



**CHENMKO ENTERPRISE CO.,LTD**

**SURFACE MOUNT**

**Dual N-Channel Enhancement Mode Field Effect Transistor**

**VOLTAGE 40 Volts CURRENT 6.3 Ampere**

**CHM4228JPT**

Lead free devices

#### APPLICATION

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

#### FEATURE

- \* Small flat package. (SO-8 )
- \* High density cell design for extremely low  $R_{DS(ON)}$ .
- \* Rugged and reliable.
- \* High saturation current capability.

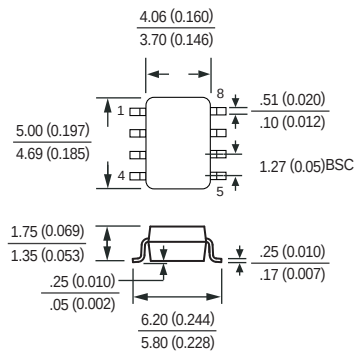
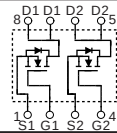
#### CONSTRUCTION

- \* N-Channel Enhancement



SO-8

#### CIRCUIT



Dimensions in millimeters

SO-8

#### Absolute Maximum Ratings

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

| Symbol    | Parameter                          | CHM4228JPT | Units            |
|-----------|------------------------------------|------------|------------------|
| $V_{DS}$  | Drain-Source Voltage               | 40         | V                |
| $V_{GS}$  | Gate-Source Voltage                | $\pm 20$   | V                |
| $I_D$     | Maximum Drain Current - Continuous | 6.3        | A                |
|           | - Pulsed (Note 3)                  | 20         |                  |
| $P_D$     | Maximum Power Dissipation          | 2000       | mW               |
| $T_J$     | 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 | $^\circ\text{C/W}$ |
|-----------------|--------------------------------------------------|------|--------------------|

2005-02

## RATING CHARACTERISTIC CURVES ( CHM4228JPT )

**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  | $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$ | 40 |  |      | V             |
| $I_{DSS}$  | Zero Gate Voltage Drain Current | $V_{DS} = 40\text{ V}, V_{GS} = 0\text{ V}$         |    |  | 1    | $\mu\text{A}$ |
| $I_{GSSF}$ | 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            | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$ | 1 |    | 3  | V                |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | $V_{GS}=10\text{ V}, I_D=6\text{ A}$            |   | 24 | 30 | $\text{m}\Omega$ |
|              |                                   | $V_{GS}=4.5\text{ V}, I_D=5\text{ A}$           |   | 35 | 45 |                  |
| $g_{FS}$     | Forward Transconductance          | $V_{DS} = 5\text{ V}, I_D = 6\text{ A}$         |   | 9  |    | S                |

### Dynamic Characteristics

|           |                              |                                                                      |  |      |  |    |
|-----------|------------------------------|----------------------------------------------------------------------|--|------|--|----|
| $C_{iss}$ | Input Capacitance            | $V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V},$<br>$f = 1.0\text{ MHz}$ |  | 1050 |  | pF |
| $C_{oss}$ | Output Capacitance           |                                                                      |  | 155  |  |    |
| $C_{rss}$ | Reverse Transfer Capacitance |                                                                      |  | 95   |  |    |

### SWITCHING CHARACTERISTICS (Note 4)

|           |                    |                                                                                                   |  |      |    |    |
|-----------|--------------------|---------------------------------------------------------------------------------------------------|--|------|----|----|
| $Q_g$     | Total Gate Charge  | $V_{DS}=20\text{ V}, I_D=6\text{ A}$<br>$V_{GS}=10\text{ V}$                                      |  | 20.6 | 27 | nC |
| $Q_{gs}$  | Gate-Source Charge |                                                                                                   |  | 3.5  |    |    |
| $Q_{gd}$  | Gate-Drain Charge  |                                                                                                   |  | 4    |    |    |
| $t_{on}$  | Turn-On Time       | $V_{DD}= 20\text{ V}$<br>$I_D = 6.0\text{ A}, V_{GS} = 10\text{ V}$<br>$R_{GEN}= 3\text{ }\Omega$ |  | 14   | 30 | nS |
| $t_r$     | Rise Time          |                                                                                                   |  | 10   | 20 |    |
| $t_{off}$ | Turn-Off Time      |                                                                                                   |  | 17   | 35 |    |
| $t_f$     | Fall Time          |                                                                                                   |  | 18   | 35 |    |

### DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

|          |                                    |                                                    |  |  |     |   |
|----------|------------------------------------|----------------------------------------------------|--|--|-----|---|
| $I_S$    | Drain-Source Diode Forward Current | (Note 1)                                           |  |  | 1.0 | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $I_S = 1.0\text{ A}, V_{GS} = 0\text{ V}$ (Note 2) |  |  | 1.2 | V |