

CMH40N50/CMA40N50

500V, 127mΩ typ., 40A 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 efficiency switch mode power supply, power factor correction, electronic lamp ballast based on half bridge.

Product Summary

BVDSS	R _{DS(on)} max.	ID
500V	145mΩ	40A

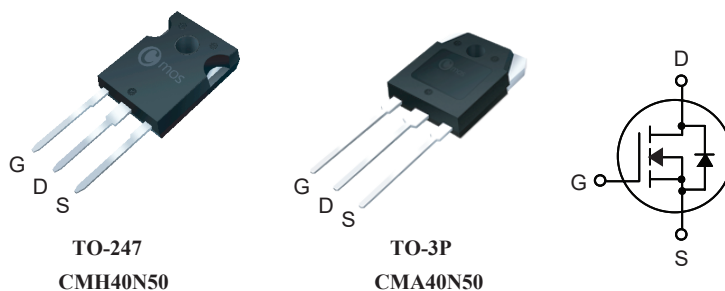
Applications

- Battery Chargers
- Switched Mode Power Supplies

Features

- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

TO-247 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	500	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	40	A
I _D @T _C =100°C	Continuous Drain Current	28	A
I _{DM}	Pulsed Drain Current	160	A
EAS	Single Pulse Avalanche Energy (Note 1)	3645	mJ
P _D @T _C =25°C	Total Power Dissipation	550	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	40	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.23	°C/W

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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	500	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =15A	---	127	145	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} =500V , V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =15A	---	35	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	0.8	---	Ω
Q _g	Total Gate Charge	V _{DD} =400V , I _D =30A V _{GS} =10V	---	130	---	nC
Q _{gs}	Gate-Source Charge		---	30	---	
Q _{gd}	Gate-Drain Charge		---	55	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =250V , I _D =30A R _G =25Ω	---	100	---	ns
T _r	Rise Time		---	290	---	
T _{d(off)}	Turn-Off Delay Time		---	250	---	
T _f	Fall Time		---	175	---	
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , f=1MHz	---	7400	---	pF
C _{oss}	Output Capacitance		---	520	---	
C _{rss}	Reverse Transfer Capacitance		---	150	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	40	A
I _{SM}	Pulsed Source Current		---	---	160	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =30A , T _J =25°C	---	0.85	1.4	V
t _{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	530	---	ns
Q _{rr}	Reverse Recovery Charge	V _{GS} =0V , I _S =35A (Note 2,3)	---	7.86	---	μC

Note :

