

N- and P-Channel Enhancement Mode MOSFET

General Description

The CMS4614 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	40	-40	V
V_{GS}	Gate-Source Voltage	± 20		V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current	8	-7	A
$I_D @ T_C = 70^\circ\text{C}$	Continuous Drain Current	6	-5.5	A
I_{DM}	Pulsed Drain Current	24	-21	A
$P_D @ T_C = 25^\circ\text{C}$	Total Power Dissipation	2		W
T_{STG}	Storage Temperature Range	-55 to 150		$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150		$^\circ\text{C}$

Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State)	---	62.5	$^\circ\text{C}/\text{W}$

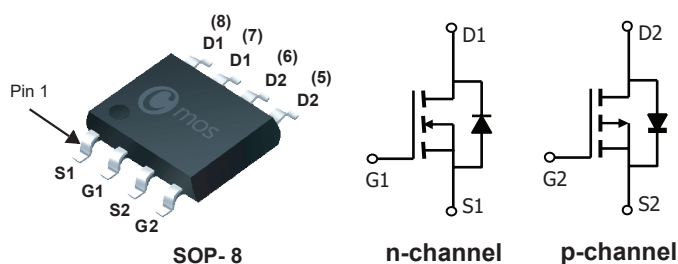
Product Summary

	BVDSS	RDSON	ID
N-Channel	40V	17m Ω	8A
P-Channel	-40V	38m Ω	-7A

Applications

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

SOP-8 Pin Configuration



Type	Package	Marking
CMS4614	SOP- 8	CMS4614

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Thermal Characteristics: p-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient (Steady-State)	---	62.5	$^{\circ}\text{C}/\text{W}$

N Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$, $I_D=6\text{A}$	---	---	17	mΩ
		$V_{GS}=4.5\text{V}$, $I_D=4\text{A}$	---	---	20	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu\text{A}$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=36\text{V}$, $V_{GS}=0\text{V}$	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5\text{V}$, $I_D=3\text{A}$	---	13	---	S
Q_g	Total Gate Charge	$V_{DS}=20\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=8\text{A}$	---	13	---	nC
Q_{gs}	Gate-Source Charge		---	4	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=20\text{V}$, $V_{GS}=10\text{V}$, $R_L=2.5\Omega$ $R_{GEN}=3\Omega$	---	5	---	ns
T_r	Rise Time		---	4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16	---	
T_f	Fall Time		---	3	---	
C_{iss}	Input Capacitance	$V_{DS}=20\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	---	1150	---	pF
C_{oss}	Output Capacitance		---	113	---	
C_{rss}	Reverse Transfer Capacitance		---	12	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0\text{V}$, Force Current	---	---	8	A
I_{SM}	Pulsed Source Current		---	---	24	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0\text{V}$, $I_S=5\text{A}$	---	---	1.2	V

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.

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P Channel Electrical Characteristics (TJ=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-40	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-5A	---	---	38	mΩ
		V _{GS} =-4.5V, I _D =-2A	---	---	53	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-32V, V _{GS} =0V	---	---	-1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-3A	---	10	---	S
Q _g	Total Gate Charge (10V)	V _{DS} =-20V, V _{GS} =-10V, I _D =-8A	---	14	---	nC
Q _{gs}	Gate-Source Charge		---	4	---	
Q _{gd}	Gate-Drain Charge		---	3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-20V, V _{GS} =-10V, R _L =2.3Ω R _{GEN} =6Ω	---	8	---	ns
T _r	Rise Time		---	6	---	
T _{d(off)}	Turn-Off Delay Time		---	18	---	
T _f	Fall Time		---	8	---	
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, f=1MHz	---	2400	---	pF
C _{oss}	Output Capacitance		---	100	---	
C _{rss}	Reverse Transfer Capacitance		---	65	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	-7	A
I _{SM}	Pulsed Source Current		---	---	-21	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A	---	---	-1.2	V

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