

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.

Features

- 20A, 60V. $R_{DS(ON)}=0.046\Omega@V_{GS}=10V$
- Fast switching
- Low Threshold Drive

Absolute Maximum Ratings

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

Thermal Data

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

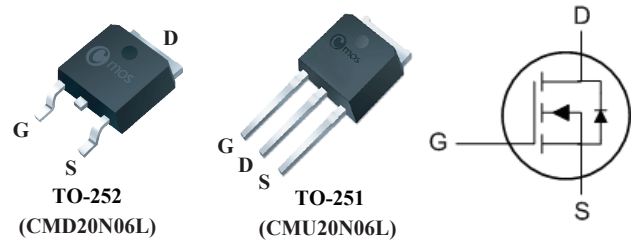
Product Summary

BVDSS	RDSON	ID
60V	46m Ω	20A

Applications

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

TO-252/251 Pin Configuration



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	---	---	V
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25 °C, I _D =250μA	---	0.07	---	V/°C
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	μA
		V _{DS} =60V, V _{GS} =0V, T _J =150 °C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	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 :

- V_{DD} = 25 V, V_{GS} = 10 V, L = 1.0 mH, I_{L(pk)} = 18.4 A, V_{DS} = 60 V, Starting T_J = 25 °C.
- When surface mounted to an FR4 board using the minimum recommended pad size.
- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

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