

CMS3050

30V, 4.4mΩ typ., 20A N-Channel MOSFET

General Description

The CMS3050 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

Features

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

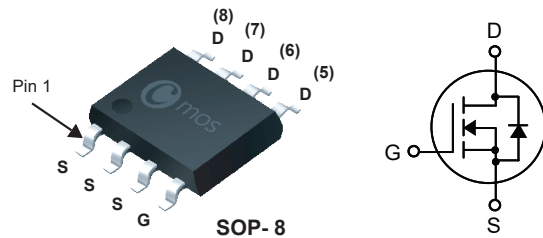
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
30V	5mΩ	20A

Applications

- DC/DC converter
- Synchronous rectifier

SOP-8 Pin Configuration



Type	Package	Marking
CMS3050	SOP-8	CMS3050

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current	20	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current	14	A
I_{DM}	Pulsed Drain Current	80	A
EAS	Single Pulse Avalanche Energy ¹	132	mJ
$P_D@T_A=25^{\circ}C$	Total Power Dissipation	2.5	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.25	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	4.4	5	mΩ
		$V_{GS}=4.5V$, $I_D=10A$	---	6.4	8	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	2.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=10A$	---	17	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	7.4	---	Ω
Q_g	Total Gate Charge	$I_D=20A$	---	20	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=15V$	---	4	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=4.5V$ (Note 2)	---	8	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$	---	6	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	11	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3\Omega$	---	36	---	
T_f	Fall Time	$R_L=0.75\Omega$ (Note 2)	---	12	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1600	---	pF
C_{oss}	Output Capacitance		---	160	---	
C_{rss}	Reverse Transfer Capacitance		---	140	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$, $T_J=25^{\circ}\text{C}$	---	0.86	1.4	V

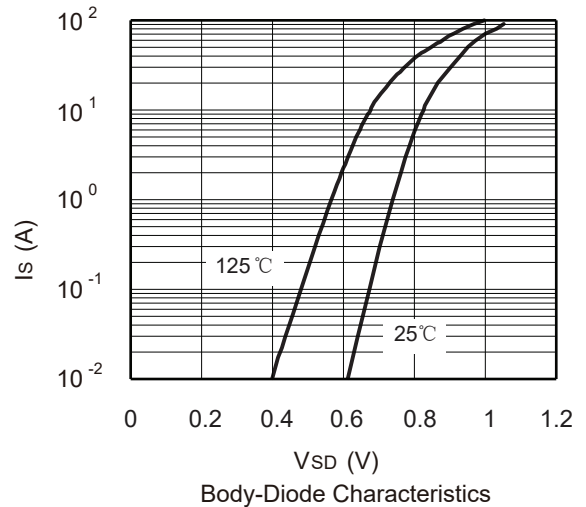
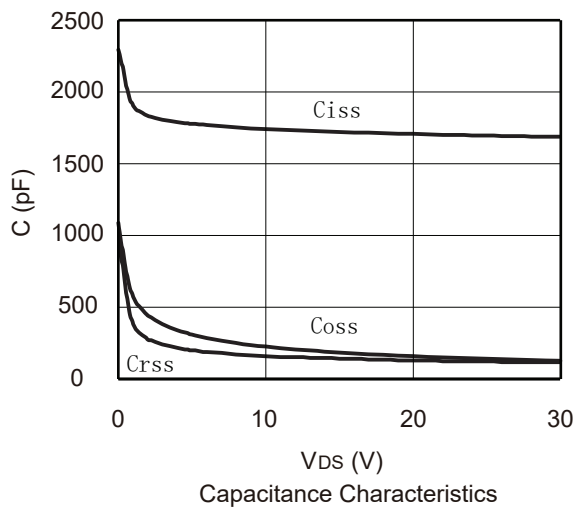
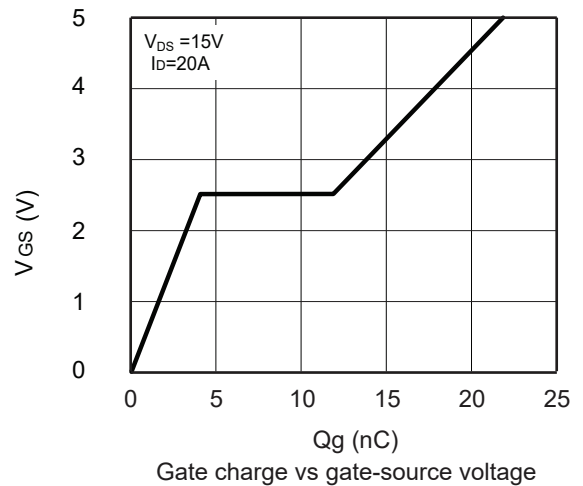
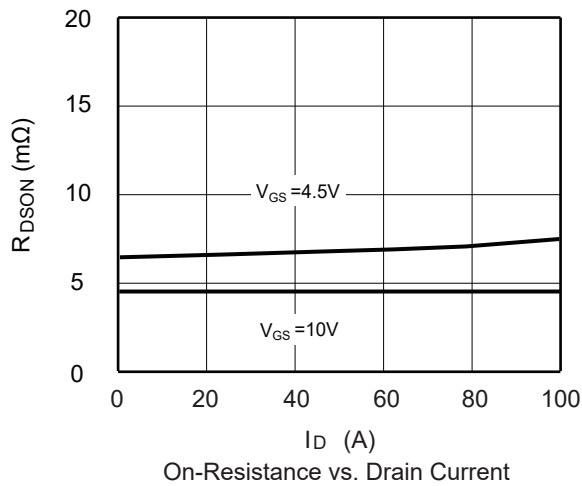
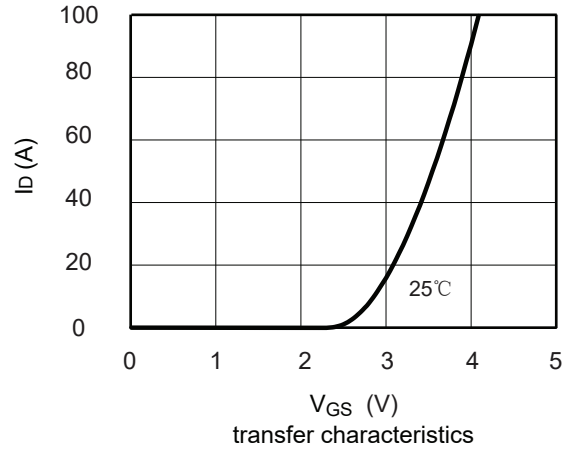
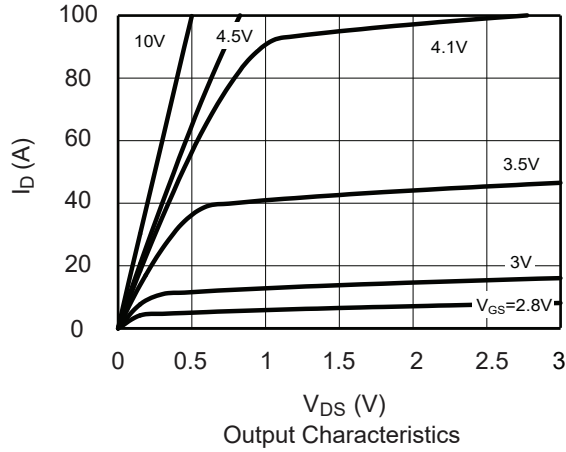
Note :

