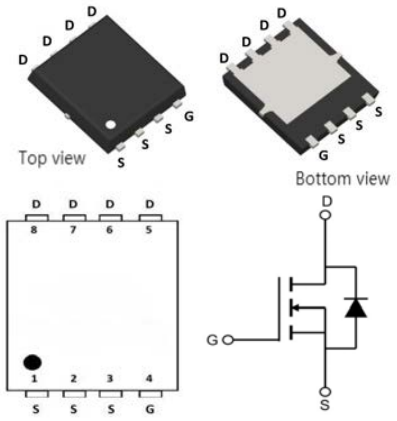
KSN40200X

40V N-Channel MOSFET

General Description

The KSN40200X power MOSFET is produced with advanced technology of KORSUN.This technology enable the power MOSFET to have berrer characteristics,including fast switching time,low on resistance,low gate charge and especially excellent avalanche characteristics.

PDFN5X6-8L Pin Configuration



Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
40	0.73 at V_{GS} = 10V	200
	1.1 at V_{GS} = 4.5V	180

Features

- Fast Switching
- 100% EAS Guaranteed
- Low Gate Charge

Applications

- Load Switch
- Li-Battery Protection
- PWM Application

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	40	V
VGS	Gate-Source Voltage	±20	V
ID	Drain Current – Continuous (Tc=25℃)	200	A
	Drain Current – Continuous (Tc=100℃)	130	A
IDM	Drain Current – Pulsed[1]	600	A
PD	Power Dissipation (Tc=25℃)	175	W
	Power Dissipation (Tc=100℃)	0.66	W/℃
TSTG	Storage Temperature Range	-55 to 150	℃
TJ	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	69	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	0.9	℃/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	40	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=40V , V_{GS}=0V , T_J=125℃	---	---	30	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	VGS=10V , ID=30A	---	0.73	0.88	mΩ
		V_{GS}= 4.5V，ID=20A	---	1.1	1.32	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS ， ID=250uA	1	1.6	2.5	V
gfs	Forward Transconductance	VDS=10V ， IS=3A	---	30	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge	VDS=20V , VGS=10V , ID=80A	---	128	---	nC
Q_{gs}	Gate-Source Charge		---	19	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time	VDD=20V , VGS=10V , RG=1.3Ω, ID=80A	---	14.5	---	ns
T_r	Rise Time		---	9.8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	53	---	
T_f	Fall Time		---	9.2	---	
C_{iss}	Input Capacitance	VDS=20V , VGS=0V , f=1MHz	---	7425	---	pF
C_{oss}	Output Capacitance		---	1824	---	
C_{rss}	Reverse Transfer Capacitance		---	112	---	

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	---	---	200	A
I_{SM}	Pulsed Source Current		---	---	400	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	1.2	V
trr	Body Diode Reverse Recovery Time	TJ=25℃, IF=12A,dI/dt=100A/μs	---	52	---	ns
Qrr	Body Diode Reverse Recovery Charge		---	78	---	nC

Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: TJ=25℃, VDD=50V, VG=10V, RG=25Ω, L=0.5mH, IAS=19A

Typical Electrical and Thermal Characteristics (Curves)

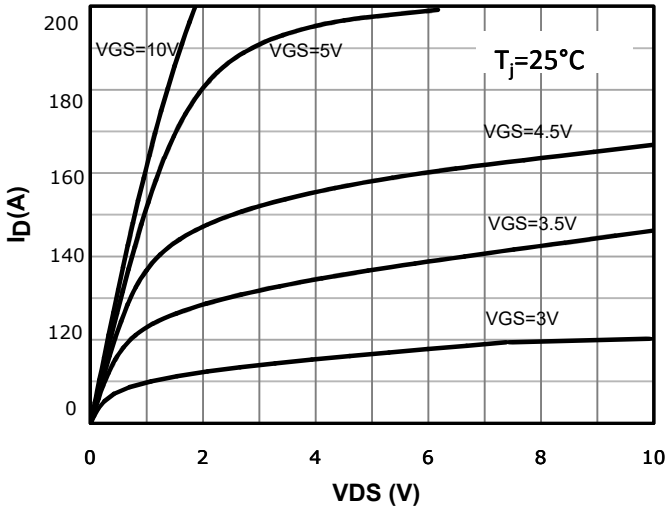


Fig1:Output Characteristics

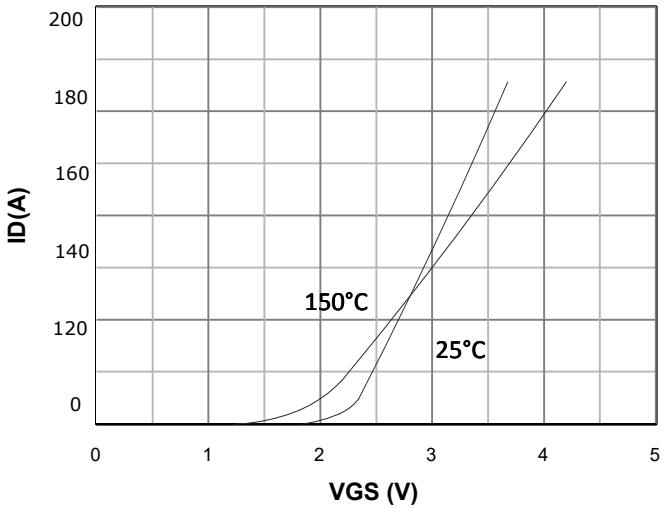


Fig2:Transfer Characteristics

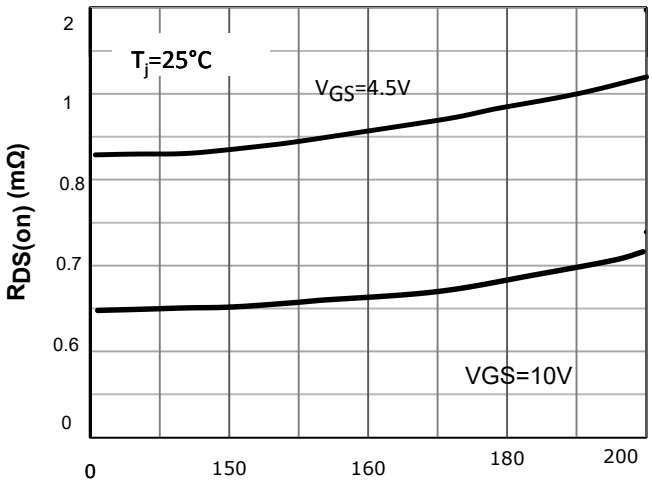


Fig3:Rdson- Drain Current

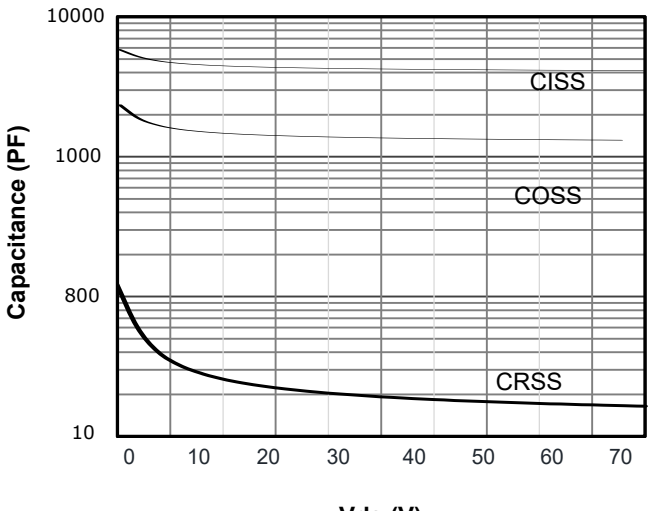


Fig4:Capacitance vs Vds

