CMD042N04/CMU042N04

40V, 3.9mΩ typ., 100A N-Channel MOSFET

General Description

The 042N04 uses advanced SGT technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a Battery protection or in other Switching application.

Product Summary

BVDSS	RDSON	ID
40V	4.4mΩ	100A

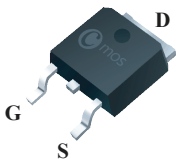
Applications

- Load Switch
- Networking DC-DC Power System
- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA

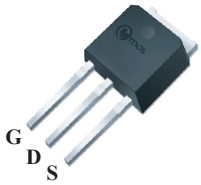
Features

- Lower On-resistance
- 100% avalanche tested
- RoHS Compliant

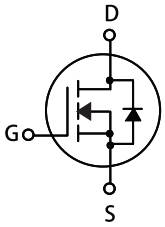
TO-252/251 Pin Configuration



TO-252
CMD042N04



TO-251
CMU042N04



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℃	Continuous Drain Current	100	A
I_D@T_C=100℃	Continuous Drain Current	70	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy [1]	210	mJ
P_D@T_C=25℃	Total Power Dissipation	100	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.25	℃/W

Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	3.9	4.4	mΩ
		V_{GS}=4.5V , I_D=10A	---	5	6.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D =20A	---	28	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	---	Ω
Q_g	Total Gate Charge	V_{DD} =20V , I_D=50A V_{GS}=4.5V	---	16	---	nC
Q_{gs}	Gate-Source Charge		---	6	---	
Q_{gd}	Gate-Drain Charge		---	4.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=20V , I_D=50A , R_L=0.4Ω R_G =10Ω , V_{GS}=10V	---	13	---	ns
T_r	Rise Time		---	7.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	65	---	
T_f	Fall Time		---	10	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	1800	---	pF
C_{oss}	Output Capacitance		---	370	---	
C_{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

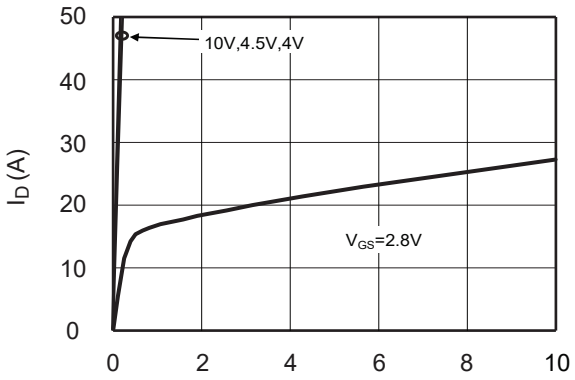
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	400	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A	---	0.83	1.2	V

Note :

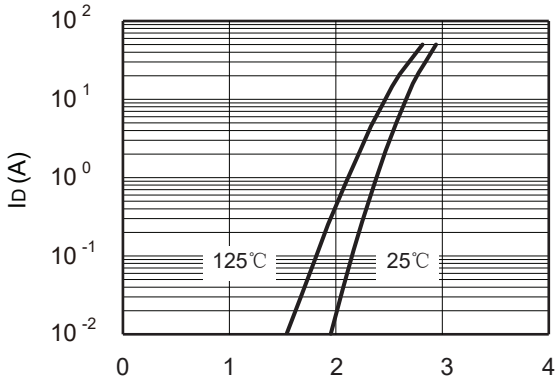
1.The EAS data shows Max. rating .The test condition is V_{DS}=30V , V_{GS}=10V , L=0.5mH , I_{AS}=29A.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

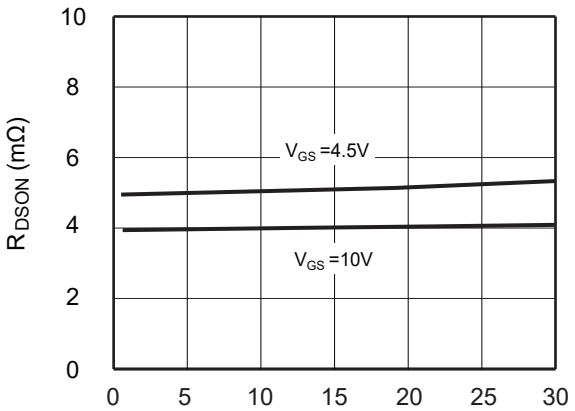
Typical Characteristics



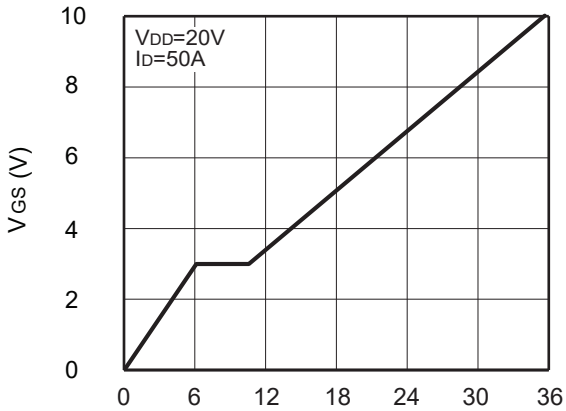
Output Characteristics



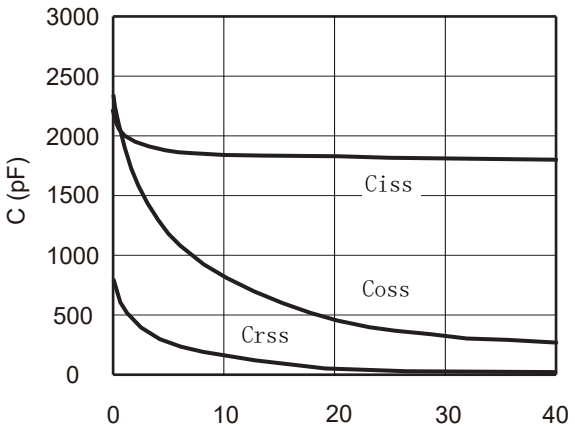
transfer characteristics



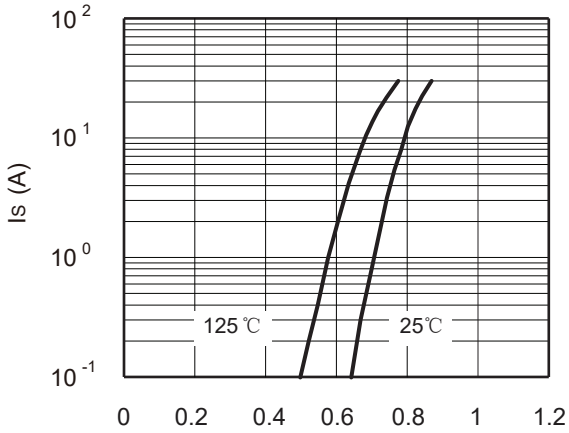
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



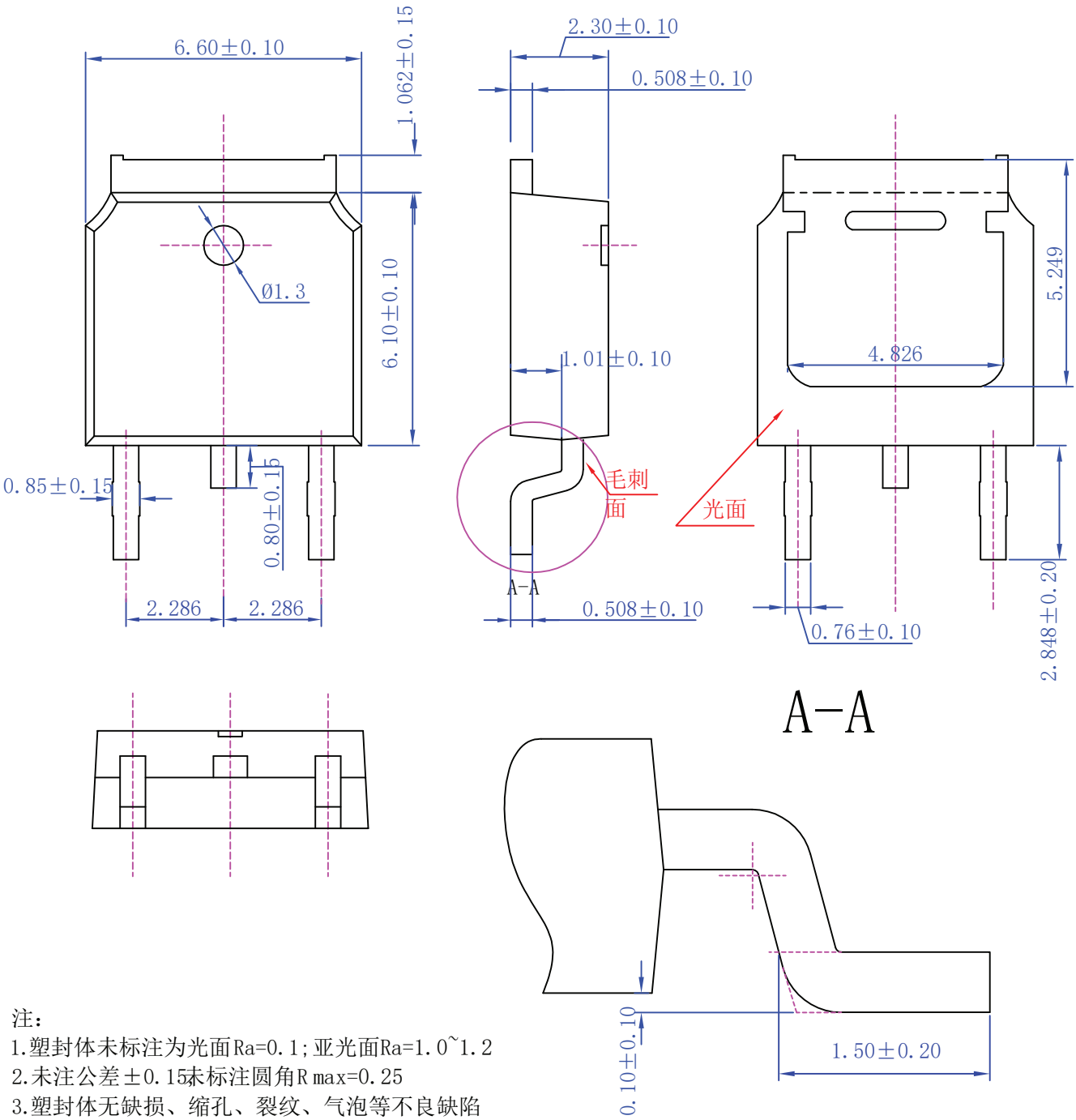
Capacitance Characteristics



Body-Diode Characteristics

Package Dimension

TO-252 Unit :mm



注：
1.塑封体未标注为光面Ra=0.1;亚光面Ra=1.0~1.2
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

