CMSC7423B

P-Channel Enhancement Mode MOSFET

General Description

The CMSC7423B 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.

Product Summary

BVDSS	RDSON	ID
-20V	6mΩ	-50A

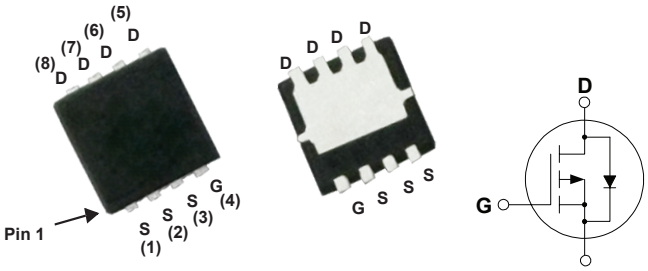
Applications

- High side in DC - DC Buck Converters
- Notebook battery power management
- Load switch in Notebook

Features

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

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

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Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Continuous Drain Current	-50	A
I_{DM}	Pulsed Drain Current	-150	A
EAS	Single Pulse Avalanche Energy [1]	90	mJ
P_D@T_C=25℃	Total Power Dissipation	85	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	---	55	℃/W

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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=-250μA	-20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-20A	---	---	6	mΩ
		V_{GS}=-2.5V , I_D=-20A	---	---	8.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = -250μA	-0.5	---	-1.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-16V, V_{GS}=0V	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS} =-5V , I_D=-4A	---	23	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	10	---	Ω
Q_g	Total Gate Charge	V_{DS}=-10V , V_{GS}=-4.5V , I_D=-20A	---	70	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	20	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-10V, V_{GS}=-4.5V, R_{GEN}=3Ω R_L=0.5Ω	---	18	---	ns
T_r	Rise Time		---	52	---	
$T_{d(off)}$	Turn-Off Delay Time		---	290	---	
T_f	Fall Time		---	125	---	
C_{iss}	Input Capacitance	V_{DS}=-10V , V_{GS}=0V , f=1MHz	---	5500	---	pF
C_{oss}	Output Capacitance		---	930	---	
C_{rss}	Reverse Transfer Capacitance		---	720	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_{SD}=-1A	---	---	-1.2	V

Notes:

1. The test condition is V_{DS}=15V , V_{GS}=10V , L=1mH , I_D =13A.