



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 500 Volts CURRENT 4.5 Ampere

CHM830GPAGP

APPLICATION

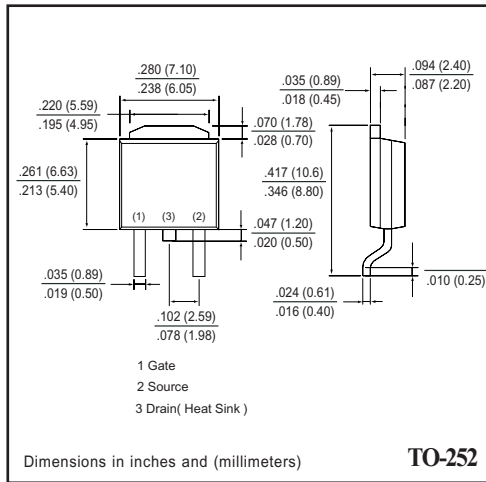
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

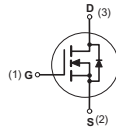
- * Small package. (TO-252)
- * Super high dense cell design for extremely low $R_{DS(ON)}$.
- * High power and current handling capability.

CONSTRUCTION

- * N-Channel Enhancement



CIRCUIT



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

Symbol	Parameter	CHM830GPAGP	Units
V_{DSS}	Drain-Source Voltage	500	V
V_{GSS}	Gate-Source Voltage	± 30	V
I_D	Maximum Drain Current - Continuous	4.5	A
	- Pulsed (Note 3)	18	
P_D	Maximum Power Dissipation at $T_c = 25^\circ\text{C}$	68	W
T_J	Operating Temperature Range	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$

- Note : 1. Surface Mounted on FR4 Board , $t \leq 10\text{sec}$
 2. Pulse Test , Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
 3. Repetitive Rating , Pulse width limited by maximum junction temperature
 4. Guaranteed by design , not subject to production testing

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	50	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTIC (CHM830GPAGP)

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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	500			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$			1	μA
I_{GSSF}	Gate-Body Leakage	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$			+100	nA
I_{GSSR}	Gate-Body Leakage	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$			-100	nA

ON CHARACTERISTICS (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	2.5		4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}, I_D=2.5\text{A}$		1.2	1.5	Ω
g_{FS}	Forward Transconductance	$V_{DS}=50\text{V}, I_D=4\text{A}$		7		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{ MHz}$		595		pF
C_{oss}	Output Capacitance			90		
C_{riss}	Reverse Transfer Capacitance			20		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=400\text{V}, I_D=4\text{A}$ $V_{GS}=10\text{V}$		13	17	nC
Q_{gs}	Gate-Source Charge			2.5		
Q_{gd}	Gate-Drain Charge			5		
t_{on}	Turn-On Time	$V_{DD}= 250\text{V}$ $I_D = 4\text{A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 14\ \Omega$		15	30	nS
t_r	Rise Time			14	28	
t_{off}	Turn-Off Time			30	60	
t_f	Fall Time			10	20	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			4.5	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 3.1\text{A}, V_{GS} = 0\text{ V}$ (Note 2)			1.6	V

RATING CHARACTERISTIC CURVES (CHM830GPAGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

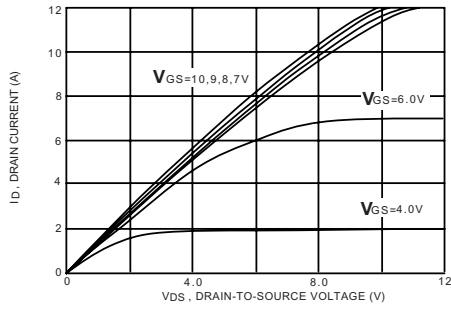


Figure 2. Transfer Characteristics

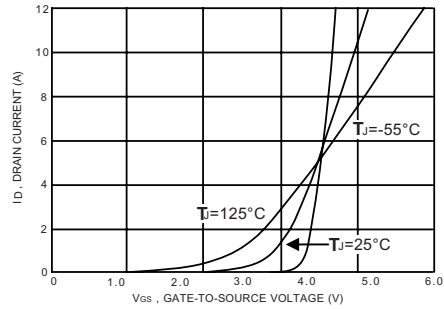


Figure 3. Gate Charge

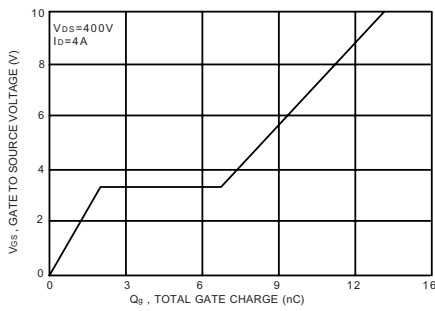


Figure 4. On-Resistance Variation with Temperature

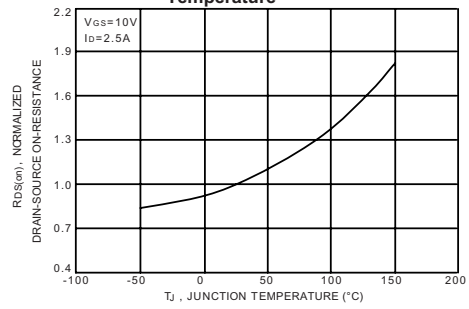


Figure 5. Gate Threshold Variation with Temperature

