CMH50N20

200V N-Channel MOSFET

General Description

The CMH50N20 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications.

Product Summary

BVDSS	RDSON	ID
200V	48mΩ	50A

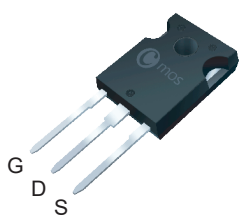
Applications

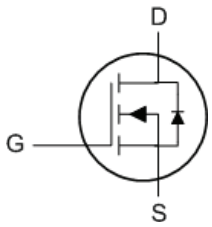
- DC-AC converters
- SMPS Power
- UPS (Uninterruptible Power Supply)

Features

- V_{DS} =200V,I_D =50A
  $RDS_{(ON)}$ =48mΩ @ V_{GS}=10V
- Low on-resistance
- Fast Switching
- RoHS Compliant

TO-247A-LL Pin Configuration





TO-247A-LL

Type	Package	Marking
CMH50N20	TO-247	CMH50N20

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	50	A
I_D@T_C=100℃	Continuous Drain Current	40	A
I_{DM}	Pulsed Drain Current	150	A
EAS	Single Pulse Avalanche Energy [1]	1500	mJ
P_D@T_C=25℃	Total Power Dissipation	280	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
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.45	℃/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	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=25A	---	---	48	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=200V, V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=25A	---	35	---	S
Q_g	Total Gate Charge	I_D =48A V_{DS}=160V V_{GS}=10V	---	100	---	nC
Q_{gs}	Gate-Source Charge		---	30	---	
Q_{gd}	Gate-Drain Charge		---	45	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=100 V I_D =48A R_G=25Ω	---	81	---	ns
T_r	Rise Time		---	432	---	
$T_{d(off)}$	Turn-Off Delay Time		---	221	---	
T_f	Fall Time		---	192	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	4600	---	pF
C_{oss}	Output Capacitance		---	700	---	
C_{rss}	Reverse Transfer Capacitance		---	75	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	150	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=25A, 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}=58A.

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Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

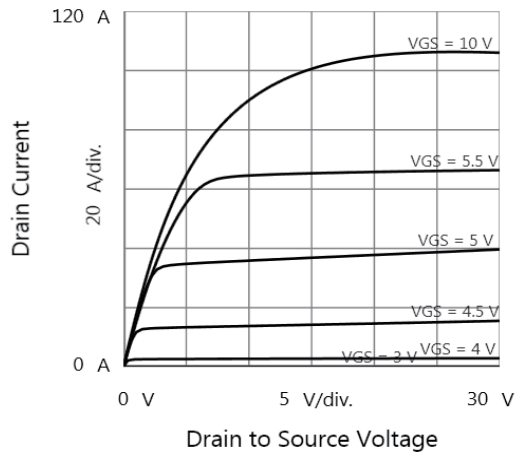

Figure 1. Output Characteristics (T_J = 25ºC)

