

CMSC040N04L

40V, 3.5mΩ typ., 70A N-Channel MOSFET

General Description

The CMSC040N04L uses advanced SGT technology to provide excellent RDS(ON). This is suitable device for DC/DC Converter and general purpose applications.

Features

- Low On-Resistance
- Simple Drive Requirements
- Surface Mount Package
- RoHS Compliant

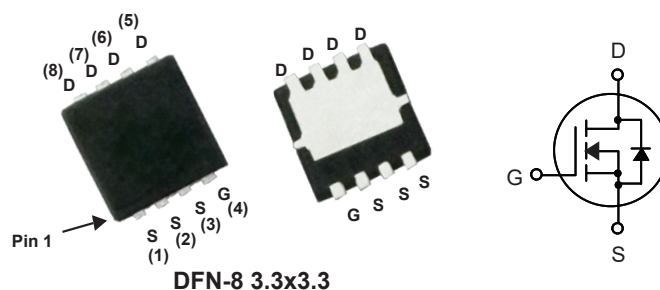
Product Summary

BVDSS	RDS(on) max.	ID
40V	4mΩ	70A

Applications

- DC-DC Converters
- Notebook Battery Management

DFN-8 3.3x3.3 Pin Configuration



Type	Package	Marking
CMSC040N04L	DFN-8 3.3x3.3	040N04L

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°C	Continuous Drain Current	70	A
I _D @T _C =100°C	Continuous Drain Current	49	A
I _{DM}	Pulsed Drain Current	280	A
EAS	Single Pulse Avalanche Energy ¹	210	mJ
P _D @T _C =25°C	Total Power Dissipation	40	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	---	60	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	3.13	°C/W

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	3.5	4	mΩ
		$V_{GS}=4.5V$, $I_D=15A$	---	4.4	6	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=20A$	---	26	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.7	---	Ω
Q_g	Total Gate Charge	$I_D=50A$	---	16	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=20V$	---	6	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=4.5V$ (Note 2)	---	4.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V$, $I_D=50A$	---	13	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	7.5	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=10\Omega$	---	65	---	
T_f	Fall Time	$R_L=0.4\Omega$ (Note 2)	---	10	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	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	---	---	70	A
I_{SM}	Pulsed Source Current		---	---	280	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$, $T_J=25^{\circ}\text{C}$	---	0.83	1.2	V

