



CHENMKO ENTERPRISE CO.,LTD

CHM2331PT

SURFACE MOUNT

P-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 20 Volts CURRENT 4.2 Ampere

Lead free devices

APPLICATION

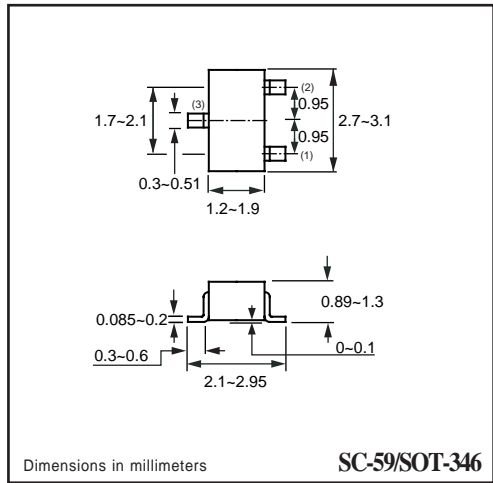
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

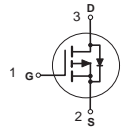
- * Small flat package. (SC-59)
- * High density cell design for extremely low $R_{DS(ON)}$.
- * Rugged and reliable.
- * High saturation current capability.

CONSTRUCTION

- * P-Channel Enhancement



CIRCUIT



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

Symbol	Parameter	CHM2331PT	Units
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 8	V
I_D	Maximum Drain Current - Continuous	-4.2	A
	- Pulsed (Note 3)	-15	
P_D	Maximum Power Dissipation	1250	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 testing

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	100	$^\circ\text{C/W}$
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RATING CHARACTERISTIC CURVES (CHM2331PT)

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 V, I _D = -250 μ A	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20 V, V _{GS} = 0 V			-1	μ A
I _{GSSF}	Gate-Body Leakage	V _{GS} = 8V, V _{DS} = 0 V			+100	nA
I _{GSSR}	Gate-Body Leakage	V _{GS} = -8V, V _{DS} = 0 V			-100	nA

ON CHARACTERISTICS (Note 2)

V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250 μ A	-0.4		-0.9	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = -4.5V, I _D = -3.3A		38	48	m Ω
		V _{GS} = -2.5V, I _D = -2.8A		50	65	
		V _{GS} = -1.8V, I _D = -2.0A		70	95	

Dynamic Characteristics

C _{ISS}	Input Capacitance	V _{DS} = -10V, V _{GS} = 0V, f = 1.0 MHz		1170		pF
C _{OSS}	Output Capacitance			220		
C _{RSS}	Reverse Transfer Capacitance			135		

SWITCHING CHARACTERISTICS (Note 4)

Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -4A V _{GS} = -4.5V		10	13	nC
Q _{gs}	Gate-Source Charge			1.3		
Q _{gd}	Gate-Drain Charge			2.8		
t _{on}	Turn-On Time	V _{DD} = -10V I _D = -4A, V _{GS} = -4.5 V R _{GEN} = 3 Ω		14	30	nS
t _r	Rise Time			9	20	
t _{off}	Turn-Off Time			74	150	
t _f	Fall Time			35	70	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I _S	Drain-Source Diode Forward Current	(Note 1)			-4.2	A
V _{SD}	Drain-Source Diode Forward Voltage	I _S = -1.6A, V _{GS} = 0 V (Note 2)			-1.2	V

RATING CHARACTERISTIC CURVES (CHM2331PT)

Typical Electrical Characteristics

Figure 1. Output Characteristics

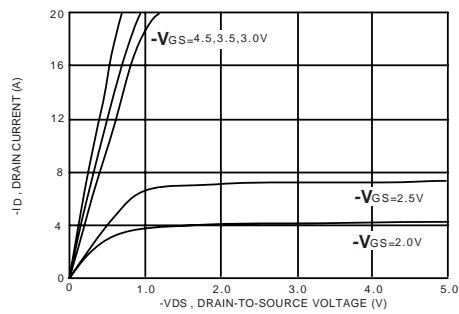


Figure 2. Transfer Characteristics

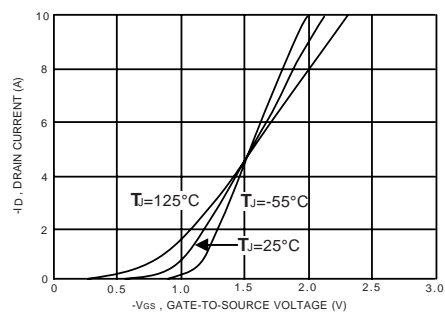


Figure 3. Gate Charge

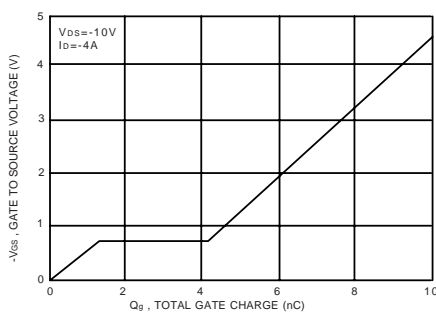


Figure 4. On-Resistance Variation with Temperature

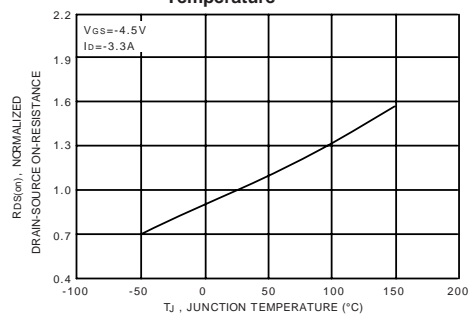


Figure 5. Gate Threshold Variation with Temperature