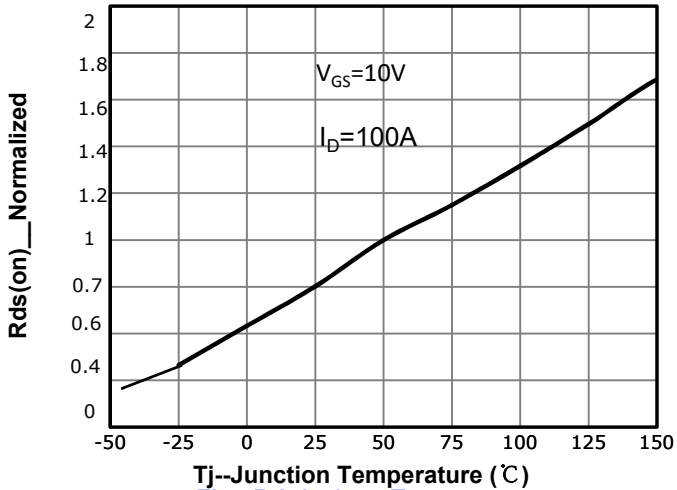


Fig5:Rds(on) vs. Temperature

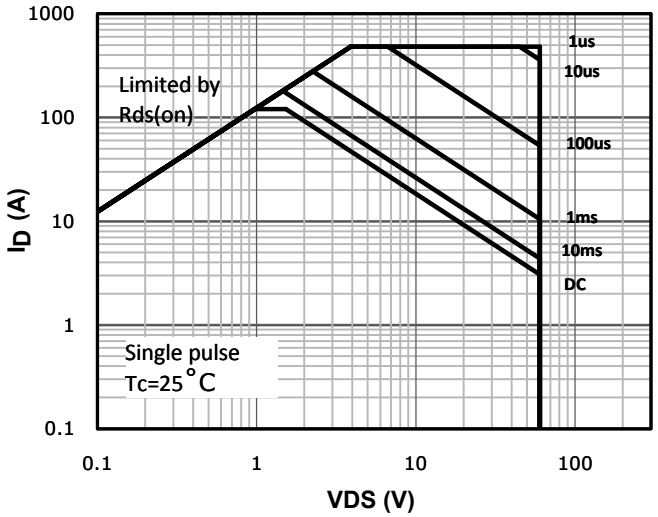


Fig6:Safe Operating Area

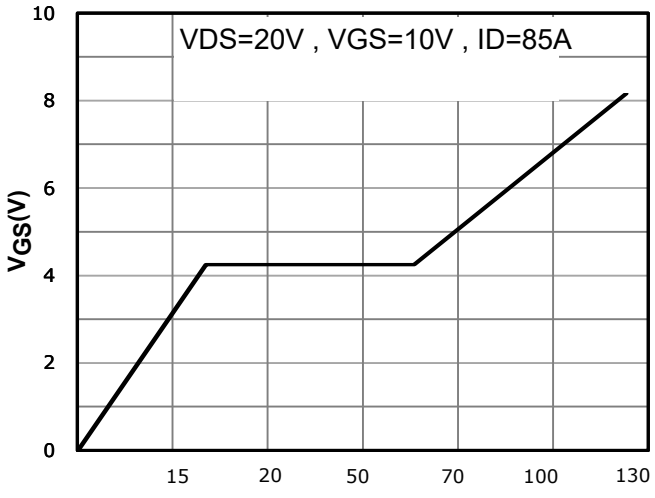


Fig7:Gate Charge

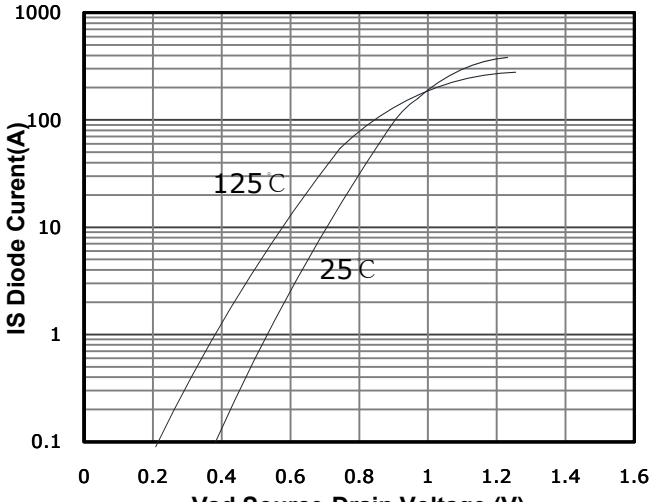


Fig8:Source- Drain Diode Forwrd

