



Halogens free devices

# CHENMKO ENTERPRISE CO.,LTD

## SURFACE MOUNT

### N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 100 Volts CURRENT 36 Ampere

CHM540ANGP

#### APPLICATION

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

#### FEATURE

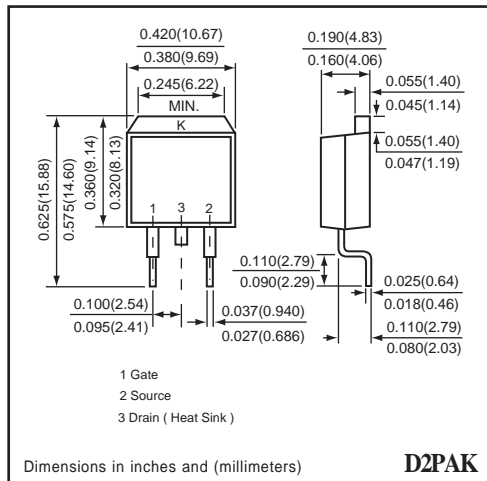
- \* Small package. (D2PAK)
- \* Super high dense cell design for extremely low  $R_{DS(ON)}$ .
- \* High power and current handling capability.

#### CONSTRUCTION

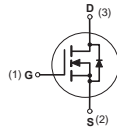
- \* N-Channel Enhancement



D2PAK



#### CIRCUIT



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

| Symbol    | Parameter   | CHM540ANGP | Units            |
|-----------|---|------------|------------------|
| $V_{DSS}$ | Drain-Source Voltage                                  | 100        | V                |
| $V_{GSS}$ | Gate-Source Voltage                                   | $\pm 20$   | V                |
| $I_D$     | Maximum Drain Current - Continuous                    | 36         | A                |
|           | - Pulsed (Note 3)                                     | 120        |                  |
| $P_D$     | Maximum Power Dissipation at $T_c = 25^\circ\text{C}$ | 140        | 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 trsting

#### Thermal characteristics

|                 |  |      |                    |
|-----------------|--|------|--------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient (Note 1) | 62.5 | $^\circ\text{C/W}$ |
|-----------------|--|------|--------------------|

## ELECTRICAL CHARACTERISTIC ( CHM540ANGP )

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|--------|-----------|------------|-----|-----|-----|-------|
|--------|-----------|------------|-----|-----|-----|-------|

### OFF CHARACTERISTICS

|            |                                 |   |     |  |      |               |
|------------|---------------------------------|---|-----|--|------|---------------|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage  | $V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$ | 100 |  |      | V             |
| $I_{DSS}$  | Zero Gate Voltage Drain Current | $V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$  |     |  | 25   | $\mu\text{A}$ |
| $I_{GSSF}$ | Gate-Body Leakage               | $V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$   |     |  | +100 | nA            |
| $I_{GSSR}$ | Gate-Body Leakage               | $V_{GS} = -20\text{ V}, V_{DS} = 0\text{ V}$  |     |  | -100 | nA            |

### ON CHARACTERISTICS (Note 2)

|              |                                   |   |   |    |    |                  |
|--------------|-----------------------------------|---|---|----|----|------------------|
| $V_{GS(th)}$ | Gate Threshold Voltage            | $V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$ | 2 |    | 4  | V                |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | $V_{GS}=10\text{V}, I_D=18\text{A}$       |   | 40 | 48 | $\text{m}\Omega$ |
| $g_{FS}$     | Forward Transconductance          | $V_{DS}=25\text{V}, I_D = 18\text{A}$     |   | 14 |    | S                |

### Dynamic Characteristics

|            |                              |  |  |     |  |    |
|------------|------------------------------|--|--|-----|--|----|
| $C_{iss}$  | Input Capacitance            | $V_{DS} = 25\text{V}, V_{GS} = 0\text{V},$<br>$f = 1.0\text{ MHz}$ |  | 832 |  | pF |
| $C_{oss}$  | Output Capacitance           |  |  | 240 |  |    |
| $C_{riss}$ | Reverse Transfer Capacitance |  |  | 105 |  |    |

### SWITCHING CHARACTERISTICS (Note 4)

|           |                    |  |  |      |    |    |
|-----------|--------------------|--|--|------|----|----|
| $Q_g$     | Total Gate Charge  | $V_{DS}=80\text{V}, I_D=18\text{A}$<br>$V_{GS}=10\text{V}$                                 |  | 37.5 | 48 | nC |
| $Q_{gs}$  | Gate-Source Charge |  |  | 6    |    |    |
| $Q_{gd}$  | Gate-Drain Charge  |  |  | 18   |    |    |
| $t_{on}$  | Turn-On Time       | $V_{DD}= 50\text{V}$<br>$I_D = 18\text{A}, V_{GS} = 10\text{ V}$<br>$R_{GEN}= 5.1\ \Omega$ |  | 13   | 40 | nS |
| $t_r$     | Rise Time          |  |  | 11   | 35 |    |
| $t_{off}$ | Turn-Off Time      |  |  | 32   | 65 |    |
| $t_f$     | Fall Time          |  |  | 15   | 45 |    |

### DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

|          |                                    |   |  |  |     |   |
|----------|------------------------------------|---|--|--|-----|---|
| $I_S$    | Drain-Source Diode Forward Current | (Note 1)                                |  |  | 36  | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $I_S = 18\text{A}, V_{GS} = 0\text{ V}$ |  |  | 1.3 | V |