CMSA030N04

N-Channel Enhancement Mode Field Effect Transistor

General Description

The CMSA030N04 uses advanced technology to provide excellent RDS (ON) . This device is ideal for high-frequency switching and synchronous rectification.

Product Summary

BVDSS	RDSON	ID
40V	3mΩ	100A

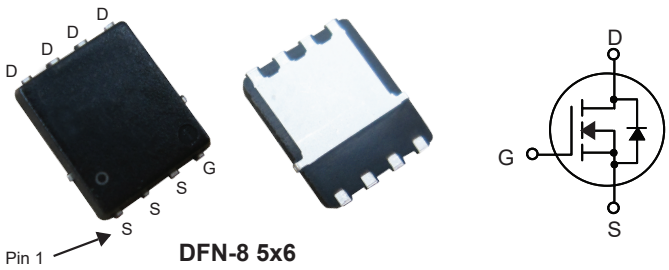
Applications

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Features

- SGT Technology
- 100% avalanche tested
- Low On-Resistance
- RoHS Compliant

DFN-8 5x6 Pin Configuration



DFN-8 5x6

Type	Package	Marking
CMSA030N04	DFN-8 5x6	CMSA030N04

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	100	A
I_D@T_C=100℃	Continuous Drain Current	70	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy[1]	225	mJ
P_D@T_C=25℃	Total Power Dissipation	70	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient [2]	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.78	℃/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	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=15A	---	2.6	3	mΩ
		V_{GS}=4.5V , I_D=10A	---	3.6	4.6	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5 V , I_D=10A	---	25	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	3	---	Ω
Q_g	Total Gate Charge	V_{DD}=20V , I_D=50A V_{GS}=0 to 10 V	---	25	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	4	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=20V , V_{GS}=10V , I_D=50A R_{GEN} =1.6Ω	---	4	---	ns
T_r	Rise Time		---	4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	19	---	
T_f	Fall Time		---	3	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	1800	---	pF
C_{oss}	Output Capacitance		---	400	---	
C_{rss}	Reverse Transfer Capacitance		---	25	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	100	A
$I_{S,pulse}$	Diode pulse current		---	---	400	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=10A , Tj=25℃	---	0.78	1.2	V

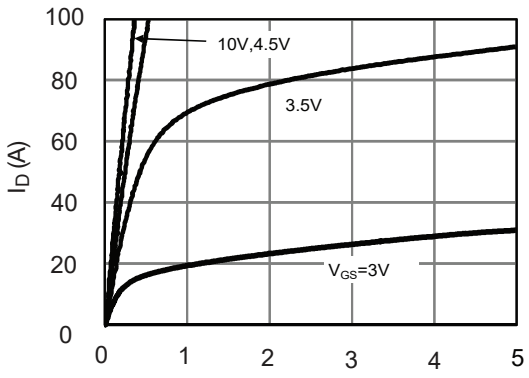
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.5 mH,I_{AS}=30A.

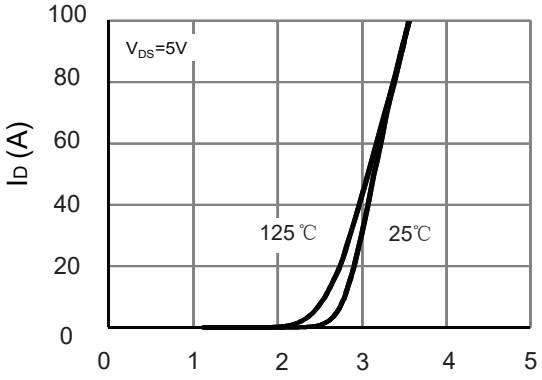
2.Device on 40mmx40mmx1.5mm epoxy PCB FR4 with 6cm2 (one layer, 70μm thick) copper area for drain connection. PCB is vertical in still air.

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.

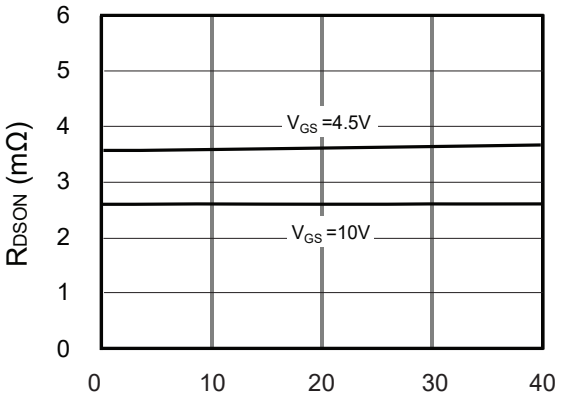
Typical Characteristics



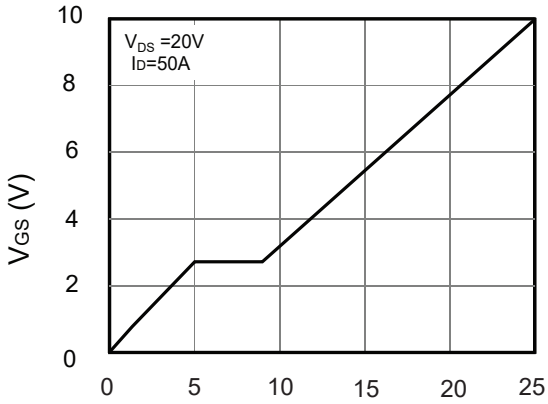
Output Characteristics



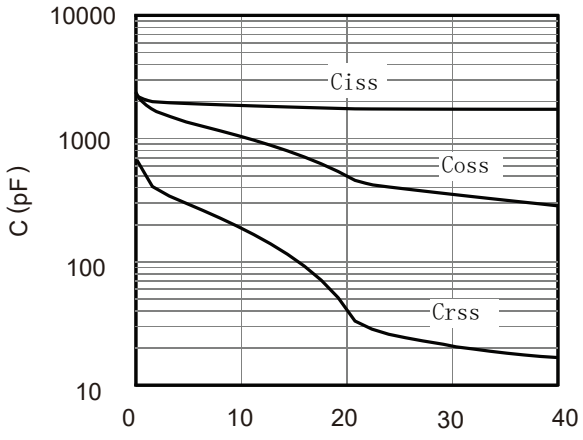
transfer characteristics



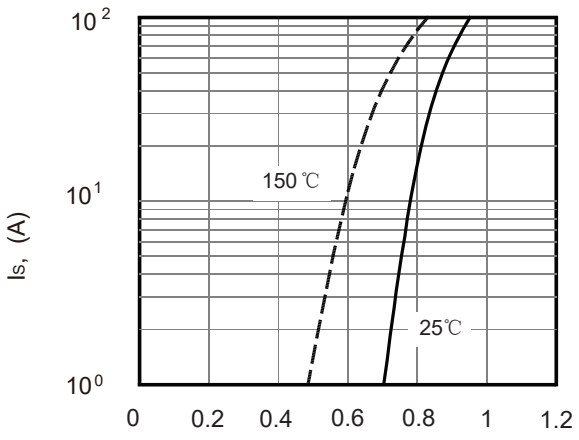
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics