CMSA016N08

80V, 1.6mΩ typ., 280A N-Channel MOSFET

General Description

This N-Channel MOSFET is produced using an advanced SGT process that has been especially tailored to minimize the on-state resistance and yet maintain superior switching performance.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
80V	1.8mΩ	280A

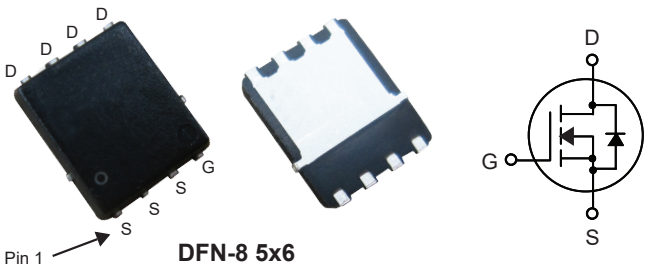
Applications

- Load Switch
- Synchronous Rectifier
- Motor Control Switch

Features

- Low On-Resistance
- 100% avalanche tested
- Small Footprint (5x6 mm) for Compact Design
- RoHS Compliant

DFN-8 5x6 Pin Configuration



DFN-8 5x6

Type	Package	Marking
CMSA016N08	DFN-8 5x6	CMSA016N08

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	280	A
I_D@T_C=100℃	Continuous Drain Current	196	A
I_{DM}	Pulsed Drain Current	1120	A
EAS	Single Pulse Avalanche Energy[1]	1300	mJ
P_D@T_C=25℃	Total Power Dissipation	320	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[2]	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.47	℃/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=250uA	80	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=50A	---	1.6	1.8	mΩ
		V_{GS}=6V , I_D=30A	---	2.4	2.8	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	---	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	44	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.5	---	Ω
Q_g	Total Gate Charge	I_D=50A	---	131	---	nC
Q_{gs}	Gate-Source Charge	V_{DS}=40V	---	42	---	
Q_{gd}	Gate-Drain Charge	V_{GS}=10V (Note 3)	---	28	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=40V	---	27	---	ns
T_r	Rise Time	V_{GS} =10V	---	73	---	
$T_{d(off)}$	Turn-Off Delay Time	R_G=3.9Ω , R_L=0.8Ω	---	82	---	
T_f	Fall Time	I_D = 50A (Note 3)	---	45	---	
C_{iss}	Input Capacitance	V_{DS}=40V , V_{GS}=0V , f=1MHz	---	8200	---	pF
C_{oss}	Output Capacitance		---	1200	---	
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	---	---	280	A
I_{SM}	Pulsed Source Current		---	---	1120	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=50A ,T_J=25℃	---	0.84	1.3	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs	---	78	---	ns
Q_{rr}	Reverse Recovery Charge	V_{GS} =0V , I_{DS}=50A (Note 3)	---	72	---	nC

Note :

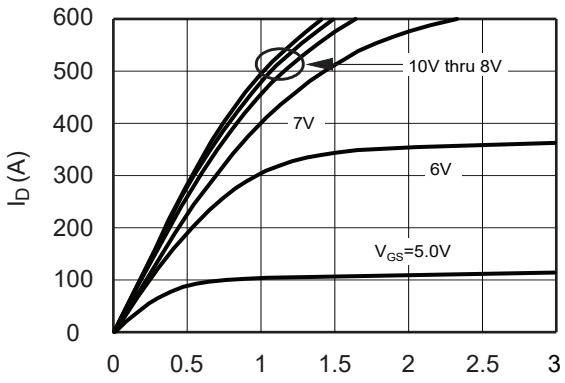
1.The EAS data shows Max. rating . The test condition is V_{DD}=50V , V_{GS}=10V , L=1mH , I_{AS}=51A.

2.Surface Mounted on 1 in^2 pad area, t≤10 sec.

