CMSC075N04

40V, 6.5mΩ typ., 50A N-Channel MOSFET

General Description

The CMSC075N04 uses advanced SGT technology to provide excellent RDS(ON).This device is ideal for load switch and battery protection applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
40V	7.5mΩ	50A

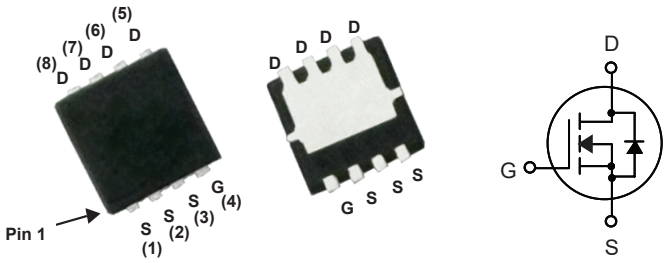
Applications

- POL applications
- BLDC Motor driver

Features

- Low ON-resistance
- Low Gate Charge
- Surface Mount Package
- RoHS Compliant

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC075N04	DFN-8 3.3x3.3	075N04

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	50	A
I_D@T_C=100℃	Continuous Drain Current	35	A
I_{DM}	Pulsed Drain Current	150	A
EAS	Single Pulse Avalanche Energy[1]	56	mJ
P_D@T_C=25℃	Total Power Dissipation	35	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-ambient(Steady-State)	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.57	℃/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=28A	---	6.5	7.5	mΩ
		V_{GS}=4.5V , I_D=25A	---	9	12	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=32V , 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	---	15	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.5	---	Ω
Q_g	Total Gate Charge	I_D=12 A V_{DS}=20V V_{GS}=4.5V	---	6	---	nC
Q_{gs}	Gate-Source Charge		---	3	---	
Q_{gd}	Gate-Drain Charge		---	1.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V V_{GS}=10 V R_{GEN}=3.3Ω I_D =1A	---	15	---	ns
T_r	Rise Time		---	6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	20	---	
T_f	Fall Time		---	11	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	750	---	pF
C_{oss}	Output Capacitance		---	170	---	
C_{rss}	Reverse Transfer Capacitance		---	7	---	

Diode Characteristics

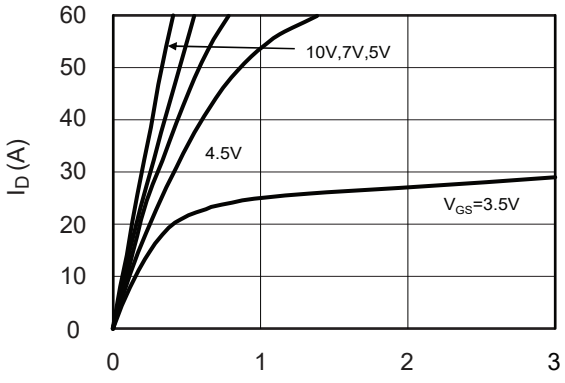
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	150	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=28A ,T_J=25℃	---	0.89	1.2	V

Note :

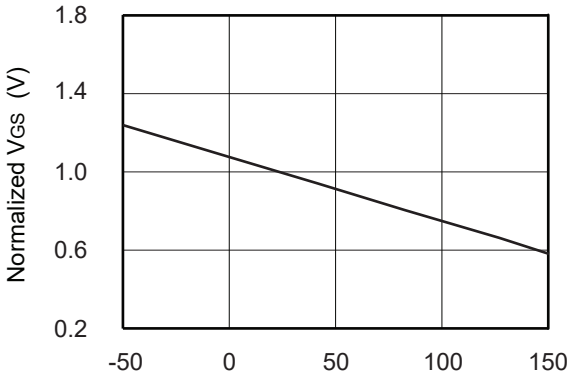
1.The EAS data shows Max. rating . The test condition is V_{DD}=25V , V_{GS}=10V , L=0.5mH , I_{AS}=15A.

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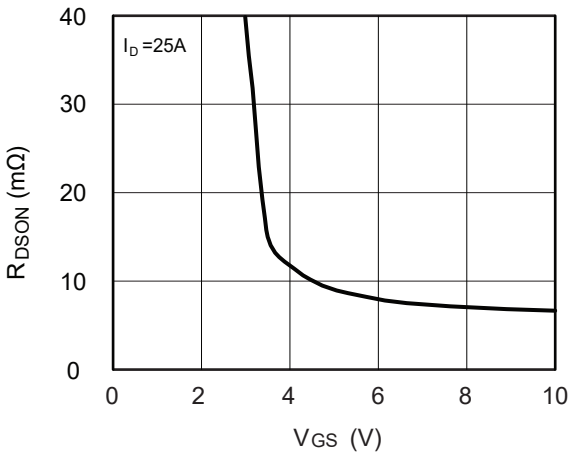
Typical Characteristics



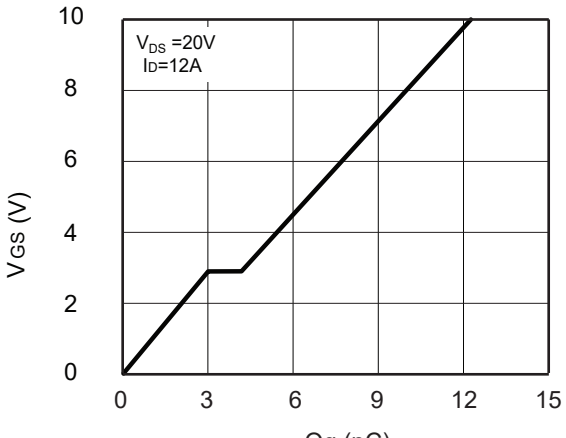
Output Characteristics



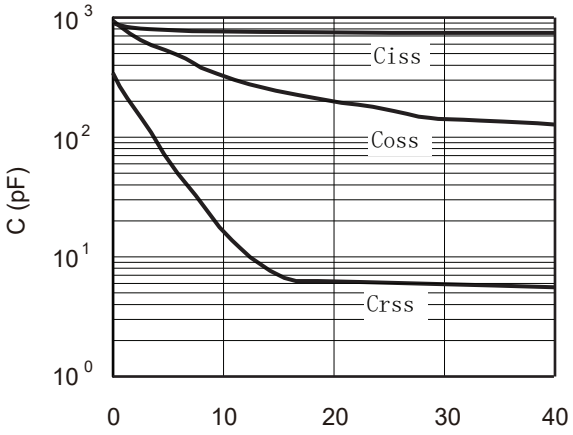
Normalized Gate Threshold Voltage vs Temperature



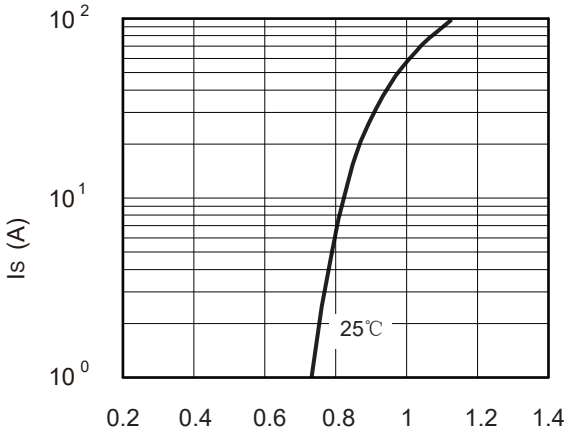
On-Resistance vs. Gate-Source Voltage



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics