CMD180P03/CMU180P03

-30V, 2.5mΩ typ., -150A P-Channel MOSFET

General Description

These P-Channel enhancement mode power field effect transistors use advanced trench technology and design to provide excellent RDS(ON) . This device is suitable for use as a load switch or in PWM applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	2.8mΩ	-150A

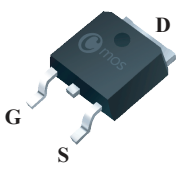
Applications

- DC-DC Converters
- Load Switches
- BLDC Motor driver

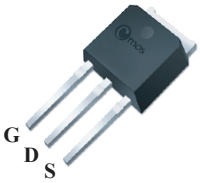
Features

- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement
- RoHS Compliant

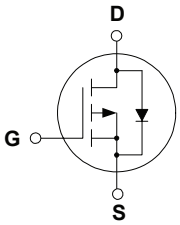
TO-252 / 251 Pin Configuration



TO-252



TO-251



Type	Package	Marking
CMD180P03	TO-252	CMD180P03
CMU180P03	TO-251	CMU180P03

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-150	A
I_D@T_C=100℃	Continuous Drain Current	-100	A
I_{DM}	Pulsed Drain Current	-450	A
EAS	Single Pulse Avalanche Energy [1]	722	mJ
P_D@T_C=25℃	Total Power Dissipation	140	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.89	℃/W

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Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-20A	---	2.5	2.8	mΩ
		V_{GS}=-4.5V, I_D=-15A	---	3.1	3.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	---	-2.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-10A	---	55	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	19	---	Ω
Q_g	Total Gate Charge	V_{DD}=-15V , I_D=-20A V_{GS}=-10V	---	163	---	nC
Q_{gs}	Gate-Source Charge		---	22	---	
Q_{gd}	Gate-Drain Charge		---	33	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V , R_{GEN}=3Ω R_L=0.75Ω	---	13	---	ns
T_r	Rise Time		---	18	---	
$T_{d(off)}$	Turn-Off Delay Time		---	135	---	
T_f	Fall Time		---	52	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	6900	---	pF
C_{oss}	Output Capacitance		---	950	---	
C_{rss}	Reverse Transfer Capacitance		---	630	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-150	A
I_{SM}	Pulsed Source Current		---	---	-450	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-15A	---	-0.77	-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}=-38A.

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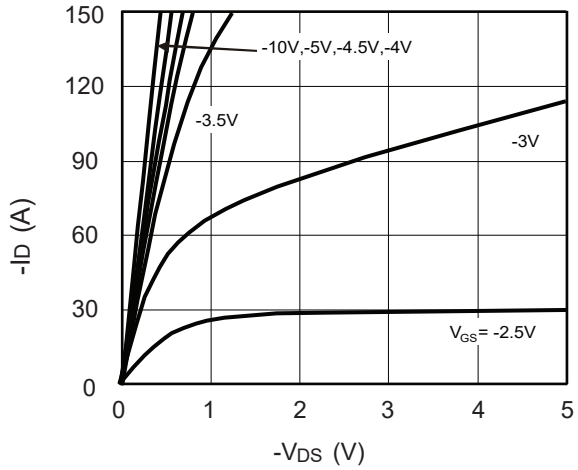
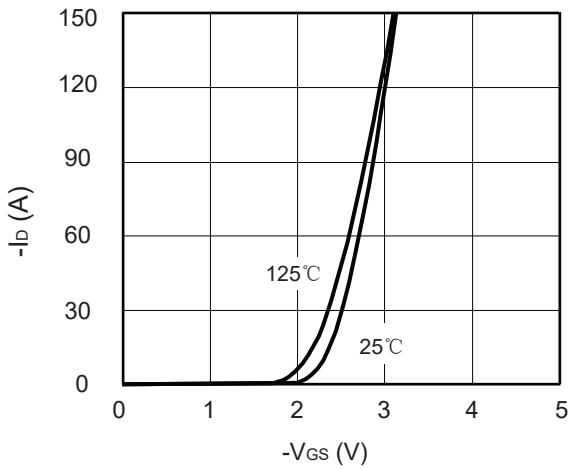
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

