

General Description

The CMS4013A uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a DC-DC converter application.

Features

- Low On-Resistance
- 100% avalanche tested
- Simple Drive Requirements
- RoHS Compliant

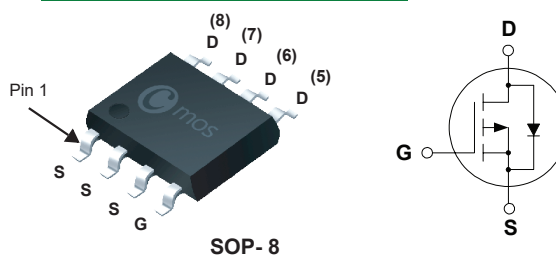
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-40V	16mΩ	-10A

Applications

- Inverter Switch
- Synchronous Rectifier
- Load Switch
- DC/DC Converter

SOP-8 Pin Configuration



Type	Package	Marking
CMS4013A	SOP- 8	CMS4013A

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^{\circ}\text{C}$	Continuous Drain Current	-10	A
$I_D@T_A=75^{\circ}\text{C}$	Continuous Drain Current	-8	A
I_{DM}	Pulsed Drain Current	-40	A
EAS	Single Pulse Avalanche Energy ¹	180	mJ
$P_D@T_C=25^{\circ}\text{C}$	Total Power Dissipation	1.7	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 Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	---	74	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-8A$	---	---	16	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-6A$	---	---	22	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = -250\mu A$	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-40V$, $V_{GS}=0V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-5A$	---	21	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	8	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-20V$, $V_{GS}=-10V$, $I_D=-10A$	---	50	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	
Q_{gd}	Gate-Drain Charge		---	9	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-20V$, $V_{GS}=-10V$ $R_{GEN}=4.7\Omega$, $I_D=-10A$	---	43	---	ns
T_r	Rise Time		---	47	---	
$T_{d(off)}$	Turn-Off Delay Time		---	150	---	
T_f	Fall Time		---	20	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1MHz$	---	2700	---	pF
C_{oss}	Output Capacitance		---	220	---	
C_{rss}	Reverse Transfer Capacitance		---	180	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-10	A
I_{SM}	Pulsed Source Current		---	---	-40	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=-8A$, $T_J=25^\circ\text{C}$	---	-0.83	-1.2	V

Note :

