

CMH51N30SD

300V, 65mΩ typ., 50A N-Channel MOSFET

General Description

These Power MOSFETs are produced using Cmos's proprietary, planar stripe, DMOS technology. These devices are well suited for high efficient switched mode power supplies and active power factor correction.

Features

- Ultra-fast body diode
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

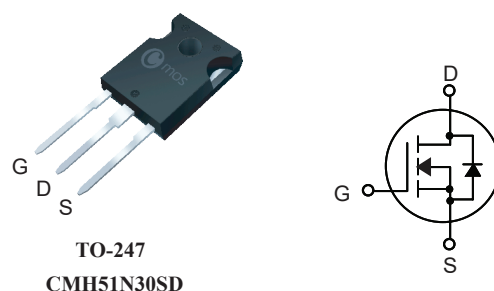
Product Summary

BVDSS	R _{DS(on)} max.	ID
300V	79mΩ	50A

Applications

- DC/DC Converter
- Uninterruptible Power Supply

TO-247 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	300	V
V _{GS}	Gate-Source Voltage	±30	V
I _D @T _C =25°C	Continuous Drain Current	50	A
I _D @T _C =100°C	Continuous Drain Current	32	A
I _{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy (Note 1)	4805	mJ
P _D @T _C =25°C	Total Power Dissipation	500	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.25	°C/W

Electrical Characteristics (T_J=25°C , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250μA	300	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =25A	---	65	79	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	3	---	5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =300V , V _{GS} =0V	---	---	25	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±30V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =20A	---	35	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	1.0	---	Ω
Q _g	Total Gate Charge	V _{DD} =300V , I _D =50A V _{GS} =10V	---	108	---	nC
Q _{gs}	Gate-Source Charge		---	34	---	
Q _{gd}	Gate-Drain Charge		---	45	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =150V , I _D =50A R _G =25Ω	---	99	---	ns
T _r	Rise Time		---	39	---	
T _{d(off)}	Turn-Off Delay Time		---	188	---	
T _f	Fall Time		---	45	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	5900	---	pF
C _{oss}	Output Capacitance		---	620	---	
C _{rss}	Reverse Transfer Capacitance		---	80	---	

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		---	---	200	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =50A , T _J =25°C	---	0.90	1.5	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	91	---	ns
Q _{rr}	Reverse Recovery Charge	V _{GS} =0V , I _S =50A (Note 2,3)	---	0.23	---	μC

Note :

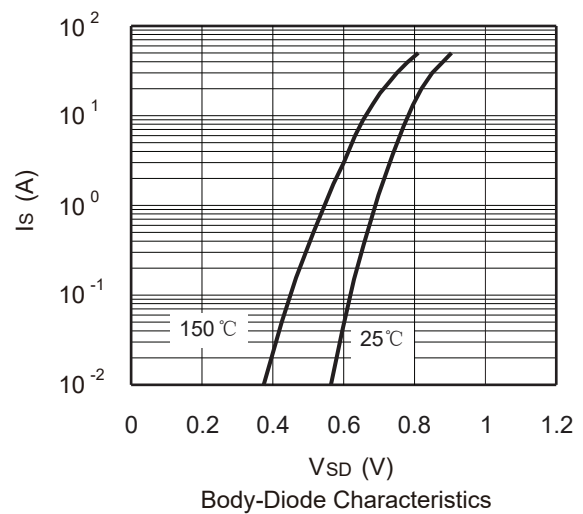
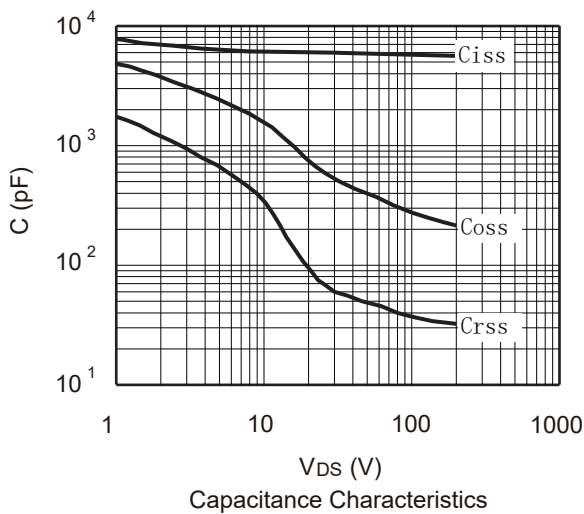
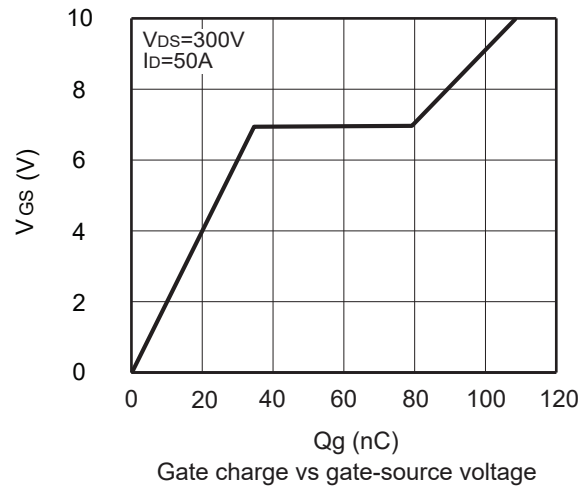
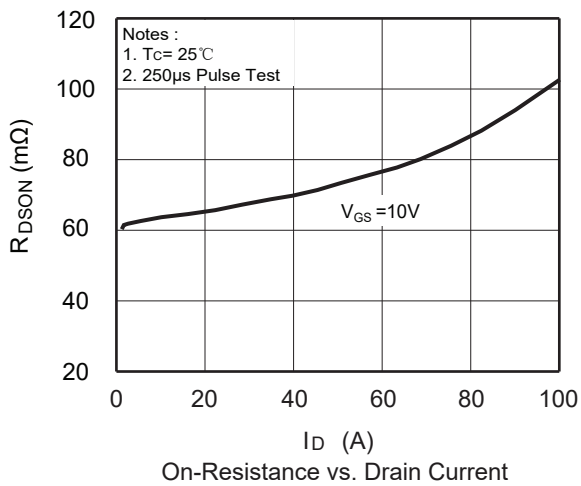
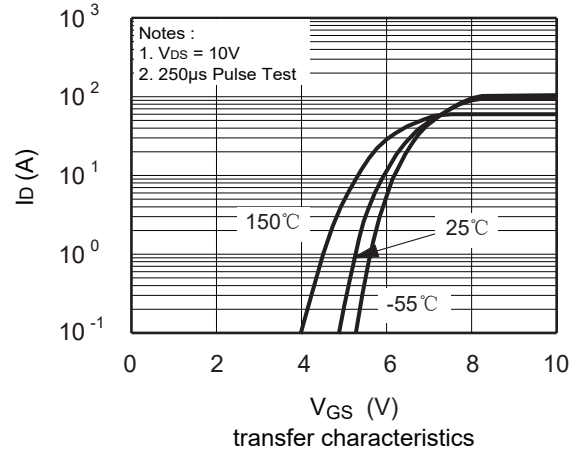
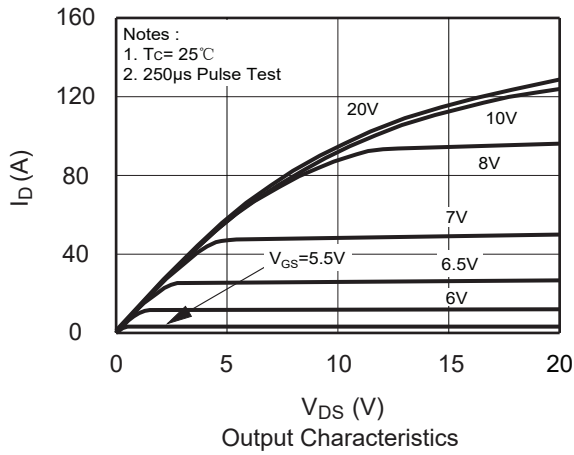
1. The EAS data shows Max. rating .The test condition is V_{DS}=100V , V_{GS}=10V , L=10mH , I_{AS}=31A.
2. Pulse test: Pulse width≤300us, Duty cycle≤2%.
3. Essentially independent of operating temperature typical characteristics.