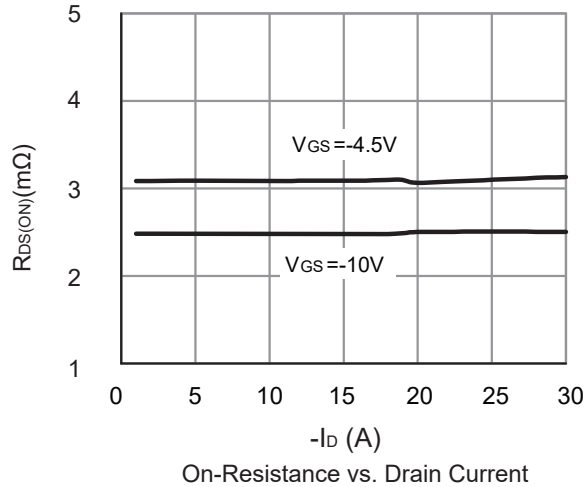
Typical Characteristics



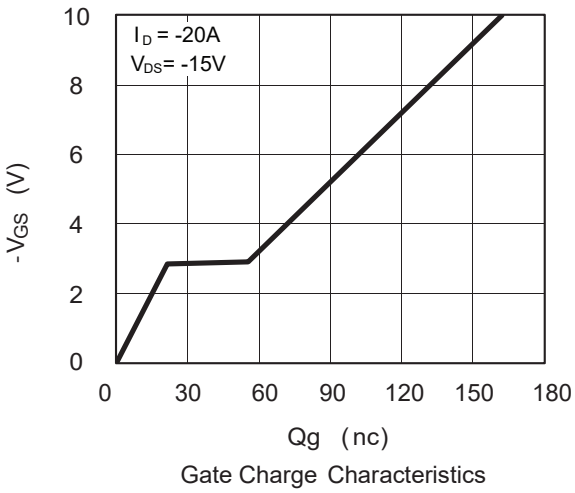
On-Region Characteristics



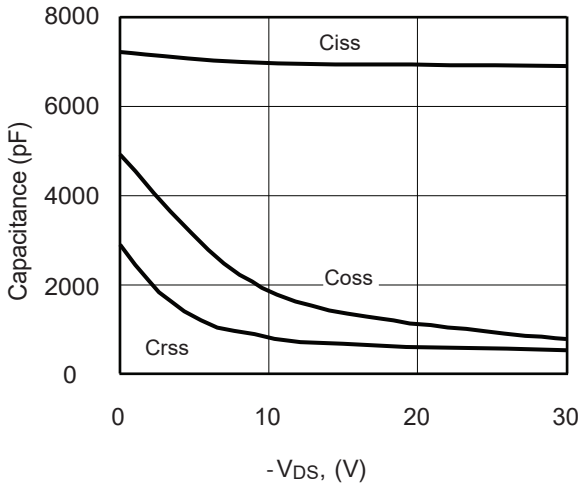
transfer characteristics



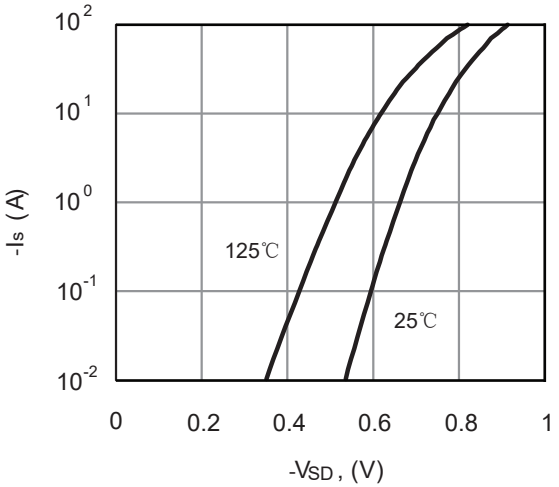
On-Resistance vs. Drain Current



Gate Charge Characteristics



Capacitance Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature