CMSA050N15

N-Channel Enhancement Mode Field Effect Transistor

General Description

This N-channel MOSFET is manufactured with advanced CMOS technology, and is suitable for the most demanding DC-DC converter applications where high efficiency is required.

Product Summary

BVDSS	RDSON	ID
150V	50mΩ	15A

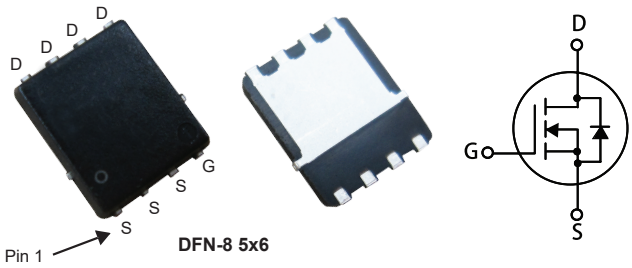
Applications

- Switching application
- Synchronous Rectification

Features

- N-Channel MOSFET
- Low ON-resistance
- Surface Mount Package
- RoHS Compliant

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA050N15	DFN-8 5*6	CMSA050N15

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±25	V
I_D@T_C=25℃	Continuous Drain Current[1]	15	A
I_D@T_C=25℃	Continuous Drain Current[1]	10	A
EAS	Single Pulse Avalanche Energy[2]	68	mJ
I_{DM}	Pulsed Drain Current	45	A
P_D@T_C=25℃	Total Power Dissipation[3]	70	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-to-Ambient[1]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case[1]	---	2	℃/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	150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=10A	---	---	50	mΩ
		V_{GS}=4.5V , I_D=10A	---	---	60	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1.0	---	3.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=150V ,V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±25V, V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=5A	---	13	---	S
Q_g	Total Gate Charge	V_{DS}=75V , I_D=10A V_{GS}=10V	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=75V , V_{GS}=10V , I_D=10A R_G=3.3Ω	---	20	---	ns
T_r	Rise Time		---	6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	28	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	1100	---	pF
C_{oss}	Output Capacitance		---	90	---	
C_{rss}	Reverse Transfer Capacitance		---	6	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	15	A
I_{SM}	Pulsed Source Current		---	---	45	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=10A , Tj=25℃	---	---	1.2	V

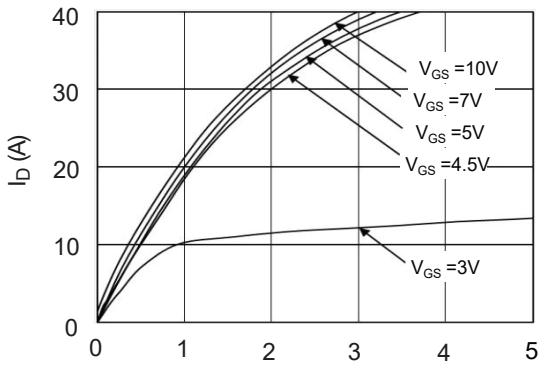
Note:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

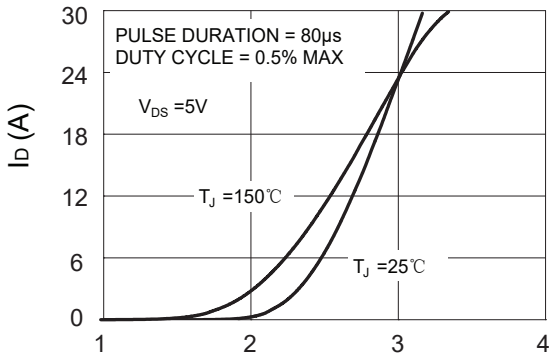
2.The EAS data shows Max. rating . The test condition is V_{DD}=30V,V_{GS}=10V,L=0.5mH,I_{AS}=16.6A

3.The power dissipation is limited by 150℃ junction temperature.

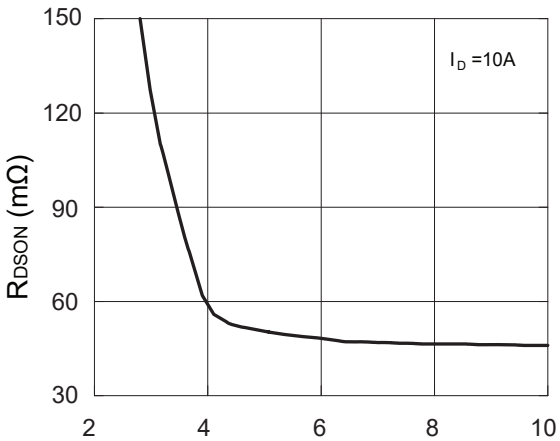
Typical Characteristics



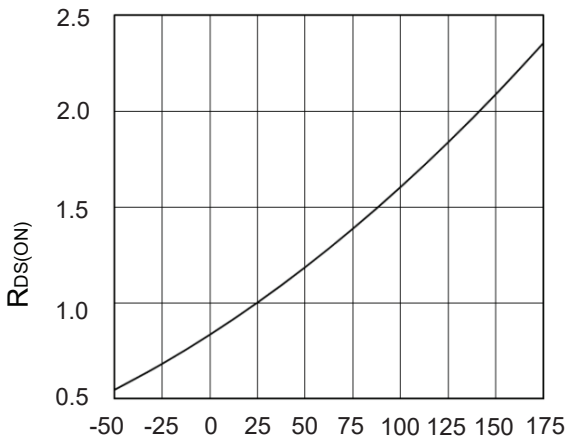
Output Characteristics



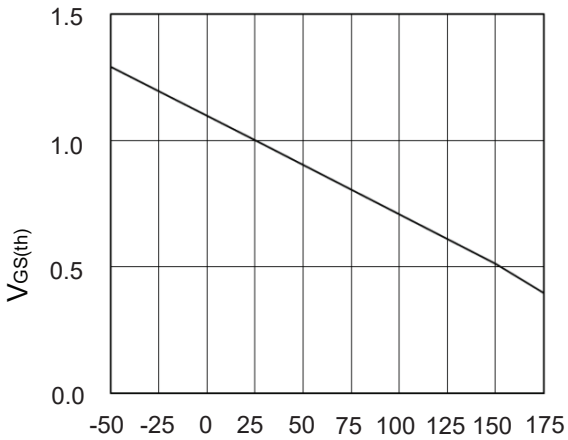
transfer characteristics



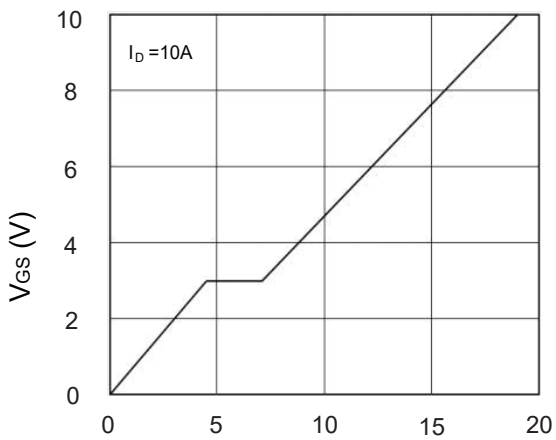
On-Resistance vs Gate Voltage



On-Resistance vs temperature

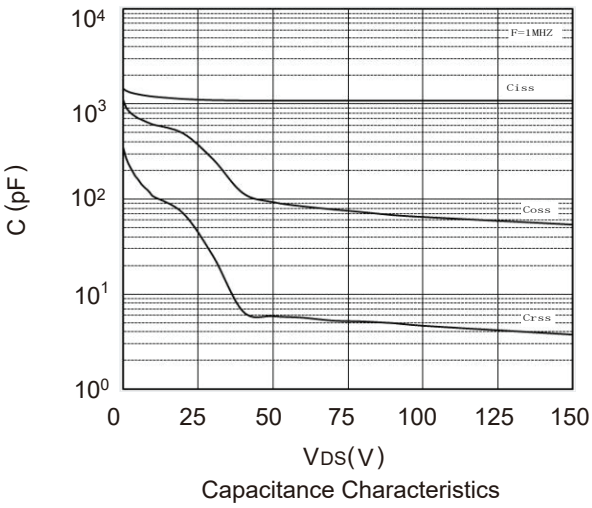


