



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

Dual Enhancement Mode Field Effect Transistor

N-channel Q1: VOLTAGE 30 Volts CURRENT 8 Ampere

N-channel Q2: VOLTAGE 30 Volts CURRENT 9 Ampere

CHM1503YJGP

Halogens free devices

APPLICATION

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

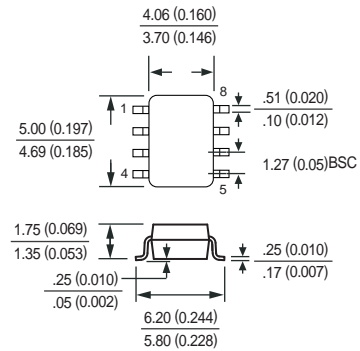
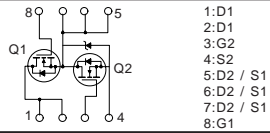
FEATURE

- * Small flat package. (SO-8)
- * Super high dense cell design for extremely low $R_{DS(ON)}$.
- * Lead free product is acquired.
- * High power and current handling capability.



SO-8

CIRCUIT



SO-8

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

Symbol	Parameter	N-Channel Q1	N-Channel Q2	Units
V_{DSS}	Drain-Source Voltage	30	30	V
V_{GSS}	Gate-Source Voltage	± 20	± 20	V
I_D	Maximum Drain Current - Continuous	8	9	A
	- Pulsed (Note 3)	30	35	
P_D	Maximum Power Dissipation	2000		mW
T_J	Operating Temperature Range	-55 to 150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150		$^\circ\text{C}$

SKY DIODE ELECTRICAL CHARACTERISTICS (At $T_A = 25^\circ\text{C}$ unless otherwise noted)

CHARACTERISTICS	SYMBOL		UNITS
Maximum Instantaneous Forward Voltage at $I_F = 1\text{A}$	V_F	0.45	Volts
Maximum Average Reverse Current at $V_R = 25\text{V}$	I_R	0.1	mAmps

- 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)	62.5	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTIC (CHM1503YJGP)

N-Channel Q1 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	$V_{GS} = -202\text{ V}, V_{DS} = 0\text{ V}$			-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	$V_{GS}=4.5\text{V}, I_D=6\text{A}$		25.6	32	m Ω
		$V_{GS}=10\text{V}, I_D=7\text{A}$		15.8	21	
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 7\text{A}$		15		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{ MHz}$		560		pF
C_{oss}	Output Capacitance			160		
C_{rss}	Reverse Transfer Capacitance			84		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=15\text{V}, I_D=9\text{A}$ $V_{GS}=10\text{V}$		11		nC
Q_{gs}	Gate-Source Charge			2.5		
Q_{gd}	Gate-Drain Charge			2.5		
t_{on}	Turn-On Time	$V_{DD}= 15\text{V}$ $I_D = 1\text{A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 0.2\ \Omega$		19		nS
t_r	Rise Time			8		
t_{off}	Turn-Off Time			39		
t_f	Fall Time			6		

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			2.0	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 2.3\text{A}, V_{GS} = 0\text{ V}$ (Note 2)			1.0	V

ELECTRICAL CHARACTERISTIC (CHM1503YJGP)

N-Channel Q2 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	$V_{GS} = -202\text{ V}, V_{DS} = 0\text{ V}$			-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	$V_{GS}=4.5\text{V}, I_D=7\text{A}$		14.2	20	m Ω
		$V_{GS}=10\text{V}, I_D=9\text{A}$		10.5	15.8	
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{ V}, I_D = 9\text{ A}$		25		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		1040		pF
C_{oss}	Output Capacitance			295		
C_{rss}	Reverse Transfer Capacitance			139		

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=15\text{V}, I_D=9\text{A}$ $V_{GS}=10\text{V}$		20		nC
Q_{gs}	Gate-Source Charge			3.5		
Q_{gd}	Gate-Drain Charge			3.5		
t_{on}	Turn-On Time	$V_{DD}= 15\text{ V}$ $I_D = 1\text{ A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 0.2\ \Omega$		18		nS
t_r	Rise Time			12		
t_{off}	Turn-Off Time			40		
t_f	Fall Time			8		

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			2.8	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 2.3\text{ A}, V_{GS} = 0\text{ V}$ (Note 2)			0.7	V