

General Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

Features

- Advanced high cell density Trench technology
- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	-50	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	-25	A
I_{DM}	Pulsed Drain Current ¹	-150	A
EAS	Single Pulse Avalanche Energy ²	882	mJ
I_{AS}	Single Pulse Avalanche Current	-50	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	60	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient ³	---	50	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case (Drain)	---	2.08	$^\circ\text{C/W}$

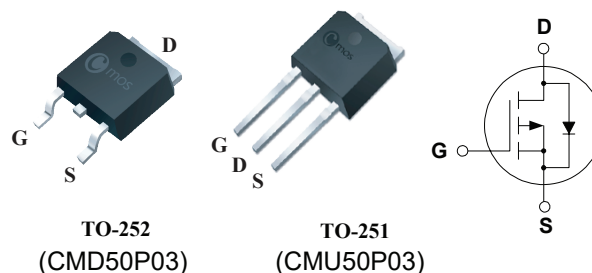
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	12m Ω	-50A

Applications

- DC-DC Converters
- Desktop PCs
- LED controller

TO-252/251 Pin Configuration



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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ¹	$V_{GS}=-10V$, $I_D=-20A$	---	---	12	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-15A$	---	---	18	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-30V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-30V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	-50	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V$, $I_D=-20A$	---	30	---	S
Q_g	Total Gate Charge	$V_{DS}=-24V$, $I_D=-50A$ $V_{GS}=0$ to $-10V$	---	45	---	nC
Q_{gs}	Gate-Source Charge		---	6.5	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-15V$, $V_{GS}=-10V$, $R_G=3.5\Omega$ $I_D=-50A$	---	11	---	ns
T_r	Rise Time		---	9	---	
$T_{d(off)}$	Turn-Off Delay Time		---	54	---	
T_f	Fall Time		---	20	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	5100	---	pF
C_{oss}	Output Capacitance		---	750	---	
C_{rss}	Reverse Transfer Capacitance		---	420	---	

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 ¹		---	---	-150	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=-30A$	---	---	-1.5	V

Notes

1. Pulse test; pulse width $\leq 300\mu s$, duty cycles $\leq 2\%$.
2. The EAS data shows Max. rating. The test condition is $V_{DD}=-25V$, $V_{GS}=-10V$, $L=1mH$, $I_{AS}=-42A$.
3. When mounted on 1 " square PCB (FR-4 material).

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. Please refer to the latest version of specification.

Characteristics

