

General Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low RDS(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	115	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 175	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient ²	---	50	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case (Drain)	---	1.1	$^\circ\text{C}/\text{W}$

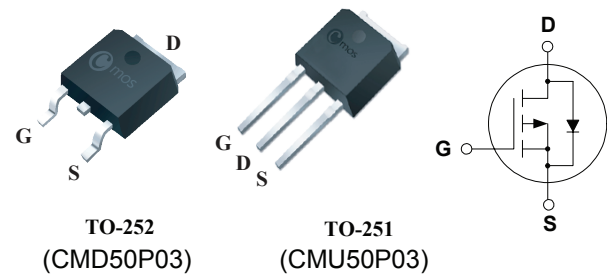
Product Summary

BVDSS	RDSON	ID
-30V	12m Ω	-50A

Applications

- DC-DC Converters
- Desktop PCs
- LED controller

TO-252/251 Pin Configuration



Electrical Characteristics ($T_J=25\text{ }^\circ\text{C}$, 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 Ω
		$V_{GS}=-4.5V, I_D=-15A$	---	---	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	$V_{DS}=-15V, I_D=-20A$	---	52	---	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	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	---	3900	---	pF
C_{oss}	Output Capacitance		---	750	---	
C_{rss}	Reverse Transfer Capacitance		---	500	---	

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 cycle $\leq 2\%$.
2. When mounted on 1" square PCB (FR-4 material).

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