



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

P-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 30 Volts CURRENT 25 Ampere

CHM4531PAGP

Halogens free devices

APPLICATION

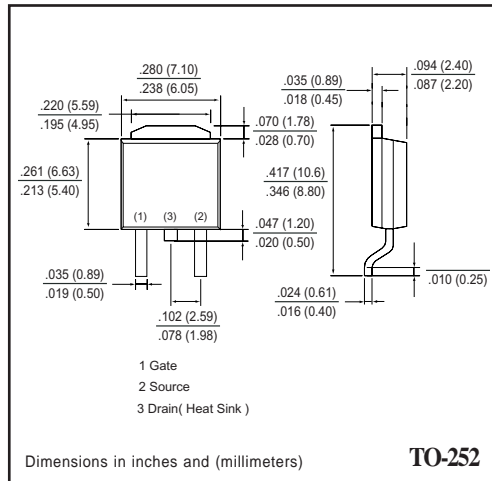
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

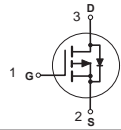
- * Small flat package. (TO-252)
- * Super high density cell design for extremely low $R_{DS(ON)}$.
- * High power and current handling capability.

CONSTRUCTION

- * P-Channel Enhancement



CIRCUIT



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

Symbol	Parameter	CHM4531PAGP	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Maximum Drain Current - Continuous	-25	A
	- Pulsed (Note 3)	-75	
P_D	Maximum Power Dissipation	43	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 testing

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	50	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTIC (CHM4531PAGP)

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	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-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		-3	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = -10\text{ V}, I_D = -5.3\text{ A}$		30	36	m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -2\text{ A}$		47	57	
g_{FS}	Forward Transconductance	$V_{DS} = -15\text{ V}, I_D = -5.3\text{ A}$		8		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		1300		pF
C_{oss}	Output Capacitance			300		
C_{riss}	Reverse Transfer Capacitance			150		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS} = -15\text{ V}, I_D = -5.3\text{ A}$ $V_{GS} = -10\text{ V}$		20	25	nC
Q_{gs}	Gate-Source Charge			3		
Q_{gd}	Gate-Drain Charge			5		
t_{on}	Turn-On Time	$V_{DD} = -15\text{ V}$ $I_D = -1.0\text{ A}, V_{GS} = -10\text{ V}$ $R_{GEN} = 6\ \Omega$		10	20	nS
t_r	Rise Time			4	10	
t_{off}	Turn-Off Time			58	80	
t_f	Fall Time			23	30	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			-2.3	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = -2.3\text{ A}, V_{GS} = 0\text{ V}$ (Note 2)			-1.2	V

RATING CHARACTERISTIC CURVES (CHM4531PAGP)

Typical Electrical Characteristics

Figure 1. Output Characteristics

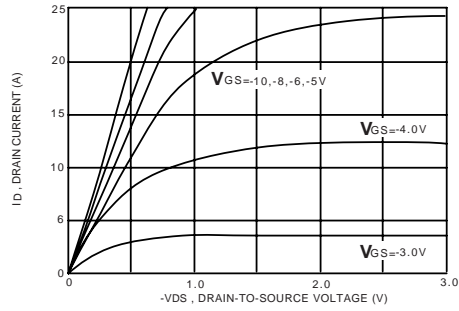


Figure 2. Transfer Characteristics

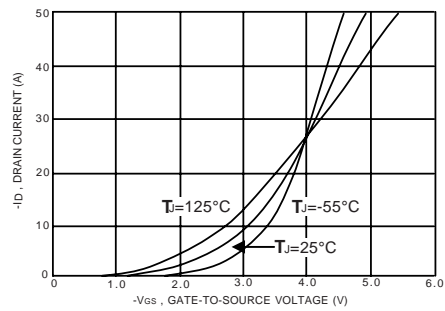


Figure 3. Gate Charge

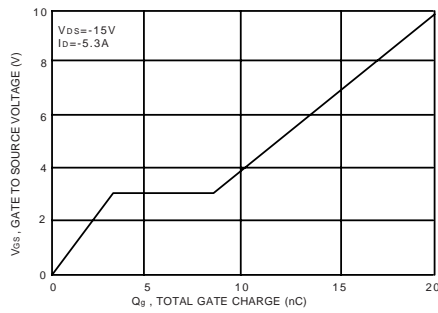


Figure 4. On-Resistance Variation with Temperature

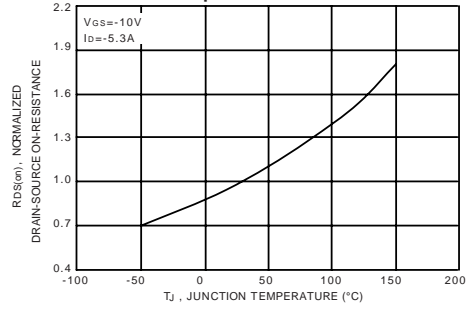


Figure 5. Gate Threshold Variation with Temperature

