



CHENMKO ENTERPRISE CO.,LTD

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 20 Volts CURRENT 4.5 Ampere

CHT2312PT

Lead free devices

APPLICATION

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

FEATURE

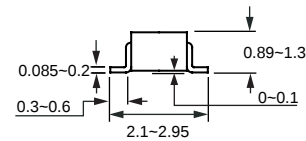
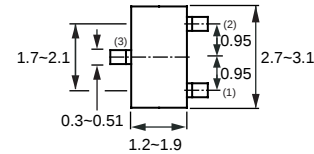
- * Small flat package. (SC-59)
- * High density cell design for extremely low $R_{DS(ON)}$.
- * Rugged and reliable.
- * High saturation current capability.

CONSTRUCTION

- * N-Channel Enhancement



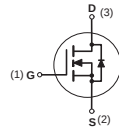
SC-59/SOT-346



Dimensions in millimeters

SC-59/SOT-346

CIRCUIT



Absolute Maximum Ratings

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

Symbol	Parameter	CHT2312PT	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 8	V
I_D	Maximum Drain Current - Continuous	4.5	A
	- Pulsed (Note 3)	13.5	
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 trsting

Thermal characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	100	$^\circ\text{C/W}$
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2005-02

RATING CHARACTERISTIC CURVES (CHT2312PT)

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	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$			1	μA
I_{GSSF}	Gate-Body Leakage	$V_{GS} = 8\text{ V}, V_{DS} = 0\text{ V}$			+100	nA
I_{GSSR}	Gate-Body Leakage	$V_{GS} = -8\text{ V}, V_{DS} = 0\text{ V}$			-100	nA

ON CHARACTERISTICS (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 50\text{ }\mu\text{A}$	0.5		1	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5\text{V}, I_D=5.0\text{A}$		27	33	$\text{m}\Omega$
		$V_{GS}=2.5\text{V}, I_D=4.5\text{A}$		33	40	
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 5.0\text{A}$		10		S

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=10\text{V}, I_D=5.0\text{A}$ $V_{GS}=4.5\text{V}$		10	15	nC
Q_{gs}	Gate-Source Charge			2.3		
Q_{gd}	Gate-Drain Charge			2.9		
t_{on}	Turn-On Time	$V_{DD}= 10\text{V}$ $I_D = 1.0\text{A}, V_{GS} = 4.5\text{ V}$ $R_{GEN}= 6\text{ }\Omega$		20	40	nS
t_r	Rise Time			18	40	
t_{off}	Turn-Off Time			60	108	
t_f	Fall Time			28	56	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			1.7	A
V_{SD}	Drain-Source Diode Forward Voltage	$I_S = 1.0\text{A}, V_{GS} = 0\text{ V}$ (Note 2)			1.2	V

RATING CHARACTERISTIC CURVES (CHT2312PT)

Typical Electrical Characteristics

Figure 1. Output Characteristics

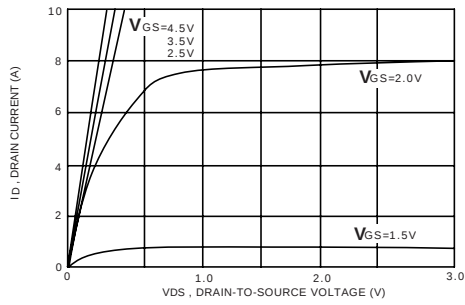


Figure 2. Transfer Characteristics

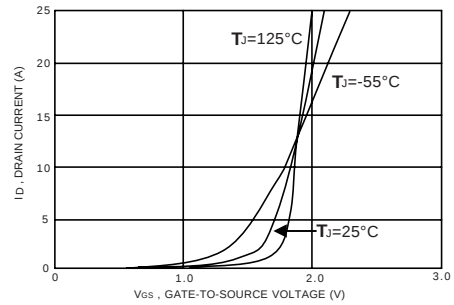


Figure 3. Gate Charge

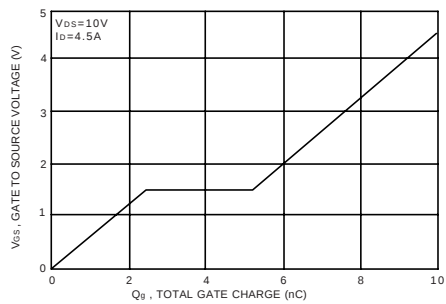


Figure 4. On-Resistance Variation with Temperature

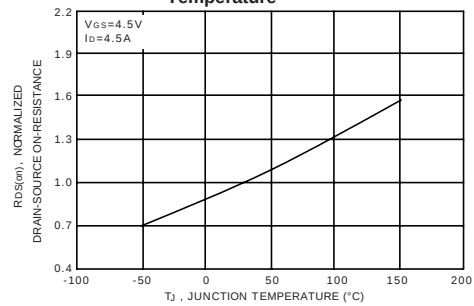


Figure 5. Gate Threshold Variation with Temperature

