

General Description

The CMSC85P03A combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for load switch and battery protection applications.

Features

- Low ON-resistance
- 100% avalanche tested
- Surface Mount Package
- RoHS Compliant

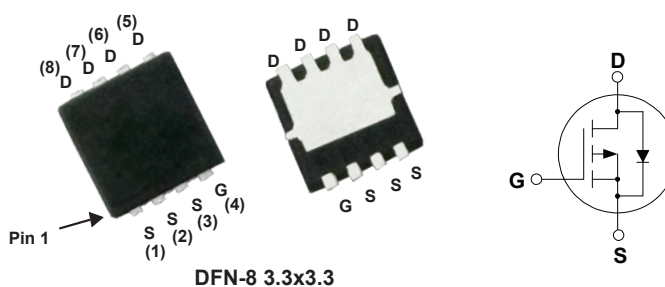
Product Summary

BVDSS	RDSON	ID
-30V	9mΩ	-40A

Applications

- High side in DC - DC Buck Converters
- Notebook battery power management
- Load switch in Notebook

DFN-8 3.3x3.3 Pin Configuration



Type	Package	Marking
CMSC85P03A	DFN-8 3.3x3.3	85P03A

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

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	-40	A
I _D @T _C =70°C	Continuous Drain Current	-28	A
I _{DM}	Pulsed Drain Current	-160	A
EAS	Single Pulse Avalanche Energy ¹	175	mJ
P _D @T _C =25°C	Total Power Dissipation	50	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 _{θJA}	Thermal Resistance Junction-ambient(6 cm ² cooling area)	---	60	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	2.5	°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	$V_{GS}=-10V$, $I_D=-20A$	---	7.7	9	m Ω
		$V_{GS}=-4.5V$, $I_D=-15A$	---	9.8	12	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = -250\mu A$	-1	---	-2	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	$V_{DS}=-5V$, $I_D=-10A$	---	30	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	3.6	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-15V$, $I_D=-20A$ $V_{GS}=0$ to $10V$	---	43	---	nC
Q_{gs}	Gate-Source Charge		---	16	---	
Q_{gd}	Gate-Drain Charge		---	7.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-15V$, $V_{GS}=-10V$, $I_D=-20A$ $R_G=6\Omega$	---	16	---	ns
T_r	Rise Time		---	46	---	
$T_{d(off)}$	Turn-Off Delay Time		---	35	---	
T_f	Fall Time		---	8	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1MHz$	---	3400	---	pF
C_{oss}	Output Capacitance		---	300	---	
C_{rss}	Reverse Transfer Capacitance		---	270	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-40	A
I_{SM}	Pulsed Source Current		---	---	-160	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=-20A$, $T_J=25^{\circ}\text{C}$	---	-0.89	-1.2	V

Notes:

1.The EAS data shows Max. rating . The test condition is $V_{DD}=-20V$, $V_{GS}=-10V$, $L=0.5mH$, $I_{AS}=-26.5A$.

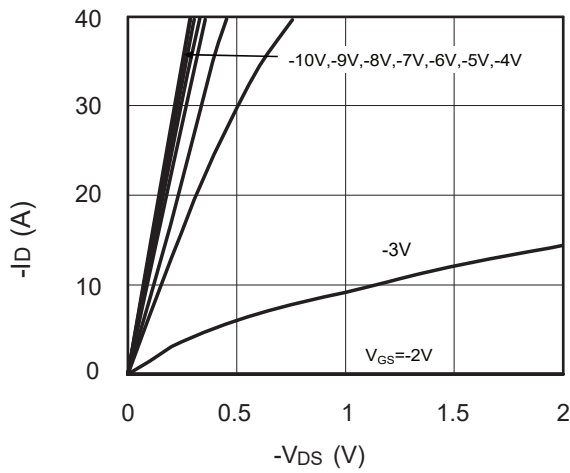
This product has been designed and qualified for the consumer market.

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

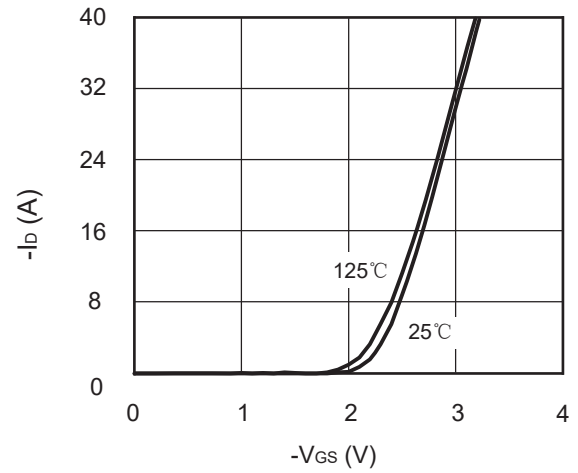
Cmos reserves the right to improve product design ,functions and reliability without notice.

