

General Description

The CMS50P03A uses advanced trench technology to provide excellent $R_{DS(ON)}$ and ultra-low low gate charge. This device is suitable for use as a load switch or in PWM applications.

Features

- $R_{DS(ON)}=12m\Omega$ @ $V_{GS}=-10V$
- $R_{DS(ON)}=20m\Omega$ @ $V_{GS}=-4.5V$
- Ultra low On-Resistance.
- Surface mount package.

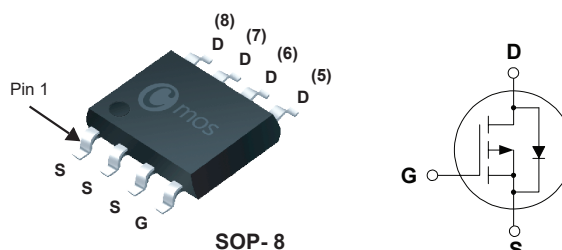
Product Summary

BVDSS	$R_{DS(ON)}$	ID
-30V	12m Ω	-18A

Applications

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

SOP-8 Pin Configuration



Type	Package	Marking
CMS50P03A	SOP- 8	CMS50P03A

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	Continuous Drain Current	-18	A
I_{DM}	Pulsed Drain Current	-72	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	3	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	---	150	$^\circ C/W$

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	$V_{GS}=-10V$, $I_D=-15A$	---	10	12	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-12A$	---	14	20	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = -250\mu A$	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24V$, $V_{GS}=0V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V$, $I_D=-10A$	---	25	---	S
Q_g	Total Gate Charge	$V_{DS}=-15V$, $V_{GS}=-4.5V$, $I_D=-11A$	---	34	---	nC
Q_{gs}	Gate-Source Charge		---	9	---	
Q_{gd}	Gate-Drain Charge		---	15	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-15V$, $V_{GS}=-10V$, $R_L=15\Omega$ $R_{GEN}=1\Omega$, $I_D=-1A$	---	13	---	ns
T_r	Rise Time		---	9	---	
$T_{d(off)}$	Turn-Off Delay Time		---	55	---	
T_f	Fall Time		---	13	---	
C_{iss}	Input Capacitance	$V_{DS}=-15V$, $V_{GS}=0V$, $f=1MHz$	---	1800	---	pF
C_{oss}	Output Capacitance		---	260	---	
C_{rss}	Reverse Transfer Capacitance		---	220	---	

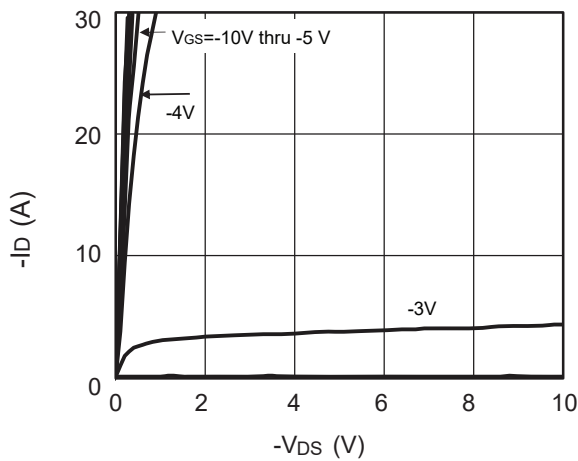
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_{SD}=-18A$	---	-0.9	-1.3	V

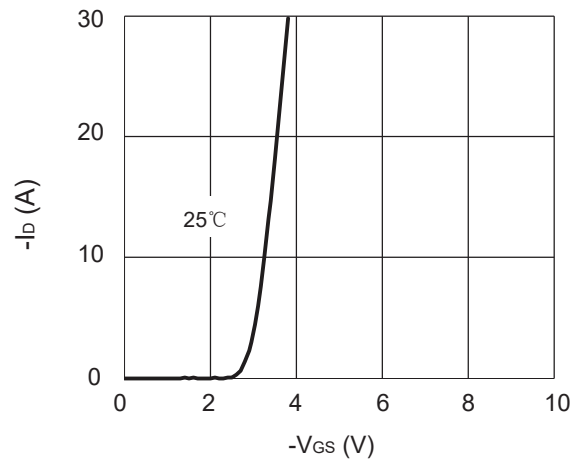
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 Cmos reserves the right to improve product design ,functions and reliability without notice.

