

CMD3N40A/CMU3N40A

400V N-Channel MOSFET

General Description

The 3N40A 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.

Features

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

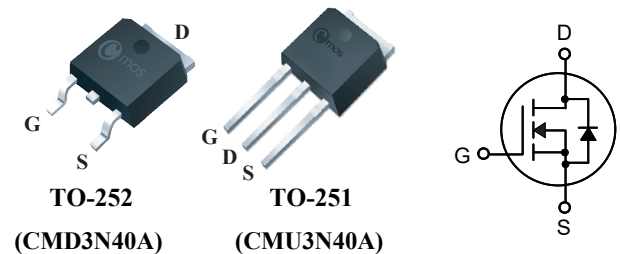
Product Summary

BVDSS	RDSON	ID
400V	3.1Ω	2.6A

Applications

- Power Supply
- PFC

TO-252/251 Pin Configuration



Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-Source Voltage	400	V
I _D	Drain Current - Continuous (T _C = 25°C)	2.6	A
	- Continuous (T _C = 100°C)	1.5	A
I _{DM}	Drain Current - Pulsed (Note 1)	6	A
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulsed Avalanche Energy (Note 2)	40	mJ
P _D	Power Dissipation (T _C = 25°C)	50	W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T _L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Rating	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max. (Note 3,4)	2.5	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max. (Note 5,6)	55	°C/W

Electrical Characteristic (T_c=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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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} = 30 V, 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	3	--	5	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 1A	--	--	3.1	Ω
g _{FS}	Forward Transconductance	V _{DS} = 20 V, I _D = 1.5 A	--	2	--	S

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	185	--	pF
C _{oss}	Output Capacitance		--	25	--	pF
C _{rss}	Reverse Transfer Capacitance		--	2	--	pF

Switching Characteristics

t _{d(on)}	Turn-On Delay Time	V _{DS} = 200 V, I _D = 2.6 A, R _G = 25 Ω, V _{GS} =10V	--	14	--	ns
t _r	Turn-On Rise Time		--	10	--	ns
t _{d(off)}	Turn-Off Delay Time		--	20	--	ns
t _f	Turn-Off Fall Time		--	8	--	ns
Q _g	Total Gate Charge	V _{DS} = 320 V, I _D = 2.6 A, V _{GS} = 10 V	--	4.2	--	nC
Q _{gs}	Gate-Source Charge		--	1.7	--	nC
Q _{gd}	Gate-Drain Charge		--	1	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	2.6	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	6	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 1 A	--	--	1.2	V
t _{rr}	Reverse Recovery Time	V _{DS} = 100 V, I _F = 2.6 A, dI _F / dt = 100 A/μs	--	140	--	ns
Q _{rr}	Reverse Recovery Charge		--	0.64	--	μC

Notes:

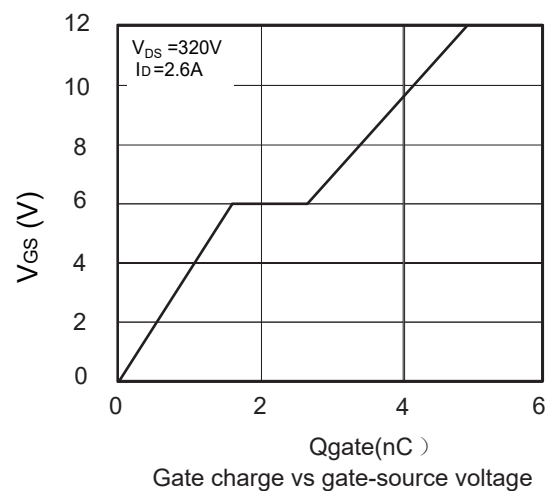
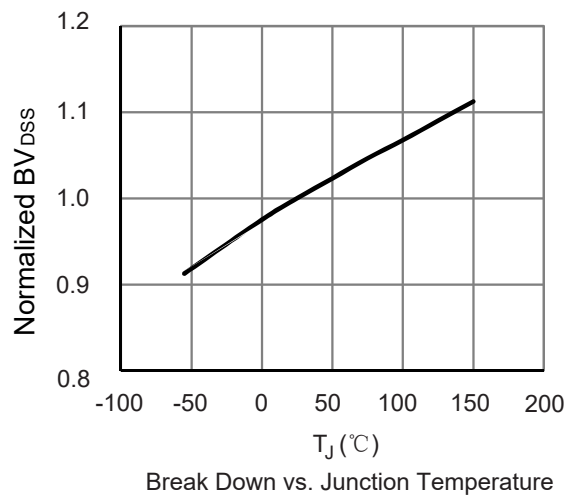
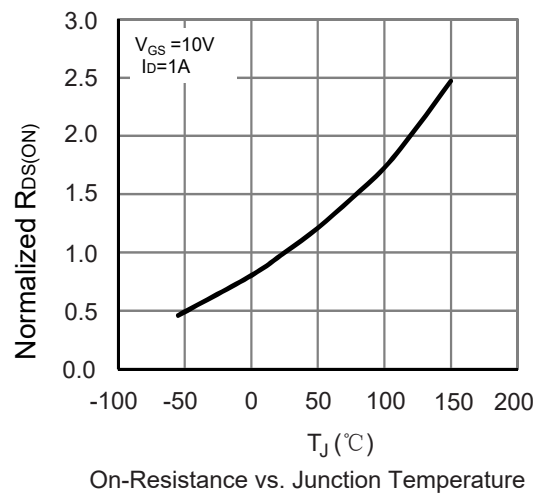
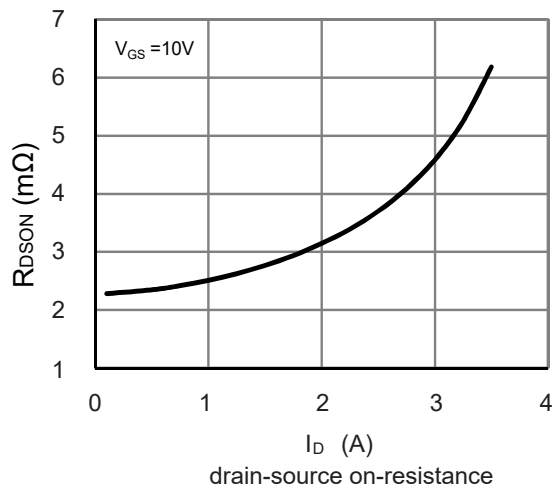
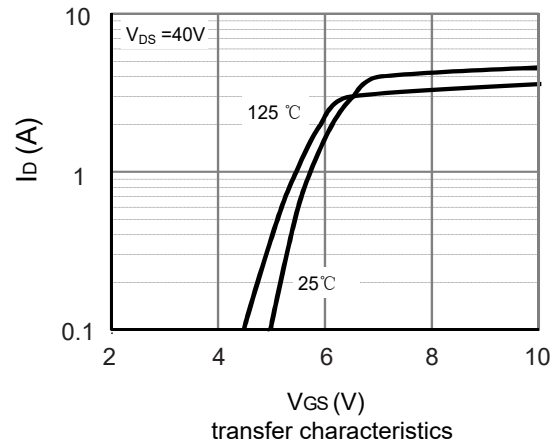
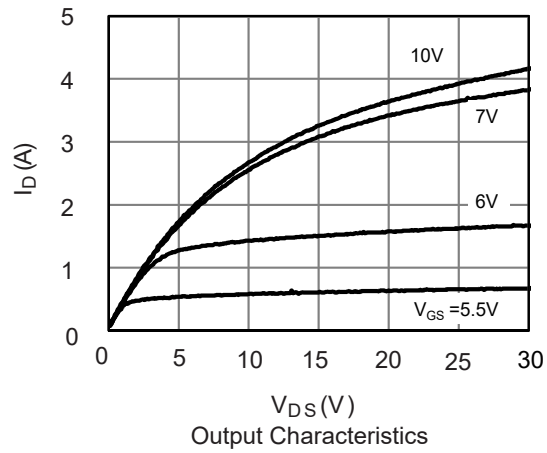
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L=12mH , I_{AS} =2.6A , V_{DD}=50V , Starting T_J=25 °C
3. The R_{θJA} is the sum of the thermal impedance from junction to case R_{θJC} and case to ambient.
4. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of T_{J(MAX)}=150 °C.
5. The value of R_{θJA} is measured with the device in a still air environment with T_A=25 °C.
6. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

This product has been designed and qualified for the consumer market.

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

Typical Characteristics



Typical Characteristics

