

CMD023N06/CMU023N06

60V, 1.9mΩ typ., 160A N-Channel MOSFET

General Description

The 023N06 uses advanced SGT technology to provide excellent RDS(ON). This is suitable device for High Frequency Switching and Synchronous Rectification.

Features

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

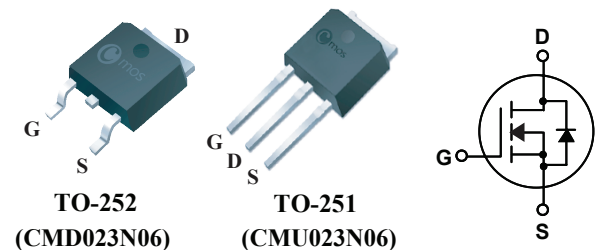
Product Summary

BVDSS	RDS(on) max.	ID
60V	2.2mΩ	160A

Applications

- High Frequency Switching and Synchronous Rectification

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	160	A
I _D @T _C =100°C	Continuous Drain Current	112	A
I _{DM}	Pulsed Drain Current	640	A
EAS	Single Pulse Avalanche Energy ¹	882	mJ
P _D @T _C =25°C	Total Power Dissipation	160	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 _{θJA}	Thermal Resistance Junction-ambient(≤10 s)	---	19	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.78	°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	60	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =28A	---	1.9	2.2	mΩ
		V _{GS} =4.5V, I _D =25A	---	2.4	3.5	
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} =60V, 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	---	38	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	0.8	---	Ω
Q _g	Total Gate Charge	I _D =50A V _{DS} =30V V _{GS} =10V (Note 2)	---	110	---	nC
Q _{gs}	Gate-Source Charge		---	24.5	---	
Q _{gd}	Gate-Drain Charge		---	21	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =30V V _{GS} =10V R _{G_ext} =2.7Ω, I _D =50A (Note 2)	---	17	---	ns
T _r	Rise Time		---	61	---	
T _{d(off)}	Turn-Off Delay Time		---	80	---	
T _f	Fall Time		---	50	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	6150	---	pF
C _{oss}	Output Capacitance		---	3300	---	
C _{rss}	Reverse Transfer Capacitance		---	150	---	

Diode Characteristics

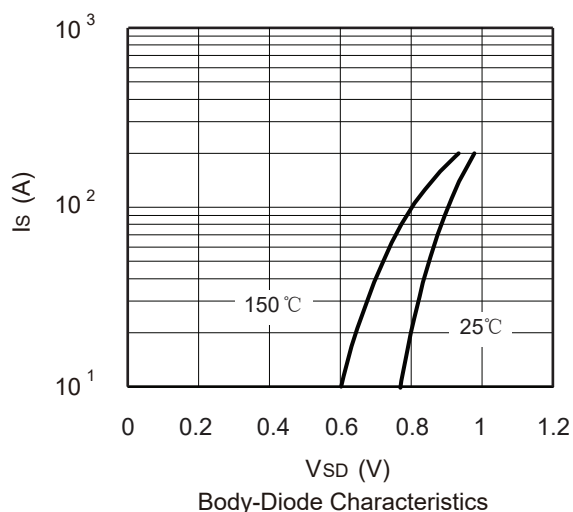
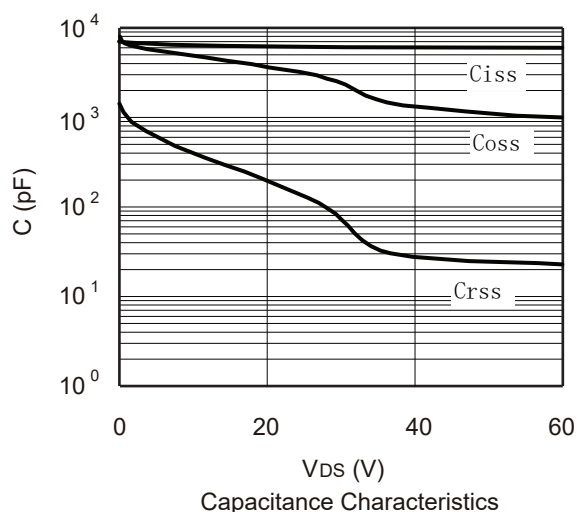
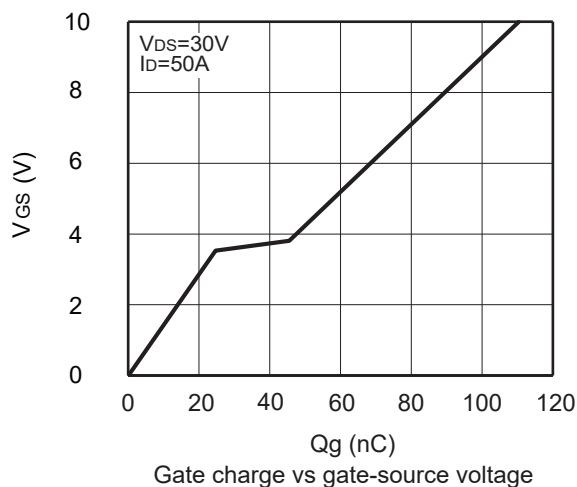
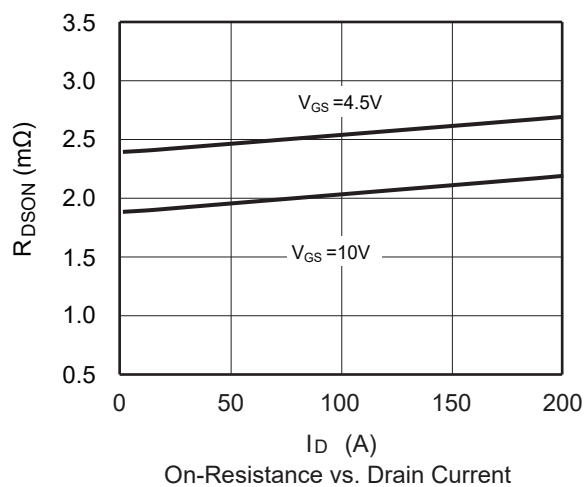
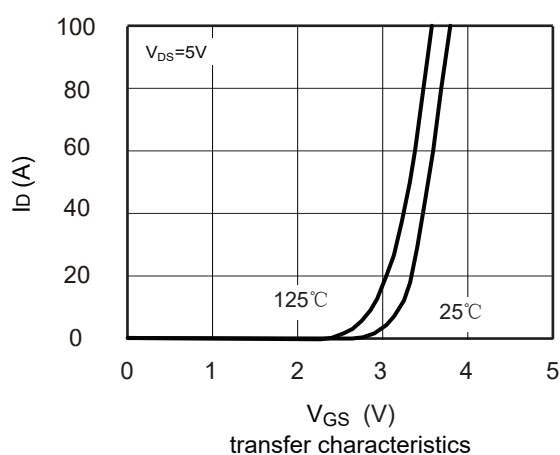
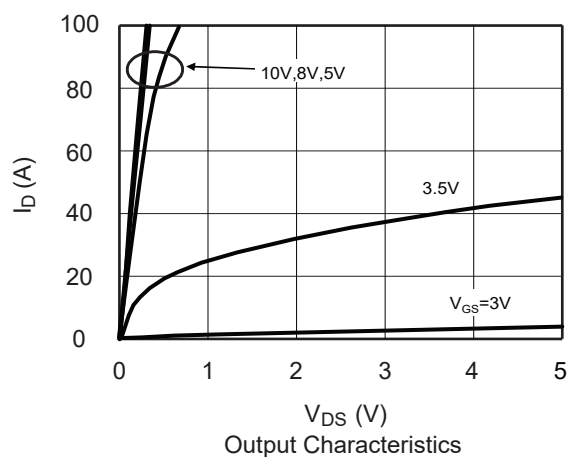
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	160	A
I _{SM}	Pulsed Source Current		---	---	640	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =28A, T _J =25°C	---	0.81	1.4	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs I _F = 50A	---	72	---	ns
Q _{rr}	Reverse Recovery Charge		---	104	---	nC

Note :

- 1.The EAS data shows Max. rating . The test condition is V_{DD}=40V, V_{GS}=10V, L=1mH, I_{AS}=42A.
- 2.Guaranteed by design, not subject to production testing.

