KINGWELL

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KSCS0032

N-Ch 100V Fast Switching MOSFETs

Features:

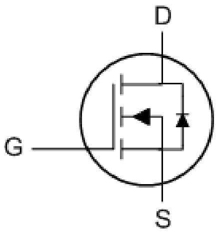
★ Super Low Gate Charge
★ 100% EAS Guaranteed
★ Green Device Available
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology

SOP8 Pin Configuration

Description:

The KSCS0032 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The KSCS0032 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.



Product Summary

BVDSS	RDSON	ID
100V	24mΩ	8A

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current[1]	8	A
I_D@T_A=100℃	Continuous Drain Current[1]	6.6	A
I_{DM}	Pulsed Drain Current[2]	32	A
EAS	Single Pulse Avalanche Energy[3]	29	mJ
I_{AS}	Avalanche Current	24	A
P_D@T_A=25℃	Total Power Dissipation[4]	2.7	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1](t≦10S)	---	45	℃/W
	Thermal Resistance Junction-ambient [1](Steady State)	---	80	℃/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=8A	---	20	24	mΩ
		V_{GS}=4.5V , I_D=4A	---	23	28	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge (10V)	V_{DS}=30V , V_{GS}=10V , I_D=8A	---	57	---	nC
Q_{gs}	Gate-Source Charge		---	8.7	---	
Q_{gd}	Gate-Drain Charge		---	14	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GS}=10V , R_G=3.3Ω, I_D=1A	---	16.2	---	ns
T_r	Rise Time		---	41.2	---	
$T_{d(off)}$	Turn-Off Delay Time		---	56.4	---	
T_f	Fall Time		---	16.2	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	3307	---	pF
C_{oss}	Output Capacitance		---	201	---	
C_{rss}	Reverse Transfer Capacitance		---	151	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	8	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=8A , di/dt=100A/µs , T_J=25℃	---	44	---	nS
Q_{rr}	Reverse Recovery Charge		---	25	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=24A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

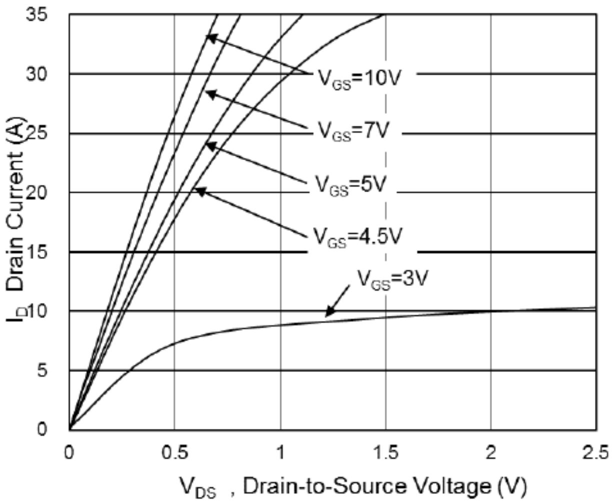


Fig.1 Typical Output Characteristics

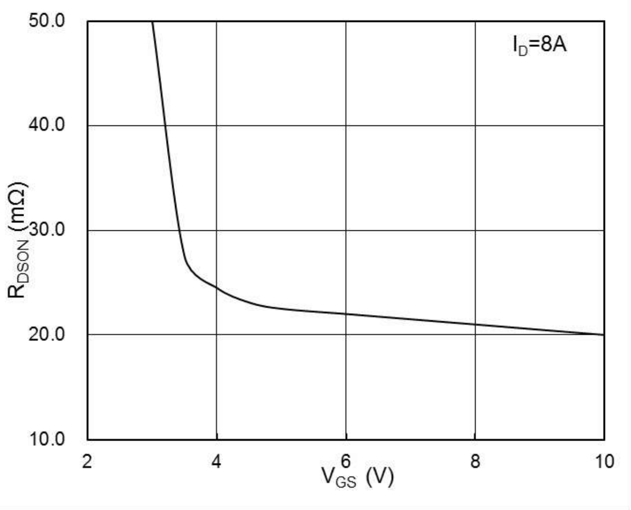


Fig.2 On-Resistance vs. G-S Voltage

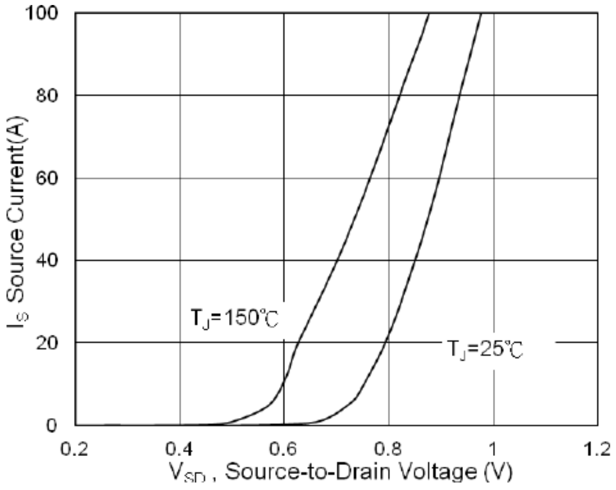


Fig.3 Source-Drain Diode Forward Voltage

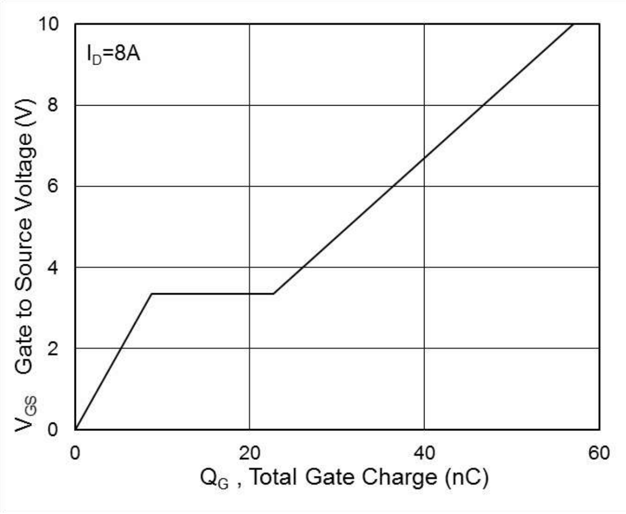


Fig.4 Gate-Charge Characteristics

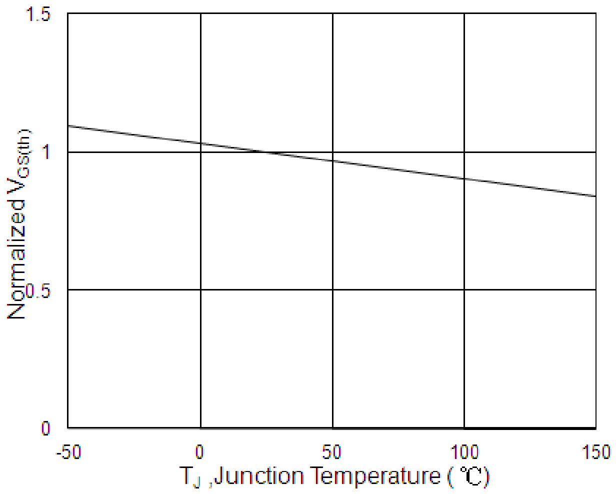


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

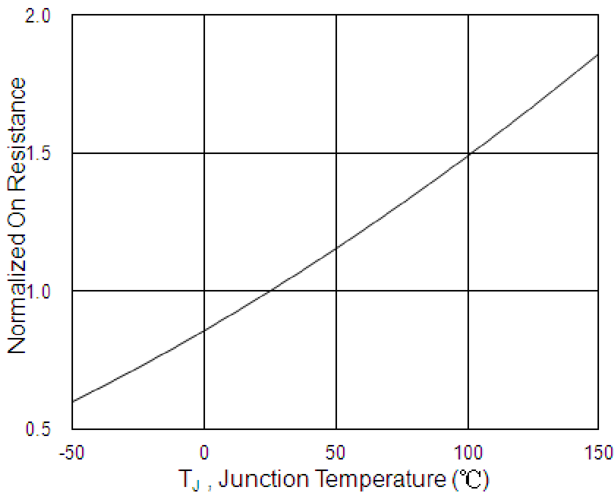


Fig.6 Normalized R_{DSON} vs. T_J

