CMD20P09/CMU20P09

-90V, 110mΩ typ., -20A P-Channel MOSFET

General Description

The 20P09 uses advanced process technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-90V	140mΩ	-20A

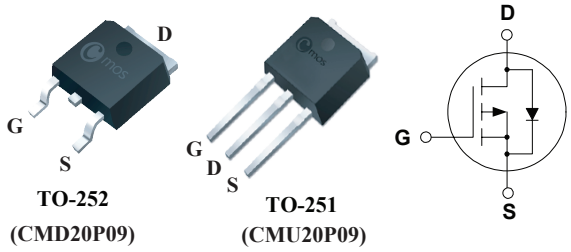
Applications

- Switching Voltage Regulators
- Motor Drivers

Features

- P-Channel
- Low ON-resistance.
- 100% avalanche tested
- RoHS Compliant

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-90	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-20	A
I_D@T_C=100℃	Continuous Drain Current	-14	A
I_{DM}	Pulsed Drain Current	-80	A
EAS	Single Pulse Avalanche Energy [1]	312	mJ
P_D@T_C=25℃	Total Power Dissipation	75	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	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.67	℃/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=-250μA	-90	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-15A	---	110	140	mΩ
		V_{GS}=-4.5V , I_D=-10A	---	126	160	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250μA	-2	---	-4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-90V , V_{GS}=0V	---	---	-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	---	28	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	8.8	---	Ω
Q_g	Total Gate Charge	V_{DS}=-80V, V_{GS}=-10V , I_D=-15A	---	70	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	20	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-50V , V_{GS}=-10V , I_D=-10A R_G =4.7Ω	---	30	---	ns
T_r	Rise Time		---	12	---	
$T_{d(off)}$	Turn-Off Delay Time		---	290	---	
T_f	Fall Time		---	41	---	
C_{iss}	Input Capacitance	V_{DS}=-25V , V_{GS}=0V , f=1MHz	---	6500	---	pF
C_{oss}	Output Capacitance		---	160	---	
C_{rss}	Reverse Transfer Capacitance		---	100	---	

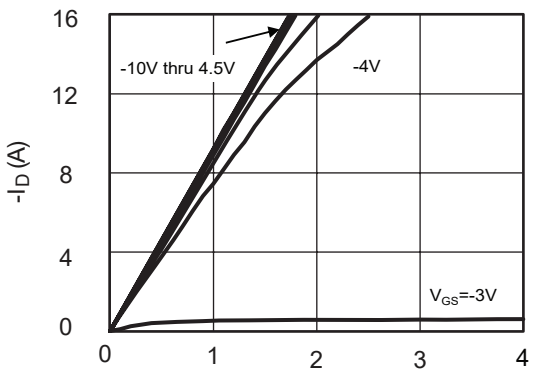
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-20	A
I_{SM}	Pulsed Source Current		---	---	-80	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-20 A , T_J=25℃	---	-0.87	-1.2	V

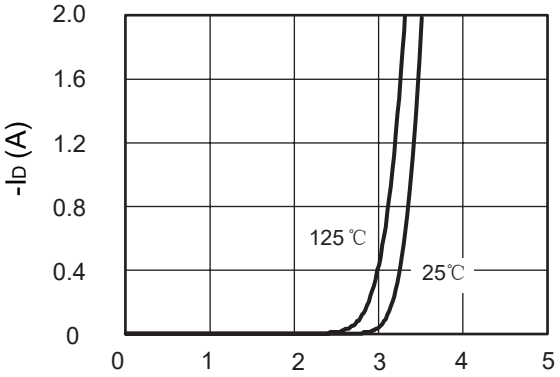
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=-50V , V_{GS}=-10V,L=1 mH,I_{AS}=-25A.

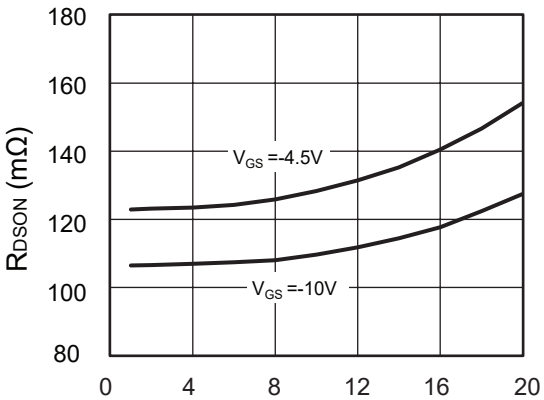
Typical Characteristics



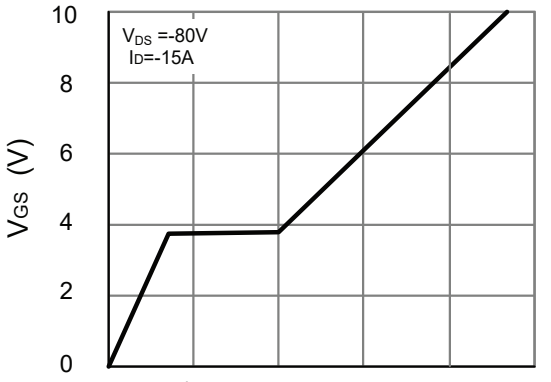
Output Characteristics



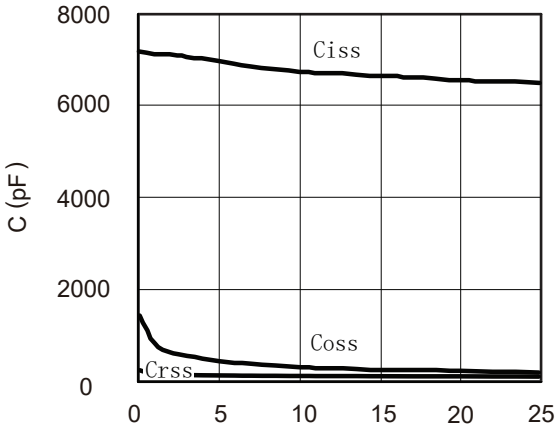
transfer characteristics



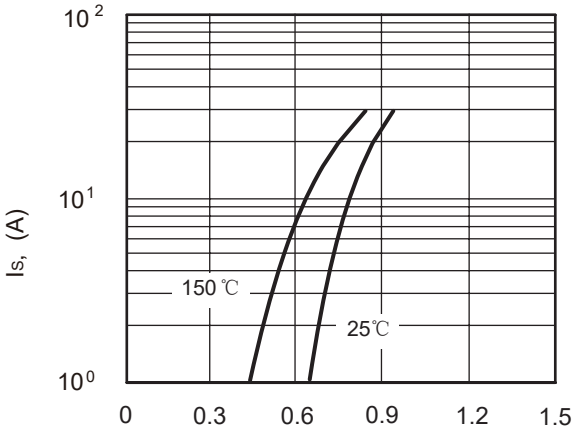
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics