CMSC045N15

150V, 33mΩ typ., 21A N-Channel MOSFET

General Description

The CMSC045N15 uses advanced SGT technology to provide excellent RDS(ON).This is suitable device for Synchronous Rectification For Server and general purpose applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
150V	41mΩ	21A

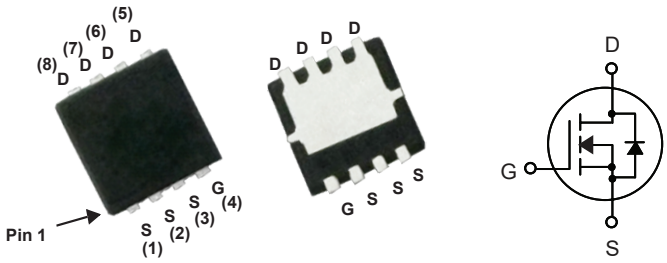
Applications

- DC-DC converters

Features

- Low On-Resistance
- Simple Drive Requirements
- Surface Mount Package
- RoHS Compliant

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC045N15	DFN-8 3.3x3.3	045N15

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	21	A
I_D@T_C=100℃	Continuous Drain Current	15	A
I_{DM}	Pulsed Drain Current	63	A
EAS	Single Pulse Avalanche Energy[1]	56	mJ
P_D@T_C=25℃	Total Power Dissipation	45	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-ambient	---	45	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.78	℃/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	150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=10A	---	33	41	mΩ
		V_{GS}=4.5V , I_D=10A	---	37	50	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	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	---	11	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.0	---	Ω
Q_g	Total Gate Charge	I_D=10A V_{DS}=75V V_{GS}=10V	---	19	---	nC
Q_{gs}	Gate-Source Charge		---	4.5	---	
Q_{gd}	Gate-Drain Charge		---	2.6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=75V V_{GS}=10V R_G = 3.3Ω I_D =10A	---	18	---	ns
T_r	Rise Time		---	5.8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	27	---	
T_f	Fall Time		---	4.5	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	1100	---	pF
C_{oss}	Output Capacitance		---	430	---	
C_{rss}	Reverse Transfer Capacitance		---	35	---	

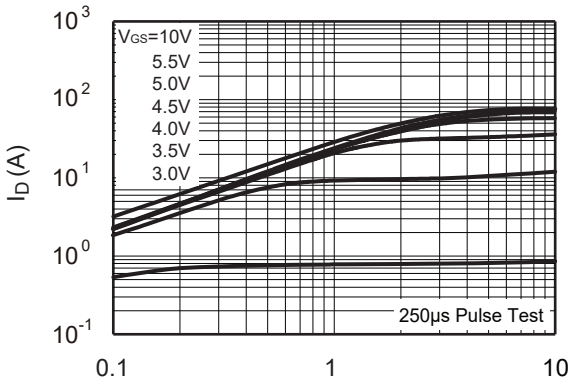
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	21	A
I_{SM}	Pulsed Source Current		---	---	63	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=10A ,T_J=25℃	---	0.84	1.2	V

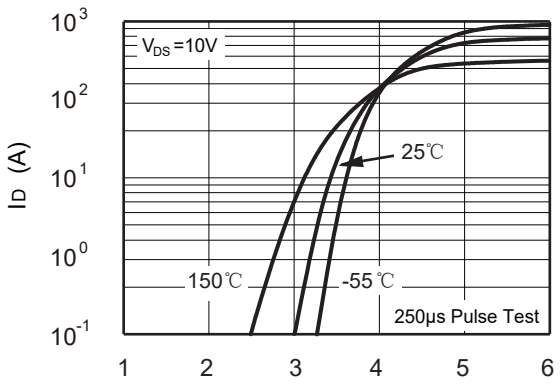
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=30V , V_{GS}=10V , L=0.5mH , I_{AS}=15A.

