250V N-Channel MOSFET

General Description

The CMH82N25 uses advanced planar stripe DMOS technology and design to provide excellent RDS(ON) . These devices are well suited for high efficient switched mode power supplies and active power factor correction.

Product Summary

BVDSS	RDSON	ID
250V	35mΩ	90A

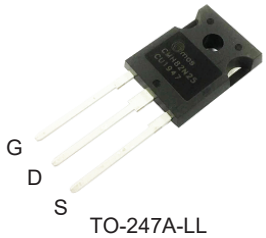
Applications

- DC-AC converters
- SMPS Power
- UPS (Uninterruptible Power Supply)

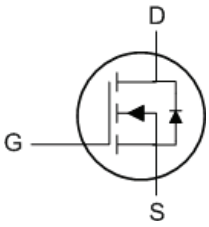
Features

- Low on-resistance
- Fast Switching
- RoHS Compliant

TO-247A-LL Pin Configuration



TO-247A-LL
CMH82N25



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	250	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	90	A
I_D@T_C=100℃	Continuous Drain Current	66	A
I_{DM}	Pulsed Drain Current	270	A
EAS	Single Pulse Avalanche Energy [1]	1200	mJ
P_D@T_C=25℃	Total Power Dissipation	550	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	---	40	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.49	℃/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	250	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=40A	---	29	35	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	3	3.8	4.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=250V, V_{GS}=0V	---	---	25	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	48	---	S
Q_g	Total Gate Charge	I_D =82A V_{DS}=250V V_{GS}=10V	---	125	---	nC
Q_{gs}	Gate-Source Charge		---	45	---	
Q_{gd}	Gate-Drain Charge		---	50	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=125 V I_D =82A R_G=25Ω V_{GS}=15V	---	80	---	ns
T_r	Rise Time		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time		---	295	---	
T_f	Fall Time		---	80	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	7000	---	pF
C_{oss}	Output Capacitance		---	780	---	
C_{rss}	Reverse Transfer Capacitance		---	70	---	

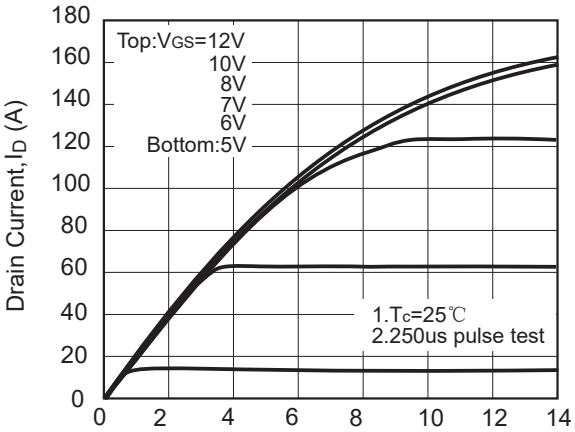
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	90	A
I_{SM}	Pulsed Source Current		---	---	270	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=40 A, T_J=25℃	---	---	1.2	V

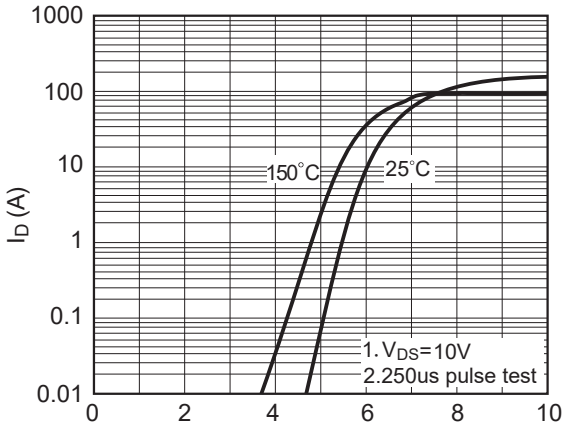
Note :

