

### General Description

The CMS4013 uses advanced trench technology to provide excellent RDS(ON). This device is ideal for load switch and battery protection applications.

### Features

- P-Channel MOSFET
- Low ON-resistance
- Surface Mount Package
- RoHS Compliant

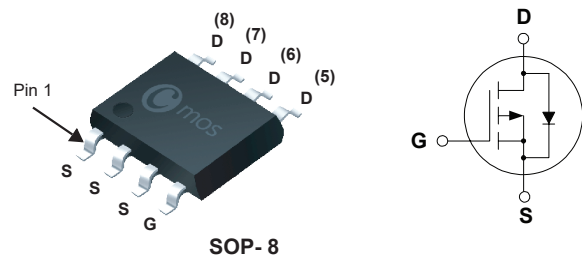
### Product Summary

BVDSS	RDSON	ID
-40V	18mΩ	-13A

### Applications

- Load switch
- Power management
- Battery protection

### SOP-8 Pin Configuration



Type	Package	Marking
CMS4013	SOP- 8	CMS4013

### Absolute Maximum Ratings (TA=25 °C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	-40	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>A</sub> =25 °C	Continuous Drain Current	-13	A
I <sub>D</sub> @T <sub>A</sub> =70 °C	Continuous Drain Current	-9	A
I <sub>DM</sub>	Pulsed Drain Current	-39	A
EAS	Single Pulse Avalanche Energy <sup>1</sup>	173	mJ
P <sub>D</sub> @T <sub>A</sub> =25 °C	Total Power Dissipation	2.7	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	---	47	°C/W

**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	-40	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V , I <sub>D</sub> =-10A	---	16	18	mΩ
		V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-8A	---	22	25	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> = -250μA	-1	---	-3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-32V, 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> =-10A	---	21	---	S
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-20V , V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-7A	---	23	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	10	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	8	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =-20V, V <sub>GS</sub> =-10V , I <sub>D</sub> =3.5A R <sub>G</sub> =4.7Ω	---	44	---	ns
T <sub>r</sub>	Rise Time		---	48	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	150	---	
T <sub>f</sub>	Fall Time		---	20	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-25V , V <sub>GS</sub> =0V , f=1MHz	---	2800	---	pF
C <sub>oss</sub>	Output Capacitance		---	270	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	180	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>SD</sub> =-8A	---	-0.81	-1.2	V

Note :

1.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=-30V, V<sub>GS</sub>=-10V, L=0.3mH, I<sub>AS</sub>=-34A.

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P-Channel Enhancement Mode MOSFET

Typical Characteristics