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

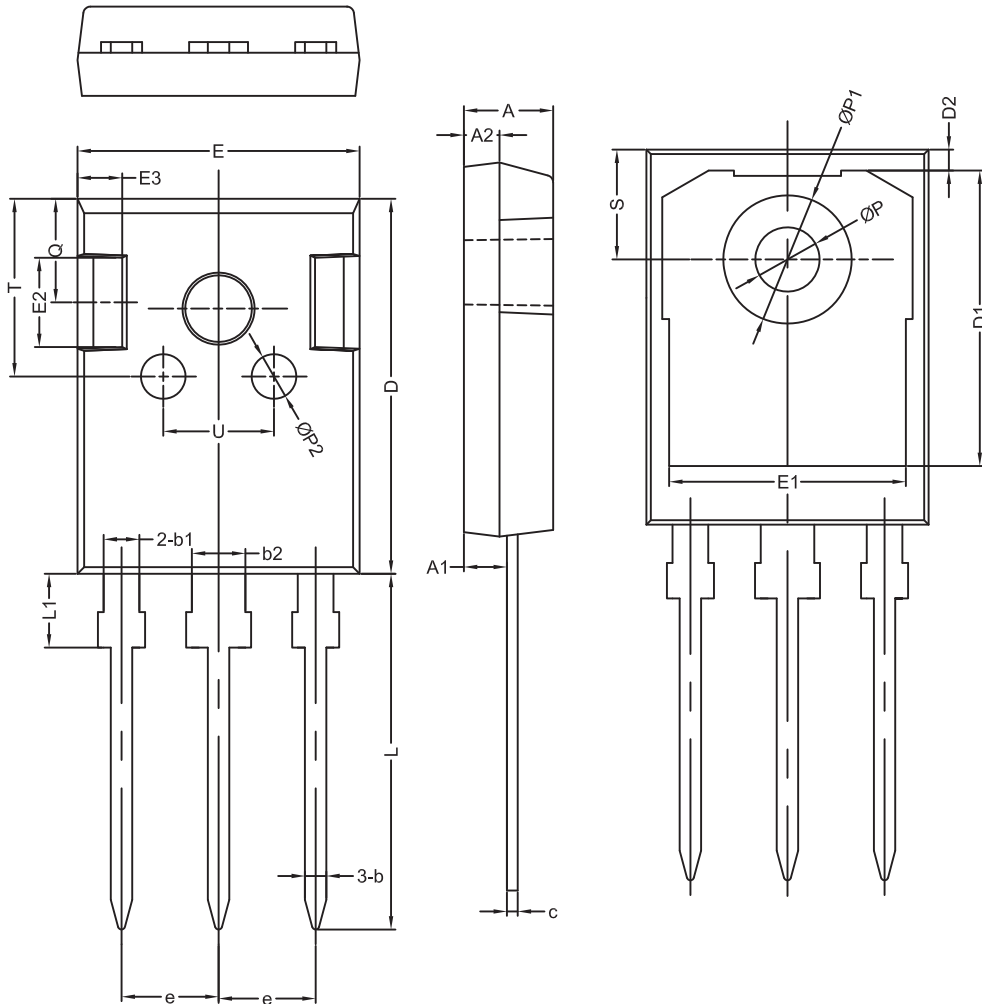
Typical Characteristics



Package Dimension

TO-247

Unit :mm



符号	机械尺寸/mm			符号	机械尺寸/mm		
	最小值	典型值	最大值		最小值	典型值	最大值
A	4.80	5.00	5.20	E2		5.00	
A1	2.21	2.41	2.61	E3		2.50	
A2	1.90	2.00	2.10	e		5.44	
b	1.10	1.20	1.35	L	19.42	19.92	20.42
b1		2.00		L1		4.13	
b2		3.00		P	3.50	3.60	3.70
c	0.55	0.60	0.75	P1		7.19	
D	20.80	21.00	21.20	P2		2.50	
D1		16.55		Q		5.80	
D2		1.20		S	6.05	6.15	6.25
E	15.60	15.80	16.0	T		10.00	
E1		13.30		U		6.20	