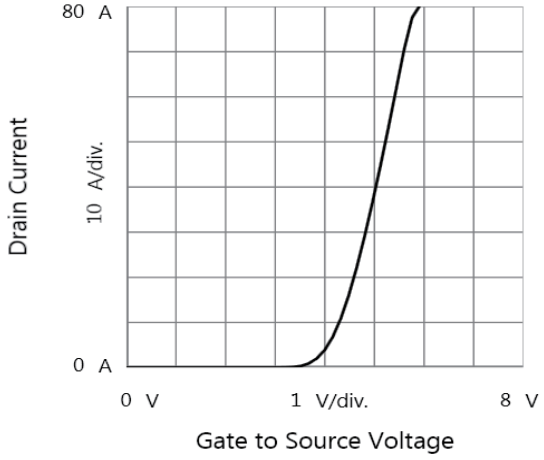

Figure 2. Transfer Characteristics

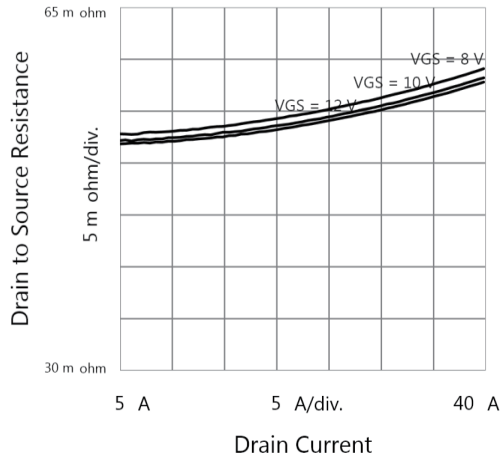

Figure 3. Drain to Source Resistance vs. Drain Current vs. Gate to Source Voltage