1. The EAS data shows Max. rating . The test condition is $V_{DD}=-30V$, $V_{GS}=-10V$, $L=1mH$, $I_{AS}=-19A$.

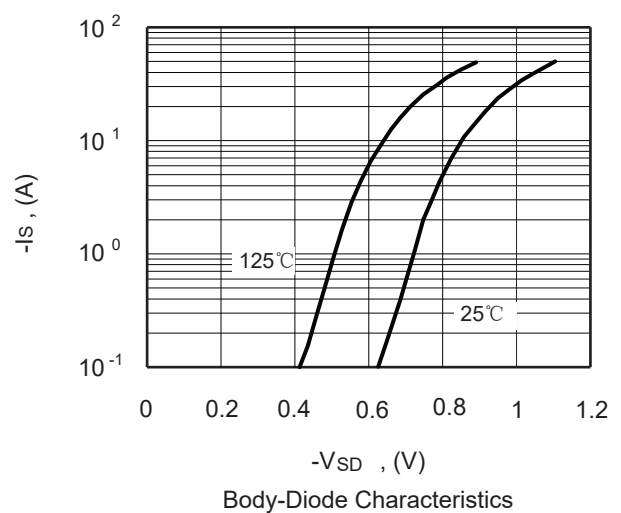
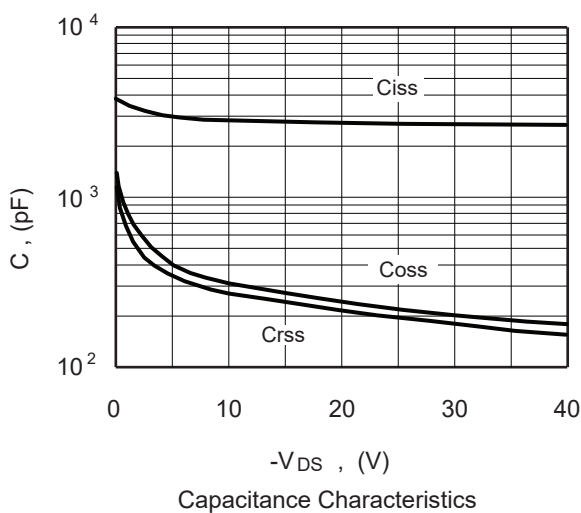
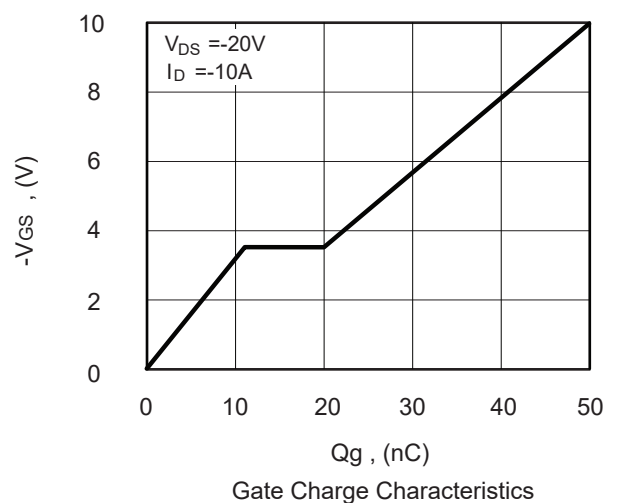
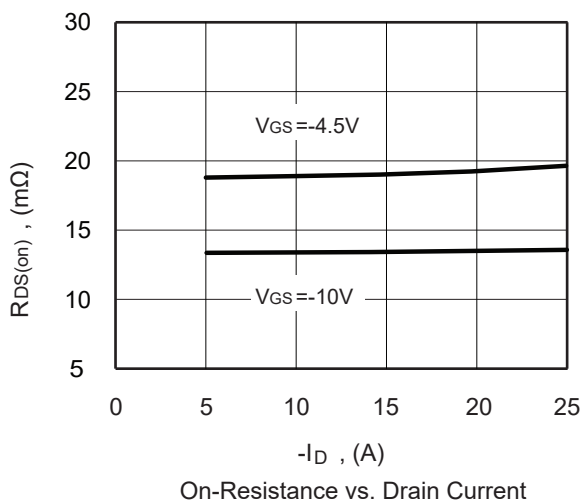
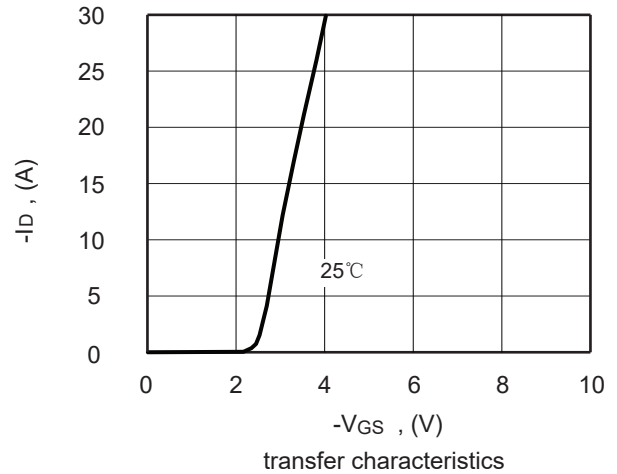
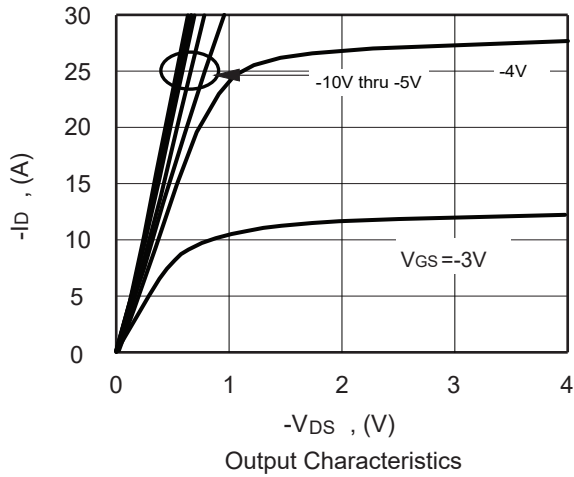
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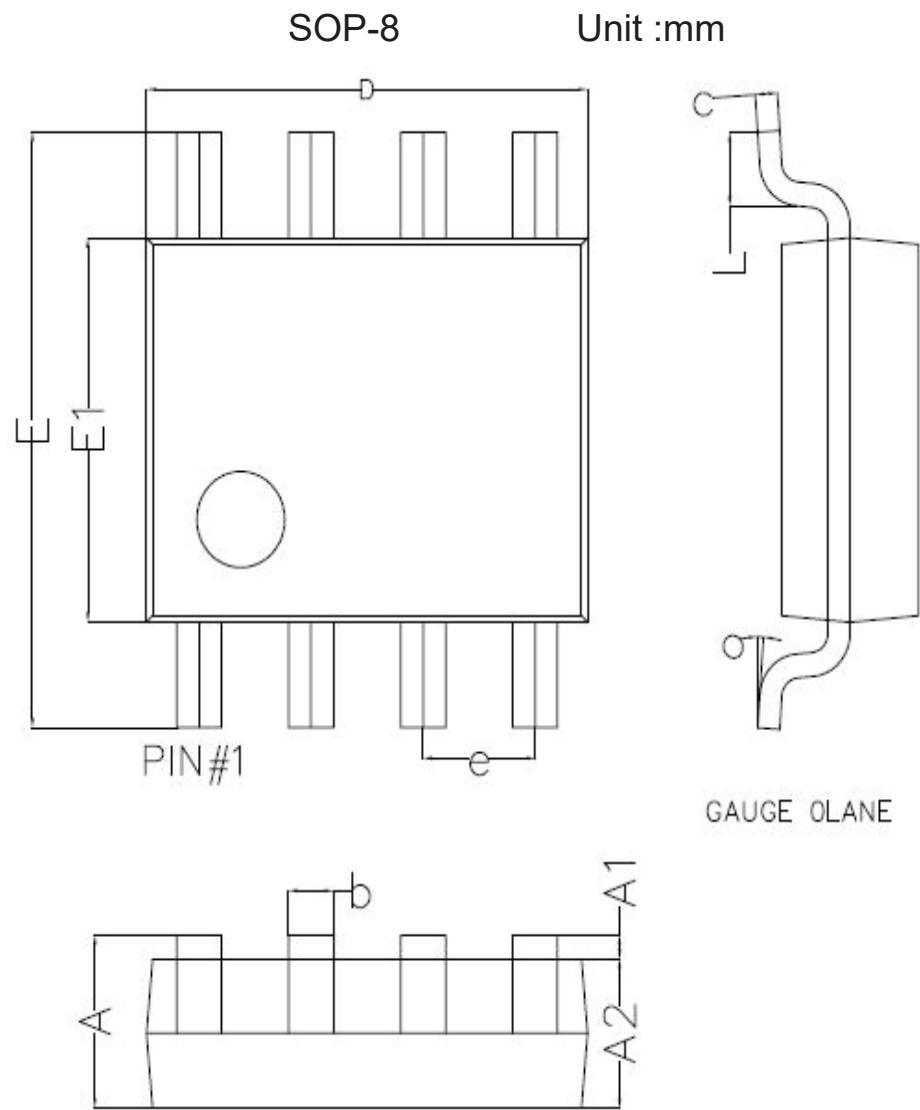
Cmos reserves the right to improve product design , functions and reliability without notice. Please refer to the latest version of specification.

P-Channel Enhancement Mode MOSFET

P-Channel: Typical Characteristics



Package Dimension



Symbol	Dim in mm		
	Min	Nor	Max
A	1.35	1.55	1.75
A1	0.02	0.065	0.10
A2	1.35	1.45	1.55
b	0.33	0.42	0.51
c	0.17	0.21	0.25
D	4.80	4.90	5.00
e	1.270 (BSC)		
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
L	0.4	0.835	1.27
θ	0°	4°	8°