
t_r	Turn-Off Time (Note 4)				40	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Drain-Source Diode Forward Current				115	mA
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current				0.8	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 115 mA			1.5	V

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

RATING CHARACTERISTIC CURVES (2N7002SGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

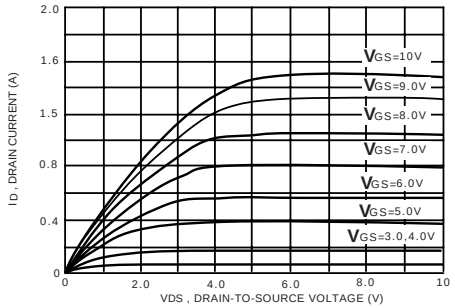


Figure 2. Transfer Characteristics

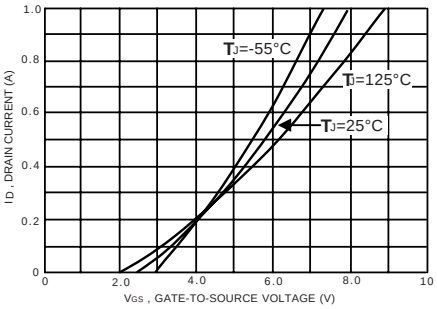


Figure3. On-Resistance Variation with Temperature