P-Channel 30-V (D-S) 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	RDSON	ID
-30V	4.2mΩ	-120A

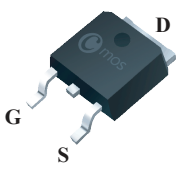
Applications

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

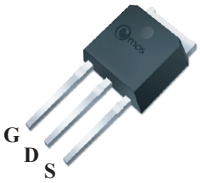
Features

- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

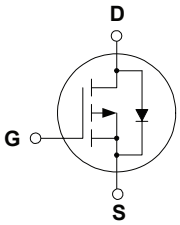
TO-252 / 251 Pin Configuration



TO-252



TO-251



Type	Package	Marking
CMD170P03	TO-252	CMD170P03
CMU170P03	TO-251	CMU170P03

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Sou ce Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-120	A
I_{DM}	Pulsed Drain Current	-480	A
EAS	Single Pulse Avalanche Energy	340	mJ
P_D@T_C=25℃	Total Power Dissipation	130	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient	---	62	℃/W
$R_{\theta JC}$	Junction-to-Case (Drain)	---	2.0	℃/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=-28A	---	---	4.2	mΩ
		V_{GS}=-4.5V, I_D=-25A	---	---	6.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	---	-3.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V, 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}=-10V , I_D=-10A	---	30	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.0	---	Ω
Q_g	Total Gate Charge	V_{DD}=-15V , I_D=-30A V_{GS}=-10V	---	40	---	nC
Q_{gs}	Gate-Source Charge		---	9	---	
Q_{gd}	Gate-Drain Charge		---	11	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V , R_G =2.5Ω I_D=-30A	---	14	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	70	---	
T_f	Fall Time		---	28	---	
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V , f=1MHz	---	7000	---	pF
C_{oss}	Output Capacitance		---	1000	---	
C_{rss}	Reverse Transfer Capacitance		---	767	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-120	A
I_{SM}	Pulsed Source Current		---	---	-480	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-28A	---	---	-1.2	V

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