

# CMH44N50SD/CMA44N50SD

500V, 115mΩ typ., 44A N-Channel MOSFET

## General Description

These Power MOSFETs are produced using Cmos's proprietary, planar stripe, DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

## Features

- Ultra-fast body diode
- 100% avalanche tested
- RoHS Compliant

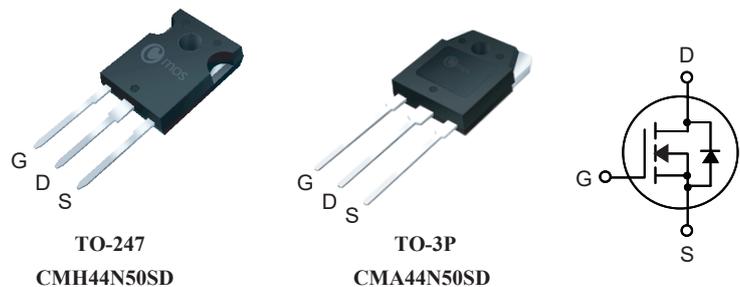
## Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
500V	140mΩ	44A

## Applications

- Charger
- Power Supply

## TO-247/TO-3P Pin Configuration



## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	500	V
V <sub>GS</sub>	Gate-Source Voltage	±25	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current	44	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current	29	A
I <sub>DM</sub>	Pulsed Drain Current	176	A
EAS	Single Pulse Avalanche Energy (Note 1)	4622	mJ
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	568	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

## Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient	---	40	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-case	---	0.22	°C/W

**Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	500	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=25A$	---	115	140	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	---	4.0	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=500V, V_{GS}=0V$	---	---	25	μA
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	±100	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=20V, I_D=20A$	---	50	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	0.7	---	Ω
$Q_g$	Total Gate Charge	$V_{DS}=250V, I_D=23A$ $V_{GS}=10V$ (note 2,3)	---	180	---	nC
$Q_{gs}$	Gate-Source Charge		---	38	---	
$Q_{gd}$	Gate-Drain Charge		---	56	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=250V, I_D=23A$ $R_G=5\Omega, V_{GS}=10V$ (note 2,3)	---	68	---	ns
$T_r$	Rise Time		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time		---	188	---	
$T_f$	Fall Time		---	26	---	
$C_{iss}$	Input Capacitance	$V_{DS}=100V, V_{GS}=0V, f=1\text{MHz}$	---	8900	---	pF
$C_{oss}$	Output Capacitance		---	320	---	
$C_{rss}$	Reverse Transfer Capacitance		---	40	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	44	A
$I_{SM}$	Pulsed Source Current		---	---	176	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_S=20A, T_J=25^{\circ}\text{C}$	---	0.89	1.5	V
$t_{rr}$	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	88	200	ns
$Q_{rr}$	Reverse Recovery Charge	$V_{GS}=0V, I_{SD}=44A$	---	0.27	---	μC

Note :

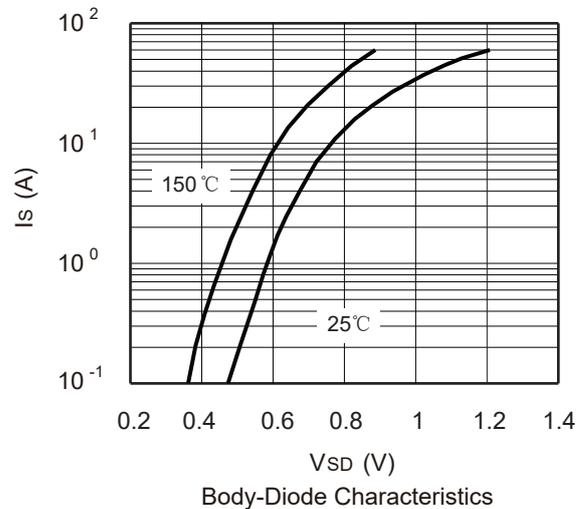
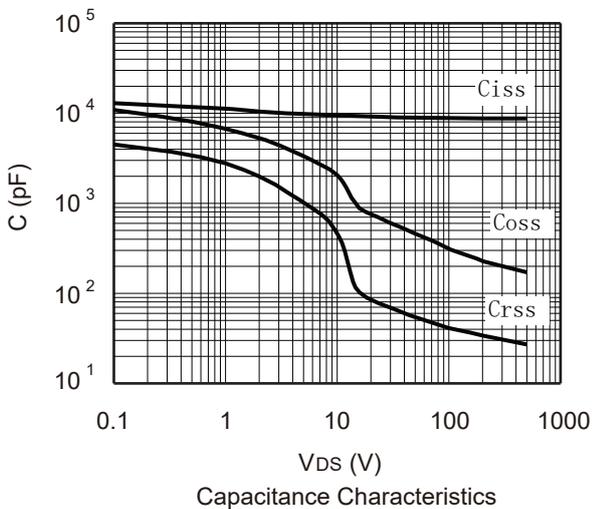
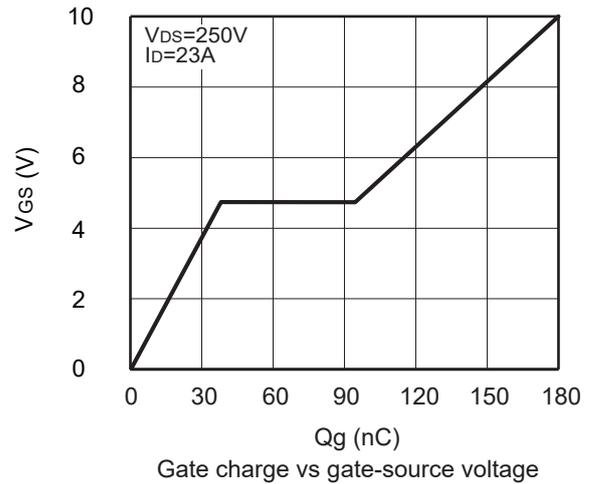
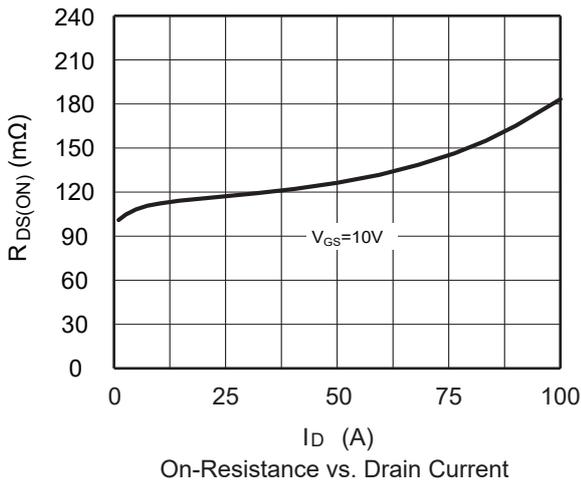
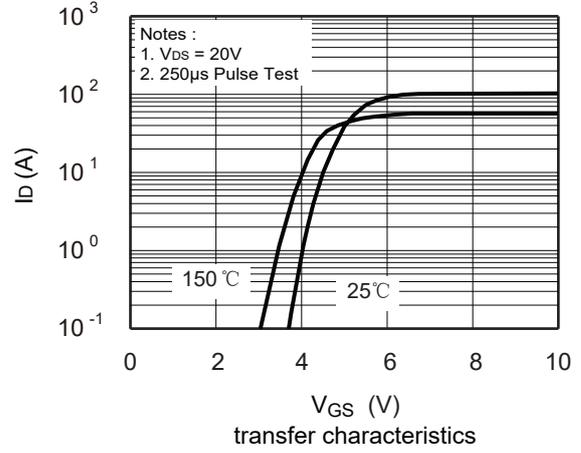
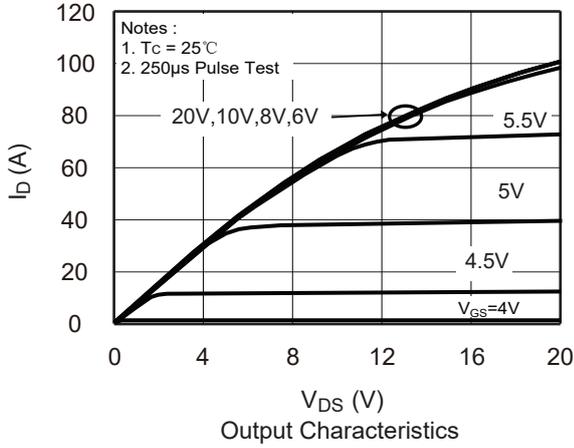
1. The EAS data shows Max. rating . The test condition is  $V_{DD}=100V, V_{GS}=10V, L=5mH, I_{AS}=43A$ .
2. Pulse test: Pulse width≤300us, Duty cycle≤2%.
3. Guaranteed by design, not subject to production testing.

