

CMD052N10/CMU052N10

100V, 4.7mΩ typ., 100A N-Channel MOSFET

General Description

The 052N10 uses advanced SGT technology to provide excellent $R_{DS(ON)}$. This device is well suited for high efficiency fast switching applications.

Features

- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

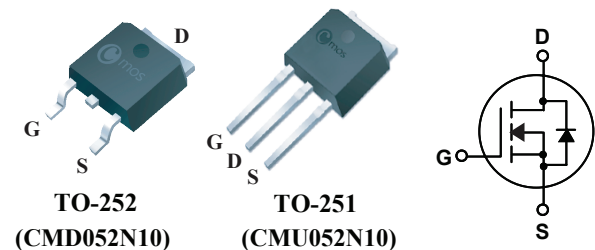
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
100V	5.2mΩ	100A

Applications

- Motor Drivers
- Switching applications

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	100	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	70	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy ¹	272	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	120	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(min. footprint)	---	54	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.04	°C/W

Electrical Characteristics(T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =28A	---	4.7	5.2	mΩ
		V _{GS} =4.5V , I _D =25A	---	5.8	7	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	---	3.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V , V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =20A	---	36	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.2	---	Ω
Q _g	Total Gate Charge	I _D =40A V _{DS} = 50V V _{GS} = 10V (Note 2)	---	60	---	nC
Q _{gs}	Gate-Source Charge		---	16	---	
Q _{gd}	Gate-Drain Charge		---	11	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} = 50V V _{GS} = 10V R _{G_ext} = 3Ω (Note 2)	---	14	---	ns
T _r	Rise Time		---	42	---	
T _{d(off)}	Turn-Off Delay Time		---	46	---	
T _f	Fall Time		---	19	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	3600	---	pF
C _{oss}	Output Capacitance		---	1600	---	
C _{rss}	Reverse Transfer Capacitance		---	100	---	

