

General Description

The CMSC7452 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Features

- Low On-Resistance
- Surface Mount Package
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	5.5	A
$I_D@T_C=100^\circ C$		3.5	
I_{DM}	Pulsed Drain Current	22	A
EAS	Single Pulse Avalanche Energy ¹	18	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	17	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady-State) ^{2,3}	---	75	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady-State)	---	7.2	$^\circ C/W$

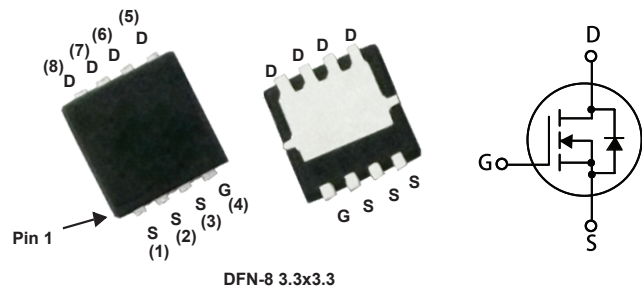
Product Summary

BVDSS	RDSON	ID
100V	300m Ω	5.5A

Applications

- High efficiency power supply
- Secondary synchronous rectifier

DFN-8 3.3x3.3 Pin Configuration



Type	Package	Marking
CMSC7452	DFN-8 3.3*3.3	7452

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=2.5A$	---	260	300	m Ω
		$V_{GS}=4.5V, I_D=2A$	---	270	330	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.9	---	2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
gfs	Forward Transconductance	$V_{DS}=10V, I_D=2A$	---	3	---	S
Q_g	Total Gate Charge	$V_{DS}=50V, I_D=2A$ $V_{GS}=10V$	---	5	---	nC
Q_{gs}	Gate-Source Charge		---	0.5	---	
Q_{gd}	Gate-Drain Charge		---	1.4	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, V_{GS}=10V, R_{GEN}=3\Omega$ $R_L=25\Omega$	---	4	---	ns
T_r	Rise Time		---	3	---	
$T_{d(off)}$	Turn-Off Delay Time		---	15	---	
T_f	Fall Time		---	2.5	---	
C_{iss}	Input Capacitance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	---	320	---	pF
C_{oss}	Output Capacitance		---	280	---	
C_{rss}	Reverse Transfer Capacitance		---	160	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V, \text{Force Current}$	---	---	5.5	A
$I_{S,pulse}$	Diode pulse current		---	---	22	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_F=1A, T_J=25^{\circ}\text{C}$	---	0.78	1	V

Notes:

- The EAS data shows Max. rating .The test condition is $V_{DS}=50V, V_{GS}=10V, L=1mH, I_{AS}=6A$.
- The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10s$ value and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.
- The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

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.

Typical Characteristics