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

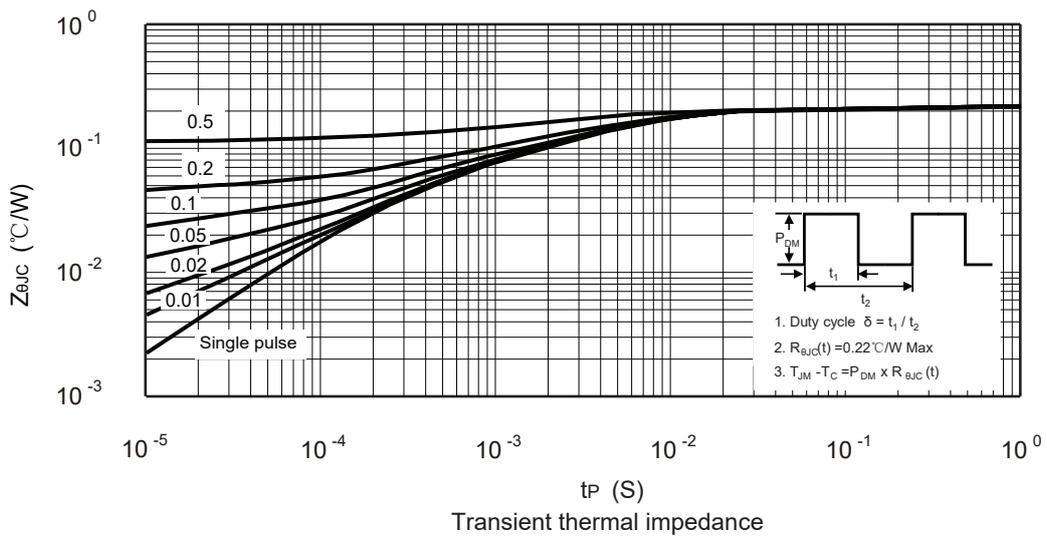
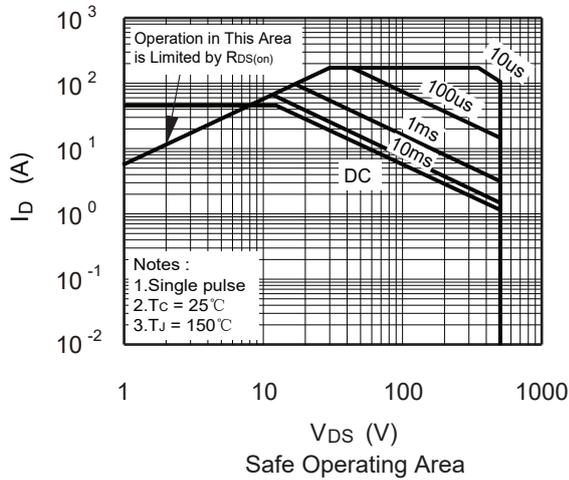
Cmos assumes no liability for customers' product design or applications.

