



**CHENMKO ENTERPRISE CO.,LTD**

Halogens free devices

**SURFACE MOUNT**  
**N-Channel Enhancement Mode Field Effect Transistor**  
 VOLTAGE 30 Volts CURRENT 7.8 Ampere

**CHM3178JGP**

**APPLICATION**

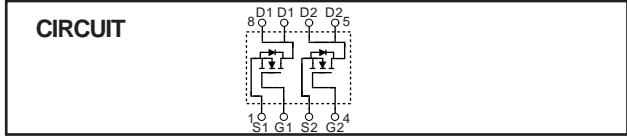
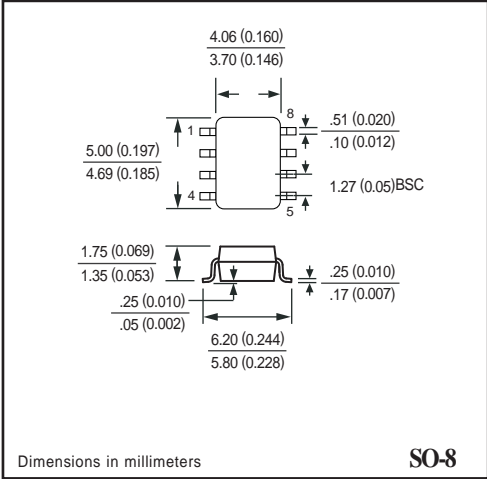
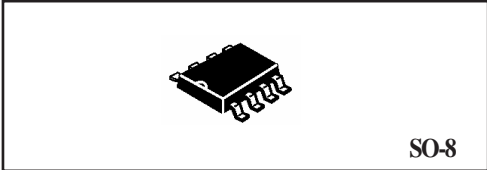
- \* Servo motor control.
- \* Power MOSFET gate drivers.
- \* Other switching applications.

**FEATURE**

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

**CONSTRUCTION**

- \* N-Channel Enhancement



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

Symbol	Parameter	CHM3178JGP	Units
$V_{DSS}$	Drain-Source Voltage	30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Maximum Drain Current - Continuous	7.8	A
	- Pulsed (Note 3)	30	
$P_D$	Maximum Power Dissipation	2000	mW
$T_J$	Operating Temperature Range	-55 to 150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$

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)	62.5	$^\circ\text{C/W}$
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## RATING CHARACTERISTIC CURVES ( CHM3178JGP )

**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	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			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	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1		3	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}, I_D=6.3\text{A}$		18	22	m $\Omega$
		$V_{GS}=4.5\text{V}, I_D=5.0\text{A}$		24	30	

### SWITCHING CHARACTERISTICS (Note 4)

$Q_g$	Total Gate Charge	$V_{DS}=15\text{V}, I_D=6\text{A}$ $V_{GS}=5\text{V}$		10.4	13	nC
$Q_{gs}$	Gate-Source Charge			3.5		
$Q_{gd}$	Gate-Drain Charge			3.8		
$t_{on}$	Turn-On Time	$V_{DD}= 15\text{V}$ $I_D = 1\text{A}, V_{GS} = 10\text{ V}$ $R_{GEN} = 6\ \Omega$		16	30	nS
$t_r$	Rise Time			9	20	
$t_{off}$	Turn-Off Time			31	60	
$t_f$	Fall Time			10	20	

### 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 ( CHM3178JGP )

## Typical Electrical Characteristics

Figure 1. Output Characteristics

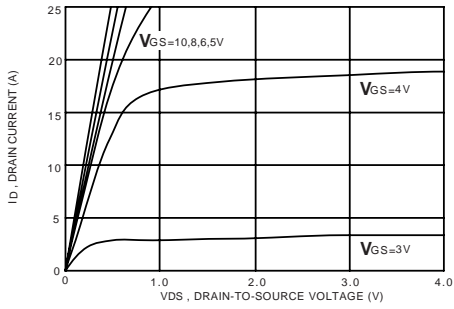


Figure 2. Transfer Characteristics

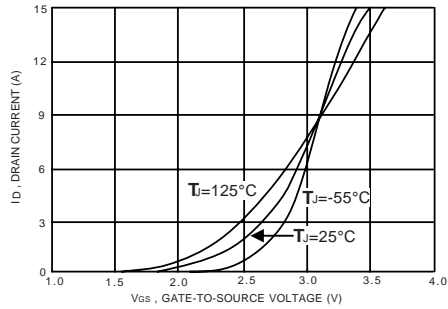


Figure 3. Gate Charge

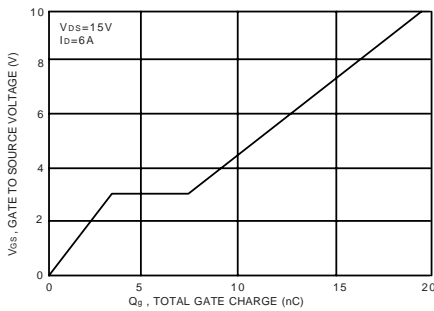


Figure 4. On-Resistance Variation with Temperature

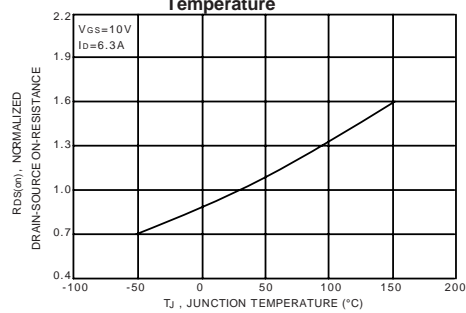


Figure 5. Gate Threshold Variation with Temperature