P-Channel Enhancement Mode MOSFET

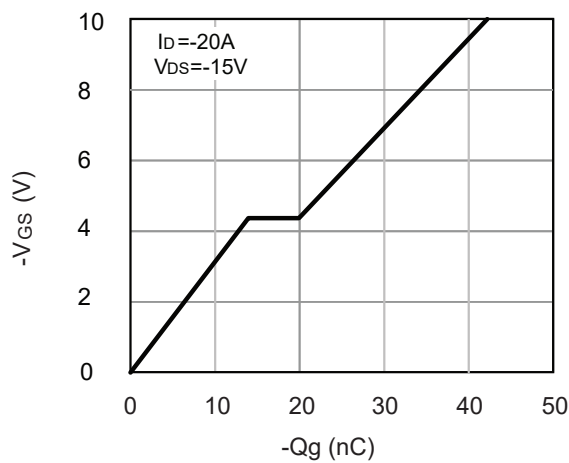
Typical Characteristics



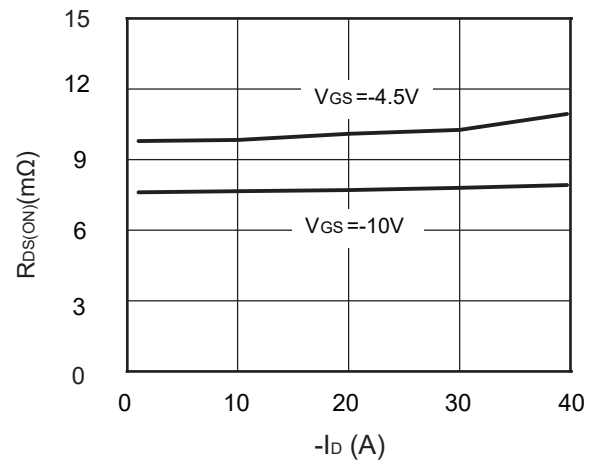
On-Region Characteristics



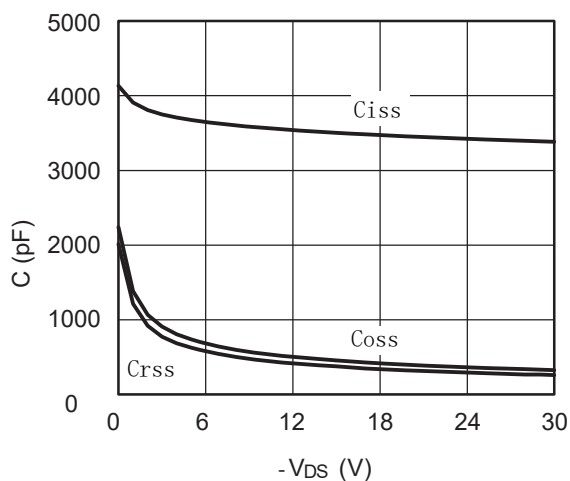
transfer characteristics



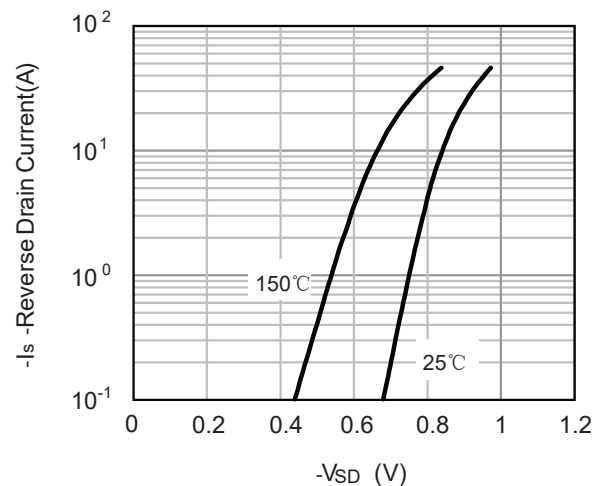
Gate charge vs gate-source voltage



On-Resistance vs. Drain Current



Capacitance Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature