CHENMKO ENTERPRISE CO.,LTD

CHM5813ESQ2GP

Halogens free devices

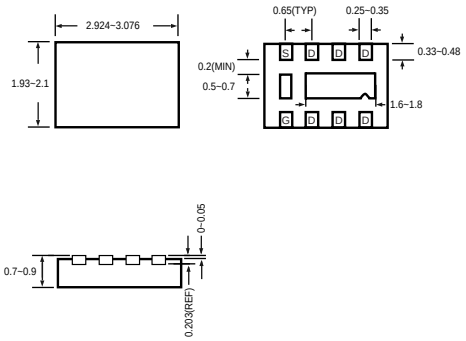
SURFACE MOUNT
P-Channel Enhancement Mode Field Effect Transistor
VOLTAGE 12 Volts CURRENT 9 Ampere

APPLICATION
* Power Management in Note Book
* Portable Equipment
* Battery Powered System
* BLoad Switch
* DSC

FEATURE
* Small flat package. (DFN 3x2)
* Super high density cell design for extremely low $R_{DS(ON)}$.
* High power and current handing capability.

MARKING
* M5813ES

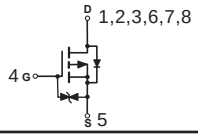
DFN 3x2



Dimensions in millimeters

DFN 3x2

CIRCUIT



Absolute Maximum Ratings
T_A = 25°C unless otherwise noted

Symbol	Parameter	CHM5813ESQ2GP	Units
V_{DSS}	Drain-Source Voltage	-12	V
V_{GSS}	Gate-Source Voltage	±8	V
I_D	Maximum Drain Current - Continuous	-9	A
	- Pulsed (Note 3)	-60	
P_D	Maximum Power Dissipation	2.5	W
T_J	Operating Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C

Note : 1. Surface Mounted on FR4 Board , t <=10sec
2. Pulse Test , Pulse width <= 300us , Duty Cycle <= 2%
3. Repetitive Rating , Pulse width linited by maximum junction temperature
4. Guaranteed by design , not subject to production trsting

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	50	°C/W

ELECTRICAL CHARACTERISTIC (CHM5813ESQ2GP)

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	-12			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -12 V, V_{GS} = 0 V			-1	µA
I_{GSSF}	Gate-Body Leakage	V_{GS} = 8V, V_{DS} = 0 V			+100	nA
I_{GSSR}	Gate-Body Leakage	V_{GS} = -8V, V_{DS} = 0 V			-100	nA
ON CHARACTERISTICS (Note 2)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250 µA	-0.4		-1	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-1.8V, I_D=-7.5A		20	31	mΩ
		V_{GS}=-2.5V, I_D=-8.5A		15	25	
		V_{GS}=-4.5V, I_D=-9A		12	20	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -6V, V_{GS} = 0V, f = 1.0 MHz		2960		pF
C_{oss}	Output Capacitance			624		
C_{rss}	Reverse Transfer Capacitance			218		
SWITCHING CHARACTERISTICS (Note 4)						
Q_g	Total Gate Charge	V_{DS}=-6V, I_D=-9A, V_{GS}=-4.5V		35		nC
Q_{gs}	Gate-Source Charge			7		
Q_{gd}	Gate-Drain Charge			12		
t_{on}	Turn-On Time	V_{DD}= -6V, V_{GS}= -4.5 V, R_{GEN}= 3Ω , R_L= 6Ω		60		nS
t_r	Rise Time			25		
t_{off}	Turn-Off Time			225		
t_f	Fall Time			72		
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Drain-Source Diode Forward Current	(Note 1)			-9.0	A
V_{SD}	Drain-Source Diode Forward Voltage	I_S = -9A, V_{GS} = 0 V (Note 2)			-1.2	V

RATING CHARACTERISTIC CURVES (CHM5813ESQ2GP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

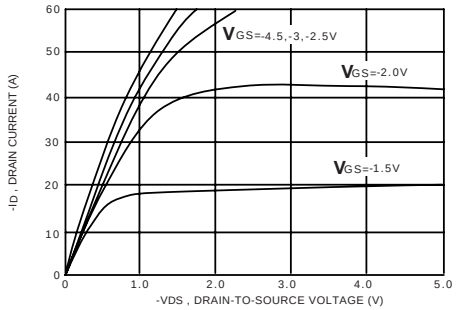


Figure 2. On-Resistance with Drain Current

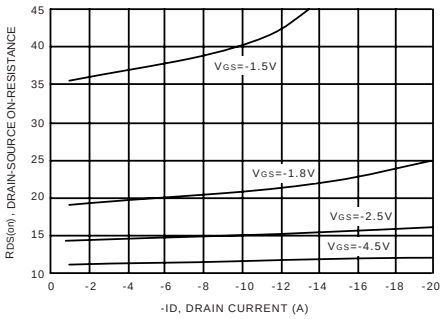


Figure 3. Gate Charge