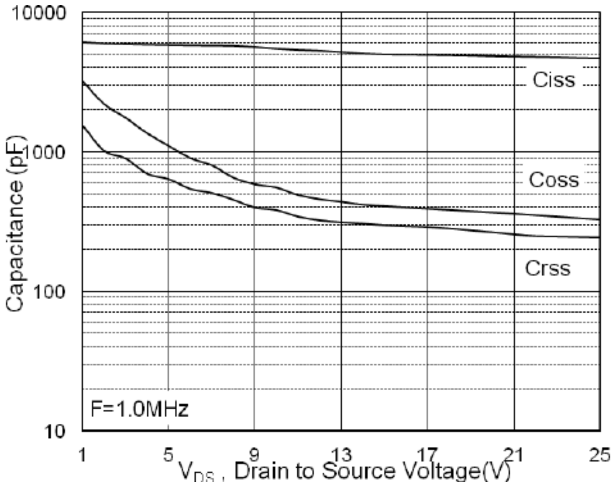


Fig.7 Capacitance

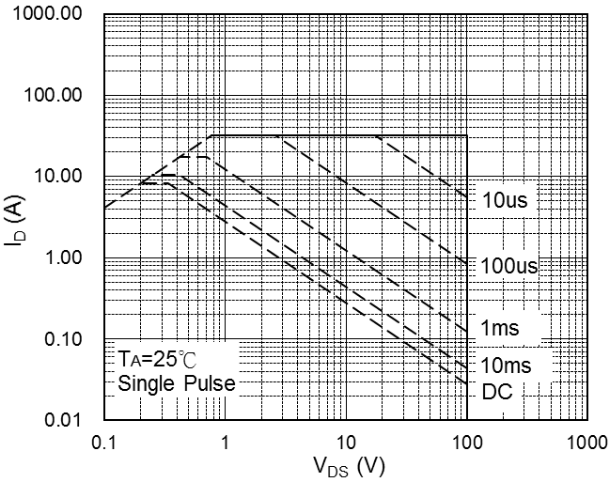


Fig.8 Safe Operating Area

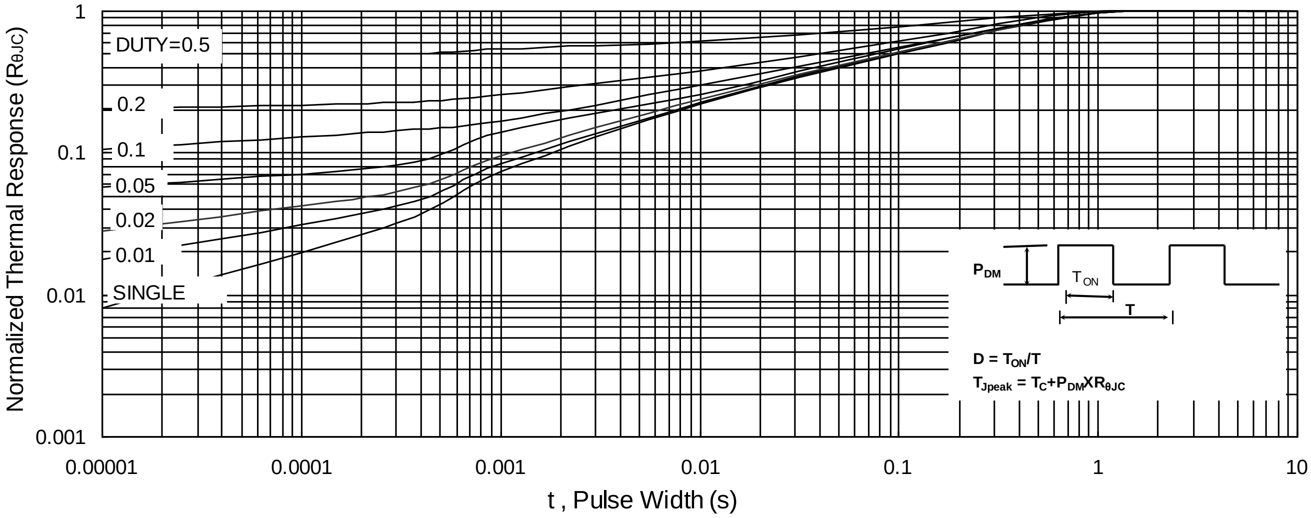


Fig.9 Normalized Maximum Transient Thermal Impedance

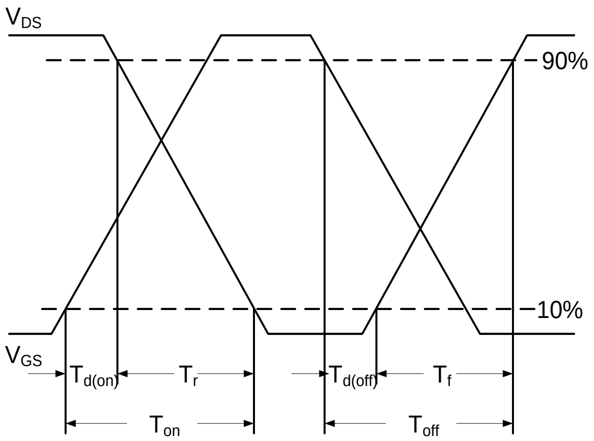


Fig.10 Switching Time Waveform

$$EAS=\frac{1}{2}L \times I_{AS}^{2}\times\frac{BV_{DSS}}{BV_{DSS}-V_{DD}}$$

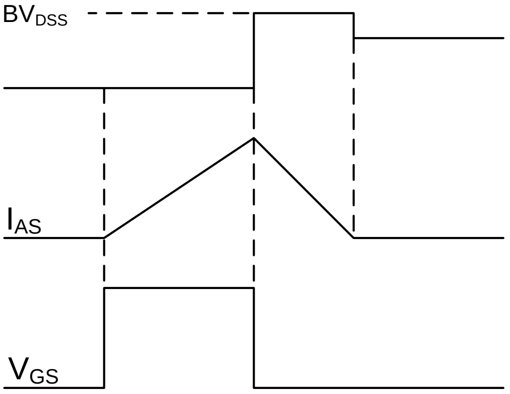


Fig.11 Unclamped Inductive Switching Waveform