KSM240N700

700V N-Channel MOSFET

General Description

The KSM240N700 is designed for high current switching applications. Rugged EAS capability and ultra low RDS(ON) is suitable for PWM, load switching applications.

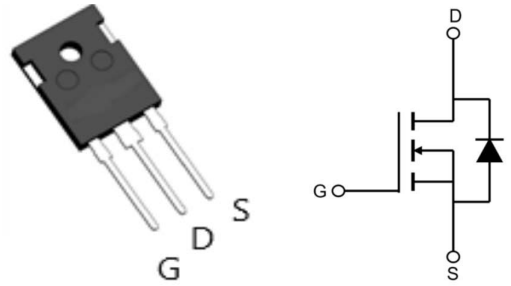
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (mΩ)	I_D (A)
700	42 at V_{GS} = 10 V	240

Features

- Easy to control Gate switching Low
- drain-source on-resistance

TO-247 Pin Configuration



Applications

- For Soft Switching Boost PFC switcchh, HB or AHB or LLC half bridge and full bridge topologies.
- Such as phase-shift-bridge(ZVS),LLCLLC Application-Server Power, Telecom Power,EV Charging, Sola arr inver

Absolute Maximum Ratings **Tc=25℃ unless otherwise noted**

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	700	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	240	A
	Drain Current – Continuous (T_C=100℃)	100	A
I_{DM}	Drain Current – Pulsed[1]	500	A
P_D	Power Dissipation (T_C=25℃)	400	W
	Power Dissipation (T_C=100℃)	1.87	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	---	0.87	℃/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	655	700	---	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	---	34	42	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	3.5	5.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.0	---	mV/℃
gfs	Forward Transconductance	V_{DS}=10V , I_S=30A	---	30	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=50V , V_{GS}=10V , I_D=20A	---	58	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	131	---	
Q_{gd}	Gate-Drain Charge[2,3]		---	172	---	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DS}=50V, I_D=20A V_{GS}=10V,R_G=3Ω	---	64	---	ns
T_r	Rise Time[2,3]		---	26	---	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	175	---	
T_f	Fall Time[2,3]		---	33	---	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	7574	---	pF
C_{oss}	Output Capacitance		---	514	---	
C_{rss}	Reverse Transfer Capacitance		---	67	---	

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	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	240	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)

