CMD4003/CMU4003

P-Channel 40-V (D-S) MOSFET

General Description

The 4003 uses advanced trench technology to provide excellent RDS(ON). The device well suited for high current applications.

Product Summary

BVDSS	RDSON	ID
-40V	20mΩ	-27A

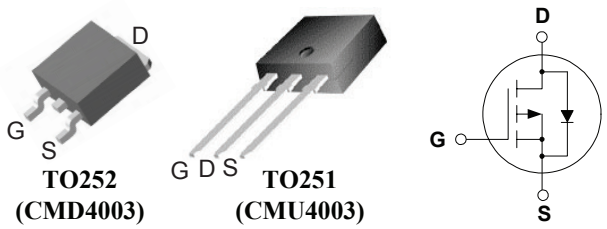
Features

- P-Channel MOSFET
- Fast Switching
- Low ON-resistance
- 100% EAS Guaranteed
- RoHS Compliant

Applications

- DC/DC converters
- Inverter
- Power Supplies

TO252 / TO251 Pin Configuration



TO252 (CMD4003)

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Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1]	-27	A
I_D@T_C=100℃	Continuous Drain Current[1]	-21	A
I_{DM}	Pulsed Drain Current[2]	-54	A
EAS	Single Pulse Avalanche Energy[3]	64	mJ
I_{AS}	Avalanche Current	-27	A
P_D@T_C=25℃	Total Power Dissipation [4]	35	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-ambient[1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case[1]	---	3.6	℃/W

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=-250uA	-40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-8A	---	14	20	mΩ
		V_{GS}=-4.5V , I_D=-5A	---	18	28	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-32V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-32V, V_{GS}=0V , T_J=55 ℃	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-10A	---	17	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2	---	Ω
Q_g	Total Gate Charge	V_{DS}=-20V, V_{GS}=-4.5V , I_D=-1A	---	12	25	nC
Q_{gs}	Gate-Source Charge		---	3.4	---	
Q_{gd}	Gate-Drain Charge		---	3.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-20V, V_{GS}=-10V, R_G=3.3Ω , I_D=-1A	---	24	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	60	---	
T_f	Fall Time		---	8	---	
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V , f=1MHz	---	2400	---	pF
C_{oss}	Output Capacitance		---	180	---	
C_{rss}	Reverse Transfer Capacitance		---	105	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	-27	A
I_{SM}	Pulsed Source Current[2,5]		---	---	-54	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1.6A , T_J=25℃	---	---	-1.2	V

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=-20V,V_{GS}=-10V,L=0.5mH,I_{AS}=-17A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.