

### General Description

The CMS4611S uses advanced trench technology MOSFETs to provide excellent  $R_{DS(ON)}$ . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of 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	60	-60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	$\pm 20$	V
$I_D@T_A=25^\circ C$	Continuous Drain Current <sup>1</sup>	6	-4	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	24	-12	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	2	2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	-55 to 150	$^\circ C$

### Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (PCB Mount) <sup>1</sup>	---	34	$^\circ C/W$

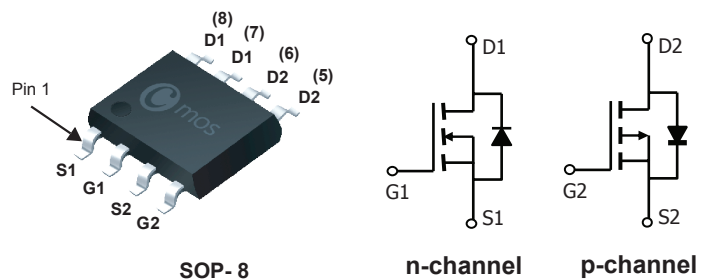
### Product Summary

	BVDSS	RDSON	ID
N-Channel	60V	50m $\Omega$	6A
P-Channel	-60V	115m $\Omega$	-4A

### Applications

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

### SOP-8 Pin Configuration



Type	Package	Marking
CMS4611S	SOP- 8	CMS4611S

**Thermal Characteristics: p-channel**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Maximum Junction-to-Ambient (PCB Mount) <sup>1</sup>	---	45	°C/W

**N 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	60	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =3.5A	---	---	50	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =2A	---	---	60	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	---	---	3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =48V , 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	---	15	---	S
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>DS</sub> =30V , V <sub>GS</sub> =4.5V , I <sub>D</sub> =3.5A	---	8	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	2	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =30V , V <sub>GS</sub> =4.5V , I <sub>D</sub> =3.5A R <sub>GEN</sub> =6Ω	---	17	---	ns
T <sub>r</sub>	Rise Time		---	18	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	30	---	
T <sub>f</sub>	Fall Time		---	6	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =30V , V <sub>GS</sub> =0V , f=1MHz	---	1000	---	pF
C <sub>oss</sub>	Output Capacitance		---	100	---	
C <sub>riss</sub>	Reverse Transfer Capacitance		---	80	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =6A , di/dt=100A/μs	---	33.2	---	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		---	43	---	nC
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =1A	---	---	1.2	V

Note :

- 1: 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 given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.
- 2: Repetitive rating, pulse width limited by junction temperature.
3. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

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

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.

**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	-60	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V , I <sub>D</sub> =-2A	---	---	115	mΩ
		V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-2A	---	---	155	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250μA	-1.5	---	-3.5	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-48V , 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	---	17	---	S
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>DS</sub> =-30V , V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-4.9A	---	10	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	2.5	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =-30V , V <sub>GS</sub> =-4.5V , R <sub>G</sub> =6Ω I <sub>D</sub> =1A	---	30	---	ns
T <sub>r</sub>	Rise Time		---	16	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	22	---	
T <sub>f</sub>	Fall Time		---	10	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-30V , V <sub>GS</sub> =0V , f=1MHz	---	700	---	pF
C <sub>oss</sub>	Output Capacitance		---	120	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	70	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =-4.9A , di/dt=100A/μs	---	32	---	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		---	42	---	nC
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>S</sub> =-1A	---	---	-1.2	V