KSU200N15

150V N-Channel MOSFET

General Description

The KSU200N15 uses advanced technology to provide excellent R_{DS}(ON), low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

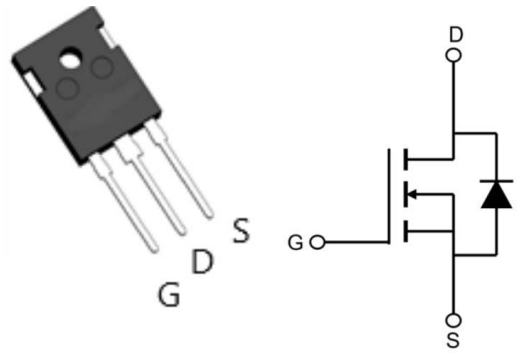
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
150	6.2 at V_{GS} = 10 V	200

Features

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

TO-247 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	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	200	A
	Drain Current – Continuous (T_C=100℃)	130	A
I_{DM}	Drain Current – Pulsed[1]	528	A
P_D	Power Dissipation (T_C=25℃)	300	W
	Power Dissipation (T_C=100℃)	3.5	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	---	47	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	0.95	℃/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}=100V , V_{GS}=0V , T_J=25℃	---	---	5	uA
		V_{DS}=100V , 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=20A	---	6.2	7.5	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		---	3.0	---	mV/℃
gfs	Forward Transconductance	V_{DS}=10V , I_S=20A	---	25	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=50V , V_{GS}=10V , I_D=20A	---	204	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	36	---	
Q_{gd}	Gate-Drain Charge[2,3]		---	68	---	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=50V, I_D=20A V_{GS}=10V,R_G=3Ω	---	55	---	ns
T_r	Rise Time[2,3]		---	78	---	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	132	---	
T_f	Fall Time[2,3]		---	60	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	5704	---	pF
C_{oss}	Output Capacitance		---	381	---	
C_{rss}	Reverse Transfer Capacitance		---	47	---	

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	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	270	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=2A , T_J=25℃	---	---	1.2	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)

