

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.

Features

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

Absolute Maximum Ratings

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

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.1	$^\circ\text{C}/\text{W}$

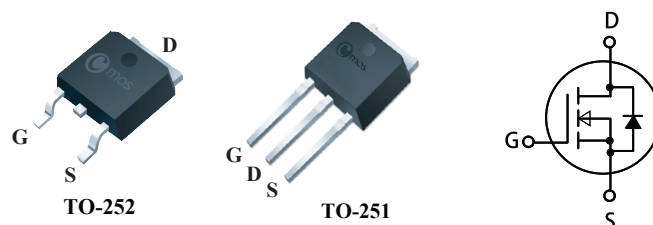
Product Summary

BVDSS	RDSON	ID
40V	20m Ω	40A

Applications

- Inverters
- Power Supplies

TO-252/251 Pin Configuration



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

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=18A$	---	---	20	m Ω
		$V_{GS}=4.5V$, $I_D=15A$	---	---	35	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=32V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance ²	$V_{DS}=5V$, $I_D=18A$	---	18	---	S
Q_g	Total Gate Charge	$I_D=10A$	---	40	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=10V$	---	15	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	10	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=10V$	---	20	---	ns
T_r	Rise Time	$I_D=9A$	---	15	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=2.7\Omega$	---	60	---	
T_f	Fall Time	$V_{GS}=10V$	---	10	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	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 $T_J = 25^{\circ}\text{C}$, $L=1\text{mH}$, $I_{AS} \approx 13A$, $V_{DD} = 20V$, $V_{GS} = 10V$.

2.Pulse Test: Pulse Width $< 300\mu s$, Duty cycle $< 2.0\%$.

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Cmos reserves the right to improve product design ,functions and reliability without notice.