This product has been designed and qualified for the consumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

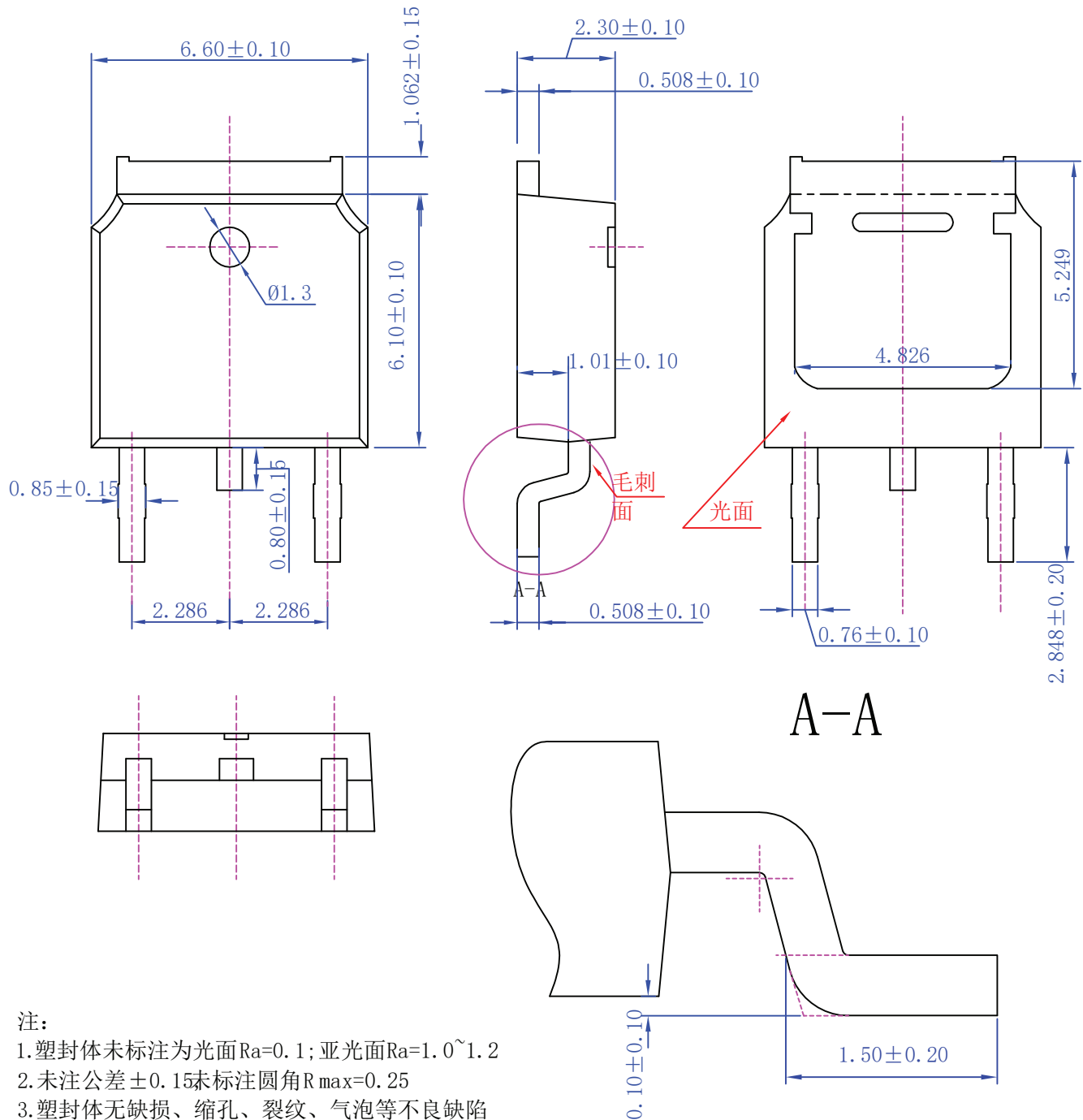
Typical Characteristics



Package Dimension

TO-252

Unit :mm



注:

1. 塑封体未标注为光面 $R_a=0.1$; 亚光面 $R_a=1.0 \sim 1.2$
2. 未注公差 ± 0.15 未标注圆角 $R_{max}=0.25$
3. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
4. 标注单位mm
5. 顶针孔不允许凸出塑封体表面

Package Dimension

TO-251A

Unit :mm

