KSW34N20

200V N-Channel MOSFET

General Description

The KSW34N20 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

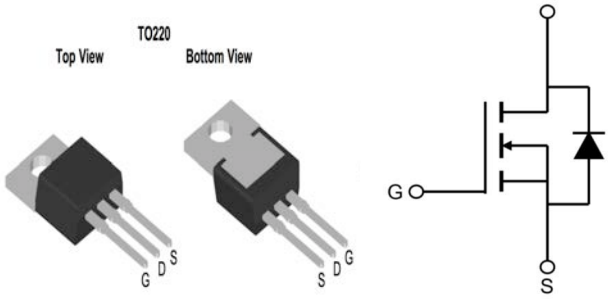
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
200	60 at V_{GS} = 10 V	34

Features

- Trench Power MV MOSFET technology
- Low R_{DS}(ON)
- Low Gate Charge
- Optimized for fast-switching applications

TO-220 Pin Configuration



Applications

- Synchronus Rectification in DC/DC and AC/DC Converters
- Industrial and Motor Drive applications

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℃)	34	A
	Drain Current – Continuous (T_C=100℃)	15	A
I_{DM}	Drain Current – Pulsed[1]	90	A
P_D	Power Dissipation (T_C=25℃)	86	W
	Power Dissipation (T_C=100℃)	1.3	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	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.2	℃/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℃	---	---	1	uA
		V_{DS}=200V , V_{GS}=0V , T_J=125℃	---	---	10	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=5A	---	60	80	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=10A	---	18	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=100V , V_{GS}=10V , I_D=8A	---	72	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	15	---	
Q_{gd}	Gate-Drain Charge[2,3]		---	12	---	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=100V, I_D=8A V_{GS}=10V,R_G=10Ω	---	49	---	ns
T_r	Rise Time[2,3]		---	27	---	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	168	---	
T_f	Fall Time[2,3]		---	64	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , F=1MHz	---	4860	---	pF
C_{oss}	Output Capacitance		---	686	---	
C_{rss}	Reverse Transfer Capacitance		---	238	---	

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	---	---	25	A
I_{SM}	Pulsed Source Current		---	---	60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , 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)