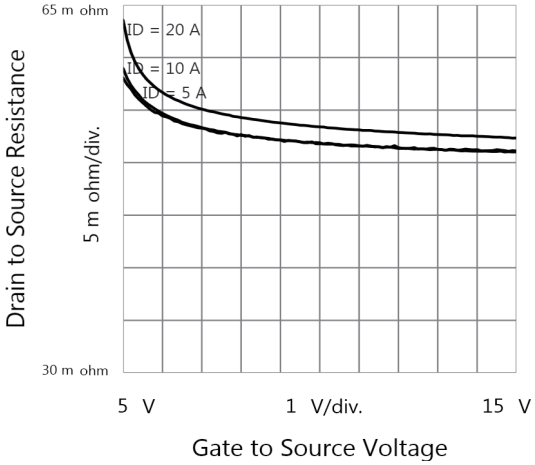

Figure 4. Drain to Source Resistance

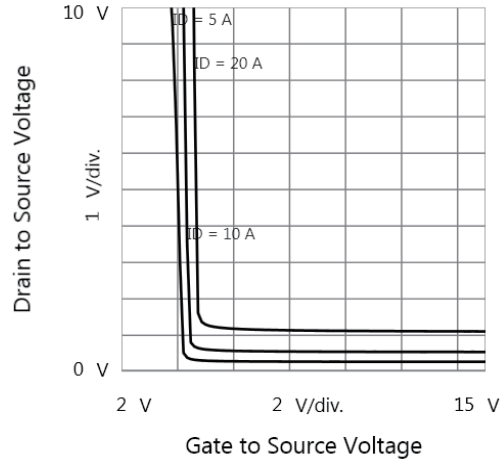

Figure 5. Drain to Source Voltage vs. Gate to Source Voltage

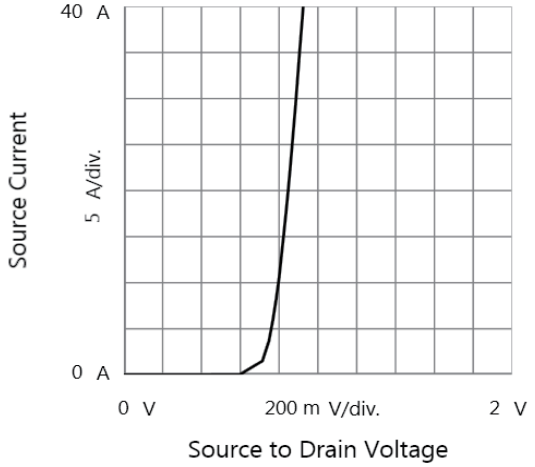

Figure 6. Body Diode Forward Characteristics

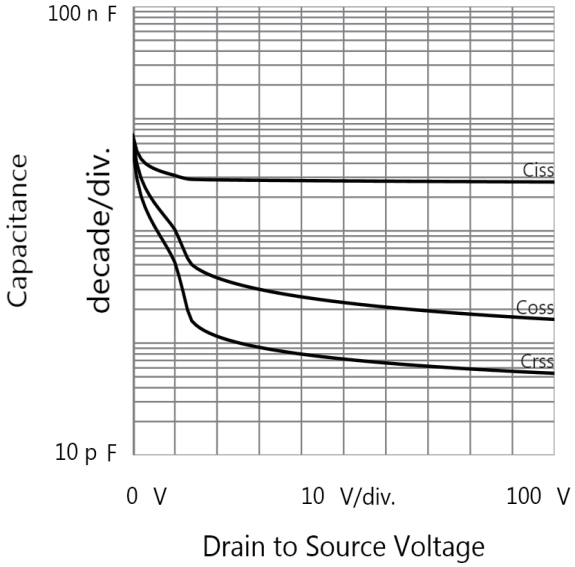

Figure 7. Capacitance

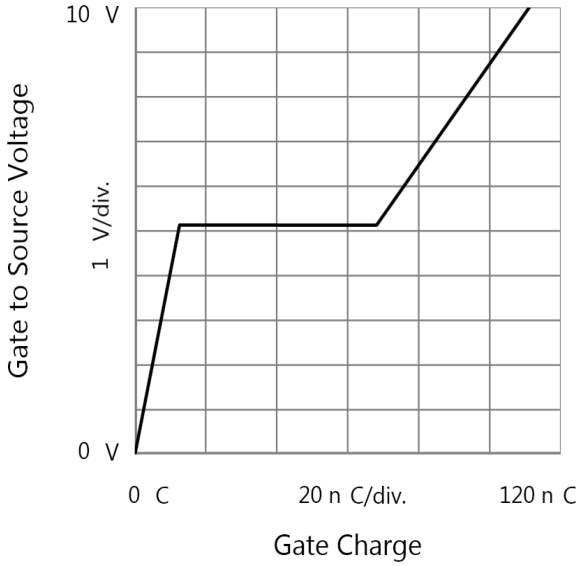

Figure 8. Gate Charge

