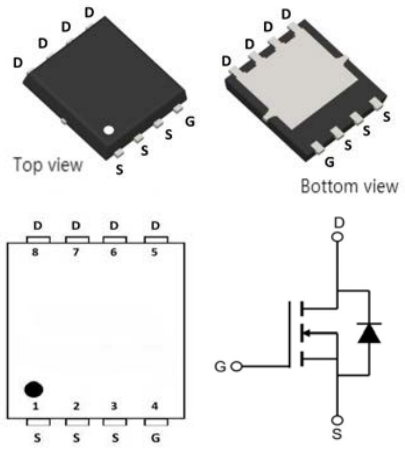
KSN100N85X

85V N-Channel MOSFET

General Description

The KSN100N85X use advanced SGT MOSFET technology to provide low RDS(ON),low gate charge,fast switching and excellent avalanche characteristics.This device is specially designed to get better ruggedness and suitable to use in Motor control.

PDFN 5* 6 Pin Configuration



Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
85	4.3 at V_{GS} = 10 V	100

Features

- VDS=85V;ID=100A
- RDS(ON)=4.3mΩ@VGS=10V
- UltraLowOn-Resistance
- HighUISandUIS100%Test
- RoHSCompliant

Applications

- Motor control
- PWM applications
- Uninterruptible power supply
- Synchronous-rectification
- High Frequency Switching

Absolute Maximum Ratings T_C=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	85	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	100	A
	Drain Current – Continuous (T_C=100℃)	63.3	A
I_{DM}	Drain Current – Pulsed[1]	280	A
E_{AS}	Single Pulse Avalanche Energy[2]	273.8	mJ
P_D	Power Dissipation (T_C=25℃)	107.8	W
	Power Dissipation – Derate above 25℃	0.98	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 from Junction – to – Ambient[3]	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance from Junction - to-Case	---	1.16	℃/W

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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max	Unit
$V_{(BRDSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	85	---	---	V
$\Delta_{BVDSS}/\Delta_{TJ}$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D= 1mA	---	0.01	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=85V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=85V , 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=15A	---	4.3	5.6	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	3	4	V
g_{fs}	Forward Transconductance	V_{DS}=5V , I_S=20A	---	57.8	---	S

Dynamic and switching Characteristics

C_{iss}	Input Capacitance	V_{DS} = 40V, V_{GS} =0V, f=1MHz	---	4645	---	pF
C_{oss}	Output Capacitance		---	673	---	
C_{rss}	Reverse Transfer Capacitance		---	41	---	
R_g	Gate Resistance	f=1MHz	---	2	---	Ω
Q_g	Total Gate Charge	V_{DS}=40V , V_{GS}=10V , I_D=20A	---	61.3	---	nC
Q_{gs}	Gate-Source Charge		---	21	---	
Q_{gd}	Gate-Drain Charge		---	11	---	
td(on)	Turn-On Delay Time	V_{DS}=40V , V_{GS}=10V , R_G=3Ω I_D=20A	---	16.5	---	ns
tr	Rise Time		---	51.8	---	
td(off)	Turn-Off Delay Time		---	37.1	---	
tf	Fall Time		---	8.2	---	
trr	Body Diode Reverse Recovery Time	IF=20A, di/dt = 100A/uS	---	69	---	ns
Q_{rr}	Body Diode Reverse Recovery Charge		---	141	---	nC

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		---	---	200	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A , T_J=25℃	---	---	1.2	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junciton temperature.
2. The data tested pulsed,pulse width ≤ 300us,duty cycle ≤ 2%.
3. Essenitally independent of operating temperature.