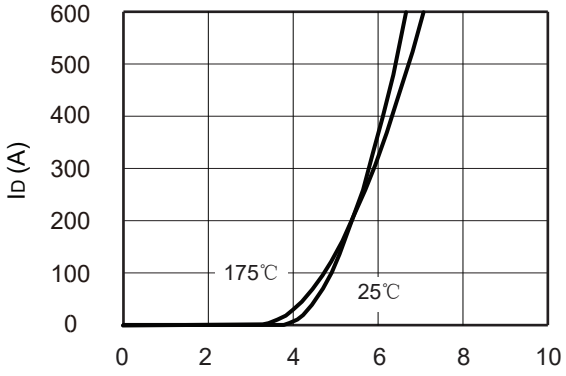
3.Guaranteed by design, not subject to production testing.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

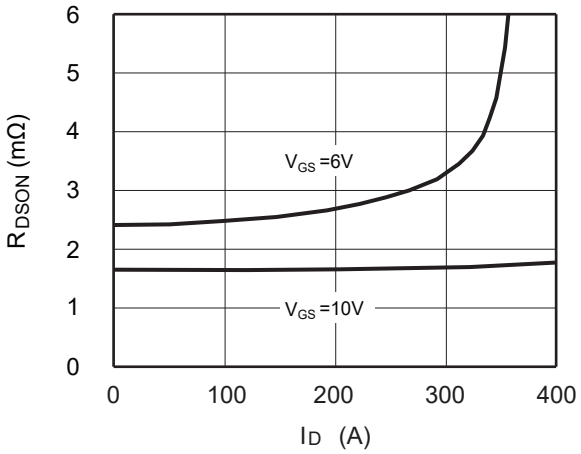
Typical Characteristics



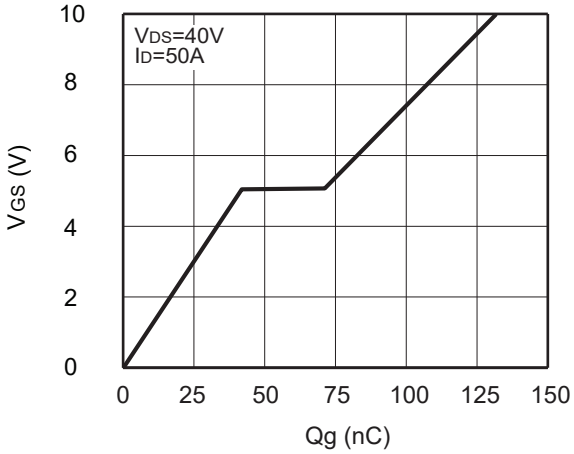
Output Characteristics



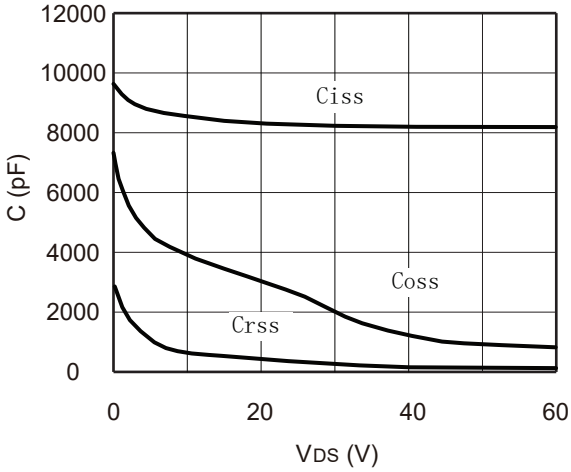
transfer characteristics



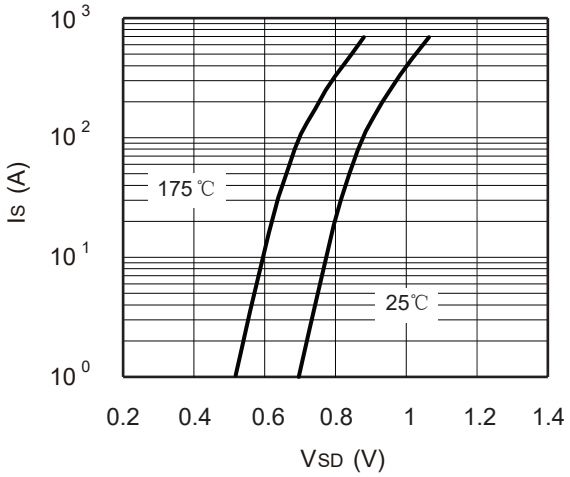
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage

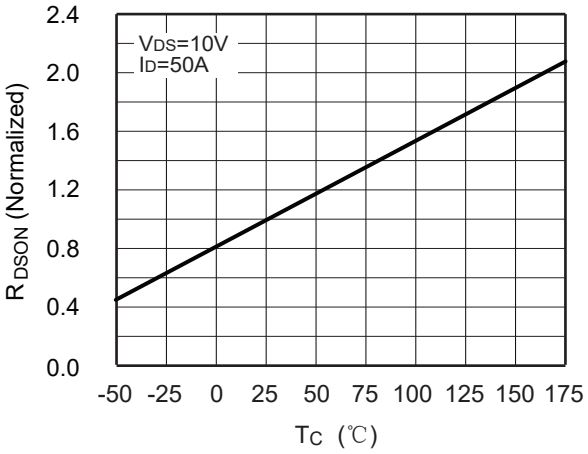


Capacitance Characteristics

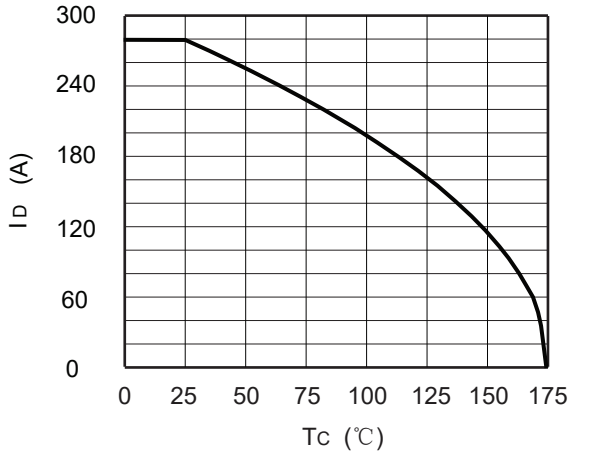


Body-Diode Characteristics

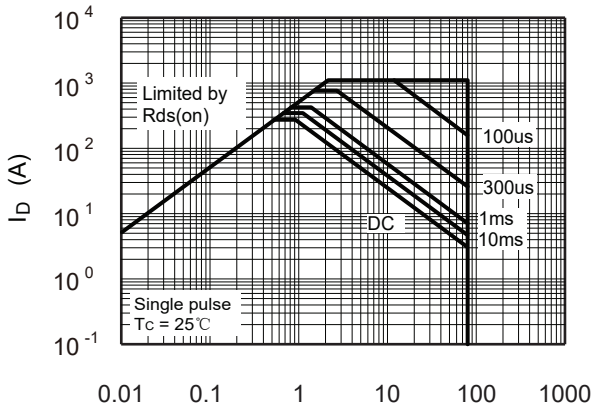
Typical Characteristics



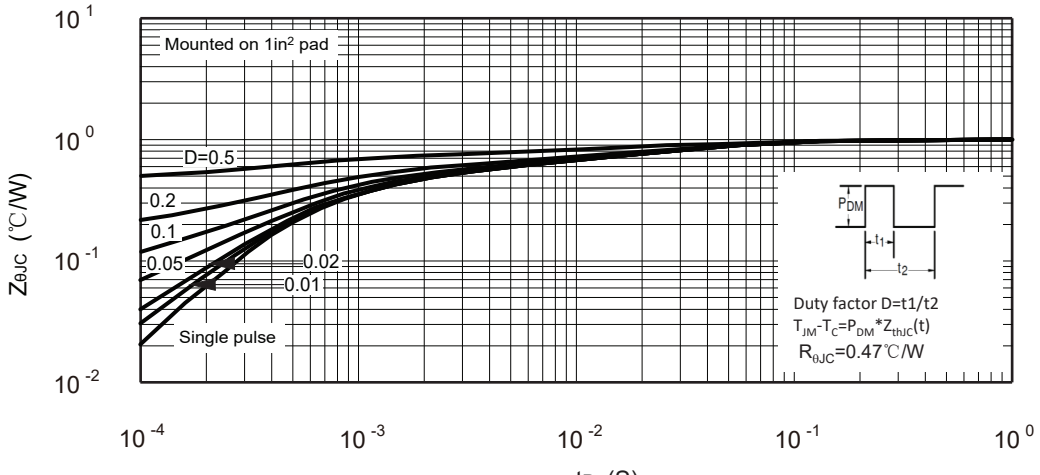
On-Resistance vs. Junction Temperature