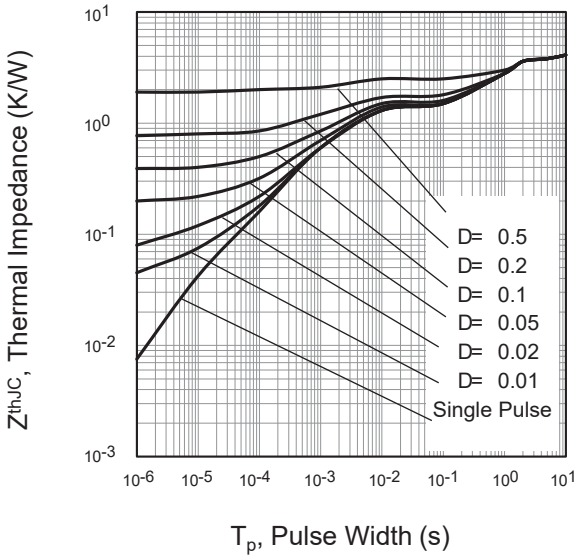

Figure 9. Transient Thermal Impedance

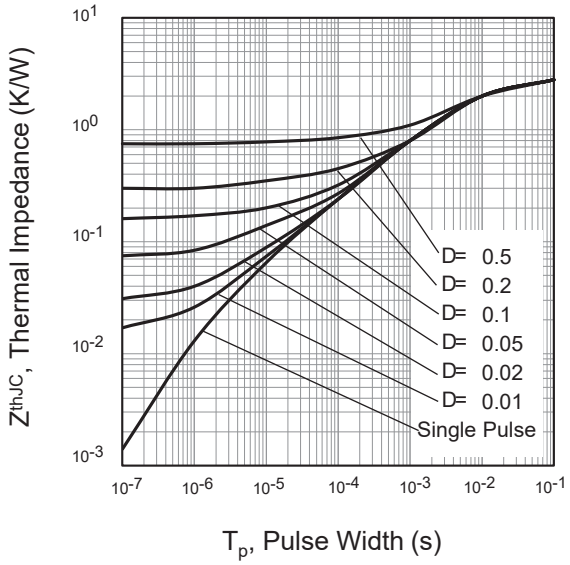

Figure 10. Transient Thermal Impedance

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

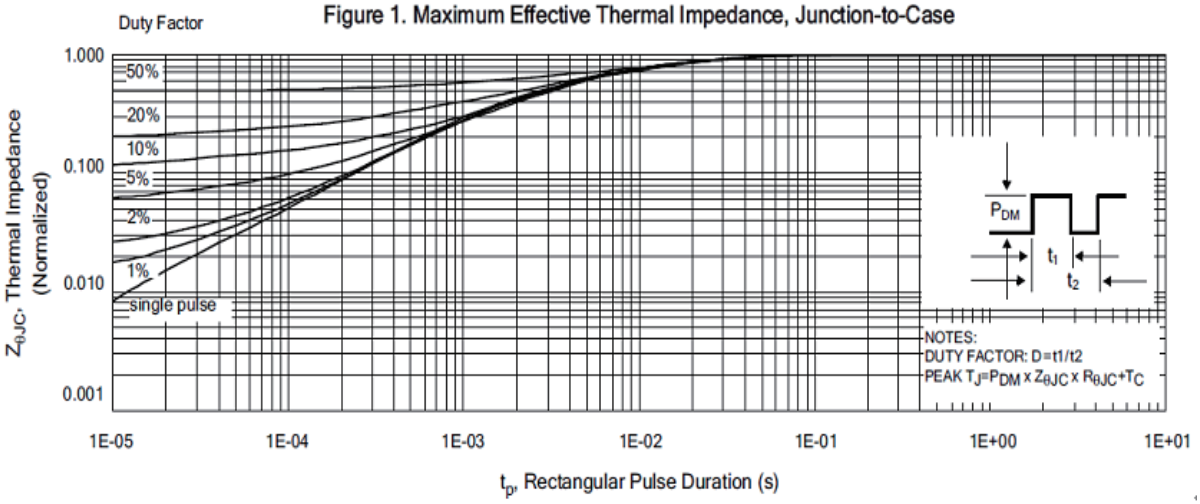

Figure 2. Maximum Power Dissipation vs Case Temperature

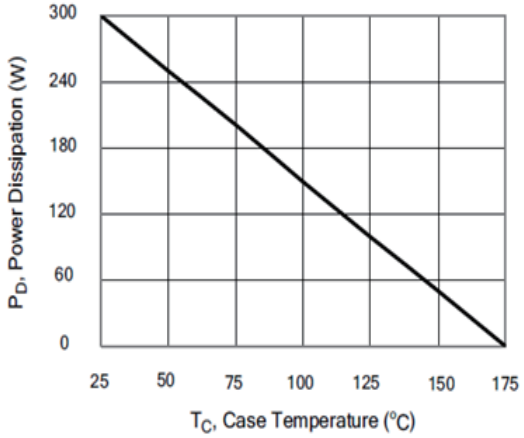

Figure3. Maximum Continuous Drain Current vs Case Temperature

