



**CHENMKO ENTERPRISE CO.,LTD**

**SURFACE MOUNT**

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

VOLTAGE 30 Volts CURRENT 20 Ampere

**CHM21A3PAPT**

*Lead free devices*

**APPLICATION**

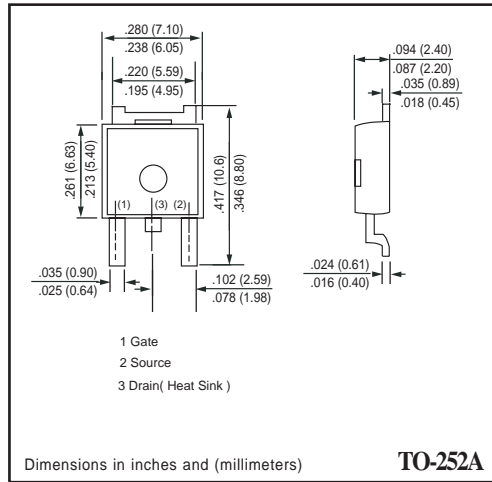
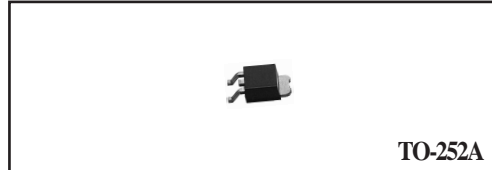
- \* Servo motor control.
- \* Power MOSFET gate drivers.
- \* Other switching applications.

**FEATURE**

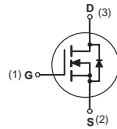
- \* Small package. (TO-252A)
- \* Super high dense cell design for extremely low R<sub>DS(ON)</sub>.
- \* High power and current handling capability.

**CONSTRUCTION**

- \* N-Channel Enhancement



**CIRCUIT**



**Absolute Maximum Ratings** T<sub>A</sub> = 25°C unless otherwise noted

Symbol	Parameter	CHM21A3PAPT	Units
V <sub>DSS</sub>	Drain-Source Voltage	30	V
V <sub>GSS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Maximum Drain Current - Continuous	20	A
	- Pulsed (Note 3)	45	
P <sub>D</sub>	Maximum Power Dissipation at T <sub>c</sub> = 25°C	38	W
T <sub>J</sub>	Operating Temperature Range	-55 to 150	°C
T <sub>STG</sub>	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 <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient (Note 1)	50	°C/W
------------------	--	----	------

## RATING CHARACTERISTIC CURVES ( CHM21A3PAPT )

**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	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			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	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.8		2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}, I_D=12\text{A}$		36	45	m $\Omega$
		$V_{GS}=4.5\text{V}, I_D=12\text{A}$		55	70	
$g_{FS}$	Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 12\text{A}$		20		S

### SWITCHING CHARACTERISTICS (Note 4)

$Q_g$	Total Gate Charge	$V_{DS}=15\text{V}, I_D=6\text{A}$ $V_{GS}=10\text{V}$		10	15	nC
$Q_{gs}$	Gate-Source Charge			2		
$Q_{gd}$	Gate-Drain Charge			3		
$t_{on}$	Turn-On Time	$V_{DD}= 15\text{V}$ $I_D = 12\text{A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 2.5\ \Omega$		12	25	nS
$t_r$	Rise Time			5	15	
$t_{off}$	Turn-Off Time			14	30	
$t_f$	Fall Time			14	30	

### DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

$I_S$	Drain-Source Diode Forward Current	(Note 1)			20	A
$V_{SD}$	Drain-Source Diode Forward Voltage	$I_S = 12\text{A}, V_{GS} = 0\text{ V}$ (Note 2)		0.9	1.3	V