



CHENMKO ENTERPRISE CO.,LTD

CHM2308ESPT

SURFACE MOUNT

N-Channel Enhancement Mode Field Effect Transistor

VOLTAGE 20 Volts CURRENT 5.4 Ampere

Lead free devices

APPLICATION

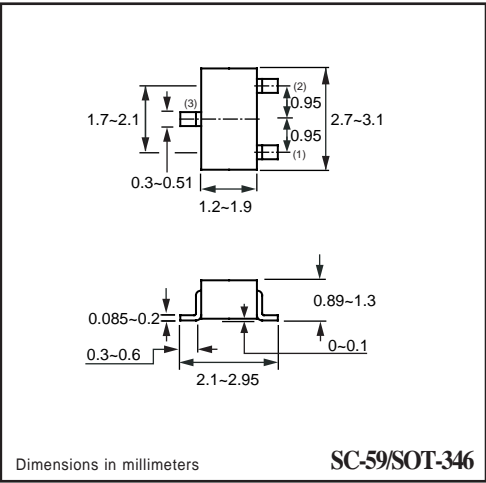
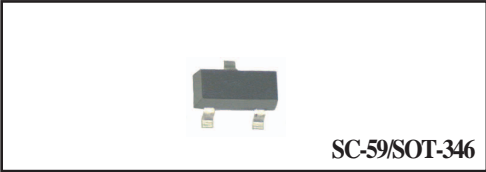
- * Servo motor control.
- * Power MOSFET gate drivers.
- * Other switching applications.

FEATURE

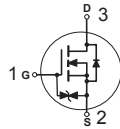
- * Small flat package. (SC-59)
- * High density cell design for extremely low Rds(ON).
- * Rugged and reliable.
- * High saturation current capability.
- * ESD per HBM 2KV

CONSTRUCTION

- * N-Channel Enhancement



CIRCUIT



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

Symbol	Parameter	CHM2308ESPT	Units
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 12	V
I_D	Maximum Drain Current - Continuous	5.4	A
	- Pulsed (Note 3)	22.0	
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 (CHM2308ESPT)

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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	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	$V_{GS} = 12\text{ V}, V_{DS} = 0\text{ V}$			+10	nA
I_{GSSR}	Gate-Body Leakage	$V_{GS} = -12\text{ V}, V_{DS} = 0\text{ V}$			-10	nA

ON CHARACTERISTICS (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.5		1.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5\text{V}, I_D=5.4\text{A}$		21	27	m Ω
		$V_{GS}=2.5\text{V}, I_D=4.3\text{A}$		27	36	
g_{FS}	Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 5.4\text{A}$		17		S

SWITCHING CHARACTERISTICS (Note 4)

Q_g	Total Gate Charge	$V_{DS}=10\text{V}, I_D=5.4\text{A}$ $V_{GS}=4.5\text{V}$		4.3	7.5	nC
Q_{gs}	Gate-Source Charge			1.1		
Q_{gd}	Gate-Drain Charge			2.5		
t_{on}	Turn-On Time	$V_{DD} = 10\text{V}$ $I_D = 1\text{A}, V_{GS} = 4.5\text{ V}$ $R_{GEN} = 6\ \Omega$		0.35	0.7	uS
t_r	Rise Time			0.87	1.8	
t_{off}	Turn-Off Time			3.6	7.5	
t_f	Fall Time			2.01	4.3	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

I_S	Drain-Source Diode Forward Current	(Note 1)			5.4	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 (CHM2308ESPT)

Typical Electrical Characteristics

Figure 1. Output Characteristics

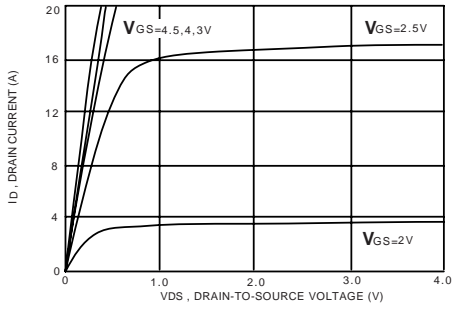


Figure 2. Transfer Characteristics

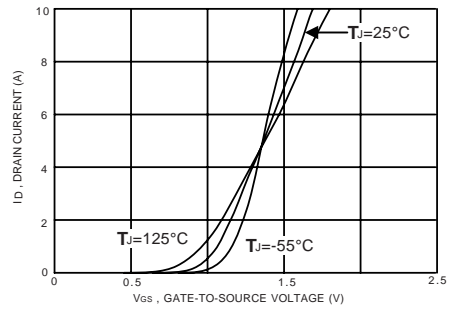


Figure 3. Gate Charge

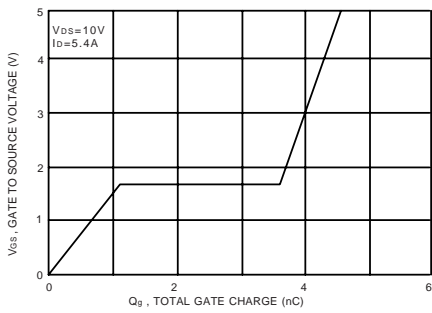


Figure 4. On-Resistance Variation with Temperature

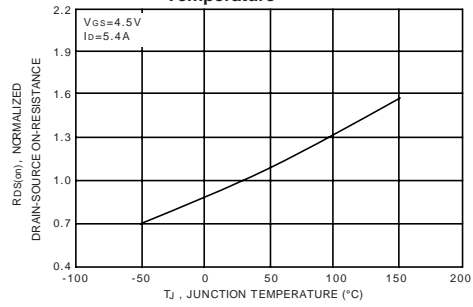


Figure 5. Gate Threshold Variation with Temperature