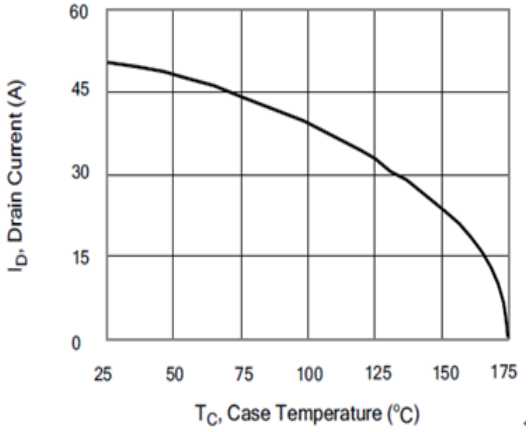

Figure 4. Typical Output Characteristics

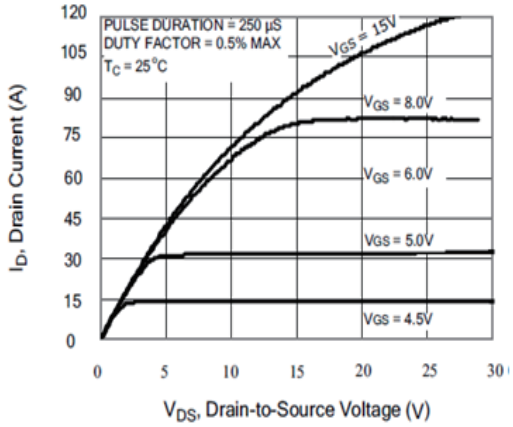

Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

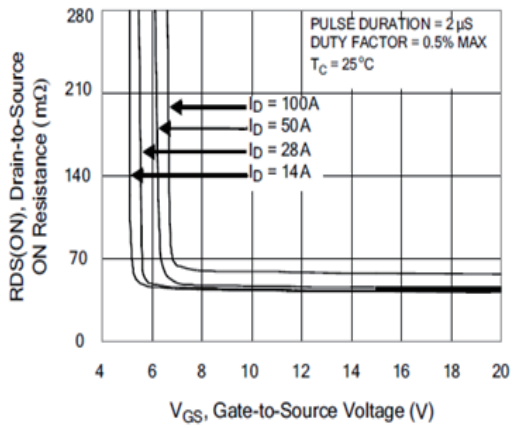

Figure 6. Maximum Peak Current Capability

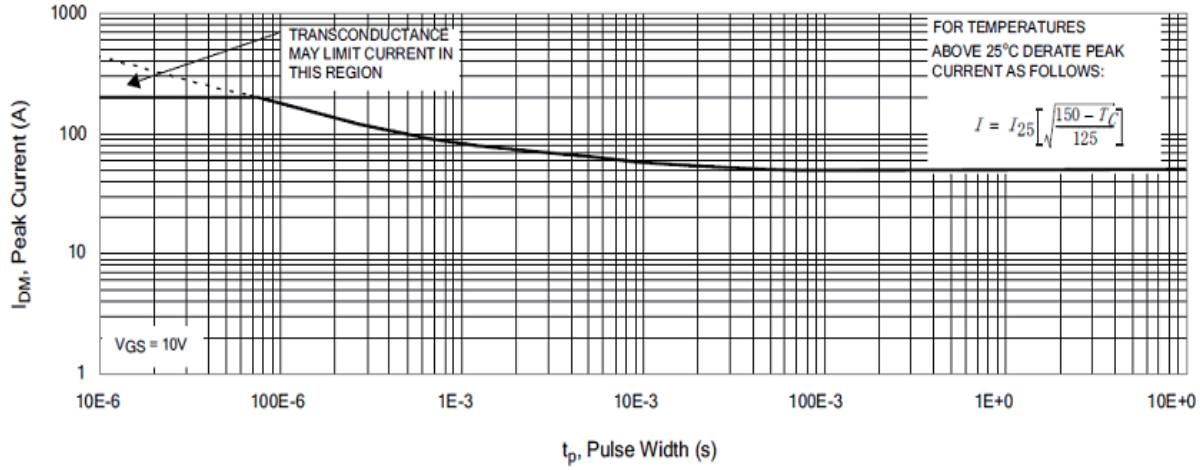

Figure 7. Typical Transfer Characteristics

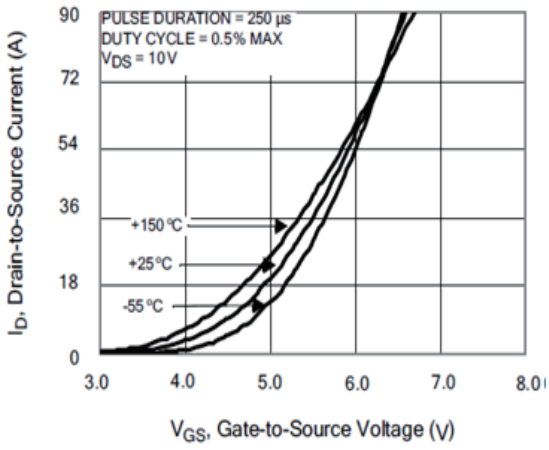

