CMD50P03/CMU50P03

P-Channel 30-V (D-S) MOSFET

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

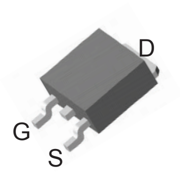
Product Summery

BVDSS	RDSON	ID
-30V	8mΩ	-50A

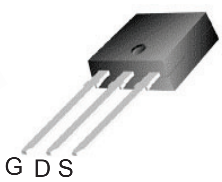
Applications

- DC-DC Converters
- Desktop PCs
- LED controller

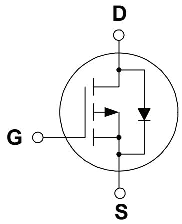
TO252 / TO251 Pin Configuration



TO252
(CMD50P03)



TO251
(CMU50P03)



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˚C	Continuous Drain Current	-50	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˚C	Total Power Dissipation	60	W
T_{STG}	Storage Temperature Range	-55 to 175	˚C
T_J	Operating Junction Temperature Range	-55 to 175	˚C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient[2]	---	50	˚C/W
$R_{\theta JC}$	Junction-to-Case (Drain)	---	1.1	˚C/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	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[1]	V_{GS}=-10V, I_D=-20A	---	---	8	mΩ
		V_{GS}=-4.5V, I_D=-15A	---	---	12	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-30V, V_{GS}=0V , T_J=125 ℃	---	---	-50	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	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=3.5Ω 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=1MHz	---	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≤ 300μs, duty cycle≤ 2%.
2. When mounted on 1" square PCB (FR-4 material).