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

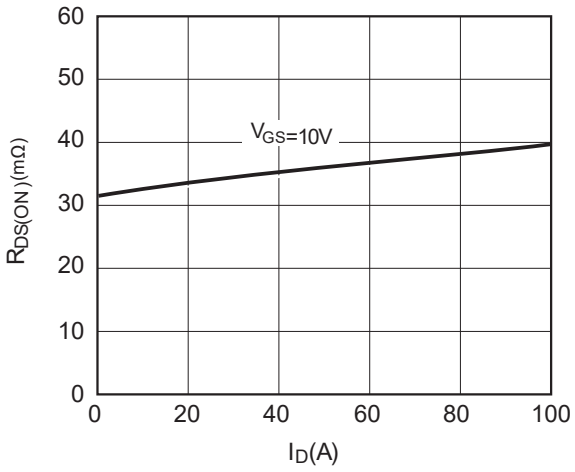
Typical Characteristics



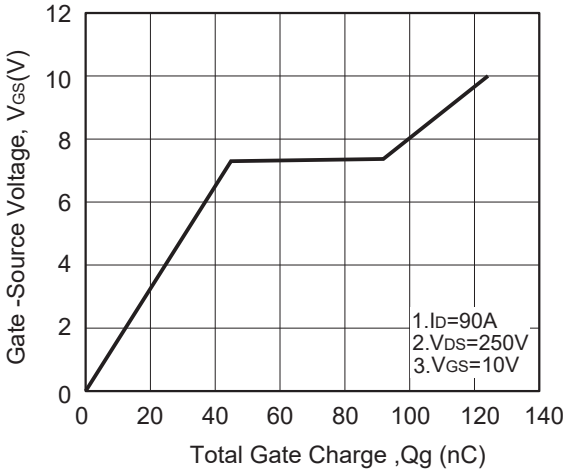
Typical Output Characteristics



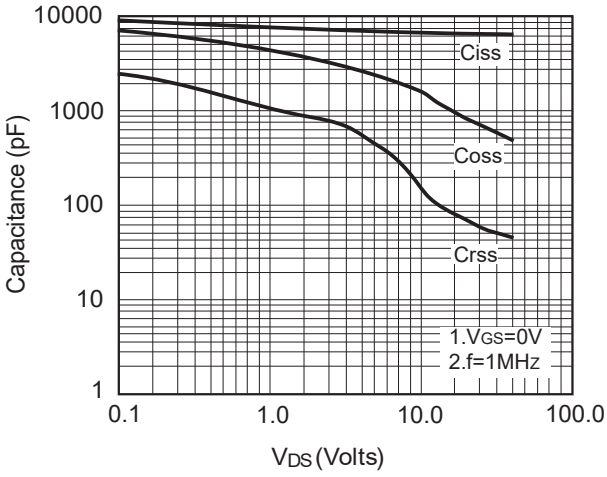
Transfer Characteristics



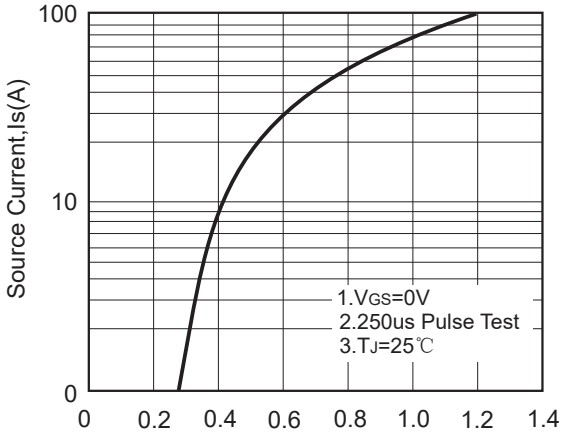
On-Resistancevs. Drain Current and Gate Voltage