Figure 8. Unclamped Inductive Switching Capability

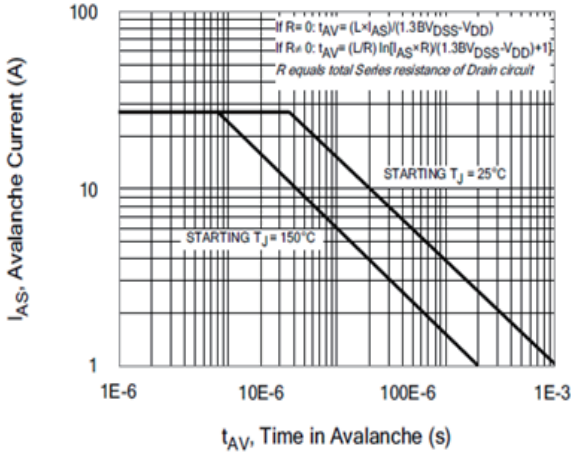

Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

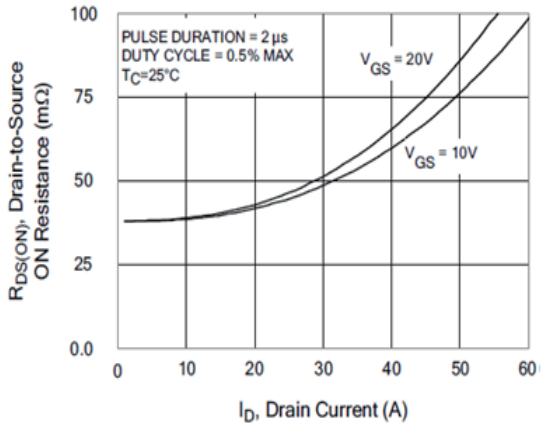

Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

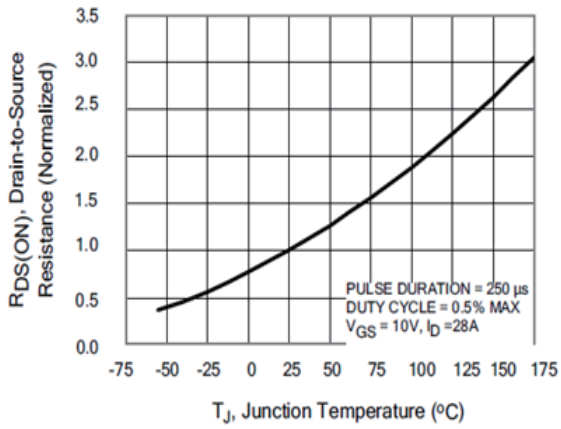

Figure 11. Typical Breakdown Voltage vs Junction Temperature

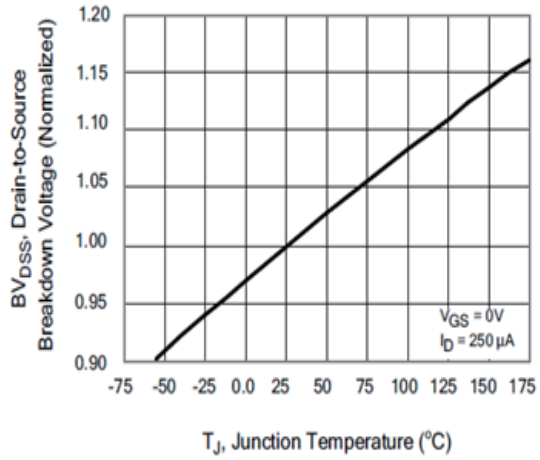