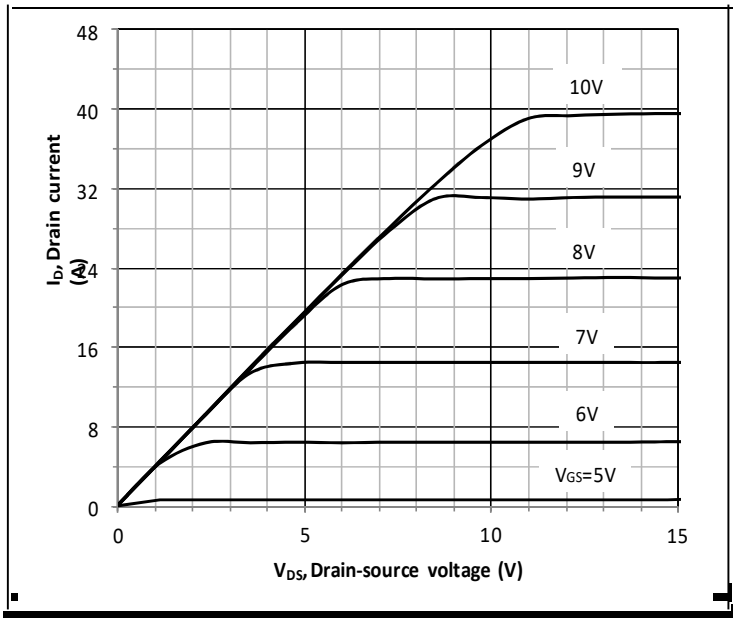


Diagram 1: Typ. output characteristics

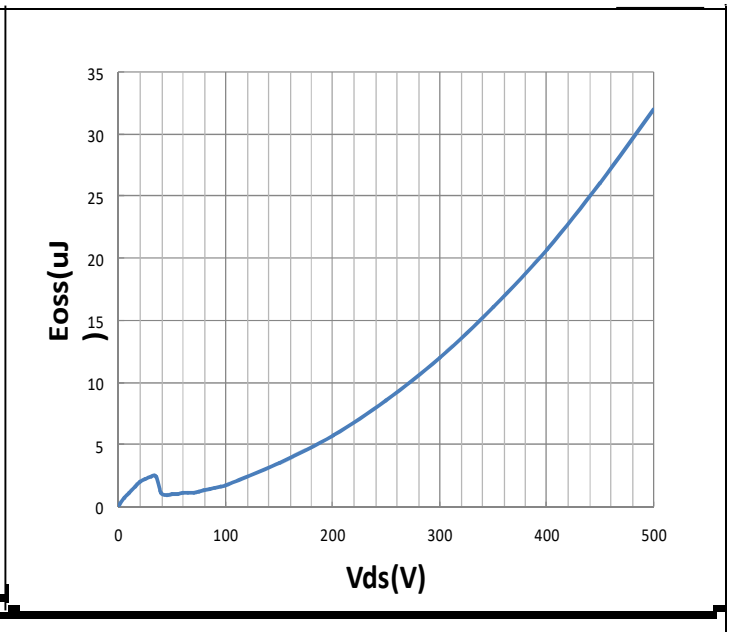


Diagram 2: Typ. Coss stored energy

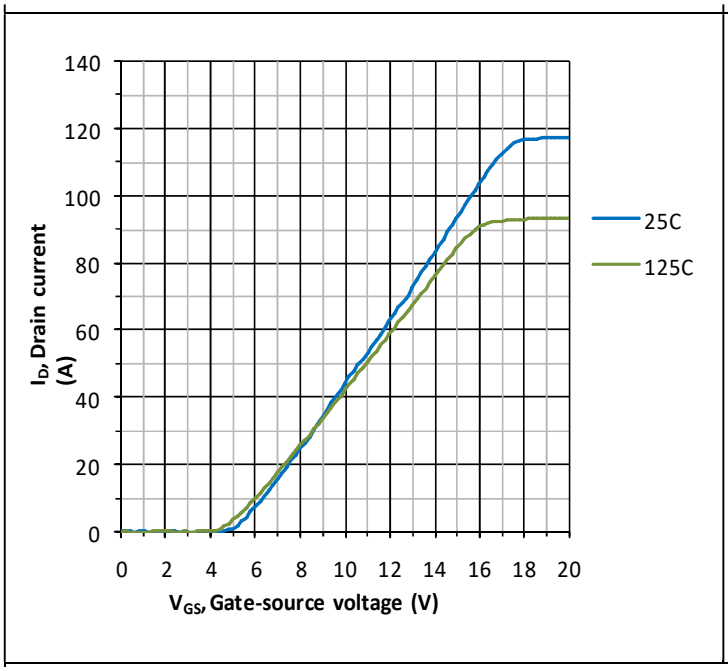


Diagram 3: Typ. transfer characteristics

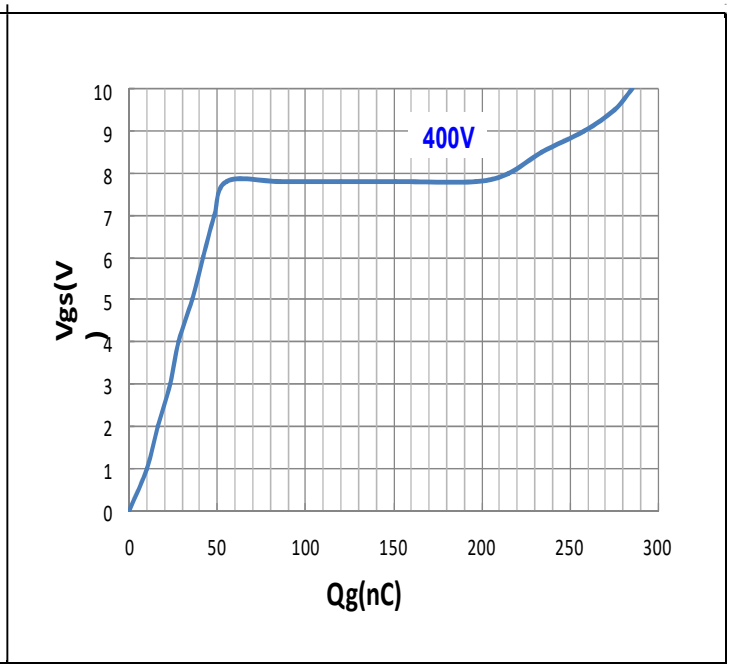


