CMD40N04/CMU40N04

40V N-Channel MOSFET

General Description

This N-Channel MOSFET has been produced using advanced trench technology to deliver low RDS(on) and optimized BVDSS capability to offer superior performance benefit in the application.

Product Summary

BVDSS	RDSON	ID
40V	20mΩ	40A

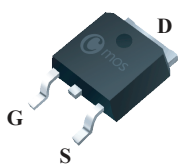
Applications

- Inverters
- Power Supplies

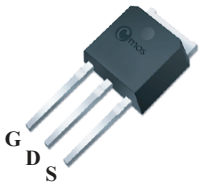
Features

- Max $r_{DS(on)}$ =20 mΩ at V_{GS} = 10V
- Max $r_{DS(on)}$ = 35m Ωat V_{GS} = 4.5V
- Fast Switching
- RoHS Compliant

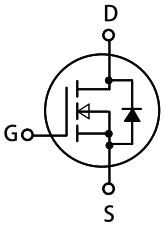
TO-252/251 Pin Configuration



TO-252



TO-251



Type	Package	Marking
CMD40N04	TO-252	CMD40N04
CMU40N04	TO-251	CMU40N04

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	40	A
I_D@T_C=100℃		28	A
I_{DM}	Pulsed Drain Current	120	A
E_{AS}	Drain-Source Avalanche Energy [1]	84	mJ
P_D@T_C=25℃	Total Power Dissipation	45	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.1	℃/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	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance [2]	V_{GS}=10V , I_D=18A	---	---	20	mΩ
		V_{GS}=4.5V , I_D=15A	---	---	35	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250 uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=32V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance [2]	V_{DS}=5V, I_D=18A	---	18	---	S
Q_g	Total Gate Charge	I_D=10A V_{DS}=10V V_{GS}=10V	---	40	---	nC
Q_{gs}	Gate-Source Charge		---	15	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V I_D=9A R_{GEN}=2.7Ω V_{GS}=10V	---	20	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	60	---	
T_f	Fall Time		---	10	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	850	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	40	A
I_{SM}	Pulsed Source Current		---	---	120	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=18A	---	---	1.2	V

Notes:

1.Starting T_J = 25℃, L=1mH, I_{AS} =13A, V_{DD} = 20V, V_{GS} = 10V.

2.Pulse Test: Pulse Width < 300μs, Duty cycle < 2.0%.

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