



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 30 Volts CURRENT 55 Ampere

CHM6031LPAPT

Lead free devices

APPLICATION

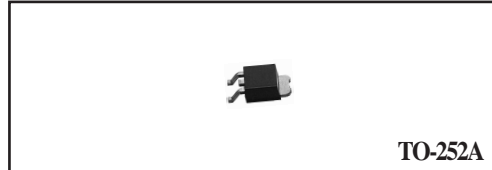
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

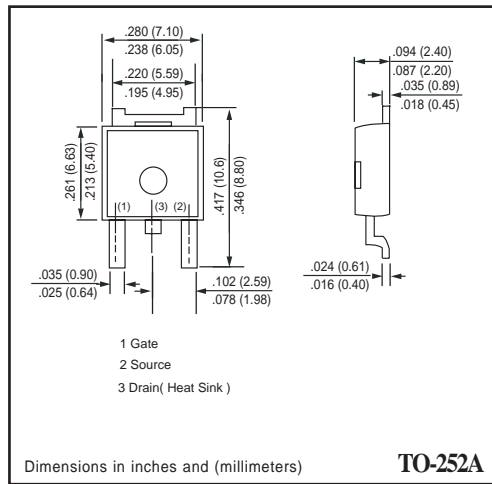
- * Small package. (TO-252A)
- * Super high dense cell design for extremely low R_{DS(ON)}.
- * High power and current handing capability.

CONSTRUCTION

- * N-Channel Enhancement

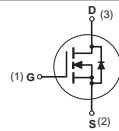


TO-252A



TO-252A

CIRCUIT



Absolute Maximum Ratings T_A = 25°C unless otherwise noted

| Symbol | Parameter | CHM6031LPAPT | Units |
|------------------|--|--------------|-------|
| V _{DSS} | Drain-Source Voltage | 30 | V |
| V _{GSS} | Gate-Source Voltage | ±20 | V |
| I _D | Maximum Drain Current - Continuous | 55 | A |
| | - Pulsed (Note 3) | 140 | |
| P _D | Maximum Power Dissipation at T _c = 25°C | 50 | W |
| T _J | Operating Temperature Range | -55 to 150 | °C |
| T _{STG} | Storage Temperature Range | -55 to 150 | °C |

- Note : 1. Surface Mounted on FR4 Board , t <=10sec
 2. Pulse Test , Pulse width <= 300us , Duty Cycle <= 2%
 3. Repetitive Rating , Pulse width limited by maximum junction temperature
 4. Guaranteed by design , not subject to production trsting

Thermal characteristics

| | | | |
|------------------|--|----|------|
| R _{θJA} | Thermal Resistance, Junction-to-Ambient (Note 1) | 50 | °C/W |
|------------------|--|----|------|

RATING CHARACTERISTIC CURVES (CHM6031LPAPT)

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 | $V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$ | 30 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$ | | | 1 | μA |
| 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 | $V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$ | 1 | 1.6 | 3 | V |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | $V_{GS}=10\text{V}, I_D=5\text{A}$ | | 8.5 | 11 | m Ω |
| | | $V_{GS}=4.5\text{V}, I_D=5\text{A}$ | | 12 | 15 | |
| g_{FS} | Forward Transconductance | $V_{DS} = 10\text{V}, I_D = 26\text{A}$ | | 32 | | S |

SWITCHING CHARACTERISTICS (Note 4)

| | | | | | | |
|-----------|--------------------|--|--|-----|-----|----|
| Q_g | Total Gate Charge | $V_{DS}=24\text{V}, I_D=48\text{A}$ $V_{GS}=5\text{V}$ | | 27 | 33 | nC |
| Q_{gs} | Gate-Source Charge | | | 6 | | |
| Q_{gd} | Gate-Drain Charge | | | 14 | | |
| t_{on} | Turn-On Time | $V_{DD}= 15\text{V}$ $I_D=55\text{A}, V_{GS}= 10\text{ V}$ $R_{GEN}= 24\ \Omega$ | | 10 | 16 | nS |
| t_r | Rise Time | | | 190 | 250 | |
| t_{off} | Turn-Off Time | | | 55 | 90 | |
| t_f | Fall Time | | | 130 | 200 | |

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

| | | | | | | |
|----------|------------------------------------|---|--|------|-----|---|
| I_S | Drain-Source Diode Forward Current | | | 55 | A | |
| V_{SD} | Drain-Source Diode Forward Voltage | $I_S = 26\text{A}, V_{GS} = 0\text{ V}$ | | 0.93 | 1.3 | V |