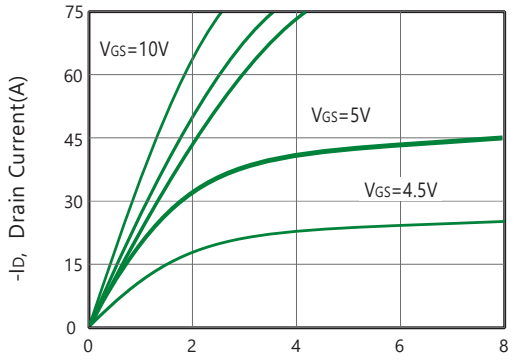


Figure 1. Output Characteristics

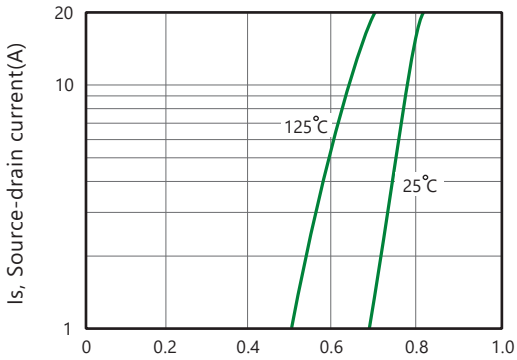


Figure 2. Body Diode Forward Voltage Variation with Source Current

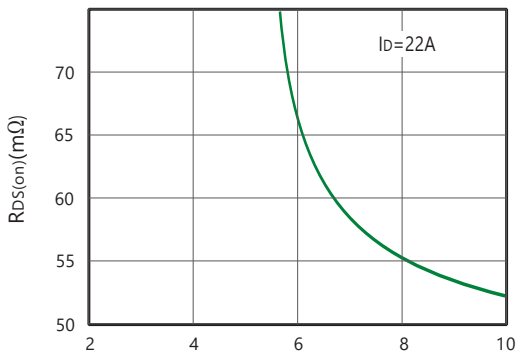


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

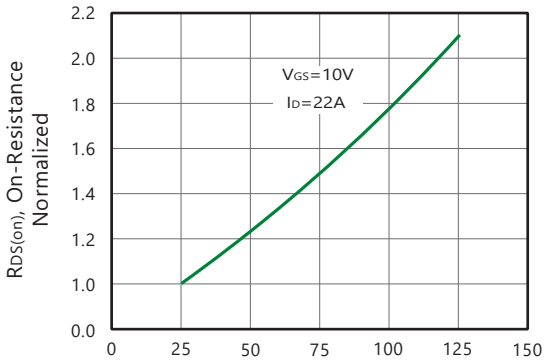


Figure 4. On-Resistance Variation with Drain Current and Temperat

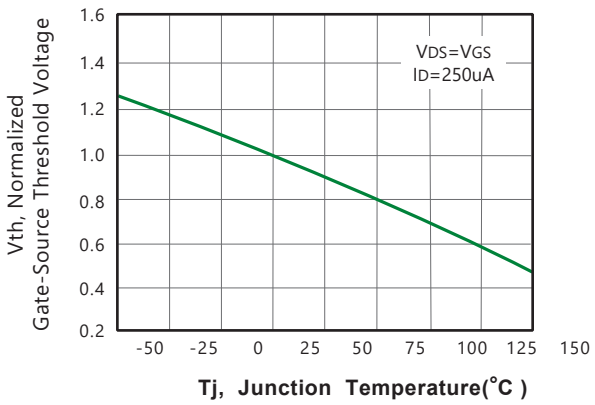


Figure 5. Gate Threshold Variation with Temperature

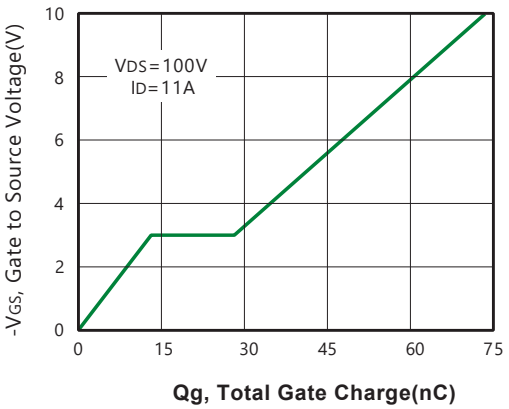


Figure 6. Gate Charge

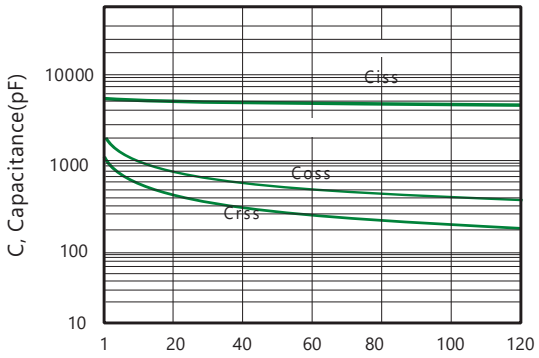


Figure 7. Capacitance

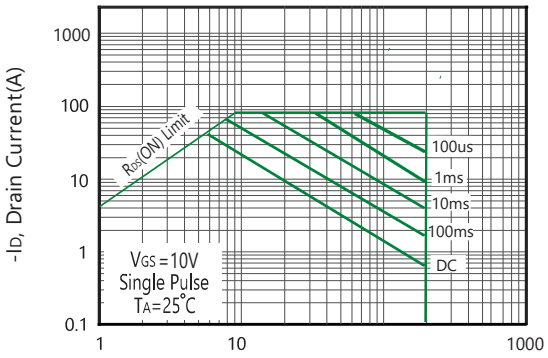


Figure 8. Maximum Safe Operating Area

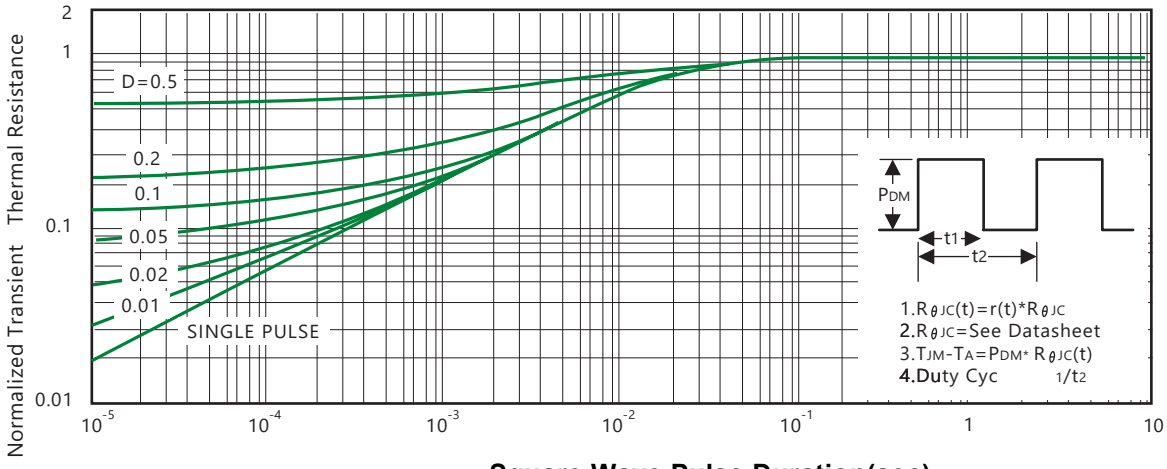


Figure 9. Normalized Thermal Transient Impedance Curve

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