CMD9N40B/CMU9N40B

400V N-Channel MOSFET

General Description

These N-Channel enhancement mode power field effect transistors are produced using Cmos's proprietary,planar stripe, DMOS technology.These devices are well suited for high efficiency switched mode power supplies,electronic lamp ballasts based on half bridge topology.

Product Summary

BVDSS	RDSON	ID
400V	0.92Ω	8A

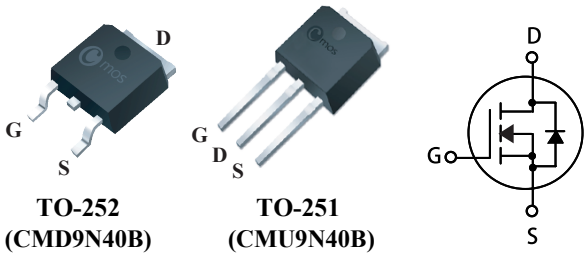
Applications

- Power Supply
- PFC

Features

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

TO-252/251 Pin Configuration



TO-252 (CMD9N40B)

TO-251 (CMU9N40B)

Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	400	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current	8	A
I_D@T_C=100℃	Continuous Drain Current	5	A
I_{DM}	Pulsed Drain Current	32	A
EAS	Single Pulse Avalanche Energy [1]	324	mJ
P_D@T_C=25℃	Total Power Dissipation	75	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.67	℃/W

Electrical Characteristic（Tc=25℃ unless otherwise noted）

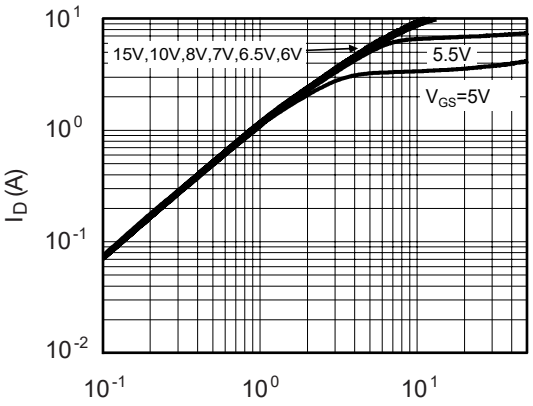
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	400	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 400 V, V_{GS} = 0 V	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = +30V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 4.5A	--	0.81	0.92	Ω
g_{FS}	Forward Transconductance	V_{DS} = 20 V, I_D = 4.5A	--	6	--	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	970	--	pF
C_{oss}	Output Capacitance		--	70	--	pF
C_{rss}	Reverse Transfer Capacitance		--	3	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 200 V, I_D = 5.5 A, R_G = 25 Ω	--	58	--	ns
t_r	Turn-On Rise Time		--	38	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	95	--	ns
t_f	Turn-Off Fall Time		--	30	--	ns
Q_g	Total Gate Charge	V_{DS} = 320 V, I_D = 5.5A, V_{GS} = 10 V	--	14	--	nC
Q_{gs}	Gate-Source Charge		--	4.7	--	nC
Q_{gd}	Gate-Drain Charge		--	2.3	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	8	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	32	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 9A	--	0.9	1.4	V

Note :

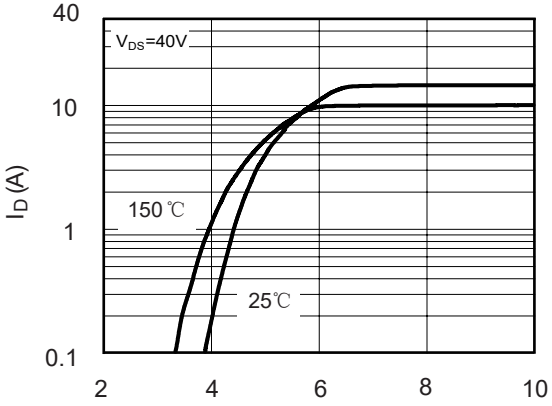
1.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=8mH,I_{AS}=9A.

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Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

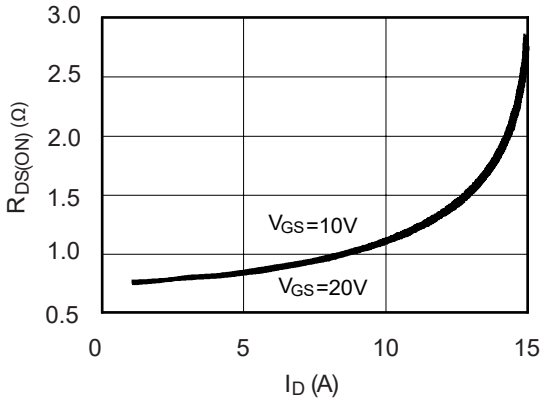
Typical Characteristics



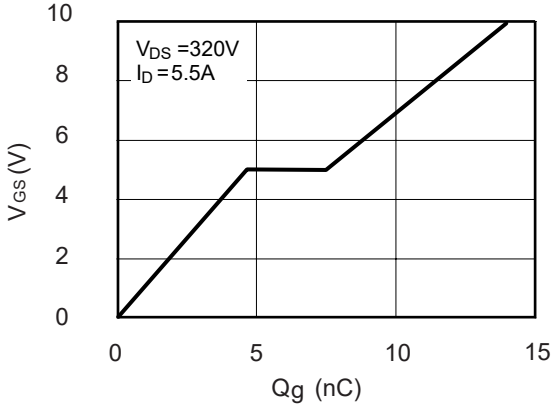
On-Region Characteristics



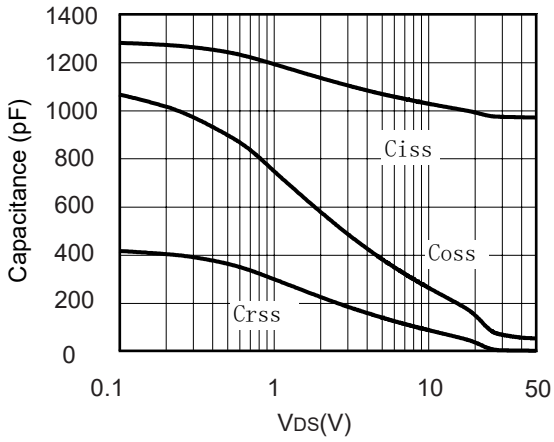
Transfer Characteristics



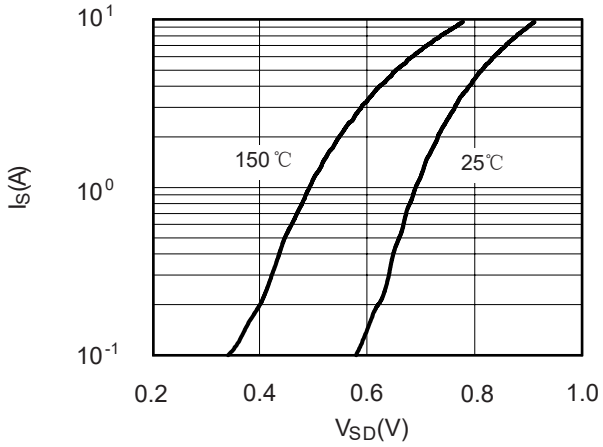
On-Resistance vs. Drain Current



Gate-Charge Characteristics



Break Down vs. Junction Temperature



Body-Diode Characteristics