

Halogens free devices



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

Dual Enhancement Mode Field Effect Transistor

N-channel: VOLTAGE 40 Volts CURRENT 14 Ampere

P-channel: VOLTAGE 40 Volts CURRENT 12 Ampere

CHM4269PA4GP

APPLICATION

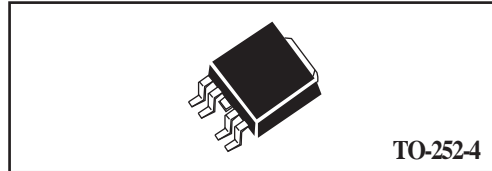
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

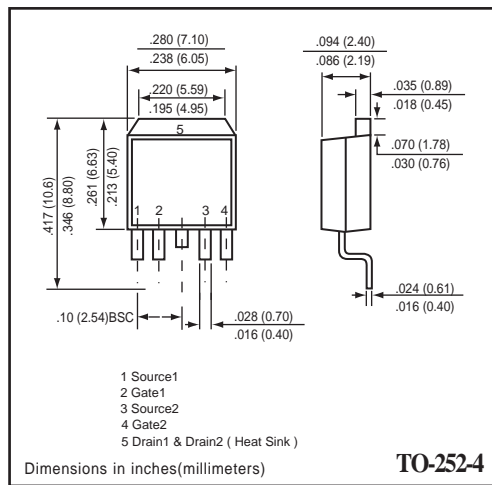
- * Small flat package. (TO-252-4)
- * Super high dense cell design for extremely low $R_{DS(ON)}$.
- * Lead free product is acquired.
- * High power and current handling capability.

CONSTRUCTION

- * N-Channel & P-Channel Enhancement in the package

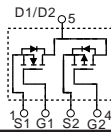


TO-252-4



TO-252-4

CIRCUIT



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

Symbol	Parameter	N-Channel	P-Channel	Units
V_{DSS}	Drain-Source Voltage	40	-40	V
V_{GSS}	Gate-Source Voltage	± 20	± 20	V
I_D	Maximum Drain Current - Continuous	14	-12	A
	- Pulsed (Note 3)	56	-48	
P_D	Maximum Power Dissipation at $T_a=25^\circ\text{C}$	10.4		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)	50	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTIC (CHM4269PA4GP)

N-Channel 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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	40			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 40\text{ V}, V_{GS} = 0\text{ V}$			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	$V_{GS}=10\text{V}, I_D=7\text{A}$		25	32	m Ω
		$V_{GS}=4.5\text{V}, I_D=5\text{A}$		35	46	
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 7\text{A}$		3		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{ MHz}$		1050		pF
C_{oss}	Output Capacitance			155		
C_{rss}	Reverse Transfer Capacitance			95		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=20\text{V}, I_D=6\text{A}$ $V_{GS}=10\text{V}$		20.5	27	nC
Q_{gs}	Gate-Source Charge			3.5		
Q_{gd}	Gate-Drain Charge			4.0		
t_{on}	Turn-On Time	$V_{DD} = 20\text{V}$ $I_D = 6\text{A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 3\ \Omega$		14	30	nS
t_r	Rise Time			10	20	
t_{off}	Turn-Off Time			17	35	
t_f	Fall Time			18	35	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			8.0	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 1.0\text{A}, V_{GS} = 0\text{ V}$ (Note 2)			1.2	V

ELECTRICAL CHARACTERISTIC (CHM4269PA4GP)

P-Channel 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	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-40			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -40\text{ V}, V_{GS} = 0\text{ V}$			-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	$V_{GS} = -10\text{ V}, I_D = -5\text{ A}$		37	45	m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -3\text{ A}$		50	65	
g_{FS}	Forward Transconductance	$V_{DS} = -4.5\text{ V}, I_D = -3.0\text{ A}$		3		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		1120		pF
C_{oss}	Output Capacitance			210		
C_{rss}	Reverse Transfer Capacitance			125		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS} = -20\text{ V}, I_D = -5\text{ A}$ $V_{GS} = -10\text{ V}$		19.2	25.3	nC
Q_{gs}	Gate-Source Charge			3		
Q_{gd}	Gate-Drain Charge			4		
t_{on}	Turn-On Time	$V_{DD} = -20\text{ V}$ $I_D = -5\text{ A}, V_{GS} = -10\text{ V}$ $R_{GEN} = 3\ \Omega$		13	26	nS
t_r	Rise Time			6	12	
t_{off}	Turn-Off Time			38	64	
t_f	Fall Time			7	14	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			-8.0	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = -1.0\text{ A}, V_{GS} = 0\text{ V}$ (Note 2)			-1.2	V