CMD50N06/CMU50N06

N-Channel 60V MOSFET

General Description

The 50N06 combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Features

- 55A,60V.RDS(ON)=0.011Ω@VGS=10V
- N-channel-Enhancement mode
- Low Threshold Drive
- 100% Avalanche Tested
- Green Device Available

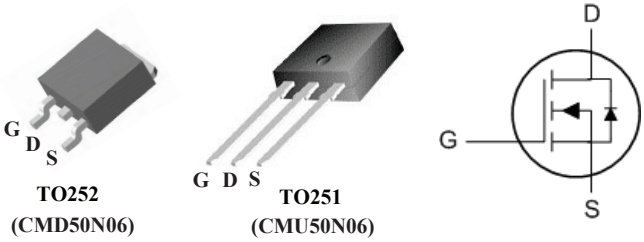
Product Summery

BVDSS	RDSON	ID
60V	11mΩ	55A

Applications

- DC-DC & DC-AC Converters
- Motor Control, Audio Amplifiers
- High Current, High Speed Switching
- Primary Switch for 12V and 24V system

TO252 / TO251 Pin Configuration



TO252 (CMD50N06)

TO251 (CMU50N06)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1]	55	A
I_D@T_C=100℃	Continuous Drain Current[1]	38	A
I_{DM}	Pulsed Drain Current[2]	165	A
EAS	Single Pulse Avalanche Energy[3]	94	mJ
I_{AS}	Avalanche Current	38	A
P_D@T_C=25℃	Total Power Dissipation	80	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	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.1	℃/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=250μA	60	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=250μA	---	0.065	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=55A	---	10.2	11	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=60V , V_{GS}=0V , T_J=125℃	---	---	100	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=20A	---	35	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.2	---	Ω
Q_g	Total Gate Charge	V_{DS}=30V , V_{GS}=10V , I_D=55A	---	42	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	
Q_{gd}	Gate-Drain Charge		---	8	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_G =10V , R_G=9.6Ω I_D=55A	---	10.5	---	ns
T_r	Rise Time		---	83	---	
$T_{d(off)}$	Turn-Off Delay Time		---	36	---	
T_f	Fall Time		---	32	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	6200	7200	---	pF
C_{oss}	Output Capacitance		---	850	---	
C_{rss}	Reverse Transfer Capacitance		---	690	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	55	A
I_{SM}	Pulsed Source Current[2]		---	---	165	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=55A ,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}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=36A