



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 20 Volts CURRENT 40 Ampere

CHM41A2NPT

Lead free devices

APPLICATION

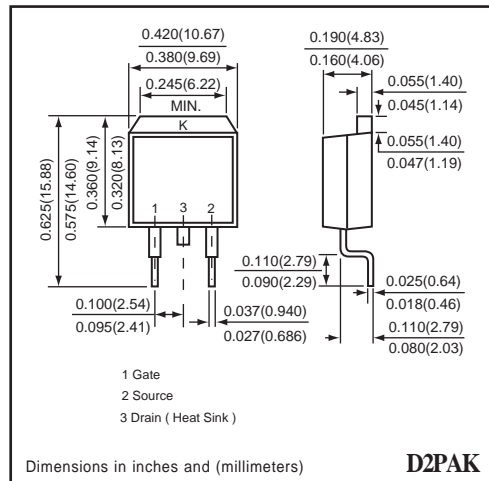
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

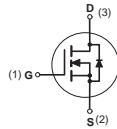
- * Small flat package. (D2PAK)
- * High density cell design for extremely low $R_{DS(ON)}$.
- * Rugged and reliable.

CONSTRUCTION

- * N-Channel Enhancement



CIRCUIT



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

| Symbol | Parameter | CHM41A2NPT | Units |
|-----------|------------------------------------|------------|------------------|
| V_{DSS} | Drain-Source Voltage | 20 | V |
| V_{GSS} | Gate-Source Voltage | ± 12 | V |
| I_D | Maximum Drain Current - Continuous | 40 | A |
| | - Pulsed (Note 3) | 120 | |
| P_D | Maximum Power Dissipation | 60 | W |
| T_J | Operating Temperature Range | -55 to 175 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ |

- 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 | $^\circ\text{C/W}$ |
|-----------------|--|------|--------------------|

RATING CHARACTERISTIC CURVES (CHM41A2NPT)

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 | $V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$ | 20 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$ | | | 1 | μA |
| I_{GSSF} | Gate-Body Leakage | $V_{GS} = 12\text{ V}, V_{DS} = 0\text{ V}$ | | | +100 | nA |
| I_{GSSR} | Gate-Body Leakage | $V_{GS} = -12\text{ V}, V_{DS} = 0\text{ V}$ | | | -100 | nA |

ON CHARACTERISTICS (Note 2)

| | | | | | | |
|--------------|-----------------------------------|---|-----|----|-----|------------------|
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$ | 0.5 | | 1.5 | V |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | $V_{GS}=4.5\text{ V}, I_D=20\text{ A}$ | | 16 | 20 | $\text{m}\Omega$ |
| g_{FS} | Forward Transconductance | $V_{DS} = 5\text{ V}, I_D = 20\text{ A}$ | | 23 | | S |

SWITCHING CHARACTERISTICS (Note 4)

| | | | | | | |
|-----------|--------------------|--|--|----|-----|----|
| Q_g | Total Gate Charge | $V_{DS}=10\text{ V}, I_D=20\text{ A}$ $V_{GS}=4.5\text{ V}$ | | 15 | 20 | nC |
| Q_{gs} | Gate-Source Charge | | | 2 | | |
| Q_{gd} | Gate-Drain Charge | | | 3 | | |
| t_{on} | Turn-On Time | $V_{DD} = 10\text{ V}$ $I_D = 1\text{ A}, V_{GS} = 4.5\text{ V}$ $R_{GEN} = 6\ \Omega$ | | 20 | 40 | nS |
| t_r | Rise Time | | | 20 | 40 | |
| t_{off} | Turn-Off Time | | | 72 | 130 | |
| t_f | Fall Time | | | 20 | 40 | |

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

| | | | | | | |
|----------|------------------------------------|---|--|--|-----|---|
| I_S | Drain-Source Diode Forward Current | (Note 1) | | | 40 | A |
| V_{SD} | Drain-Source Diode Forward Voltage | $I_S = 20\text{ A}, V_{GS} = 0\text{ V}$ (Note 2) | | | 1.3 | V |