CMD50N06T/CMU50N06T

60V N-Channel MOSFET

General Description

The 50N06T 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.

Product Summary

BVDSS	RDSON	ID
60V	17mΩ	50A

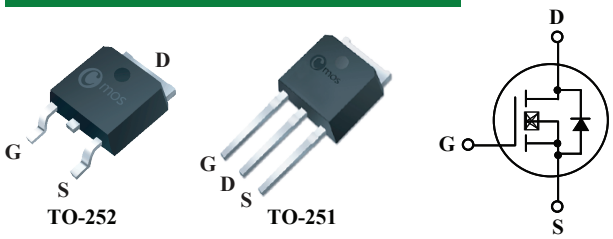
Applications

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

Features

- Low On-Resistance
- 100% Avalanche Tested
- RoHS Compliant

TO-252/251 Pin Configuration



Type	Package	Marking
CMD50N06T	TO-252	CMD50N06T
CMU50N06T	TO-251	CMU50N06T

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]	50	A
I_D@T_C=100℃	Continuous Drain Current[1]	30	A
I_{DM}	Pulsed Drain Current[2]	150	A
EAS	Single Pulse Avalanche Energy[3]	156	mJ
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
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	---	17	mΩ
		V_{GS}=4.5V, I_D=15A	---	---	22	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	3	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	---	26	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.8	---	Ω
Q_g	Total Gate Charge	V_{DS}=30V , V_{GS}=10V , I_D=50A	---	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=50A	---	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	---	2800	---	pF
C_{oss}	Output Capacitance		---	700	---	
C_{rss}	Reverse Transfer Capacitance		---	400	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current[2]		---	---	150	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=28A ,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 test condition is V_{DD}=20V,V_{GS}=10V,L=0.5mH,I_{AS}=25A

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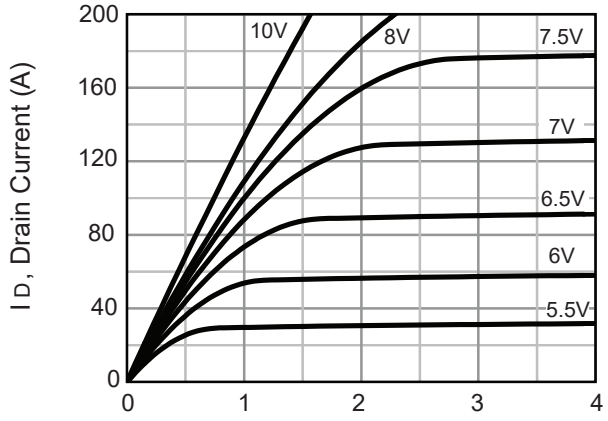
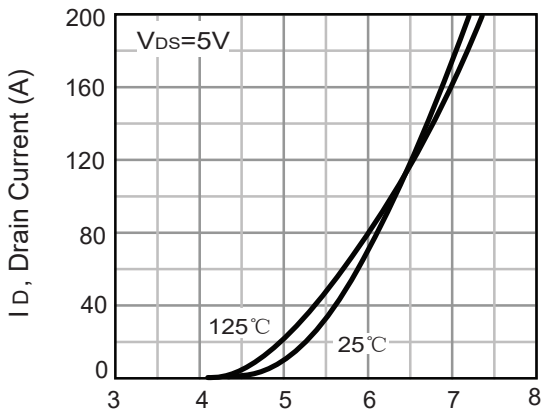
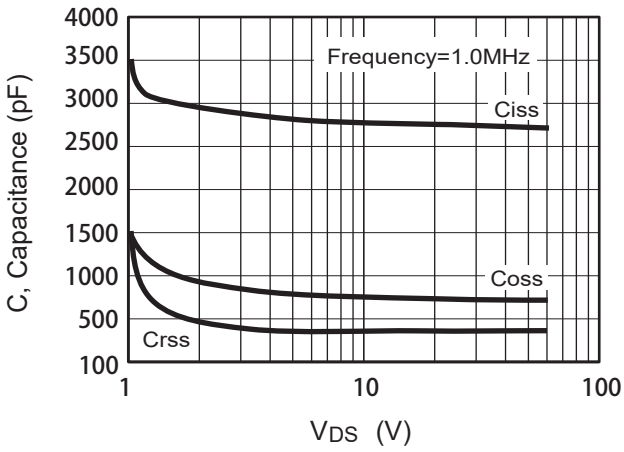
Typical Characteristics



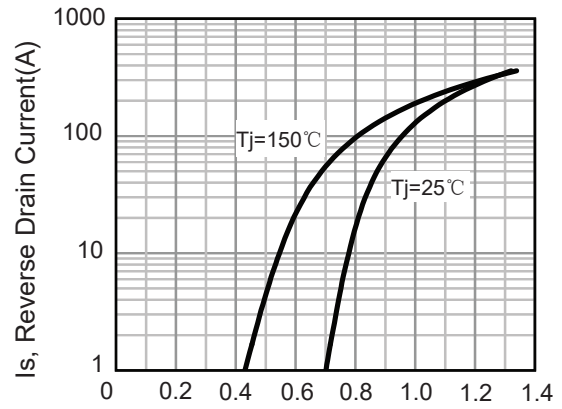
Output Characteristics



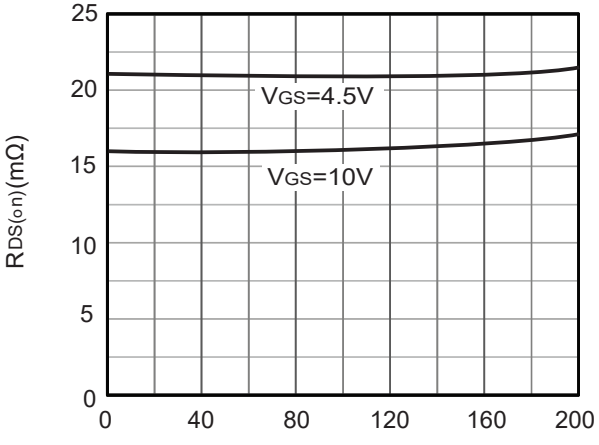
Transfer Characteristics



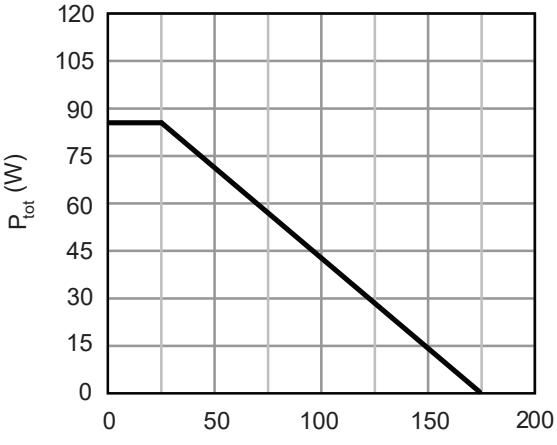
Capacitance Characteristics



Forward Characteristic of Reverse Diode



Rds(on) vs Drain Current and Gate Voltage



Power dissipation