

### General Description

The CMS4606B uses advanced trench technology to provide excellent RDS(ON) and low gate charge.

The complementary MOSFETs may be used in inverter and other applications.

### Features

- Dual N and P Channel MOSFET
- Surface mount Package
- Reliable and Rugged
- Simple Drive Requirement
- Low On-resistance

### Absolute Maximum Ratings

Symbol	Parameter	Max n-channel	Max p-channel	Units
$V_{DS}$	Drain-Source Voltage	30	-30	V
$V_{GS}$	Gate-Source Voltage	±20		V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current	6	-6.5	A
$I_D@T_C=70^\circ\text{C}$	Continuous Drain Current	5	-5.3	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	18	-20	A
EAS	Single Pulse Avalanche Energy <sup>2 3</sup>	20	35	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	2		W
$T_{STG}$	Storage Temperature Range	-55 to 150		°C
$T_J$	Operating Junction Temperature Range	-55 to 150		°C

### Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State) <sup>4</sup>	---	62.5	°C/W

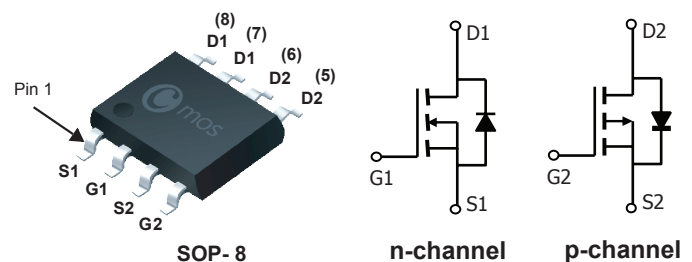
### Product Summary

	BVDSS	RDSON	ID
N-Channel	30V	22mΩ	6A
P-Channel	-30V	40mΩ	-6.5A

### Applications

- Power Management
- DC/DC Converter
- Power Management in FAN, LCD Inverter Systems

### SOP-8 Pin Configuration



Type	Package	Marking
CMS4606B	SOP- 8	CMS4606B

**Thermal Characteristics: p-channel**

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State) <sup>4</sup>	---	62.5	°C/W

**N Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=6A$	---	---	22	mΩ
		$V_{GS}=4.5V, I_D=5A$	---	---	34	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	---	2.5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V$	---	---	1	uA
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	±100	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=5A$	---	7	---	S
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=6A$	---	5.2	---	nC
$Q_{gs}$	Gate-Source Charge		---	0.9	---	
$Q_{gd}$	Gate-Drain Charge		---	1.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, V_{GS}=10V, R_L=2.2\Omega$ $R_{GEN}=3\Omega$	---	4.5	---	ns
$T_r$	Rise Time		---	2.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	15	---	
$T_f$	Fall Time		---	3.5	---	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	---	700	---	pF
$C_{oss}$	Output Capacitance		---	45	---	
$C_{rss}$	Reverse Transfer Capacitance		---	35	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	6	A
$I_{SM}$	Pulsed Source Current		---	---	18	A
$t_{rr}$	Reverse Recovery Time	$I_S=6A, T_J=25^\circ C$ $di/dt=100A/\mu s$	---	8.5	---	ns
$Q_{rr}$	Reverse Recovery Charge		---	2.2	---	μC
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=1A$	---	---	1	V

This product has been designed and qualified for the consumer market.  
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**P Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =-250μA	-30	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V , I <sub>D</sub> =-4A	---	---	40	mΩ
		V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-3A	---	---	60	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250μA	-1	---	-2.5	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-24V , V <sub>GS</sub> =0V	---	---	-1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V , I <sub>D</sub> =-2A	---	6	---	S
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>DS</sub> =-15V , V <sub>GS</sub> =-10V , I <sub>D</sub> =-6.5A	---	14	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	2.5	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3.5	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =-15V , V <sub>GS</sub> =-10V , R <sub>L</sub> =2.3Ω R <sub>GEN</sub> =3Ω	---	8	---	ns
T <sub>r</sub>	Rise Time		---	6	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	18	---	
T <sub>f</sub>	Fall Time		---	5	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V , V <sub>GS</sub> =0V , f=1MHz	---	1200	---	pF
C <sub>oss</sub>	Output Capacitance		---	140	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	95	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	6.5	A
I <sub>SM</sub>	Pulsed Source Current		---	---	20	A
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =-6.5A, T <sub>J</sub> =25°C dI/dt=100A/μs	---	15	---	ns
Q <sub>rr</sub>	Reverse Recovery Charge		---	9.7	---	μC
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =-1A	---	---	-1	V

Note :

- 1.Pulse test: pulse width ≤300μs, duty cycle≤2%.
- 2.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=20V, L=0.5 mH,I<sub>AS</sub>=9A.
- 3.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=-20V, L=0.5 mH,I<sub>AS</sub>=-11A.
- 4.The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

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