Typical Characteristics

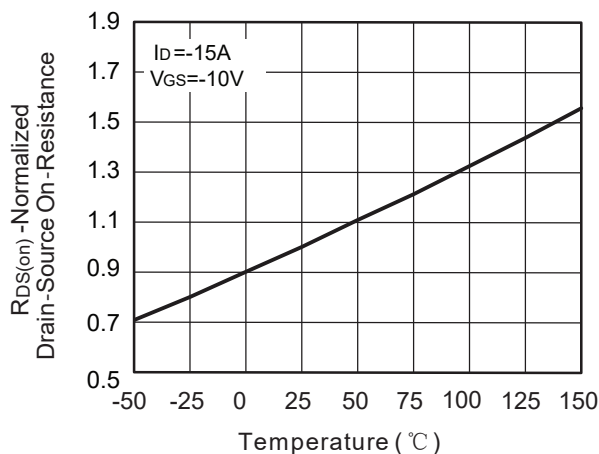
P-Channel Enhancement Mode MOSFET



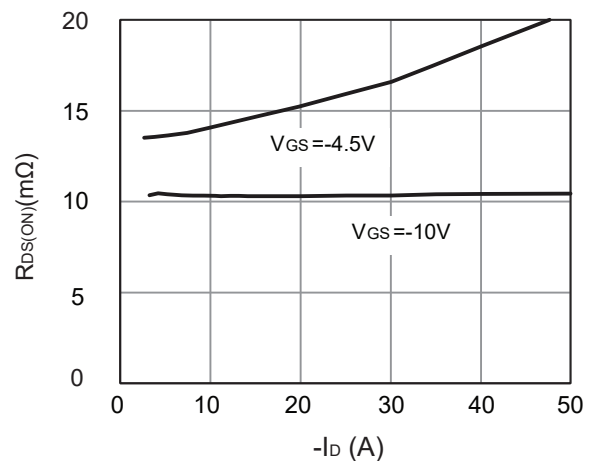
On-Region Characteristics



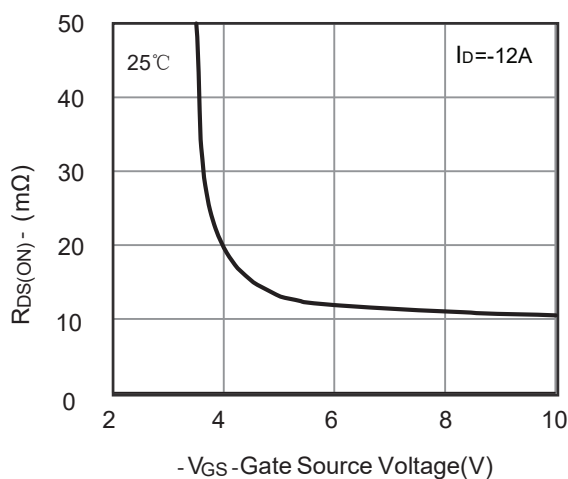
transfer characteristics



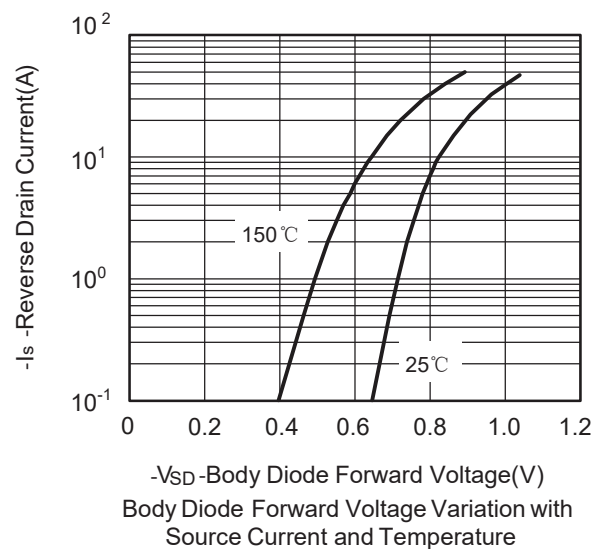
On-Resistance vs. Junction Temperature



On-Resistance vs. Drain Current



On-Resistance vs. Gate-Source Voltage



Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Characteristics

P-Channel Enhancement Mode MOSFET

