



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

Dual P-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 30 Volts CURRENT 5.9 Ampere

CHM8531JPT

Lead free devices

#### APPLICATION

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

#### FEATURE

- \* Small flat package. (SO-8 )
- \* Super high dense cell design for extremely low  $R_{DS(ON)}$ .
- \* High power and current handling capability.
- \* Lead free product is acquired.

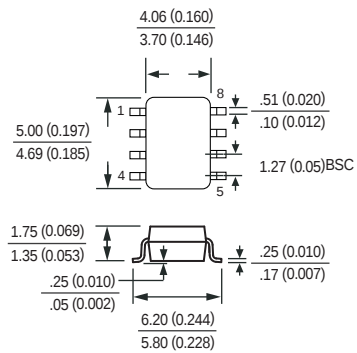
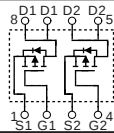
#### CONSTRUCTION

- \* P-Channel Enhancement



SO-8

#### CIRCUIT



Dimensions in millimeters

SO-8

#### Absolute Maximum Ratings

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

| Symbol    | Parameter                          | CHM8531JPT | Units              |
|-----------|------------------------------------|------------|--------------------|
| $V_{DS}$  | Drain-Source Voltage               | -30        | V                  |
| $V_{GS}$  | Gate-Source Voltage                | $\pm 20$   | V                  |
| $I_D$     | Maximum Drain Current - Continuous | -5.9       | 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 | $^{\circ}\text{C/W}$ |
|-----------------|--------------------------------------------------|------|----------------------|

2006-02

## RATING CHARACTERISTIC CURVES ( CHM8531JPT )

**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  | $V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$ | -30 |  |      | V             |
| $I_{DSS}$  | Zero Gate Voltage Drain Current | $V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$         |     |  | -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 | $V_{GS} = -10\text{ V}, I_D = -5.3\text{ A}$     |    | 30 | 36 | $\text{m}\Omega$ |
|              |                                   | $V_{GS} = -4.5\text{ V}, I_D = -2.0\text{ A}$    |    | 45 | 60 |                  |
| $g_{FS}$     | Forward Transconductance          | $V_{DS} = -15\text{ V}, I_D = -5.3\text{ A}$     |    | 8  |    | S                |

### SWITCHING CHARACTERISTICS (Note 4)

|           |                    |                                                                                                        |  |    |    |    |
|-----------|--------------------|--------------------------------------------------------------------------------------------------------|--|----|----|----|
| $Q_g$     | Total Gate Charge  | $V_{DS} = -15\text{ V}, I_D = -5.3\text{ A}$<br>$V_{GS} = -10\text{ V}$                                |  | 20 | 25 | nC |
| $Q_{gs}$  | Gate-Source Charge |                                                                                                        |  | 3  |    |    |
| $Q_{gd}$  | Gate-Drain Charge  |                                                                                                        |  | 5  |    |    |
| $t_{on}$  | Turn-On Time       | $V_{DD} = -15\text{ V}$<br>$I_D = -1.0\text{ A}, V_{GS} = -10\text{ V}$<br>$R_{GEN} = 6\text{ }\Omega$ |  | 10 | 20 | nS |
| $t_r$     | Rise Time          |                                                                                                        |  | 4  | 10 |    |
| $t_{off}$ | Turn-Off Time      |                                                                                                        |  | 58 | 80 |    |
| $t_f$     | Fall Time          |                                                                                                        |  | 23 | 30 |    |

### DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

|          |                                    |                                                     |  |  |      |   |
|----------|------------------------------------|-----------------------------------------------------|--|--|------|---|
| $I_S$    | Drain-Source Diode Forward Current | (Note 1)                                            |  |  | -2.3 | A |
| $V_{SD}$ | Drain-Source Diode Forward Voltage | $I_S = -2.3\text{ A}, V_{GS} = 0\text{ V}$ (Note 2) |  |  | -1.2 | V |