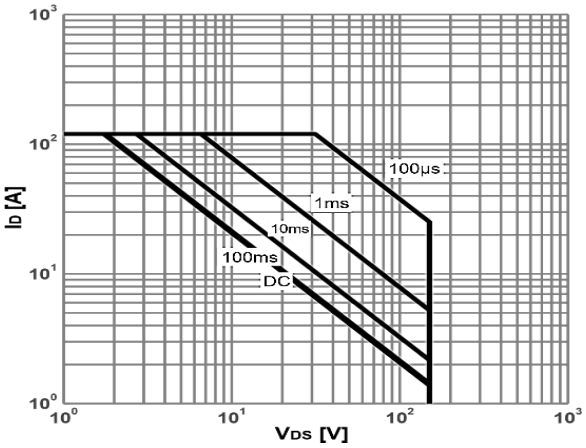


Figure 1. Power dissipation

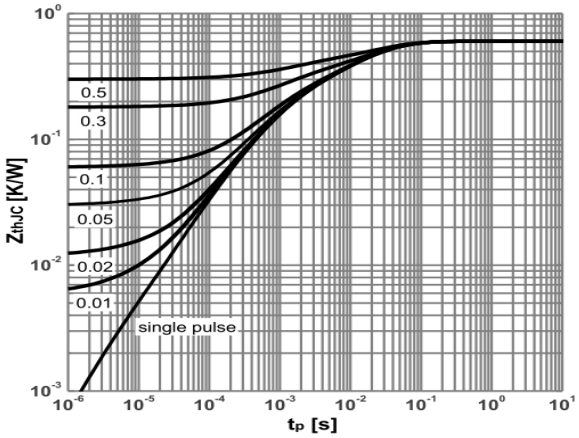


Figure 2. Max. transient thermal impedance

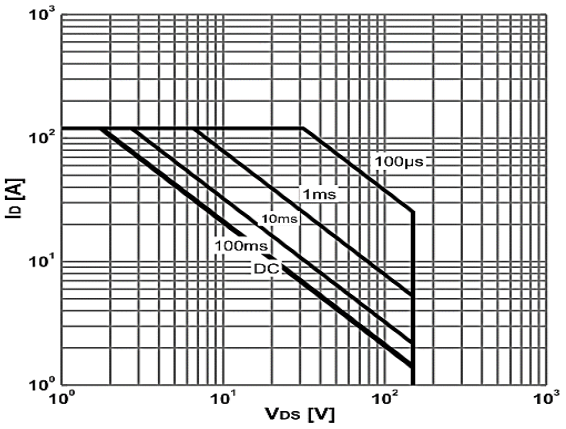


Figure 3. Safe operating area

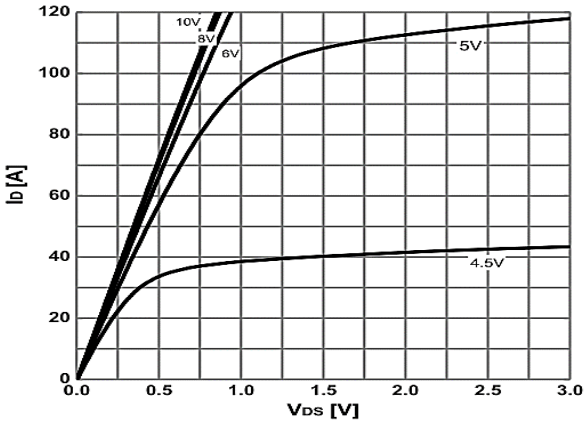


Figure 4. Typ. output characteristics

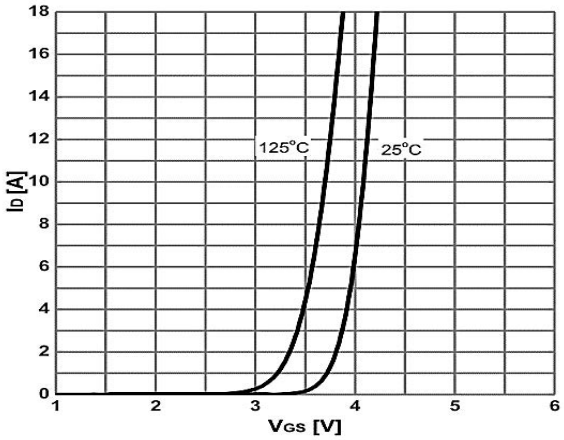


Figure 5. Typ. transfer characteristics

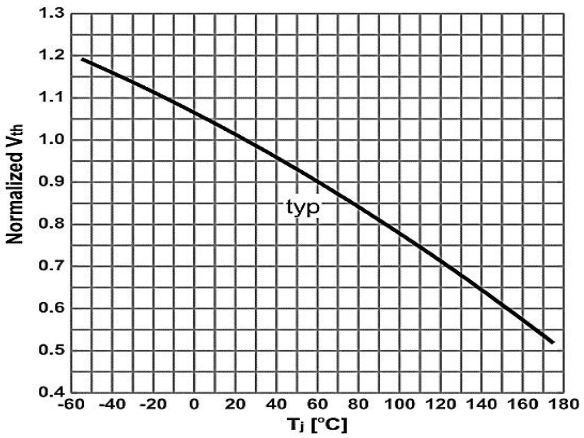


Figure 6. Gate threshold voltage vs. Junction Temperature

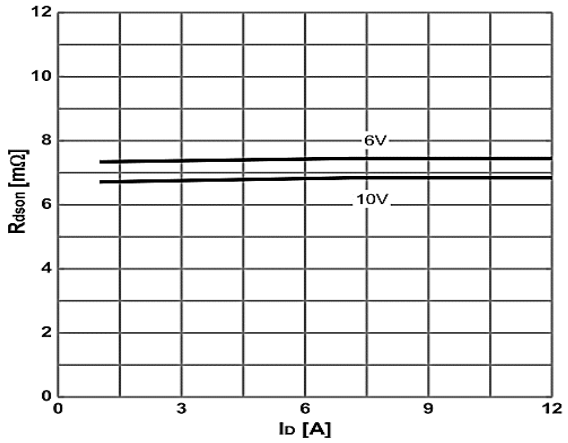