Figure 12. Typical Threshold Voltage vs Junction Temperature

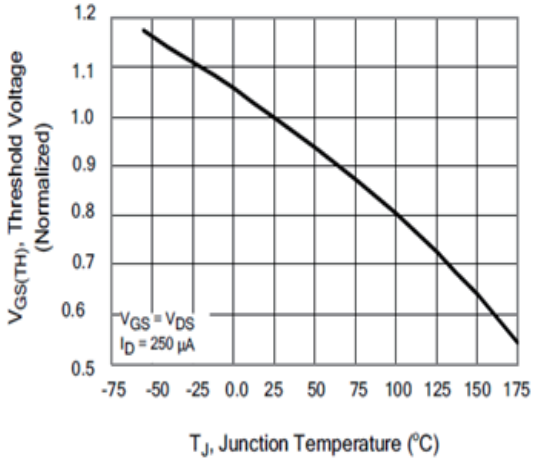

Figure 13. Maximum Forward Bias Safe Operating Area

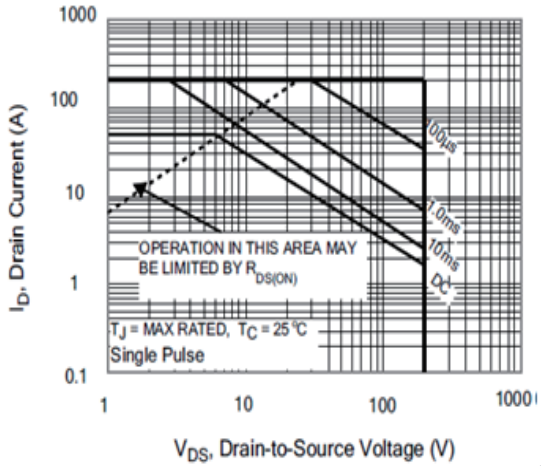

Figure 14. Capacitance vs Vds

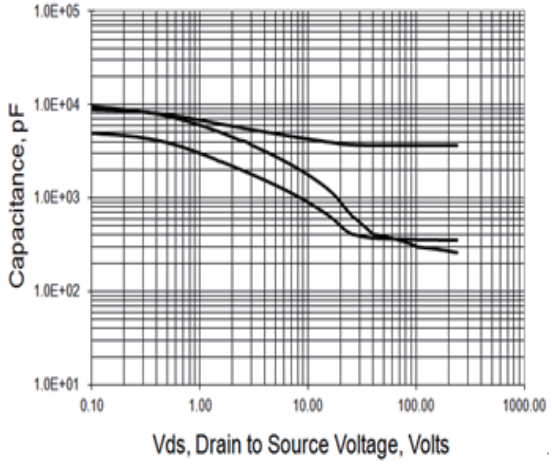

Figure 15 .Typical Gate Charge

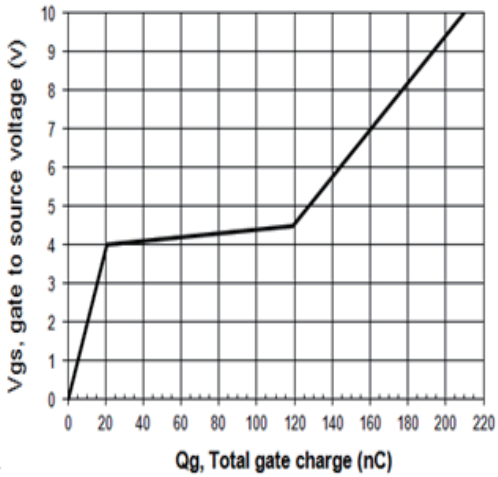

Figure 16. Typical Body Diode Transfer Characteristics