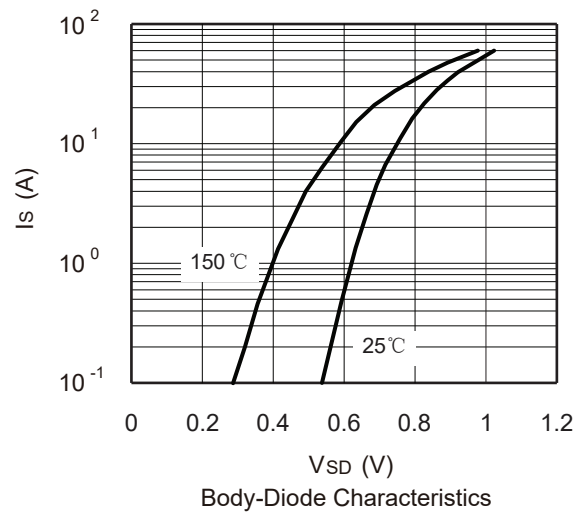
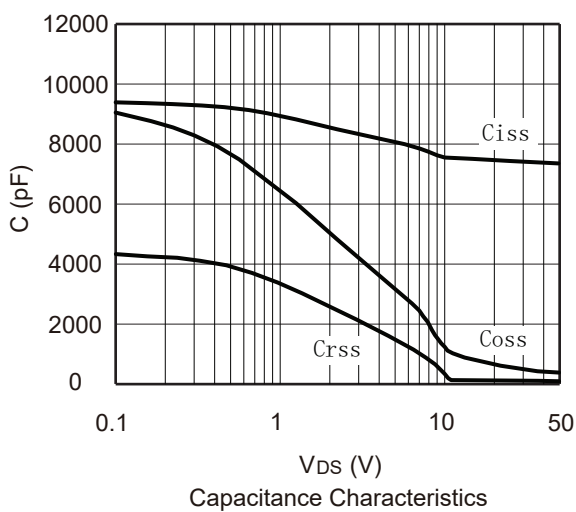
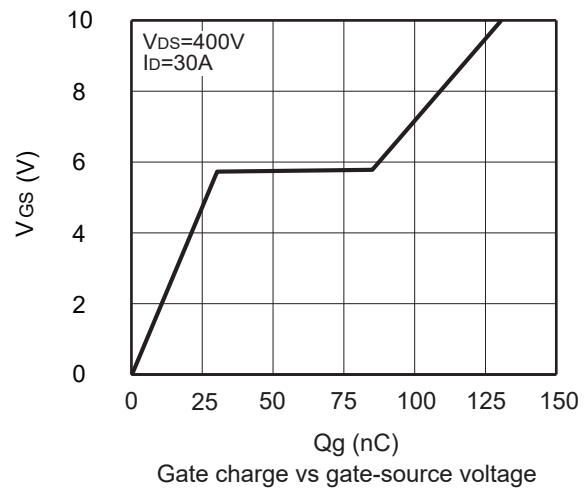
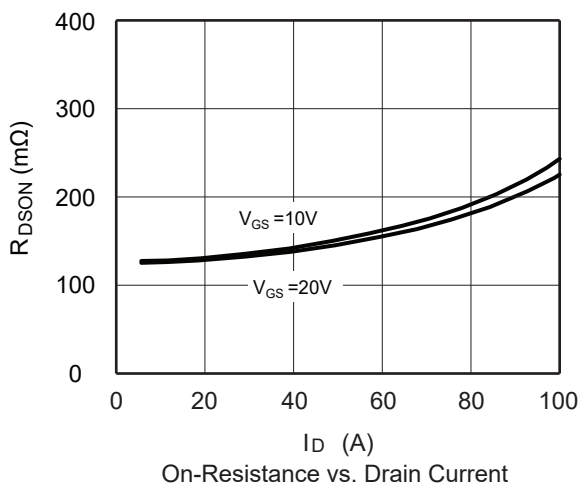
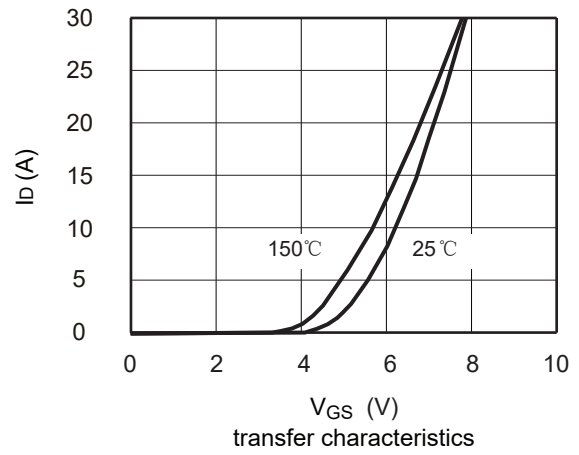
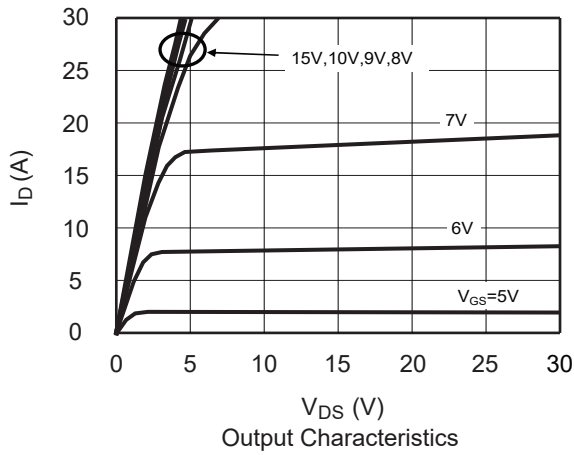
1. The EAS data shows Max. rating .The test condition is V_{DS}=50V , V_{GS}=10V , L=10mH , I_{AS}=27A.
2. Pulse test: Pulse width≤300us, Duty cycle≤2%.
3. Essentially independent of operating temperature typical characteristics.

