



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 60 Volts CURRENT 5 Ampere

CHM456NZPT

Lead free devices

APPLICATION

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

FEATURE

- * Small flat package. (SC-73/SOT-223)
- * High density cell design for extremely low $R_{DS(ON)}$.
- * Rugged and reliable.

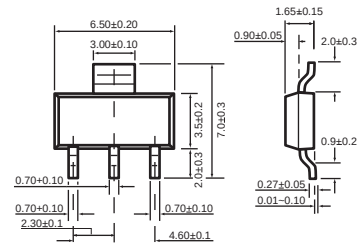
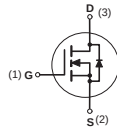
CONSTRUCTION

- * N-Channel Enhancement



SC-73/SOT-223

CIRCUIT



- 1 Gate
2 Source
3 Drain (Heat Sink)

Dimensions in millimeters

SC-73/SOT-223

Absolute Maximum Ratings

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

Symbol	Parameter	CHM456NZPT	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Maximum Drain Current - Continuous	5.0	A
	- Pulsed (Note 3)	20	
P_D	Maximum Power Dissipation	3000	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)	42	$^\circ\text{C/W}$
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2006-01

RATING CHARACTERISTIC CURVES (CHM456NZPT)

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	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 55\text{ V}, V_{GS} = 0\text{ V}$			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	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1		3	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{ V}, I_D=3.8\text{ A}$		36	55	$\text{m}\Omega$
		$V_{GS}=5.0\text{ V}, I_D=3.8\text{ A}$		45	75	
g_{FS}	Forward Transconductance	$V_{DS} = 25\text{ V}, I_D = 1.9\text{ A}$		5		S

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=30\text{ V}, I_D=3.8\text{ A}$ $V_{GS}=10\text{ V}$		19	24	nC
Q_{gs}	Gate-Source Charge			2.8		
Q_{gd}	Gate-Drain Charge			3.6		
t_{on}	Turn-On Time	$V_{DD}= 30\text{ V}$ $I_D = 1\text{ A}, V_{GS} = 10\text{ V}$ $R_{GEN}= 6\Omega$		11	25	nS
t_r	Rise Time			8	18	
t_{off}	Turn-Off Time			34	65	
t_f	Fall Time			9	22	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			3.8	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 3.8\text{ A}, V_{GS} = 0\text{ V}$ (Note 2)			1.2	V