



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 600 Volts CURRENT 4 Ampere

CHM04N6NPT

Lead free devices

APPLICATION

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

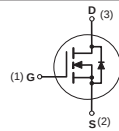
FEATURE

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

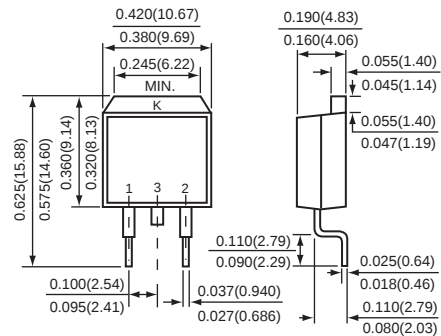
CONSTRUCTION

- * N-Channel Enhancement

CIRCUIT



D2PAK



- 1 Gate
2 Source
3 Drain (Heat Sink)

Dimensions in inches and (millimeters)

D2PAK

Absolute Maximum Ratings

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

Symbol	Parameter	CHM04N6NPT	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Maximum Drain Current - Continuous	4	A
	- Pulsed (Note 3)	16	
P_D	Maximum Power Dissipation	89	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	$^\circ\text{C/W}$
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2006-02

RATING CHARACTERISTIC CURVES (CHM04N6NPT)

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
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OFF CHARACTERISTICS

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	600			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$			25	μA
I_{GSSF}	Gate-Body Leakage	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$			+100	nA
I_{GSSR}	Gate-Body Leakage	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$			-100	nA

ON CHARACTERISTICS (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2		4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{ V}, I_D=2\text{ A}$		2.2	2.5	Ω
g_{FS}	Forward Transconductance	$V_{DS}=40\text{ V}, I_D = 2\text{ A}$		2.8		S

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=480\text{ V}, I_D=4\text{ A}$ $V_{GS}=10\text{ V}$		24	31	nC
Q_{gs}	Gate-Source Charge			4		
Q_{gd}	Gate-Drain Charge			11		
t_{on}	Turn-On Time	$V_{DD}= 300\text{ V}$ $I_D = 4\text{ A}, V_{GS} = 10\text{ V}$ $R_{GEN}= 25\Omega$		25	50	nS
t_r	Rise Time			65	120	
t_{off}	Turn-Off Time			75	150	
t_f	Fall Time			65	120	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			4	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 2.5\text{ A}, V_{GS} = 0\text{ V}$ (Note 2)			1.6	V