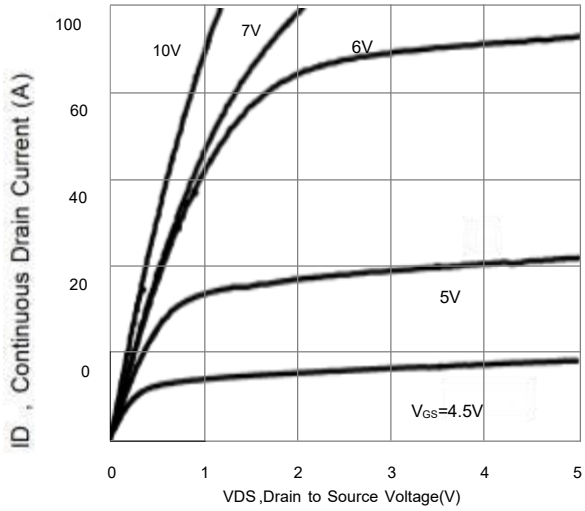


Figure 1: On-Region Characteristics

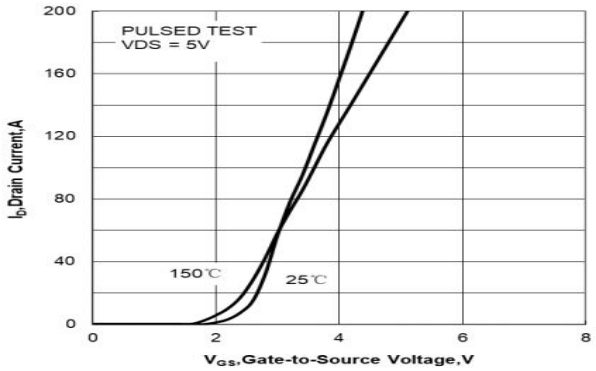


Figure 2: Transfer Characteristics

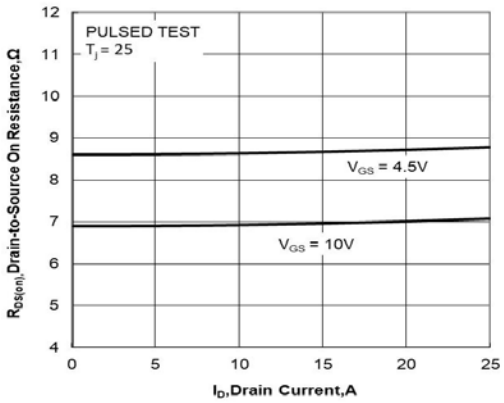


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

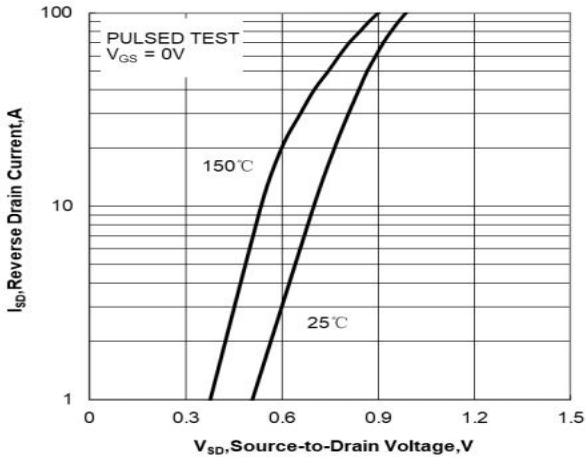


Figure 4: On-Resistance vs. Junction Temperature

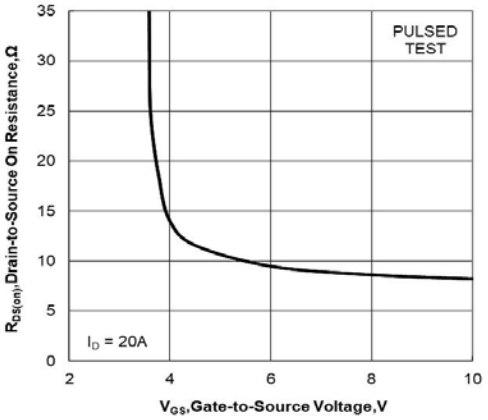


Figure 5: On-Resistance vs. Gate-Source Voltage

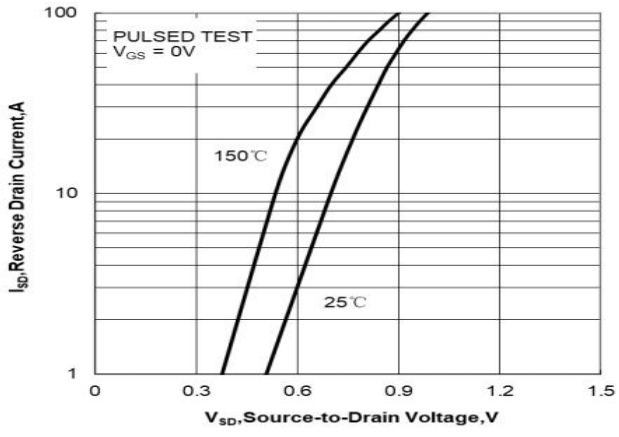


Figure 6: Body-Diode Characteristics

