KSM116N20

200V N-Channel MOSFET

General Description

The KSM116N20 is silicon N-channel Enhanced VDMOSFET, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

Product Summary

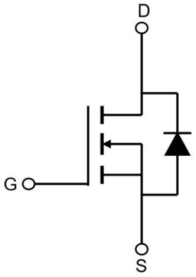
V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
200	32 at V_{GS} = 10 V	116

Features

- silicon N-channel Enhanced VDMOSFETs
- Optimized for fast-switching applications

TO-3PN Pin Configuration





Applications

- Synchronus Rectification in DC/DC and AC/DC Converters
- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	116	A
	Drain Current – Continuous (T_C=100℃)	60	A
I_{DM}	Drain Current – Pulsed[1]	360	A
P_D	Power Dissipation (T_C=25℃)	410	W
	Power Dissipation (T_C=100℃)	2.8	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.8	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	200	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=200V , V_{GS}=0V , T_J=25℃	---	---	5	uA
		V_{DS}=120V , V_{GS}=0V , T_J=125℃	---	---	100	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=10A	---	18	22	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	3.0	4.0	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient					
gfs	Forward Transconductance	V_{DS}=10V , I_S=20A	---	20	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=120V , V_{GS}=10V , I_D=30A	---	104	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	18	---	
Q_{gd}	Gate-Drain Charge[2,3]		---	28	---	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=120V, I_D=50A V_{GS}=10V,R_G=25Ω	---	75	---	ns
T_r	Rise Time[2,3]		---	578	---	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	132	---	
T_f	Fall Time[2,3]		---	160	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	5755	---	pF
C_{oss}	Output Capacitance		---	434	---	
C_{rss}	Reverse Transfer Capacitance		---	15	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	80	A
I_{SM}	Pulsed Source Current		---	---	300	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=30A , T_J=25℃	---	---	1.4	V

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristics (Curves)

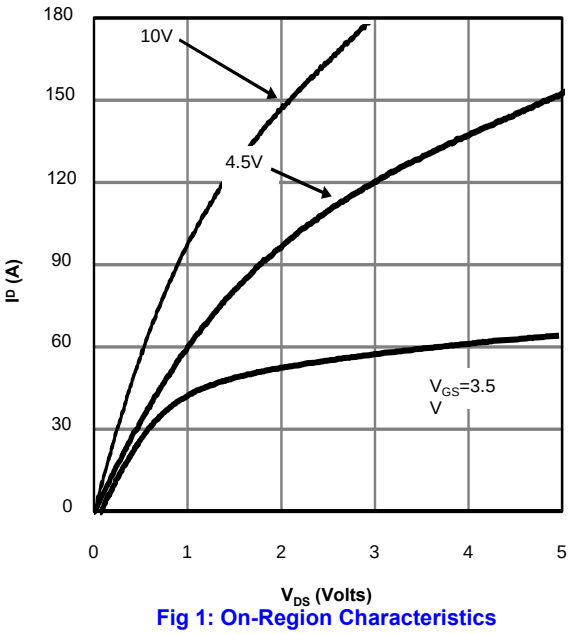


Fig 1: On-Region Characteristics

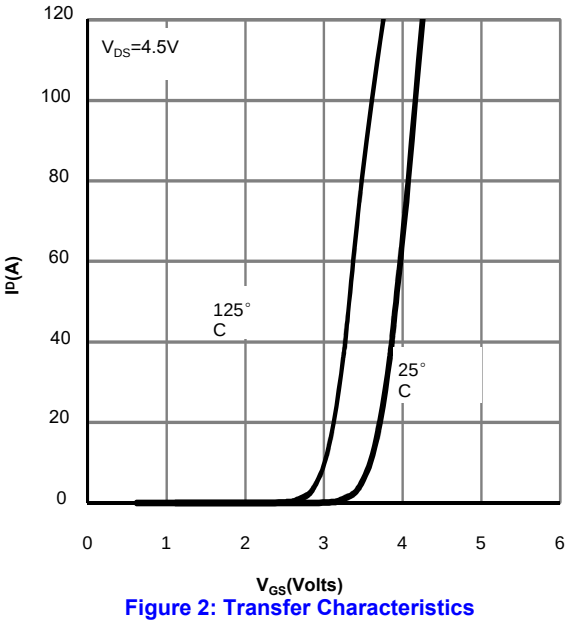


Figure 2: Transfer Characteristics

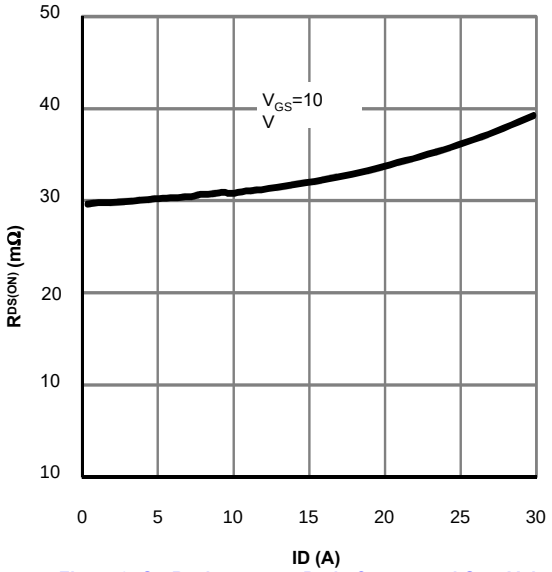


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

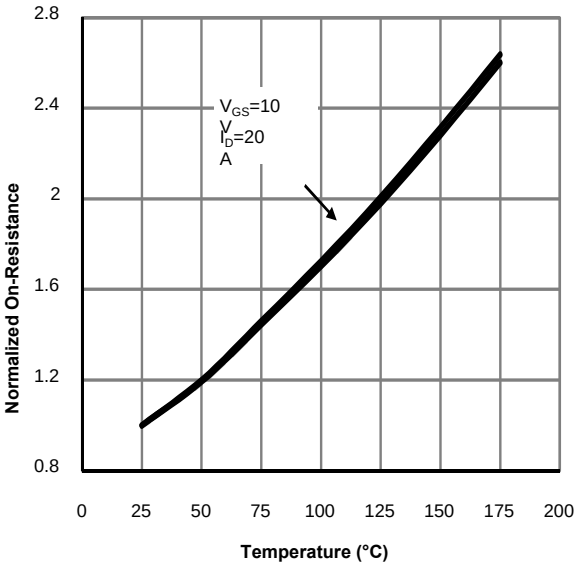


Fig. 4 Rdson-JunctionTemperature

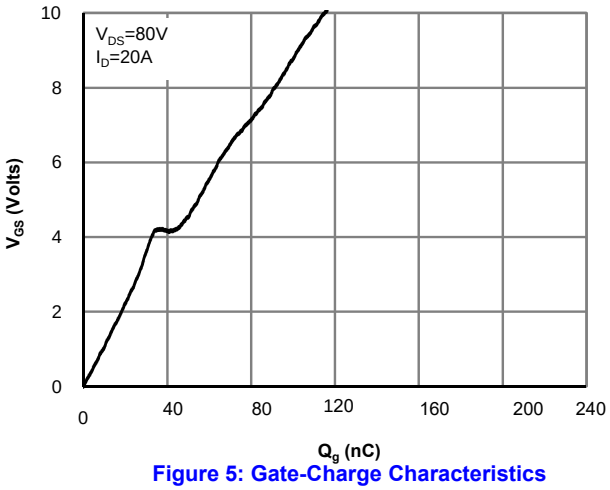


Figure 5: Gate-Charge Characteristics

