CMD60N03/CMU60N03

N-Ch 30V Fast Switching MOSFETs

General Description

The 60N03 is N-channel MOSFET device that features a low on-state resistance and excellent switching characteristics, and designed for low voltage high current applications such as DC/DC converter with synchronous rectifier.

Features

- Simple Drive Requirement
- Low Gate Charge
- Fast Switching
- Ultra-Low RDS(on)
- Green Device Available

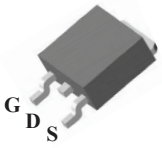
Product Summery

BVDSS	RDSON	ID
30V	7mΩ	60A

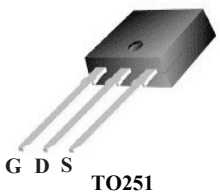
Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- DC/DC converter
- Motor drives

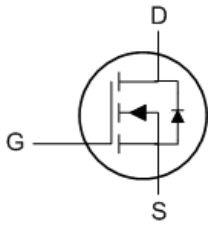
TO252 / TO251 Pin Configuration



TO252
(CMD60N03)



TO251
(CMU60N03)



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[1]	60	A
I_D@T_C=100°C	Continuous Drain Current[1]	50	A
I_{DM}	Pulsed Drain Current[2]	180	A
EAS	Single Pulse Avalanche Energy[3]	55	mJ
I_{AS}	Avalanche Current	50	A
P_D@T_C=25°C	Total Power Dissipation	55	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
$R_{\theta JA}$	Thermal Resistance Junction-ambient[1]	---	52	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case[1]	---	2.73	°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
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=250uA	---	0.012	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=20A	---	5	7	mΩ
		V_{GS}=4.5V , I_D=20A	---	9.5	13	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	2	3	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-6	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=150℃	---	---	250	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V, I_D=10A	---	45	---	S
R_g	Gate Resistance	V_{GS}=0.5V, f=1MHz	---	2.3	---	Ω
Q_g	Total Gate Charge	V_{DS}=15V I_D=20A V_{GS}=4.5V	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	4.4	---	
Q_{gd}	Gate-Drain Charge		---	7.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_{GS}=10Ω I_D=20A	---	10	---	ns
T_r	Rise Time		---	100	---	
$T_{d(off)}$	Turn-Off Delay Time		---	45	---	
T_f	Fall Time		---	38	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	1150	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	150	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	60	A
I_{SM}	Pulsed Source Current[2]		---	---	180	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=35A, T_J=25℃	---	---	1.25	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}=27V,V_{GS}=10V,L=0.14mH,I_{AS}=28A