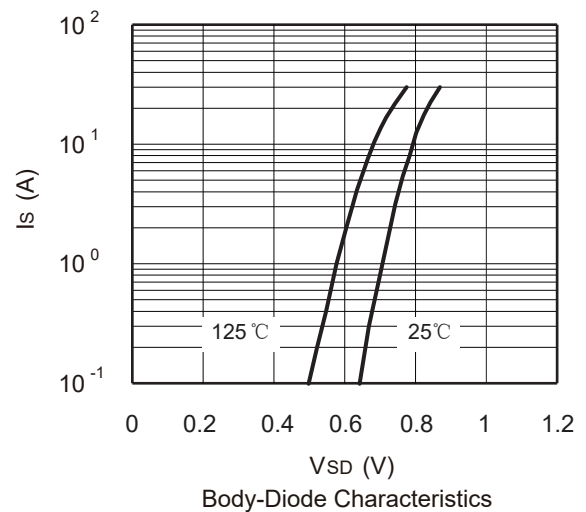
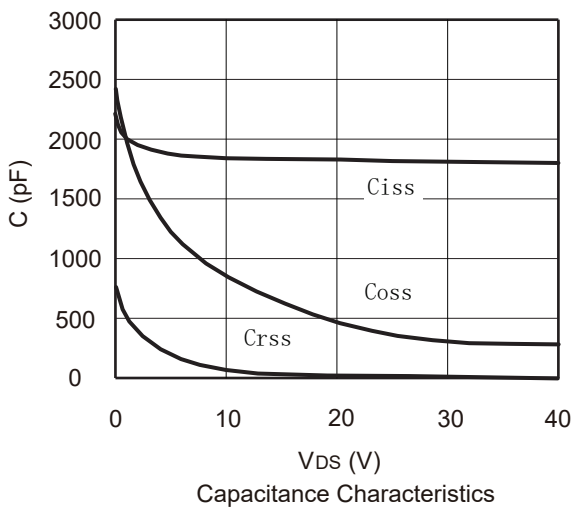
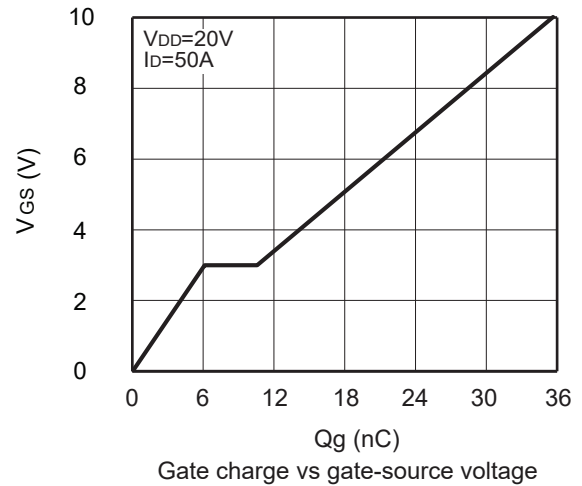
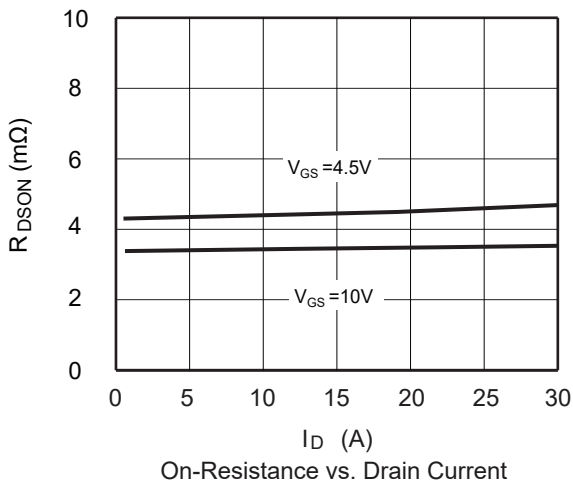
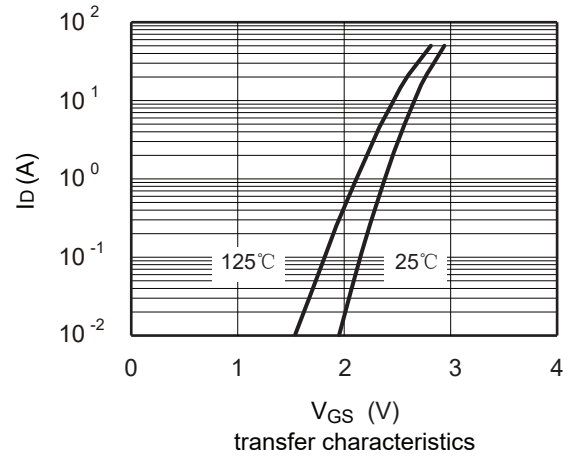
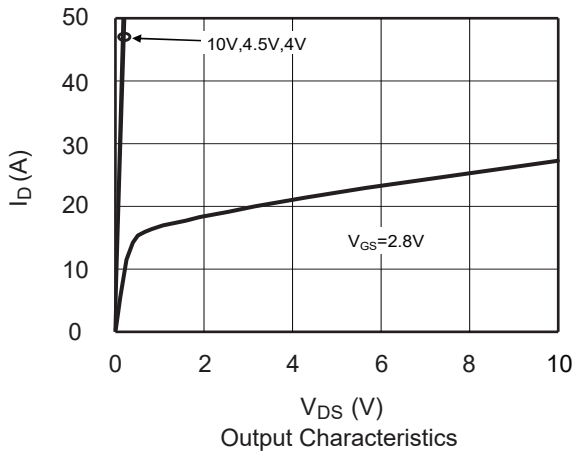
Note :

