CMD5N20A / CMU5N20A

200V N-Channel MOSFET

General Description

The 5N20A uses advanced trench technology and design to provides low on-state resistance, high switching performance and excellent quality. These devices are well suited for SMPS, HID and general purpose applications.

Product Summary

BVDSS	RDSON	ID
200V	530mΩ	6A

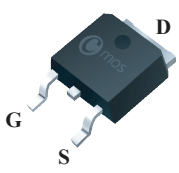
Applications

- LED TV
- Switch mode power supplies (SMPS)
- DC-DC Converters

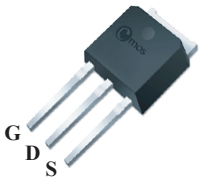
Features

- Simple Drive Requirement
- Low On-Resistance
- RoHS Compliant

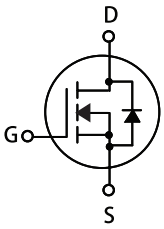
TO-252/251 Pin Configuration



TO-252
(CMD5N20A)



TO-251
(CMU5N20A)



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current	6	A
I_D@T_C=100°C	Continuous Drain Current	4	A
I_{DM}	Pulsed Drain Current [1]	24	A
EAS	Single Pulse Avalanche Energy[2]	10	mJ
P_D@T_C=25°C	Total Power Dissipation	45	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	3.12	°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=250uA	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=2.5A	---	450	530	mΩ
		V_{GS}=4.5V , I_D=2.5A	---	460	540	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}= 200V , V_{GS}=0V	---	---	25	uA
		V_{DS}=160V , V_{GS}=0V , T_J=125℃	---	---	250	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=20V, I_D=2.5A	---	3	---	S
Q_g	Total Gate Charge	V_{DS}=160V, V_{GS}=10V, I_D=1A	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	3	---	
Q_{gd}	Gate-Drain Charge		---	5.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=100V, I_D=1A V_{GS}=10V , R_G=3Ω	---	22	---	ns
T_r	Rise Time		---	35	---	
$T_{d(off)}$	Turn-Off Delay Time		---	45	---	
T_f	Fall Time		---	11	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	700	---	pF
C_{oss}	Output Capacitance		---	25	---	
C_{rss}	Reverse Transfer Capacitance		---	12	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	6	A
I_{SM}	Pulsed Source Current		---	---	24	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=5A , T_J=25℃	---	0.85	1.2	V

Note :

1. Repetitive rating: pulse width limited by maximum junction temperature.
2. The EAS data shows Max. rating . The test condition is V_{DD}=50V , V_{GS}=10V , L=8mH , I_D=1.6A