CMD15N50B/CMU15N50B

500V N-Channel MOSFET

General Description

The 15N50B have been fabricated using an advanced high voltage MOSFET process that is designed to deliver high levels of performance and robustness in popular AC-DC applications.

Product Summary

BVDSS	RDSON	ID
500V	0.375Ω	15A

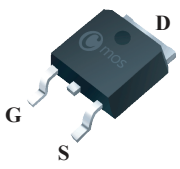
Applications

- DC-DC Converters
- Power switching application

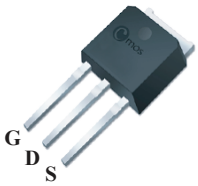
Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

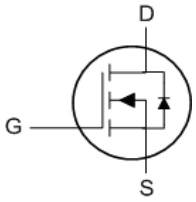
TO-252/251 Pin Configuration



TO-252



TO-251



Type	Package	Marking
CMD15N50B	TO-252	CMD15N50B
CMU15N50B	TO-251	CMU15N50B

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current	15	A
I_D@T_C=100℃	Continuous Drain Current	9.5	A
I_{DM}	Pulsed Drain Current[1]	45	A
EAS	Single Pulse Avalanche Energy[2]	325	mJ
P_D@T_C=25℃	Total Power Dissipation	90	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	1.4	℃/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	500	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=7.5A	---	---	0.375	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=500V, V_{GS}=0V	---	---	1	uA
		V_{DS}=400V, V_{GS}=0V, T_J=125℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=1.6A	---	8	---	S
Q_g	Total Gate Charge	I_D=15A V_{DS}=250V V_{GS}=10V (Note 3, 4)	---	48	---	nC
Q_{gs}	Gate-Source Charge		---	12	---	
Q_{gd}	Gate-Drain Charge		---	20	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=250V I_D=15A R_G=6.1Ω V_{GS}=10V (Note 3, 4)	---	12	---	ns
T_r	Rise Time		---	30	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	40	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	1300	---	pF
C_{oss}	Output Capacitance		---	240	---	
C_{rss}	Reverse Transfer Capacitance		---	25	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	15	A
I_{SM}	Pulsed Source Current		---	---	45	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=15 A, T_J=25℃	---	---	1.2	V

Note :

1.Repetitive Rating: Pulse width limited by maximum junction temperature

2.L =10mH , I_{AS} =8A, V_{DD} =100V,Starting T_J = 25℃

3.Pulse Test: Pulse width≤300μs, Duty Cycle≤2%

4.Essentially Independent of Operating Temperature Typical Characteristics