# CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

**CHM210BGP**

## SURFACE MOUNT
## N-Channel Enhancement Mode Field Effect Transistor

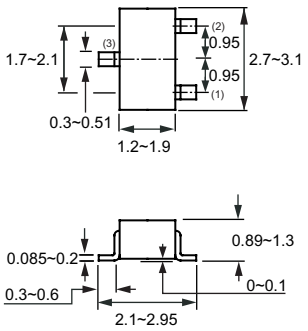
*VOLTAGE 100 Volts CURRENT 1.3 Ampere*

### APPLICATION
* Servo motor control.
* Other switching applications.

### FEATURE
* Small flat package. (SC-59 )
* High density cell design for extremely low $R_{DS(ON)}$.
* Rugged and reliable.
* High saturation current capability.

### CONSTRUCTION
* N-Channel Enhancement

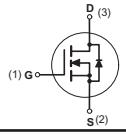
SC-59/SOT-346




Dimensions in millimeters

SC-59/SOT-346

### CIRCUIT




## Absolute Maximum Ratings $T_A$ = 25°C unless otherwise noted

| Symbol | Parameter | CHM210BGP | Units |
|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | 100 | V |
| $V_{GSS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Maximum Drain Current - Continuous | 1.3 | A |
| | - Pulsed (Note 1) | 18 | |
| $P_D$ | Maximum Power Dissipation (Note 1) | 750 | mW |
| $T_J$ | Operating Temperature Range | -55 to 150 | °C |
| $T_{STG}$ | Storage Temperature Range | -55 to 150 | °C |

Note : 1. Part mounted on FR-4 board with recommended pad layout.
2. Short duration test pulse used to minimize self-heating effect

## Thermal characteristics

| | | | |
|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient (Note 1) | 166 | °C/W |

# ELECTRICAL CHARACTERISTIC ( CHM210BGP )

## 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 | 100 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$ = 80 V, $V_{GS}$ = 0 V | | | 1 | uA |
| $I_{GSSF}$ | Gate-Body Leakage | $V_{GS}$ = 20V, $V_{DS}$ = 0 V | | | +100 | nA |
| $I_{GSSR}$ | Gate-Body Leakage | $V_{GS}$ = -20V, $V_{DS}$ = 0 V | | | -100 | nA |
| **ON CHARACTERISTICS** (Note 2) | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 uA | 1.0 | | 2.0 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=5V, $I_D$=1A | | 230 | 240 | mΩ |
| | | $V_{GS}$=10V, $I_D$=2A | | 220 | 230 | |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$ =10V, $I_D$ = 2A | | 10 | | S |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$ = 25V, $V_{GS}$ = 0V, f = 1.0 MHz | | 802 | | pF |
| $C_{oss}$ | Output Capacitance | | | 80 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 41 | | |
| **SWITCHING CHARACTERISTICS** (Note 4) | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=50V, $I_D$=2A, $V_{GS}$=10V | | 15 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 2.0 | | |
| $Q_{gd}$ | Gate-Drain Charge | | | 4.0 | | |
| $t_{on}$ | Turn-On Time | $V_{DD}$= 30V, $I_D$= 1.0A, $V_{GS}$= 10 V, $R_{GEN}$= 6 Ω | | 16 | | nS |
| $t_r$ | Rise Time | | | 330 | | |
| $t_{off}$ | Turn-Off Time | | | 39 | | |
| $t_f$ | Fall Time | | | 111 | | |
| **DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS** | | | | | | |
| $I_S$ | Drain-Source Diode Forward Current | (Note 1) | | | 10 | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $I_S$ = 2A, $V_{GS}$ = 0 V (Note 2) | | | 1.4 | V |

# RATING CHARACTERISTIC CURVES ( CHM210BGP )

## Typical Electrical Characteristics

**Figure 1. Output Characteristics**

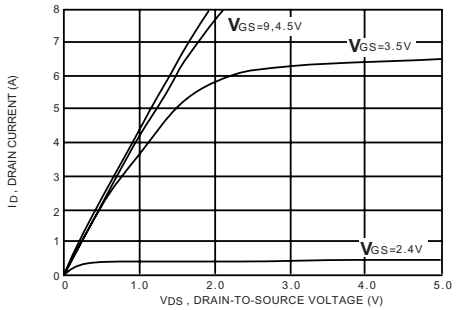



**Figure 2. Transfer Characteristics**

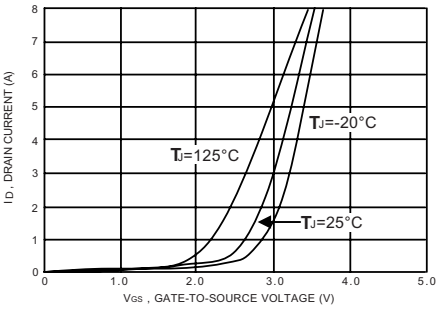



**Figure 3. Gate Charge**

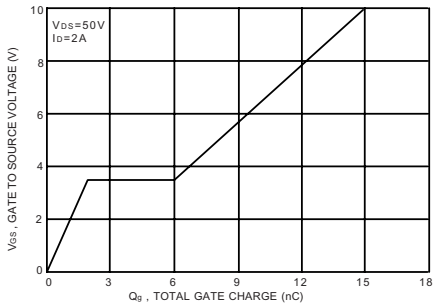



**Figure 4. On-Resistance Variation with Temperature**