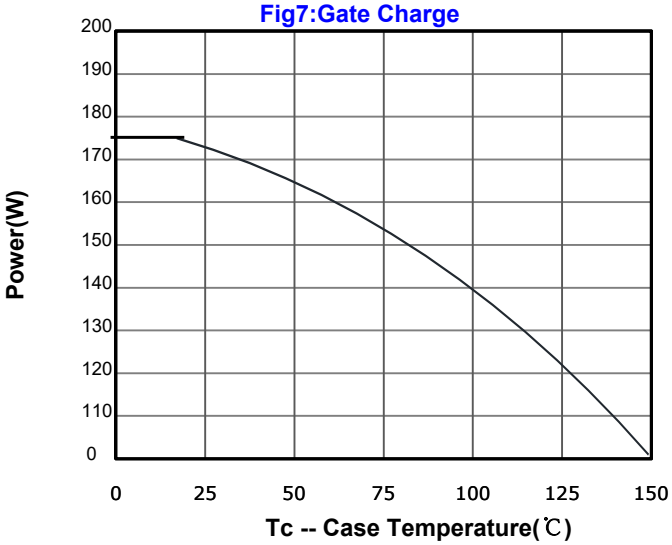


Fig9:Power Disipation

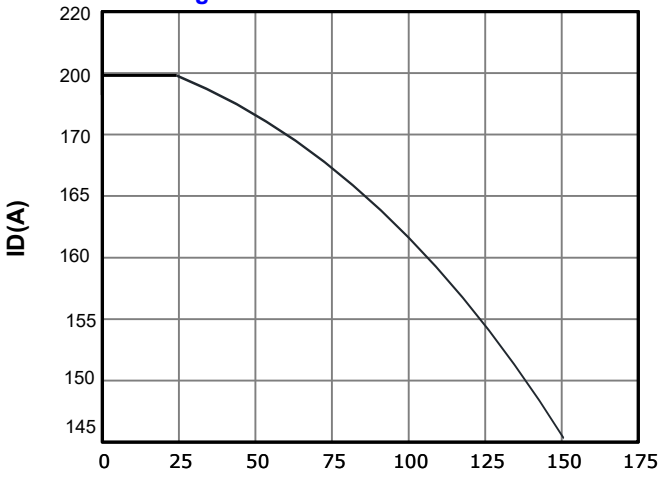


Fig10：IDCurrent- Junction Temperature

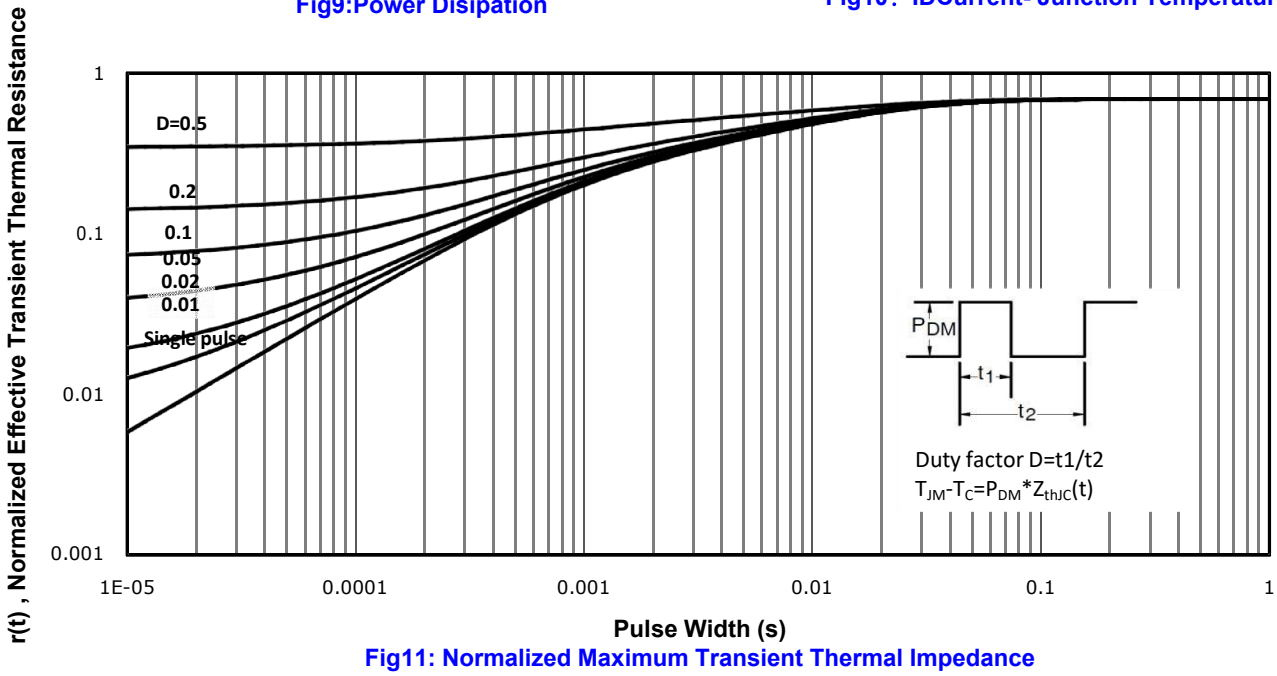


Fig11: Normalized Maximum Transient Thermal Impedance

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