CHENMKO ENTERPRISE CO.,LTD

2N7002SESGP

Halogens free devices

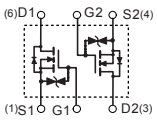
SURFACE MOUNT
Dual N-Channel Enhancement MOS FET
VOLTAGE 60 Volts CURRENT 0.64 Ampere

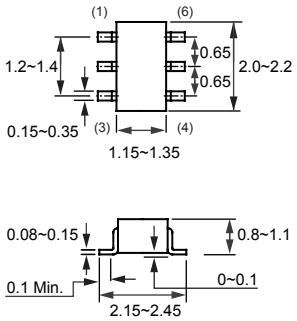
APPLICATION
* Relays, Solenoids, Lamps, Hammers Display deivers.
* High saturation current capability.
* Battery Operated Systems.

FEATURE
* Small surface mounting type. (SC-88/SOT-363)
* 60V/0.5A, $R_{DS(ON)}$=2ohm at V_{GS}=10V ·
* Super high density cell design for extremely low $R_{DS(ON)}$
* Exceptional on-resistance and maximum DC current capability

SC-88/SOT-363

CIRCUIT





Dimensions in millimeters

SC-88/SOT-363

Absolute Maximum Ratings T_A = 25°C unless otherwise noted

Symbol	Parameter	2N7002SESGP	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Maximum Drain Current - Continuous at Ta=25°C	0.64	A
	- Pulsed (Note 1)	0.9	
P_D	Maximum Power Dissipation at Ta=25°C	1.2	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Temperature Range	-55 to 150	°C

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	375	°C/W

2010-01

Note:
1. Pulse width limited by safe operating area

ELECTRICAL CHARACTERISTIC (2N7002SESGP)

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 = 250 µA	60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60 V, V_{GS} = 0 V			10	µA
I_{GSSF}	Gate-Body Leakage	V_{GS} = 20V, V_{DS} = 0 V			+30	µA
I_{GSSR}	Gate-Body Leakage	V_{GS} = -20V, V_{DS} = 0 V			-30	µA
ON CHARACTERISTICS (Note 2)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA	1.0		2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=0.5A			2	Ω
		V_{GS}=4.5V, I_D=0.2A			4	
g_{FS}	Forward Transconductance	V_{DS} =10V, I_D = 0.6A		0.6		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0 MHz		32	50	pF
C_{oss}	Output Capacitance			8		
C_{rss}	Reverse Transfer Capacitance			6		
SWITCHING CHARACTERISTICS (Note 4)						
Q_g	Total Gate Charge	V_{DS}=50V, I_D=0.6A, V_{GS}=4.5V		1.0	1.6	nC
Q_{gs}	Gate-Source Charge			0.5		
Q_{gd}	Gate-Drain Charge			0.5		
t_{on}	Turn-On Time	V_{DD}= 30V, I_D = 0.6A, V_{GS} = 10 V, R_G = 3.3 Ω, R_D = 52 Ω		12		nS
t_r	Rise Time			10		
t_{off}	Turn-Off Time			56		
t_f	Fall Time			29		

Note:
2. Pulsd: Pulse duration = 30 us, duty cycle 1.5%

RATING CHARACTERISTIC CURVES (2N7002SESGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

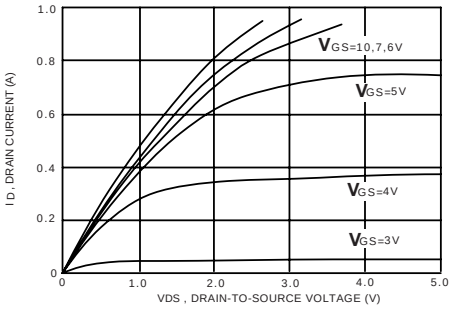


Figure 2. Transfer Characteristics

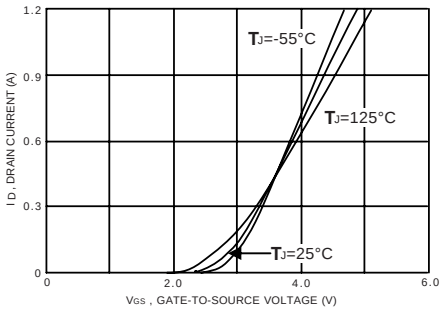


Figure 3. Gate Charge

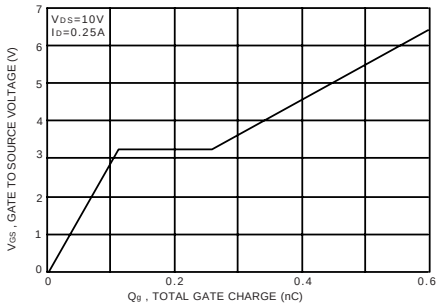


Figure 4. On-Resistance Variation with Temperature