Typical Total gate Charge Characteristics

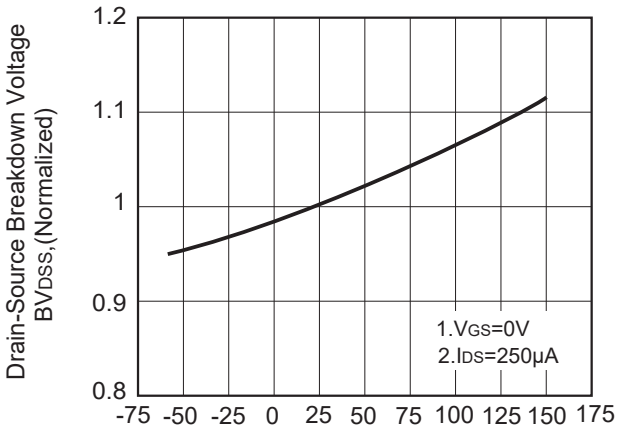


Capacitance Characteristics

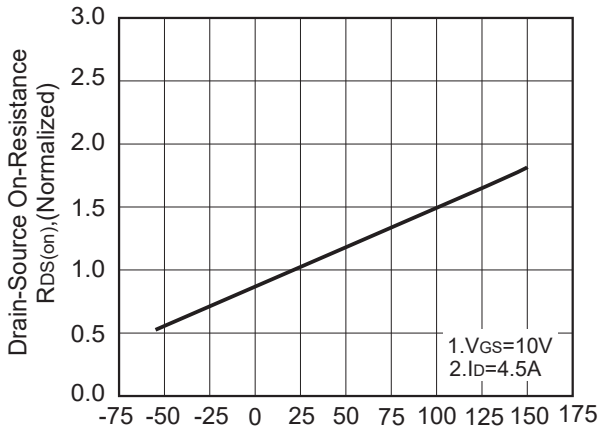


Body-Diode Forward Voltage Variation with Source Current

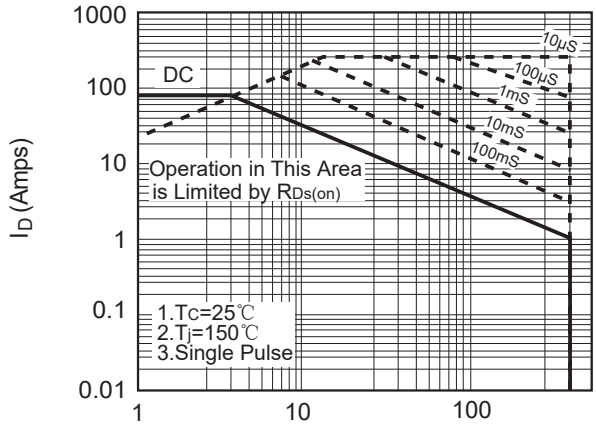
Typical Characteristics



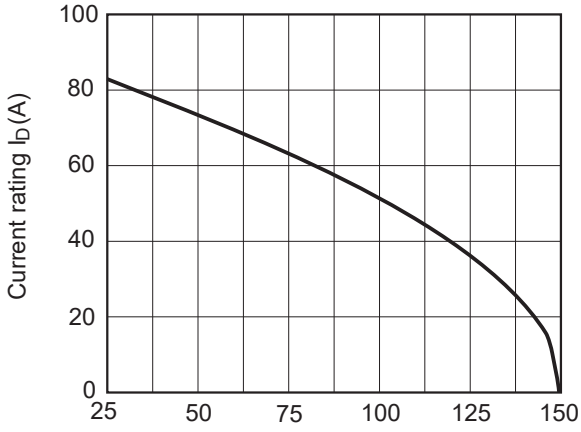
Breakdown Voltage Variation vs. Temperature



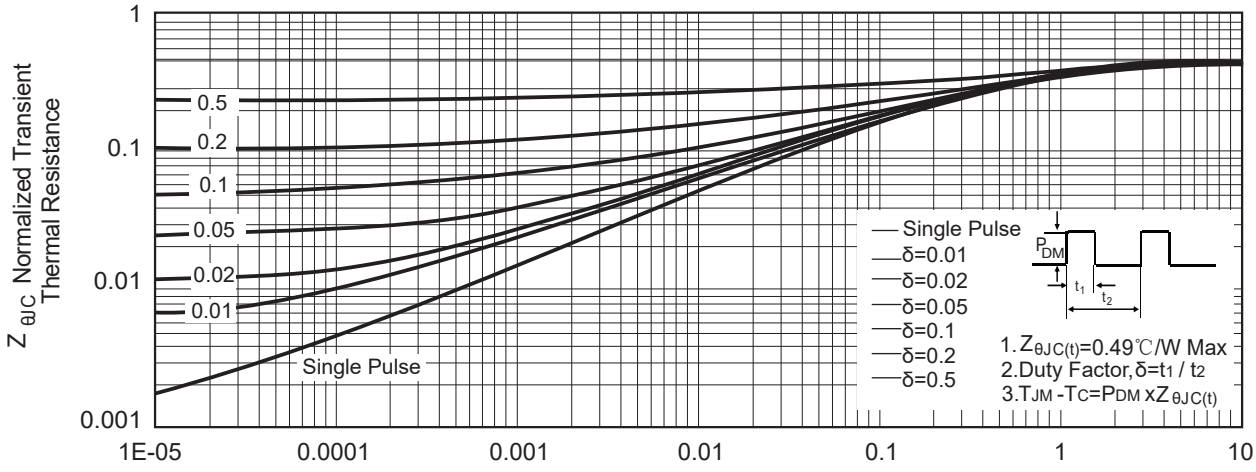
On-Resistance Variation vs. Temperature



Maximum Safe Operating Area



Current De-rating



Normalized Maximum Transient Thermal Impedance