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

### Typical Characteristics



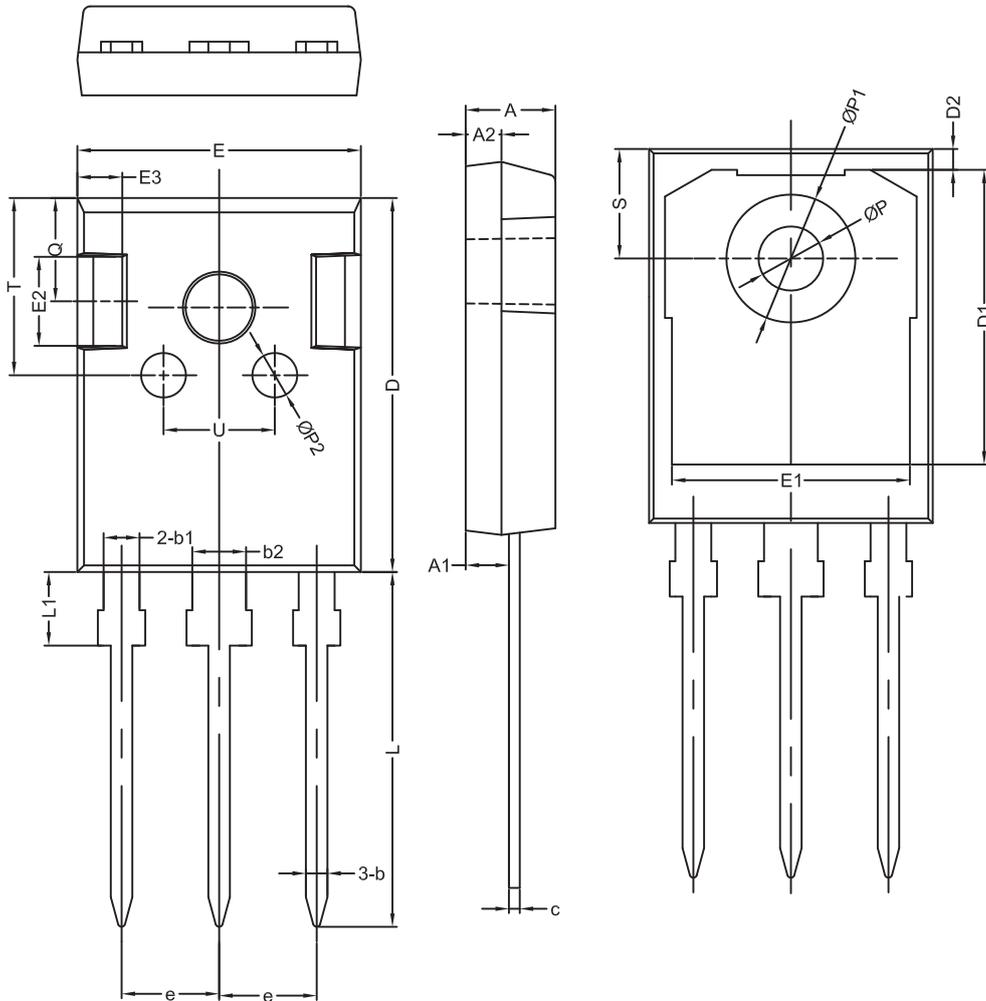
### Typical Characteristics



### Package Dimension

TO-247

Unit :mm

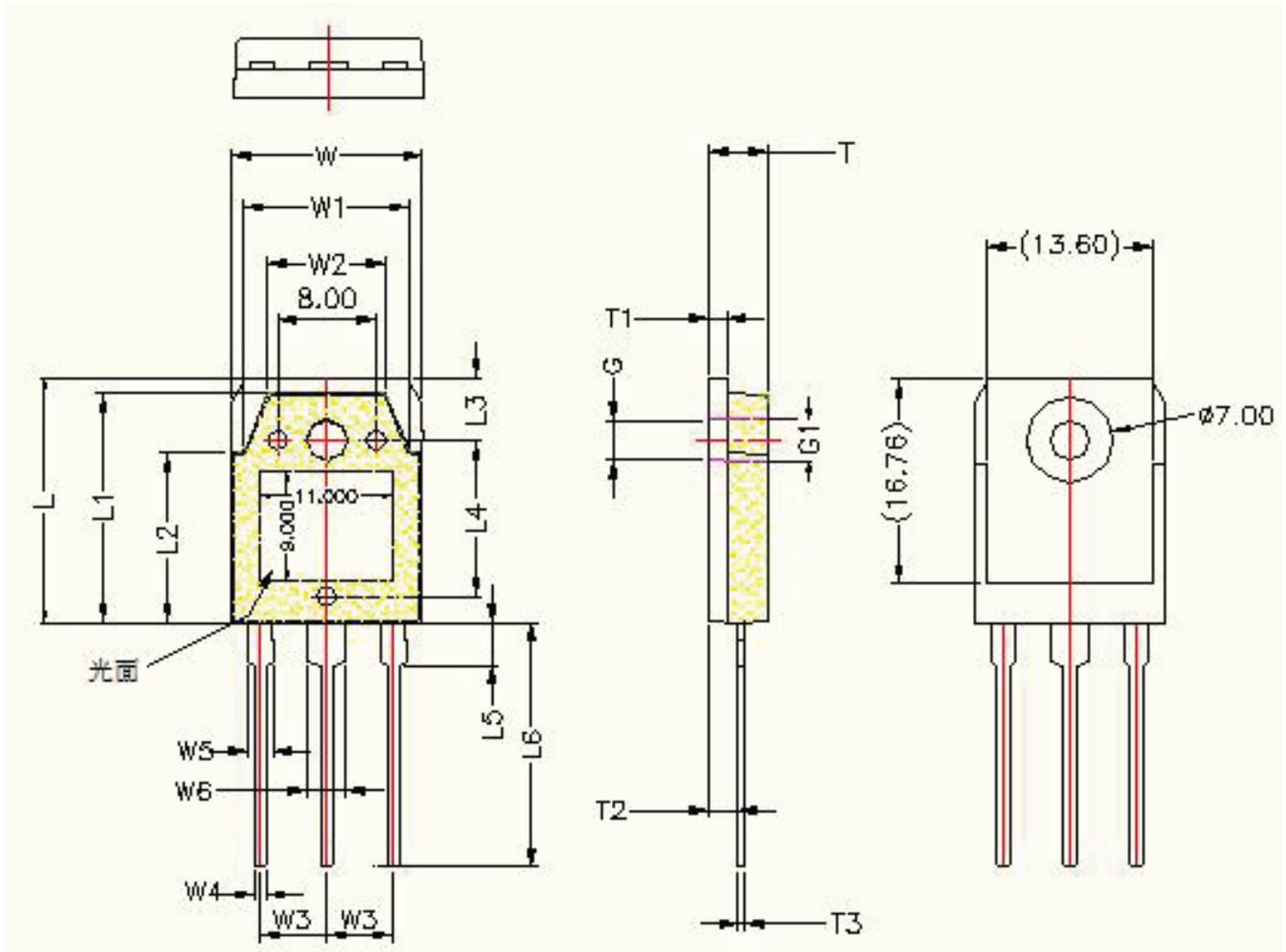


符号	机械尺寸/mm			符号	机械尺寸/mm		
	最小值	典型值	最大值		最小值	典型值	最大值
A	4.80	5.00	5.20	E2		5.00	
A1	2.21	2.41	2.61	E3		2.50	
A2	1.90	2.00	2.10	e		5.44	
b	1.10	1.20	1.35	L	19.42	19.92	20.42
b1		2.00		L1		4.13	
b2		3.00		P	3.50	3.60	3.70
c	0.55	0.60	0.75	P1		7.19	
D	20.80	21.00	21.20	P2		2.50	
D1		16.55		Q		5.80	
D2		1.20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

**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		