Maximum Drain Current vs. Case Temperature



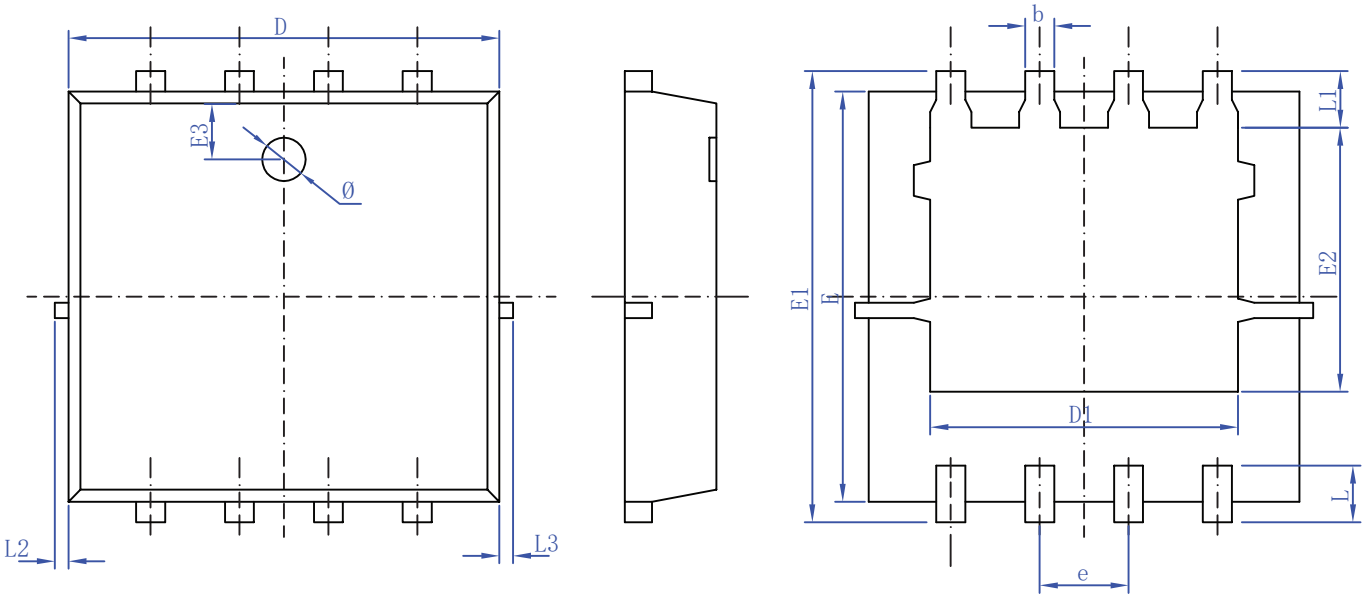
Safe Operating Area

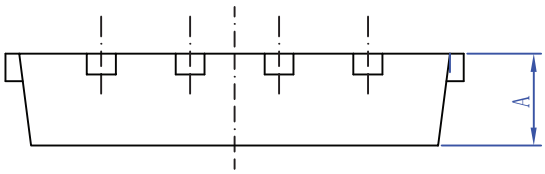


Transient thermal impedance

Package Dimension

DFN-8 5x6 Unit :mm





Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		

注：
1.未注公差±0.05未标注圆角R max=0.25