gate threshold voltage vs temperature

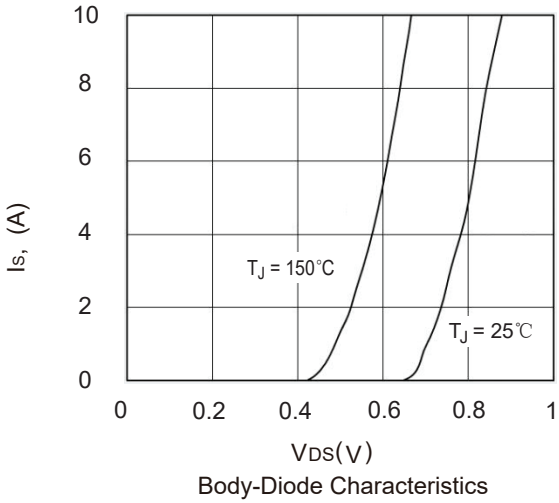


Gate charge vs gate-source voltage

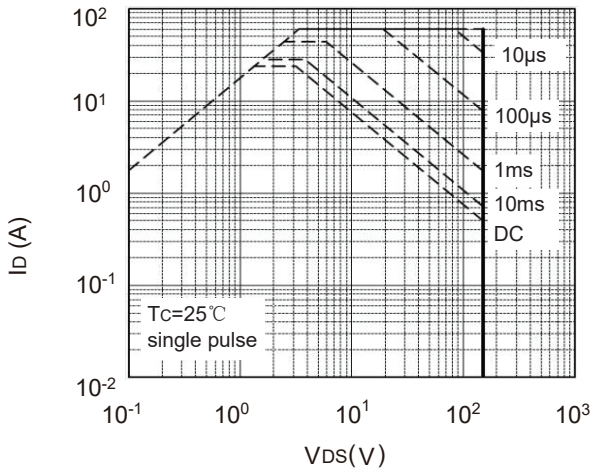
Typical Characteristics



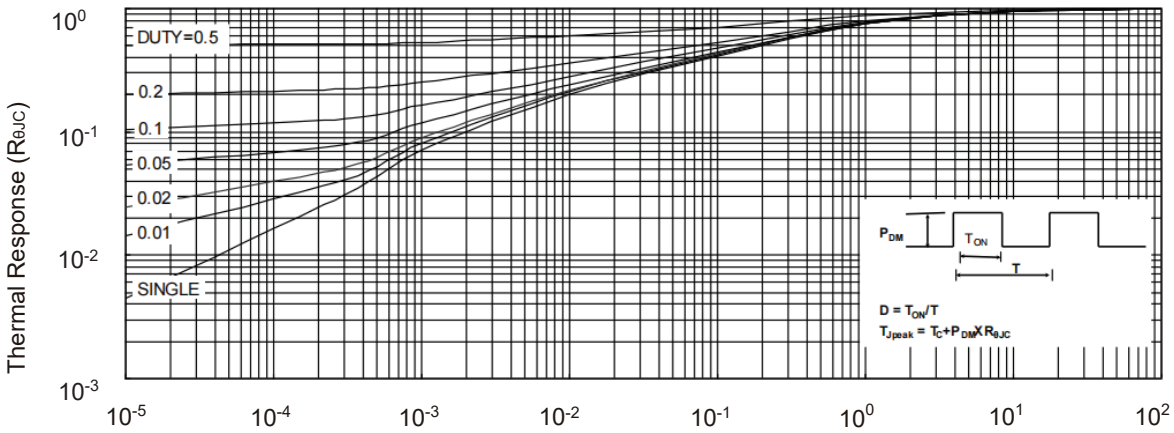
Capacitance Characteristics



Body-Diode Characteristics



Safe operating area



t , Pulse Width (s)

Thermal impedance