CMD20N06L/CMU20N06L

60V N-Channel MOSFET

General Description

The 20N06L combines advanced trench MOSFET technology .This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance.
These devices are well suited for low voltage applications such as automotive, DC/DC converters, and high efficiency switching for power management in portable and battery operated products.

Product Summary

BVDSS	RDSON	ID
60V	46mΩ	20A

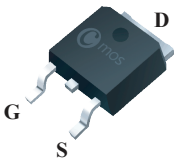
Applications

- Power Supplies
- Converters
- Power Motor Controls
- Bridge Circuits

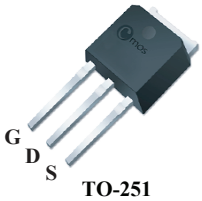
Features

- 20A,60V.RDS(ON)=0.046Ω@VGS=10V
- Fast switching
- Low Threshold Drive

TO-252/251 Pin Configuration



TO-252
(CMD20N06L)



TO-251
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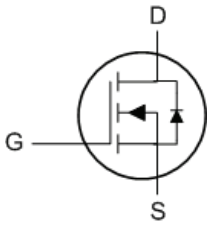

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current	20	A
I_D@T_A=100°C	Continuous Drain Current	10	A
I_{DM}	Pulsed Drain Current	60	A
EAS	Single Pulse Avalanche Energy (Note 1)	170	mJ
P_D@T_A=25°C	Total Power Dissipation	60	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Note 2)	---	80	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.5	°C/W

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	60	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=250μA	---	0.07	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=10A (Note 3)	---	---	46	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , V_{GS}=0V	---	---	1	uA
		V_{DS}=60V , V_{GS}=0V , T_J=150 ℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=7V , I_D=6A	---	13	---	ms
Q_g	Total Gate Charge	V_{DS}=48V , V_{GS}=10V , I_D=20A (Note 3)	---	21	---	nC
Q_{gs}	Gate-Source Charge		---	5.6	---	
Q_{gd}	Gate-Drain Charge		---	7.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GS}=10V , R_G=9.1Ω I_D=20A (Note 3)	---	10	---	ns
T_r	Rise Time		---	62	---	
$T_{d(off)}$	Turn-Off Delay Time		---	27	---	
T_f	Fall Time		---	40	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	720	---	pF
C_{oss}	Output Capacitance		---	205	---	
C_{rss}	Reverse Transfer Capacitance		---	48	---	

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		---	---	60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A (Note 3)	---	---	1.2	V

Notes :
1. VDD = 25 V, VGS = 10 V,L = 1.0 mH, IL(pk) = 18.4 A, VDS = 60 V, Starting TJ = 25℃.
2. When surface mounted to an FR4 board using the minimum recommended pad size.
3. Pulse Test: Pulse Width ≤ 300 us, Duty Cycle ≤ 2%.