Diode Characteristics

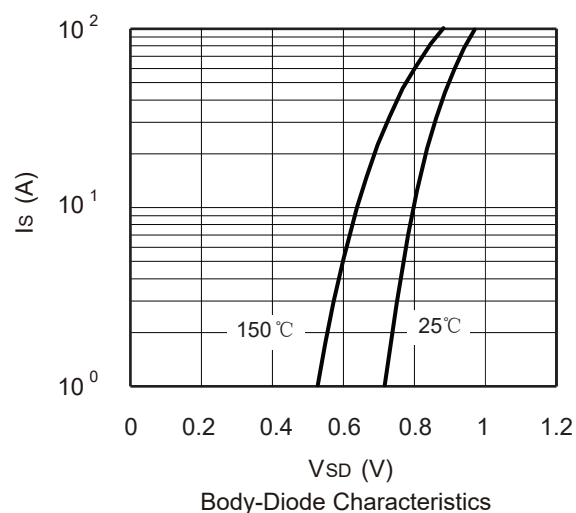
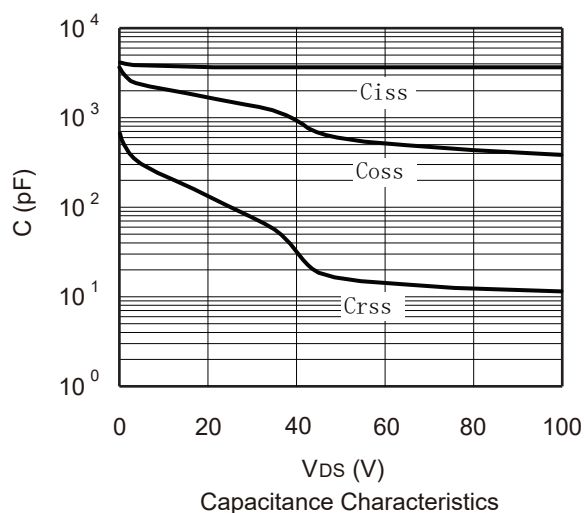
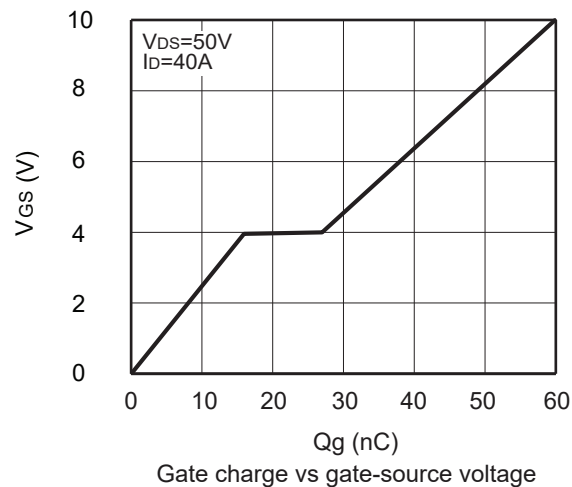
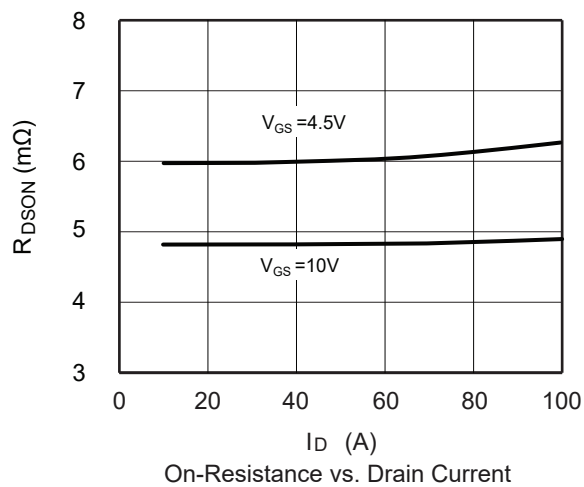
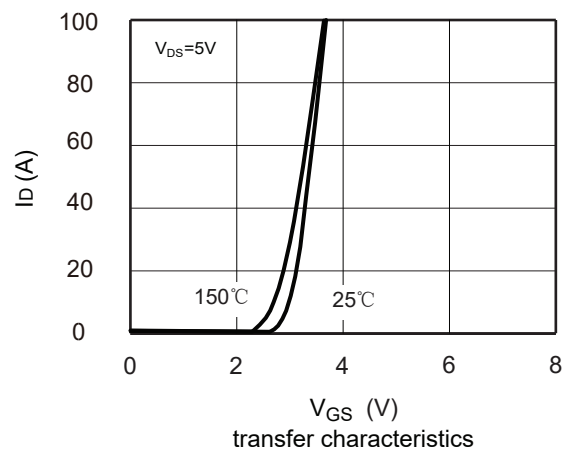
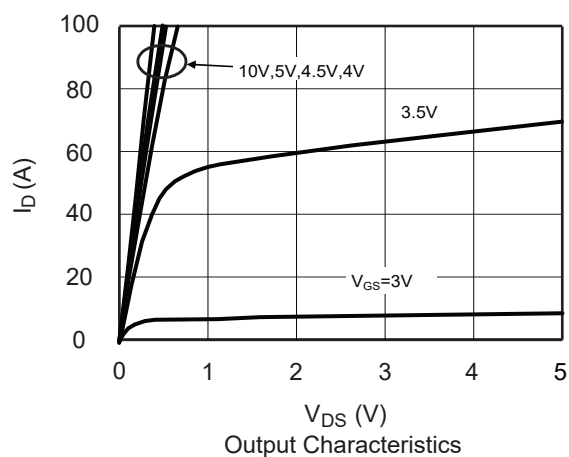
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	100	A
I _{SM}	Pulsed Source Current		---	---	400	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =25A , T _J =25°C	---	0.85	1.4	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	59	---	ns
Q _{rr}	Reverse Recovery Charge	I _F = 40A	---	100	---	nC

Note :

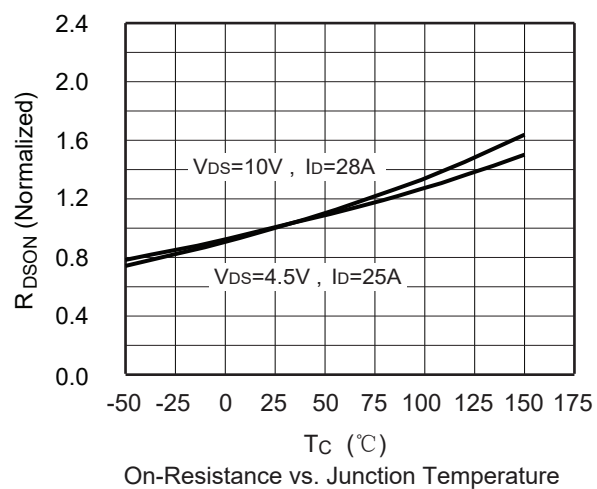
- 1.The EAS data shows Max. rating . The test condition is V_{DD}=50V , V_{GS}=10V , L=0.5mH , I_{AS}=33A.
- 2.Guaranteed by design, not subject to production testing.

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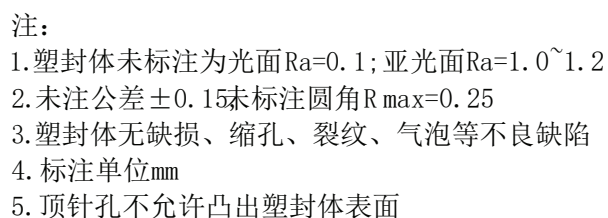
Typical Characteristics



Characteristics



Unit :mm



Package Dimension

TO-251A

Unit :mm