Diagram 4: Typ. gate charge

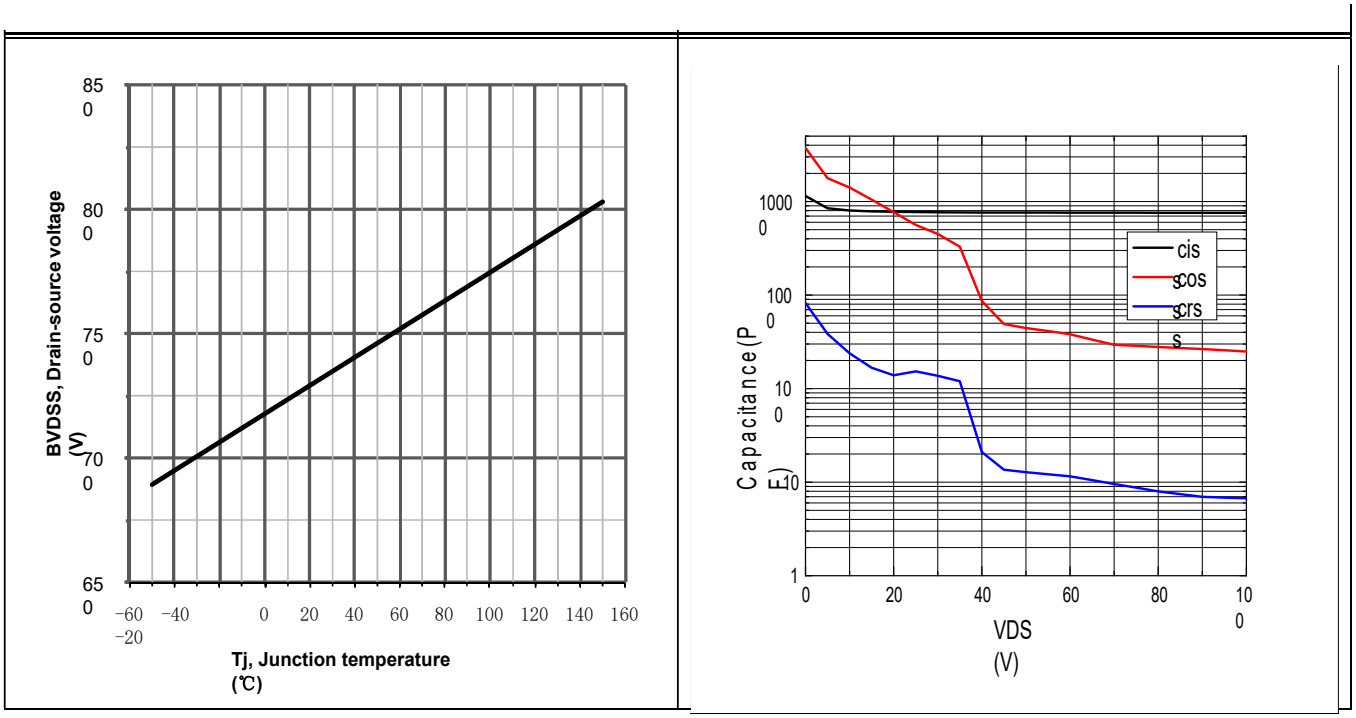


Diagram 5: Drain-source breakdown voltage

Diagram 6: Typ. capacitances

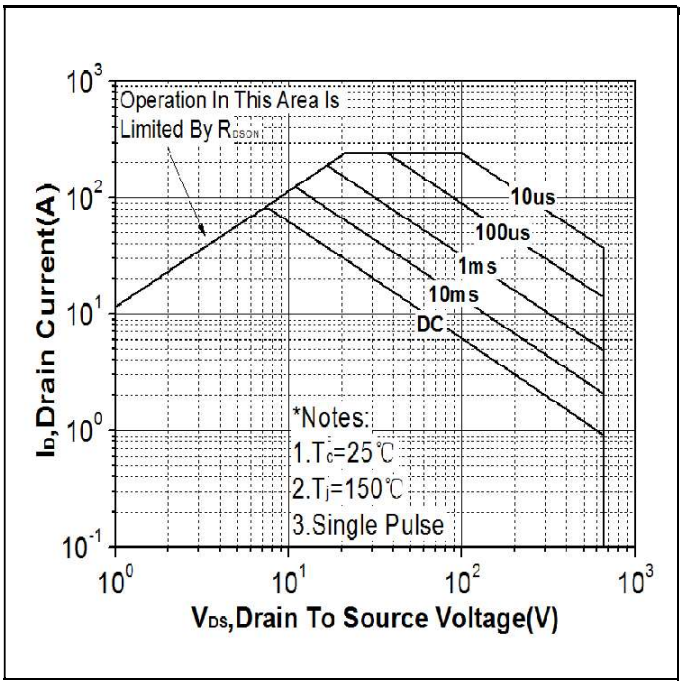


Diagram 7: Safe operating area T_C=25 °C

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