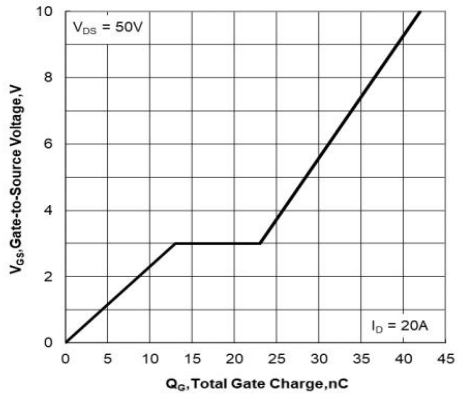


Figure 7: Gate-Charge Characteristics

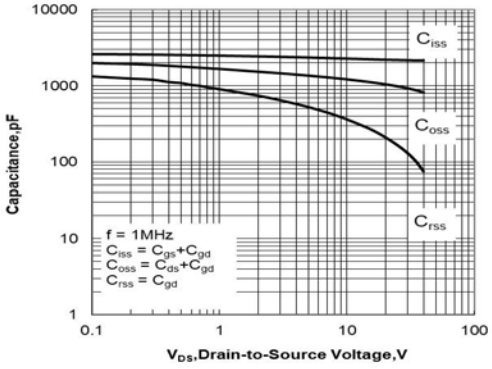


Figure 8: Capacitance Characteristics

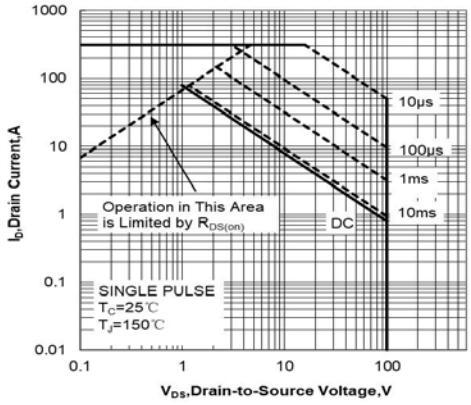


Figure 9: Maximum Forward Biased Safe Operating Area

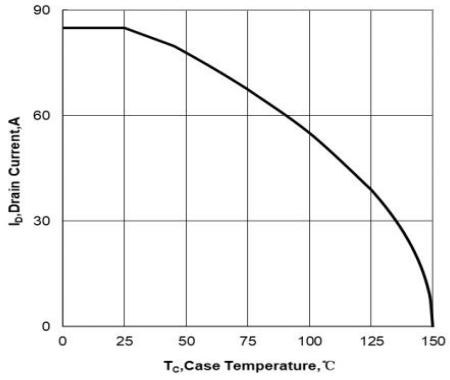


Figure 10: Maximum Power Dissipation vs Case Temperature

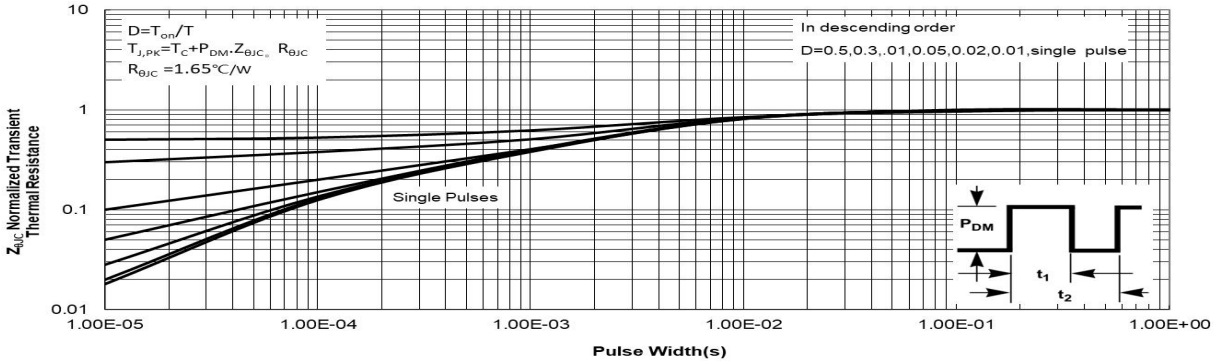


Figure 11: Normalized Maximum Transient Thermal Impedance

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