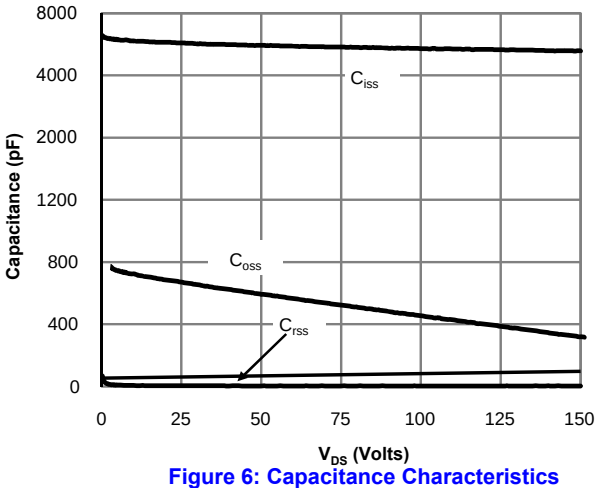


Figure 6: Capacitance Characteristics

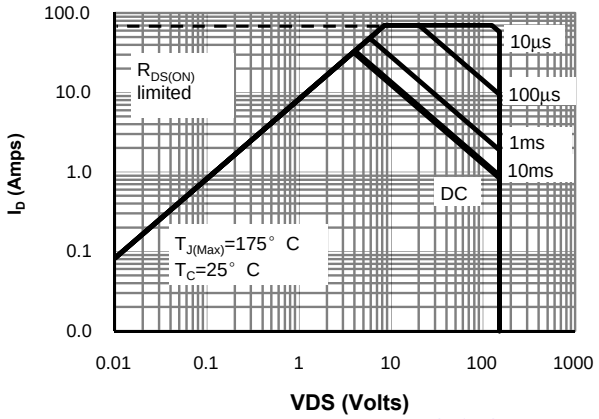


Figure 7: Maximum Forward Biased Safe Operating Area

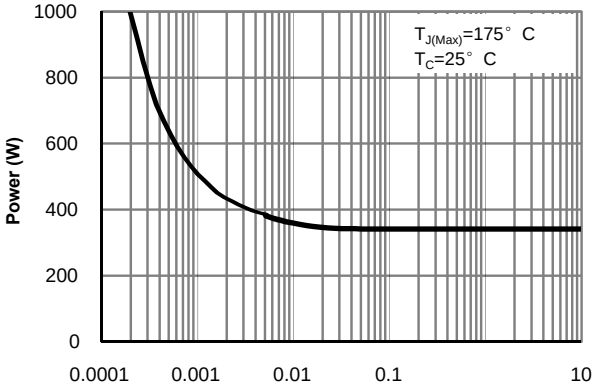


Figure 8: Single Pulse Power Rating Junction-to-Case

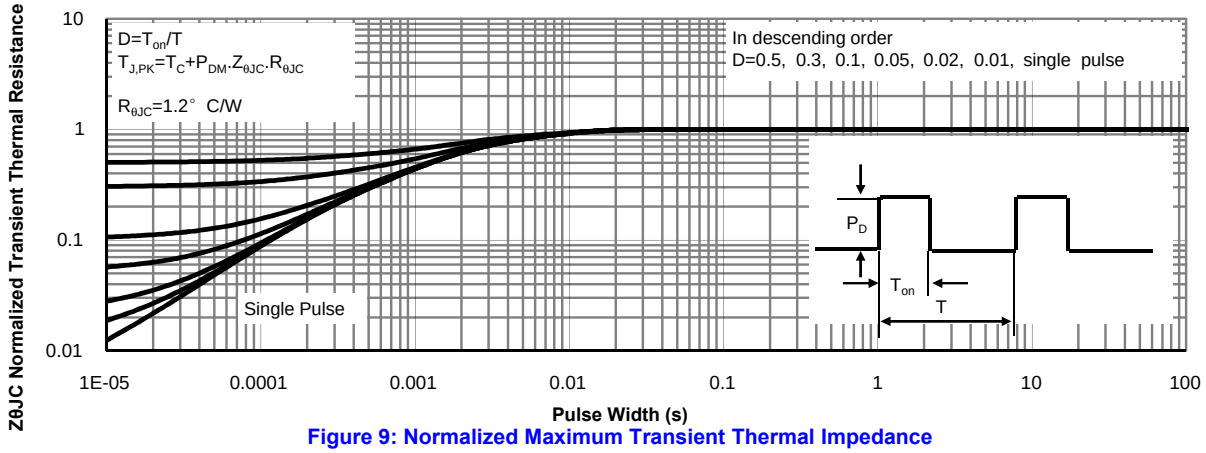


Figure 9: Normalized Maximum Transient Thermal Impedance

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