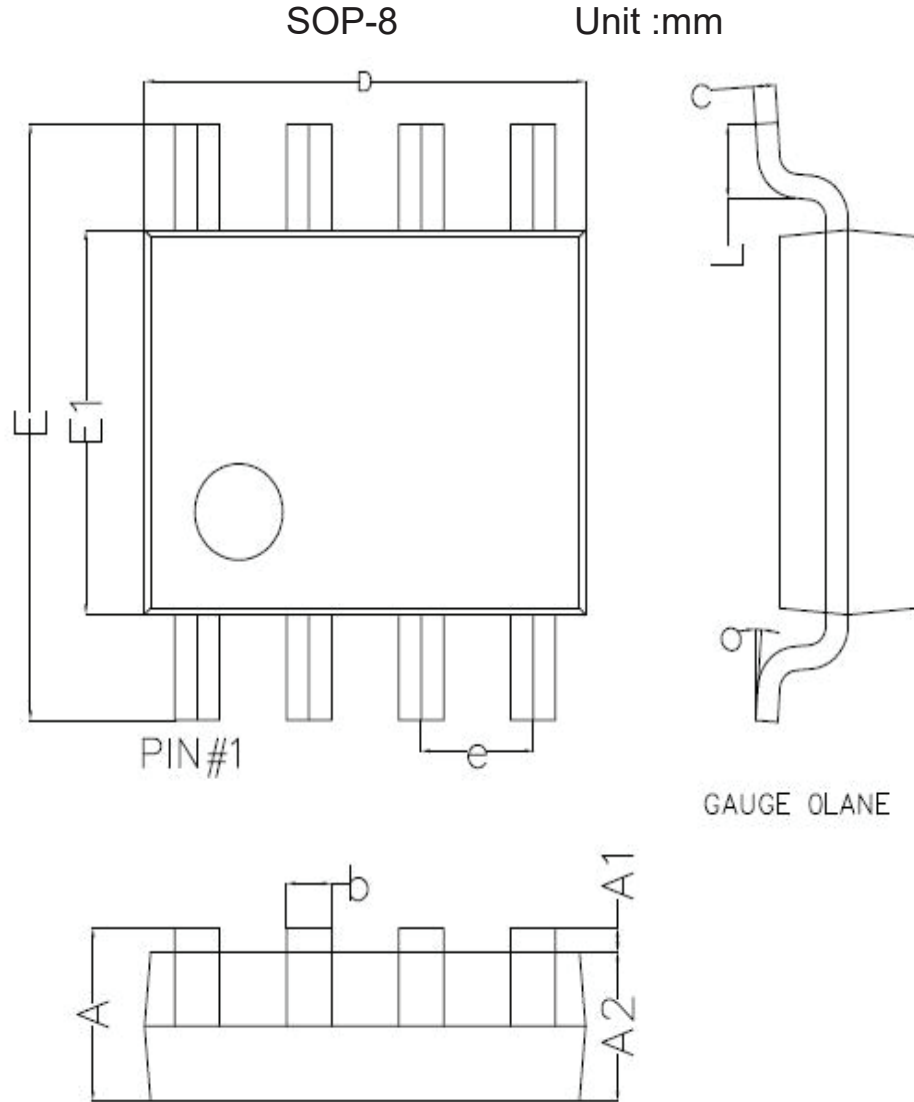
- 1.The EAS data shows Max. rating . The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=23A$.
2. Defined by design, not subject to production.

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.Please refer to the latest version of specification.

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°