CMS4410M

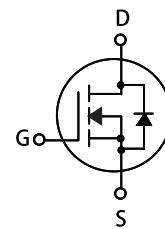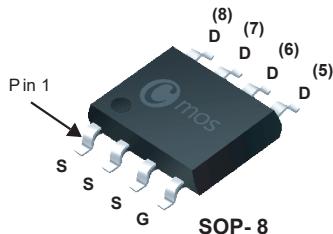## N-Channel Enhancement Mode MOSFET

General Description

The CMS4410M uses advanced

trenchtechnology to provide

excellent RDS(ON).This device

is suitable for use as a synchronous

switch in PWM applications.

Product Summary

BVDSS	RDSON	ID
30V	8.2mΩ	12.5A

Applications

- DC/DC Converter
- Synchronous Rectifier
- Load Switch
- Battery protection

SOP-8 Pin Configuration

Type	Package	Marking
CMS4410M	SOP-8	CMS4410M

Features

- Low On-Resistance
- Surface mount package.
- RoHS Compliant

Absolute Maximum Ratings (TA=25℃ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	12.5	A
I_D@T_A=75℃	Continuous Drain Current	8.8	A
I_{DM}	Pulsed Drain Current	50	A
EAS	Single Pulse Avalanche Energy [1]	117	mJ
P_D@T_C=25℃	Total Power Dissipation	3	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(at 10 seconds) [3]	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case [2]	---	25	℃/W

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Electrical Characteristics (T$_J$=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V , I$_D$=250μA	30	---	---	V
R$_{DS(ON)}$	Static Drain-Source On-Resistance	V$_{GS}$=10V , I$_D$=10A	---	7	8.2	mΩ
		V$_{GS}$=4.5V , I$_D$=8A	---	11	15	
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =250μA	1	---	2.5	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=24V , V$_{GS}$=0V	---	---	1	uA
		V$_{DS}$=24V , V$_{GS}$=0V, T$_J$=55℃	---	---	5	
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$ = ±20V , V$_{DS}$=0V	---	---	±100	nA
gfs	Forward Transconductance	V$_{DS}$=5V, I$_D$=10A	---	13	---	S
R$_g$	Gate Resistance	V$_{DS}$=0V , V$_{GS}$=0V , f=1MHz	---	2.5	---	Ω
Q$_g$	Total Gate Charge	V$_{DS}$=15V , V$_{GS}$=0 to 10V I$_D$=12.5A	---	28	---	nC
Q$_{gs}$	Gate-Source Charge		---	4.5	---	
Q$_{gd}$	Gate-Drain Charge		---	5	---	
T$_{d(on)}$	Turn-On Delay Time	V$_{DS}$=15V , V$_{GS}$=10V , I$_D$ =12.5A R$_{GS}$ =10Ω	---	10	---	ns
T$_r$	Rise Time		---	35	---	
T$_{d(off)}$	Turn-Off Delay Time		---	55	---	
T$_f$	Fall Time		---	20	---	
C$_{iss}$	Input Capacitance	V$_{DS}$=25V , V$_{GS}$=0V , f=1MHz	---	1350	---	pF
C$_{oss}$	Output Capacitance		---	180	---	
C$_{rss}$	Reverse Transfer Capacitance		---	120	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I$_S$	Continuous Source Current	V$_G$=V$_D$=0V , Force Current	---	---	12.5	A
I$_{SM}$	Pulsed Source Current		---	---	50	A
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_F$=10A , T$_J$=25℃	---	0.84	1.2	V

Notes:
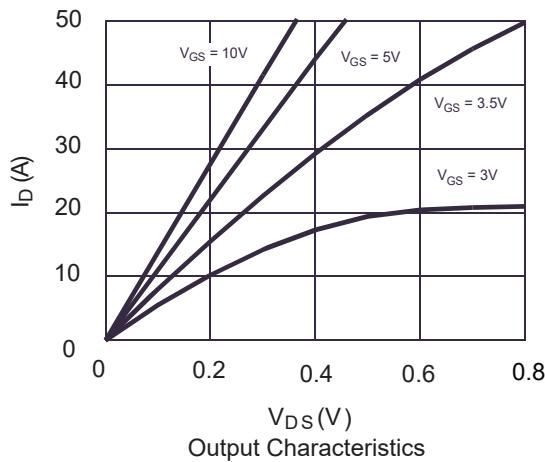
1.The EAS data shows Max. rating .The test condition is V$_{DS}$=25V , V$_{GS}$=10V , L=1.5mH , I$_{AS}$=12.5A.

2. R$_{θJA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R$_{θJC}$ is guaranteed by design while R$_{θJA}$ is determined by the user's board design.

3. R$_{θJA}$ is measured with 1.0 in^2 copper on FR-4 board.

This product has been designed and qualified for the counsumer market.

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Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

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Typical Characteristics

Output Characteristics

transfer characteristics

On-Resistance vs. Gate-Source Voltage

On-Resistance vs. Junction Temperature

Power Dissipation vs Ambient Temperature

Gate charge vs gate-source voltage