


CHENMKO ENTERPRISE CO.,LTD
SURFACE MOUNT
N-Channel Enhancement Mode Field Effect Transistor
VOLTAGE 30 Volts CURRENT 7.8 Ampere
CHM3178JPT
Lead free devices
APPLICATION

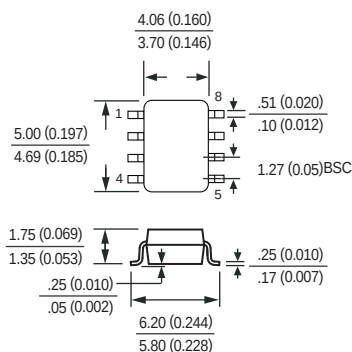
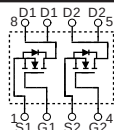
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

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

CONSTRUCTION

- * N-Channel Enhancement


SO-8
CIRCUIT

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

Symbol	Parameter	CHM3178JPT	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 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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2006-09

RATING CHARACTERISTIC CURVES (CHM3178JPT)

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	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			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	$V_{GS}=10\text{ V}, I_D=6.3\text{ A}$		18	22	$\text{m}\Omega$
		$V_{GS}=4.5\text{ V}, I_D=5.0\text{ A}$		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	$V_{DD}= 15\text{ V}$ $I_D = 1\text{ A}, V_{GS} = 10\text{ V}$ $R_{GEN}= 6\text{ }\Omega$		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 (CHM3178JPT)

Typical Electrical Characteristics

Figure 1. Output Characteristics

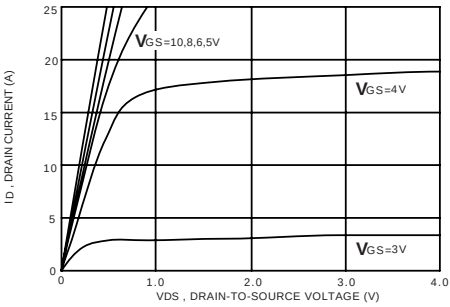


Figure 2. Transfer Characteristics

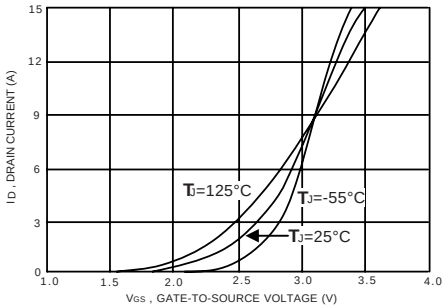


Figure 3. Gate Charge

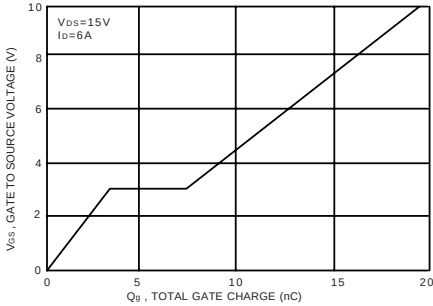


Figure 4. On-Resistance Variation with Temperature

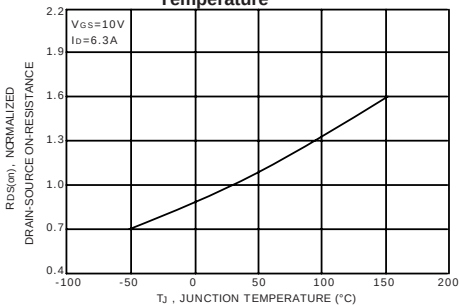


Figure 5. Gate Threshold Variation with Temperature