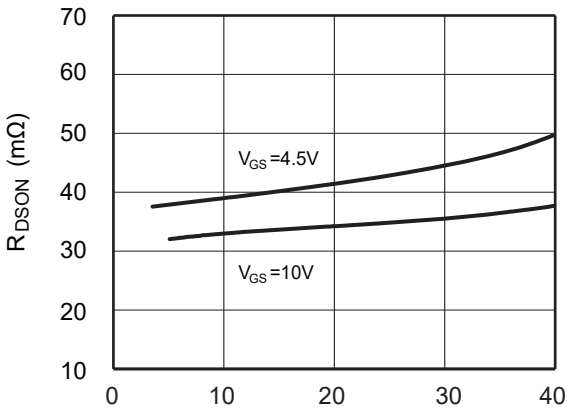
Typical Characteristics



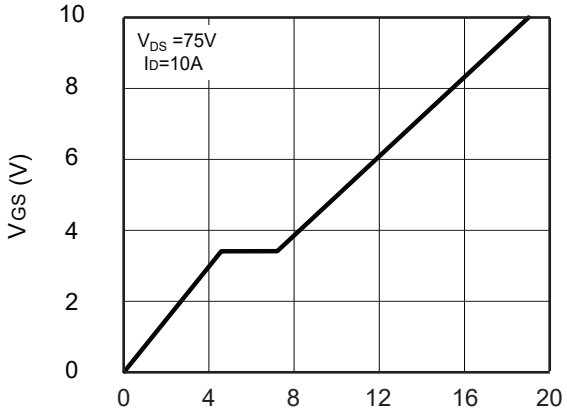
Output Characteristics



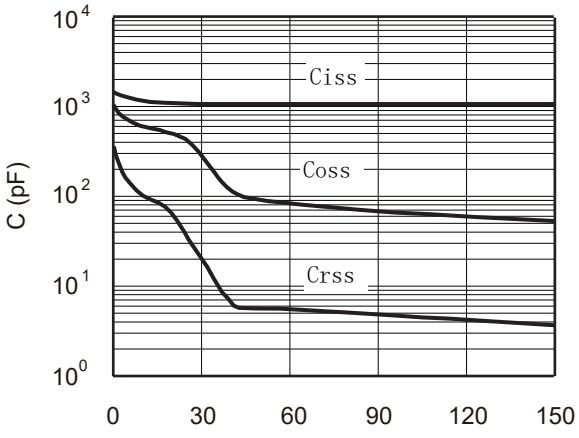
transfer characteristics



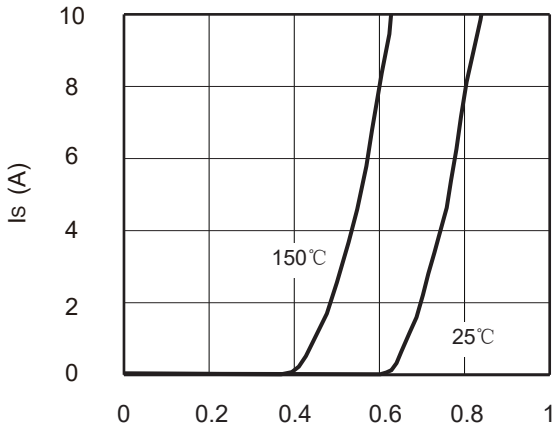
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



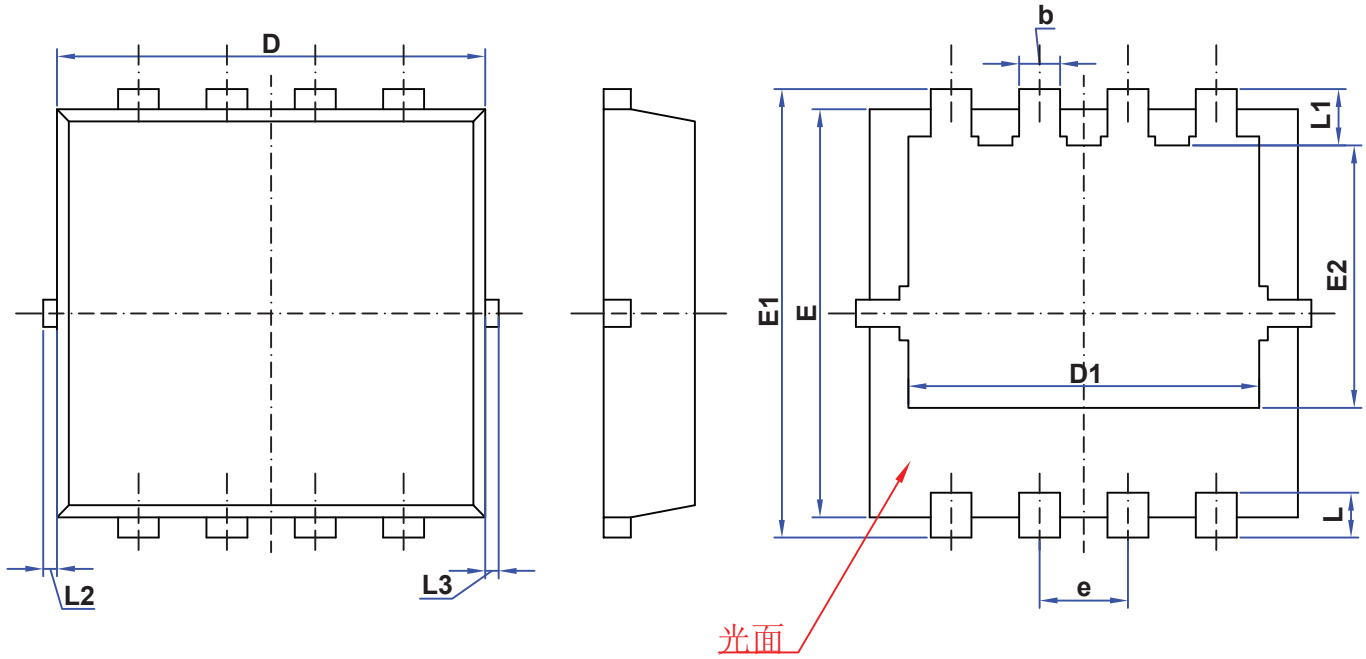
Capacitance Characteristics

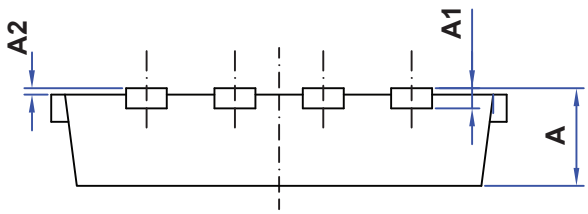


Body-Diode Characteristics

Package Dimension

DFN-8 3.3x3.3 Unit :mm





注：
1. 未注公差±0.10,
2. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
3. 标注单位mm

Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.700	0.900	0.800
A1	0.100	0.200	0.150
A2	-	0.050	-
D	3.000	3.200	3.100
D1	2.350	2.550	2.450
E	3.000	3.200	3.100
E1	3.200	3.600	3.400
E2	1.635	1.835	1.735
b	0.200	0.400	0.300
e	0.550	0.750	0.650
L	0.250	0.650	0.450
L1	0.345	0.745	0.545
L2	0~0.100		
L3	0~0.100		