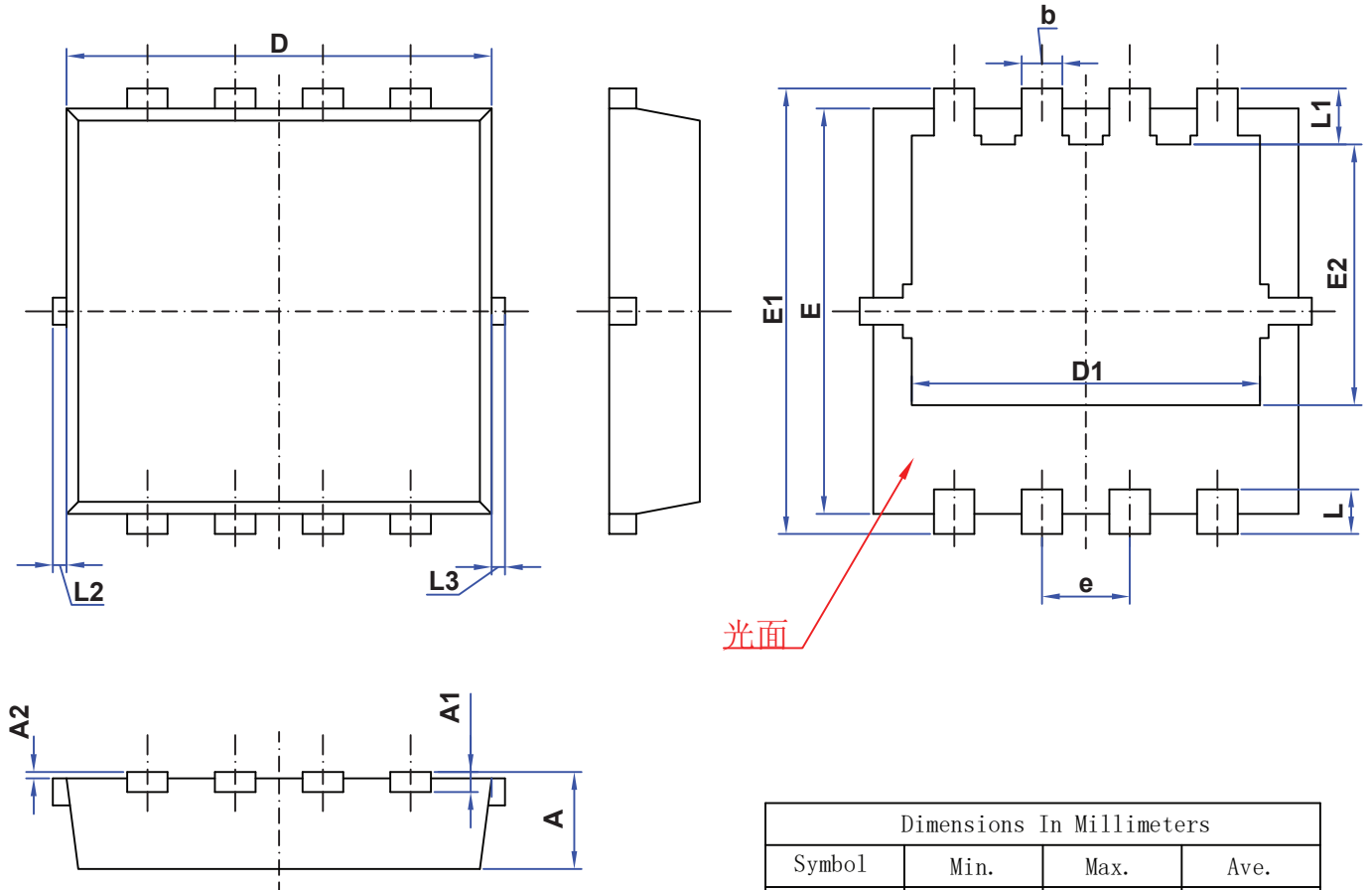
- 1.The EAS data shows Max. rating . The test condition is $V_{DD}=30V$, $V_{GS}=10V$, $L=1\text{mH}$, $I_{AS}=20.5A$.
- 2.Guaranteed by design, not subject to production testing.

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
DFN-8 3.3x3.3 Unit :mm


注:

1. 未注公差 ± 0.10 ,
2. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
3. 标注单位mm

Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.700	0.900	0.800
A1	0.100	0.200	0.150
A2	—	0.050	—
D	3.000	3.200	3.100
D1	2.350	2.550	2.450
E	3.000	3.200	3.100
E1	3.200	3.600	3.400
E2	1.635	1.835	1.735
b	0.200	0.400	0.300
e	0.550	0.750	0.650
L	0.250	0.650	0.450
L1	0.345	0.745	0.545
L2	0~0.100		
L3	0~0.100		