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



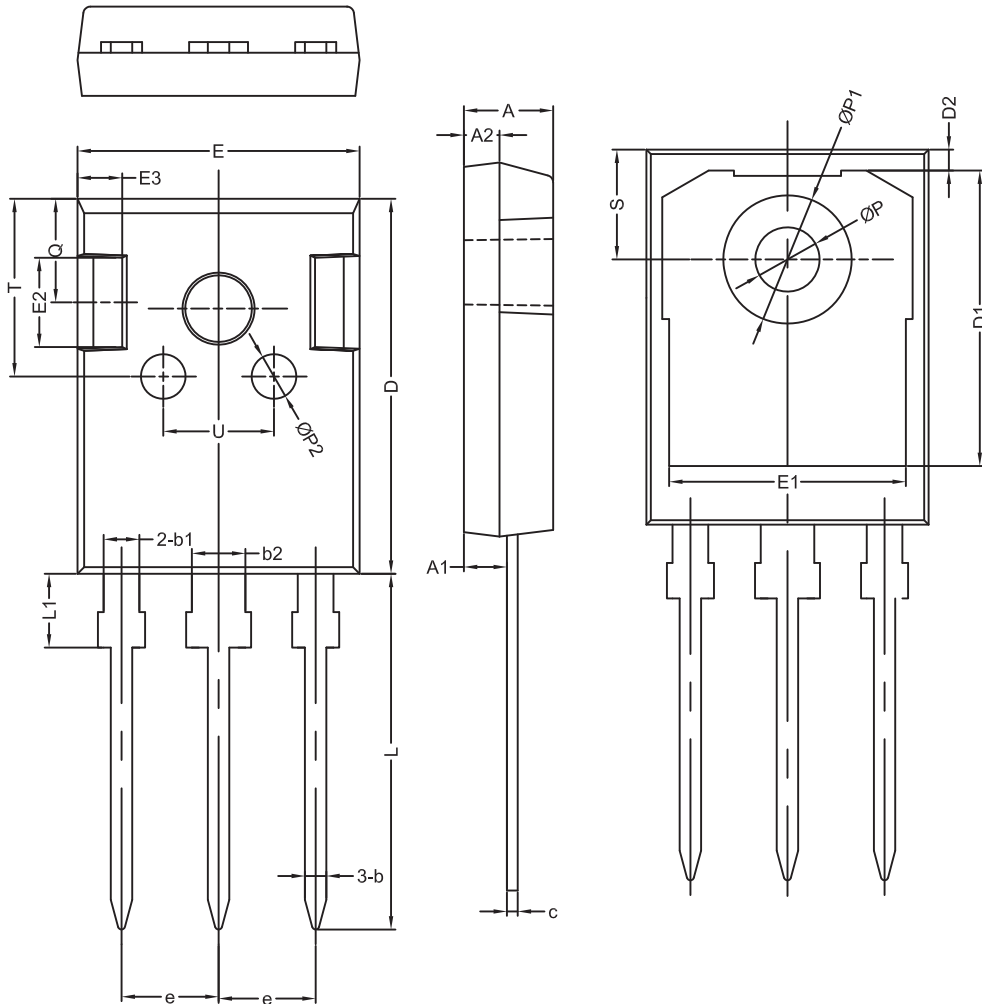
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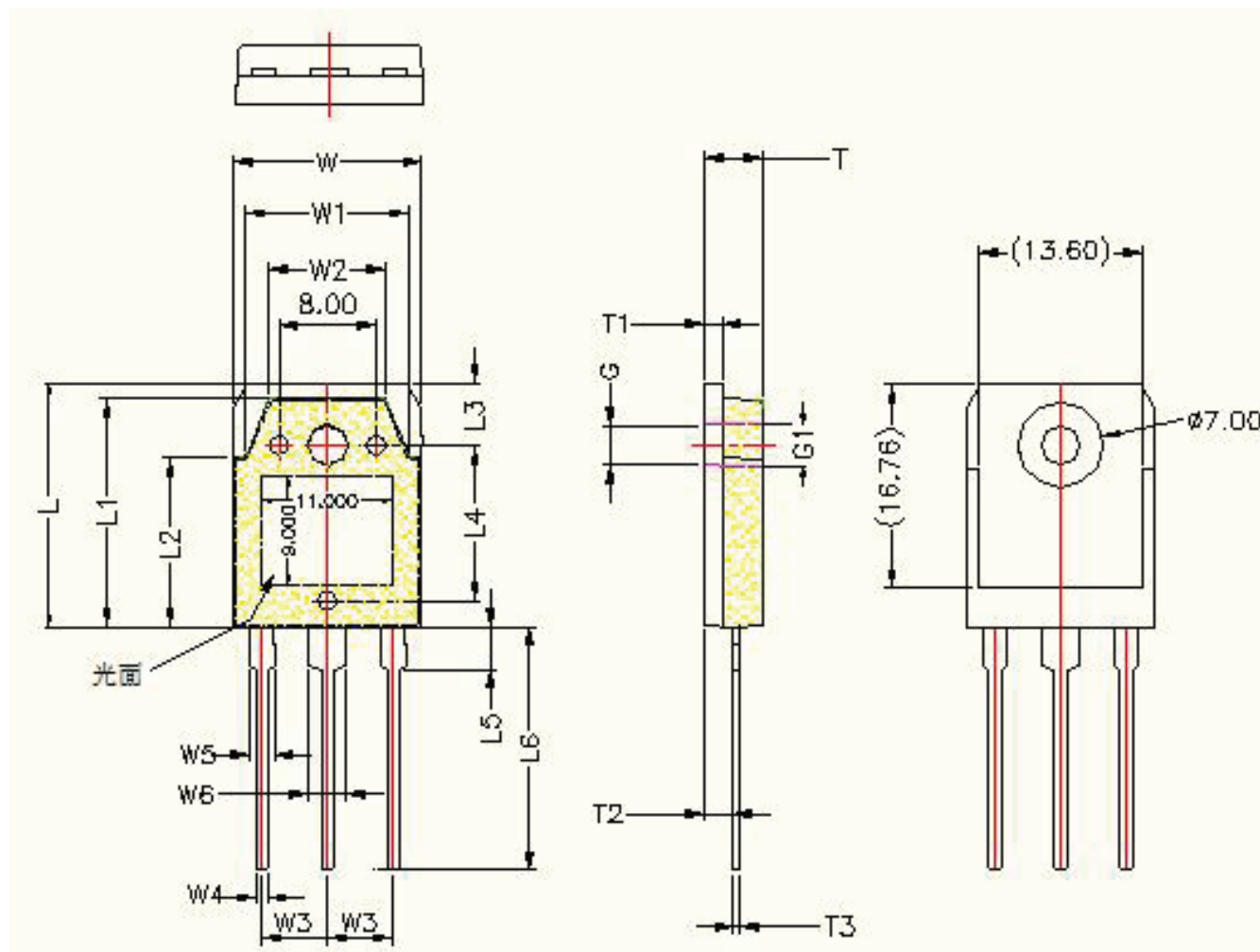
Package Dimension

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	

Package Dimension
TO-3P
Unit :mm


Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
W	15.60±0.3	L	19.90±0.3	T	4.80±0.3
W1	13.60±0.3	L1	18.70±0.3	T1	1.50±0.3
W2	9.60±0.3	L2	13.90±0.3	T2	2.40±0.3
W3	5.45(TYP)	L3	5.00±0.3	T3	0.60±0.3
W4	1.00±0.3	L4	12.76±0.3	G	Ø3.25±0.3
W5	2.10±0.2	L5	3.50±0.3	G1	Ø3.58±0.3
W6	3.10±0.2	L6	20.00±0.3		