

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.

Features

- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	-120	A
I_{DM}	Pulsed Drain Current	-480	A
EAS	Single Pulse Avalanche Energy	225	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	130	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case (Drain)	---	1.15	$^\circ\text{C/W}$

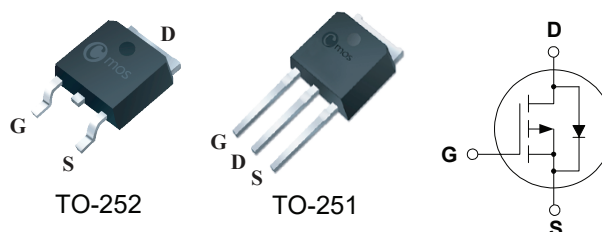
Product Summary

BVDSS	RDSON	ID
-30V	4.5m Ω	-120A

Applications

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

TO-252 / 251 Pin Configuration



Type	Package	Marking
CMD170P03A	TO-252	CMD170P03A
CMU170P03A	TO-251	CMU170P03A

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$, $I_D=-250\mu\text{A}$	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10\text{V}$, $I_D=-28\text{A}$	---	4	4.5	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}$, $I_D=-25\text{A}$	---	5.5	6.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu\text{A}$	-1.0	---	-3.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^{\circ}\text{C}$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5\text{V}$, $I_D=-25\text{A}$	---	52	---	S
R_g	Gate Resistance	$V_{DS}=0\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	---	22	---	Ω
Q_g	Total Gate Charge	$V_{DD}=-15\text{V}$, $I_D=-30\text{A}$ $V_{GS}=-10\text{V}$	---	40	---	nC
Q_{gs}	Gate-Source Charge		---	9	---	
Q_{gd}	Gate-Drain Charge		---	11	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-15\text{V}$, $V_{GS}=-10\text{V}$, $R_G=2.5\Omega$ $I_D=-30\text{A}$	---	14	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	70	---	
T_f	Fall Time		---	28	---	
C_{iss}	Input Capacitance	$V_{DS}=-25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	---	5300	---	pF
C_{oss}	Output Capacitance		---	600	---	
C_{rss}	Reverse Transfer Capacitance		---	420	---	

Diode Characteristics

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

Notes:

1.The EAS data shows Max. rating .The test condition is $V_{DS}=-25\text{V}$, $V_{GS}=-10\text{V}$, $L=1\text{mH}$, $I_{AS}=-30\text{A}$.

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