

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.

Features

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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	50	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	35	A
I_{DM}	Pulsed Drain Current	150	A
EAS	Single Pulse Avalanche Energy ¹	56	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	35	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(Steady-State)	---	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.57	°C/W

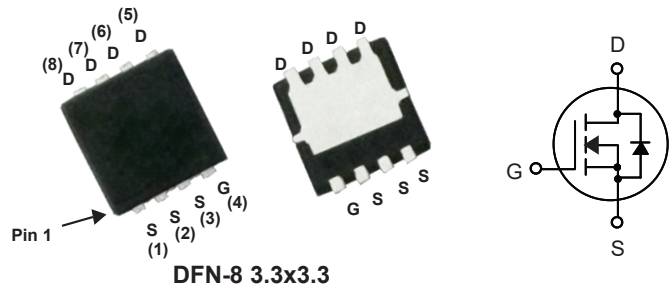
Product Summary

BVDSS	RDS(on) max.	ID
40V	7.5mΩ	50A

Applications

- POL applications
- BLDC Motor driver

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

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

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	$V_{GS}=10V$, $I_D=28A$	---	6.5	7.5	mΩ
		$V_{GS}=4.5V$, $I_D=25A$	---	9	12	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=32V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=20A$	---	15	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.5	---	Ω
Q_g	Total Gate Charge	$I_D=12A$	---	6	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=20V$	---	3	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=4.5V$	---	1.2	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$	---	15	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	6	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3.3\Omega$	---	20	---	
T_f	Fall Time	$I_D=1A$	---	11	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	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	$V_{GS}=0V$, $I_S=28A$, $T_J=25^{\circ}\text{C}$	---	0.89	1.2	V

Note :

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

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Typical Characteristics
