CMD70N03/CMU70N03

N-Ch 30V Fast Switching MOSFETs

General Description

The 70N03 is the highest performance trench N-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The 70N03 meet the RoHS and Green Product requirement , 100% EAS guaranteed with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% avalanche tested
- Green Device Available

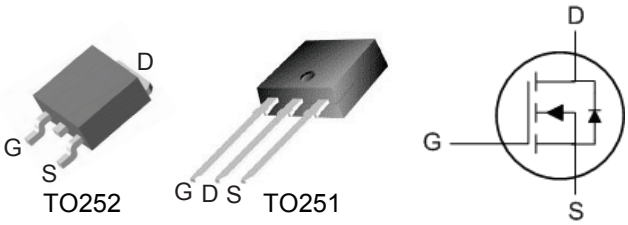
Product Summery

BVDSS	RDSON	ID
30V	7mΩ	70A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

TO252 / TO251 Pin Configuration



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℃	Continuous Drain Current[1]	70	A
I_D@T_C=100℃	Continuous Drain Current[1]	50	A
I_{DM}	Pulsed Drain Current[2]	170	A
EAS	Single Pulse Avalanche Energy[3]	85	mJ
I_{AS}	Avalanche Current	45	A
P_D@T_C=25℃	Total Power Dissipation	65	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient[1]	---	70	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case[1]	---	2	℃/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
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	6.5	---	MV/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=20A	---	5.3	7	mΩ
		V_{GS}=4.5V , I_D=20A	---	7.5	11.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.5	3	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	5.08	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=20V , V_{GS}=0V , T_J=150 ℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V, I_D=15A	---	29	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	3.4	Ω
Q_g	Total Gate Charge	V_{DS}=10V , V_{GS}=5V , I_D=30A	---	16.6	25.5	nC
Q_{gs}	Gate-Source Charge		---	8.1	---	
Q_{gd}	Gate-Drain Charge		---	4.7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V , V_{GS}=10V , R_G=3.3Ω I_D=30A	---	13	---	ns
T_r	Rise Time		---	6.7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	22.5	---	
T_f	Fall Time		---	10.1	---	
C_{iss}	Input Capacitance	V_{DS}=20V , V_{GS}=0V , f=1MHz	---	2211	---	pF
C_{oss}	Output Capacitance		---	515	---	
C_{rss}	Reverse Transfer Capacitance		---	174	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	27	---	A
I_{SM}	Pulsed Source Current[2]		---	---	100	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.3	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}=30V,V_{GS}=10V,L=0.1mH,I_L=12A