Figure 7. On-state resistance vs. Drain current

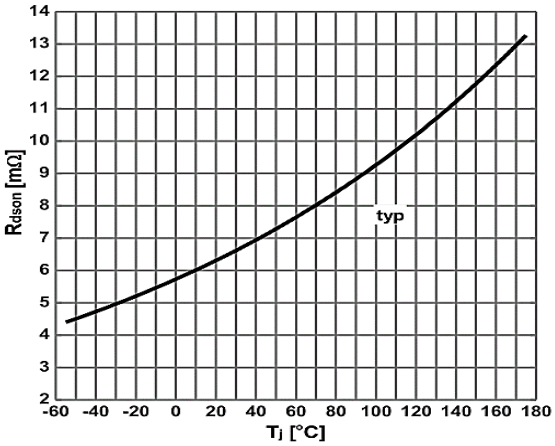


Figure 8. On-state resistance vs. Junction temperature

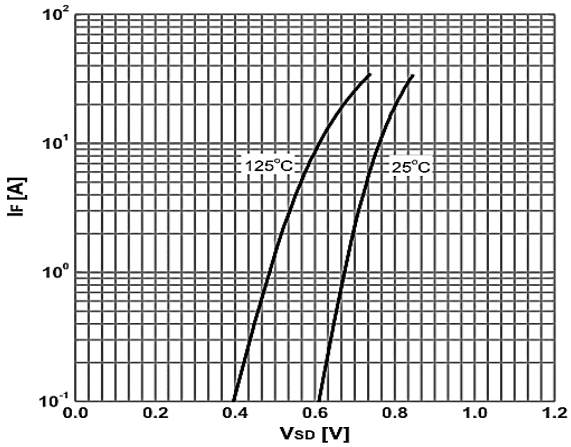


Figure 9. Forward characteristics of reverse diode

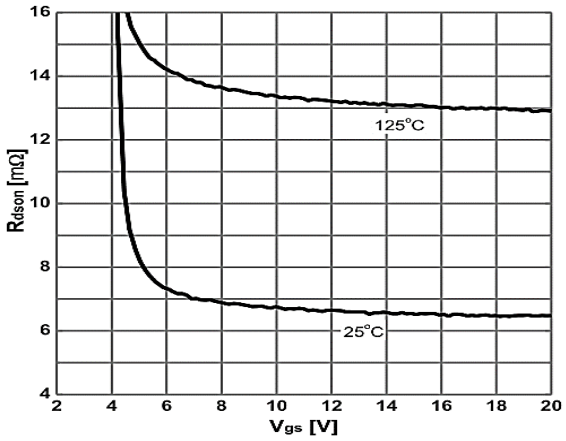


Figure10. On-state resistance vs. Vgs characteristics

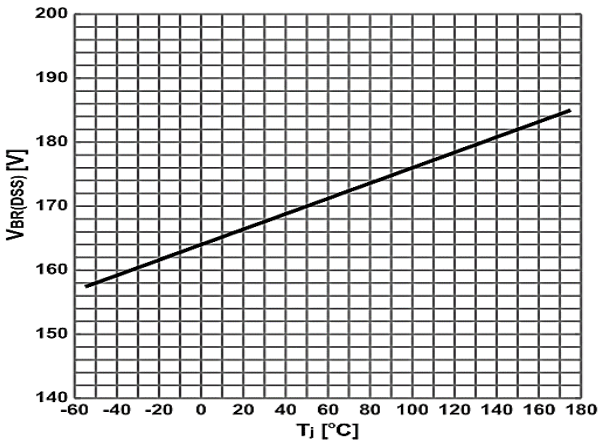


Figure 10：Breakdown Voltage Variation vs. Temperature

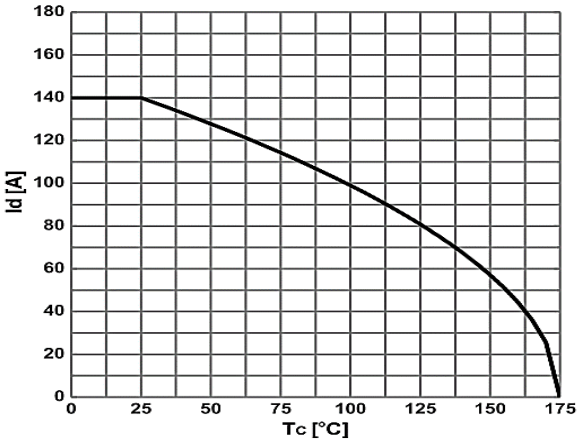


Figure 11：Maximum Drain Current

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