

General Description

The CMSC7404 combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for load switch and battery protection applications.

Features

- N-Channel MOSFET
- Low ON-resistance
- Surface Mount Package
- RoHS Compliant

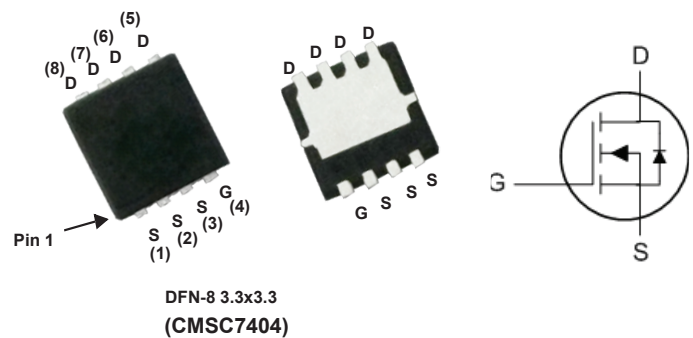
Product Summary

BVDSS	RDSON	ID
20V	6.5mΩ	40A

Applications

- Synchronous Rectification
- Synchronous Buck

DFN-8 3.3x3.3 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current	40	A
I_{DM}	Pulsed Drain Current	120	A
EAS	Single Pulse Avalanche Energy ¹	140	mJ
$P_D @ T_C = 25^\circ C$	Total Power Dissipation	40	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient	---	40	$^\circ C/W$
$R_{\theta JC}$	Maximum Junction-to-Case	---	3.1	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=20A$	---	---	6.5	m Ω
		$V_{GS}=2.5V, I_D=20A$	---	---	9	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	---	1	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 12V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=20A$	---	28	---	S
Q_g	Total Gate Charge (4.5V)	$V_{DS}=10V, I_D=20A$ $V_{GS}=10V$	---	38	---	nC
Q_{gs}	Gate-Source Charge		---	8.5	---	
Q_{gd}	Gate-Drain Charge		---	13	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=10V, V_{GS}=10V, R_{GEN}=3\Omega$ $R_L=0.56\Omega$	---	7	---	ns
T_r	Rise Time		---	8.2	---	
$T_{d(off)}$	Turn-Off Delay Time		---	70	---	
T_f	Fall Time		---	20	---	
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	---	2000	---	pF
C_{oss}	Output Capacitance		---	745	---	
C_{rss}	Reverse Transfer Capacitance		---	600	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V, \text{Force Current}$	---	---	40	A
$I_{S,pulse}$	Diode pulse current		---	---	120	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_F=20A, T_J=25^{\circ}\text{C}$	---	---	1.2	V

Note :

1.The EAS test condition is $V_{DD}=15V, V_{GS}=10V, L=0.5mH, I_{AS}=24A$

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