

P-Ch 60V Fast Switching MOSFETs

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

Product Summary

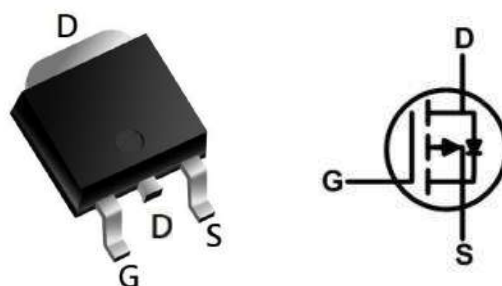
BVDSS	RDSON	ID
-60V	14mΩ	-60A

Description

The KJD6117 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The KJD6117 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-60	V
VGS	Gate-Source Voltage	±20	V
ID@Tc=25°C	Continuous Drain Current, VGS @ -10V ₁	-60	A
ID@Tc=100°C	Continuous Drain Current, VGS @ -10V ₁	-35	A
IDM	Pulsed Drain Current ₂	-170	A
EAS	Single Pulse Avalanche Energy ₃	330	mJ
IAS	Avalanche Current	-40	A
PD@Tc=25°C	Total Power Dissipation ₄	90	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
RθJA	Thermal Resistance Junction-Ambient ₁	---	62	°C/W
RθJC	Thermal Resistance Junction-Case ₁	---	1.4	°C/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	-60	—	—	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-18A	---		14	mΩ
		V _{GS} =-4.5V, I _D =-12A	---		17	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0		-2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.28	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-48V, V _{GS} =0V, T _J =55°C	---	---	-5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-18A	---	43	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2.6		Ω
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _D =-12A	---	85	---	nC
Q _{gs}	Gate-Source Charge		---	11	---	
Q _{gd}	Gate-Drain Charge		---	30	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-30V, V _{GS} =-10V, R _G =6Ω, I _D =-1A	---	18	---	ns
T _r	Rise Time		---	12	---	
T _{d(off)}	Turn-Off Delay Time		---	100	---	
T _f	Fall Time		---	68	---	
C _{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	---	4635	---	pF
C _{oss}	Output Capacitance		---	524	---	
C _{rss}	Reverse Transfer Capacitance		---	241	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	-40	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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}=-30V, V_{GS}=-10V, L=0.5mH, I_{AS}=-40A
4. The power dissipation is limited by 150°C 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

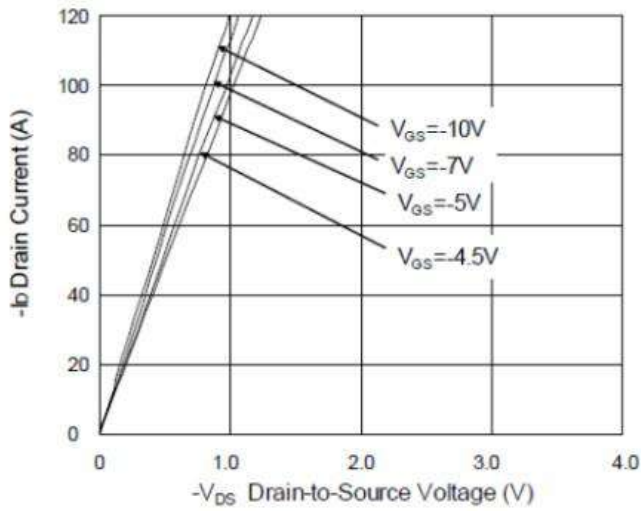


Fig.1 Typical Output Characteristics

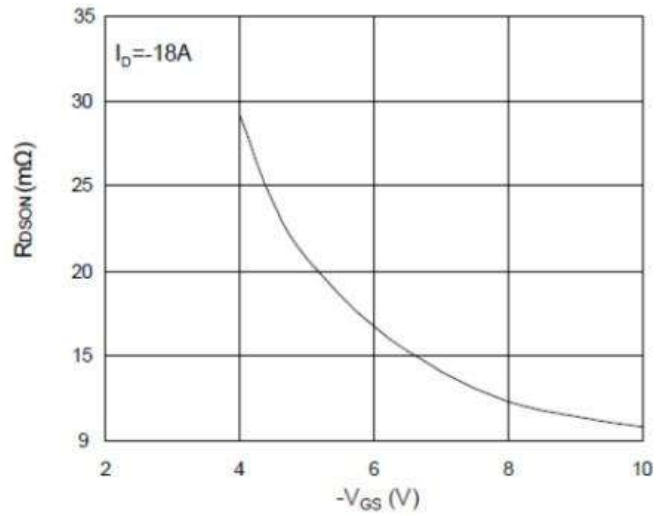


Fig.2 On-Resistance v.s Gate-Source

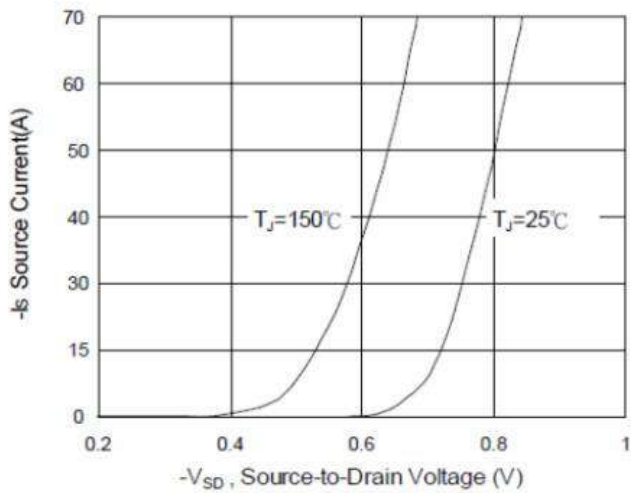


Fig.3 Source Drain Forward Characteristics

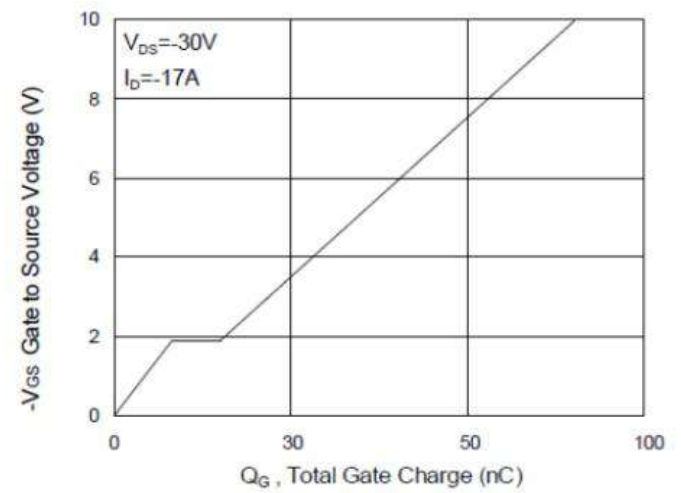


Fig.4 Gate-Charge Characteristics

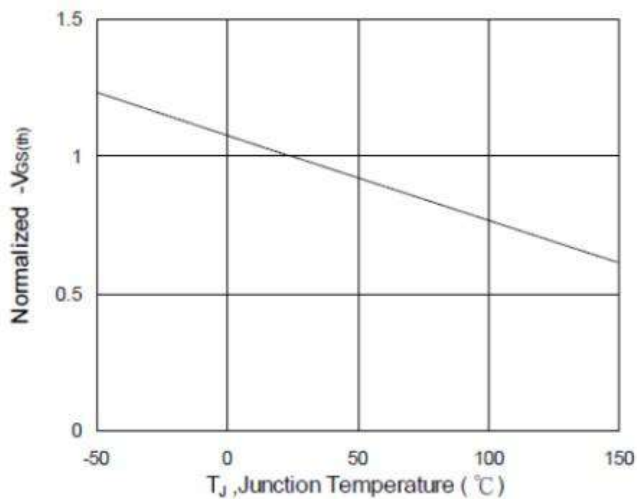


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

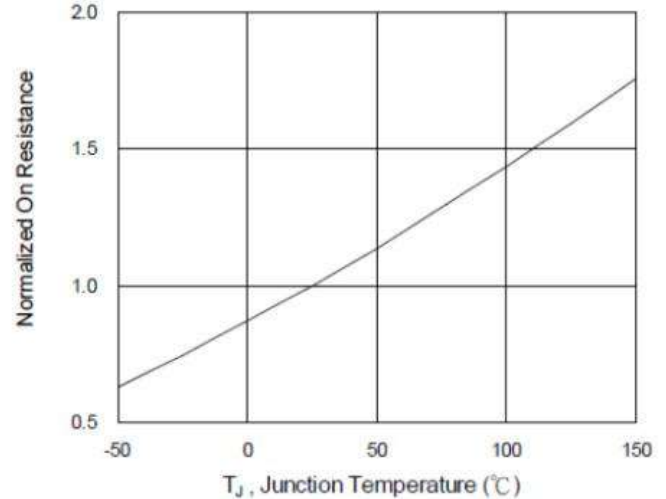


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

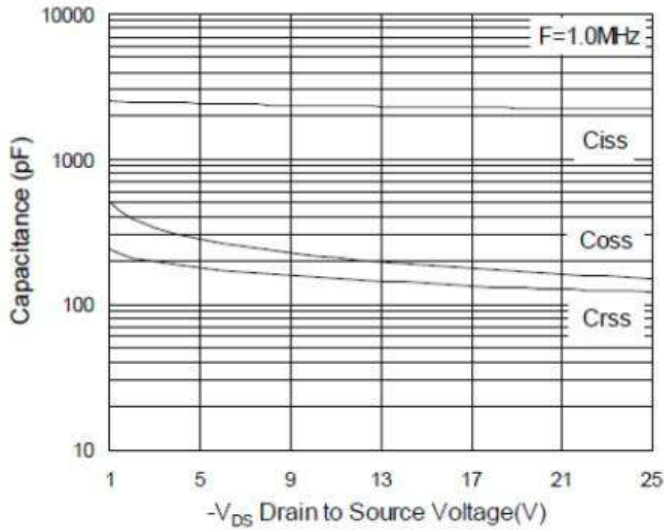


Fig.7 Capacitance

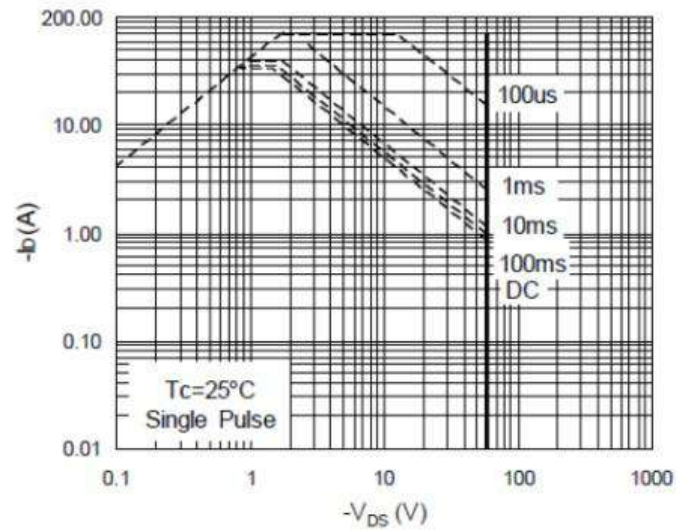


Fig.8 Safe Operating Area

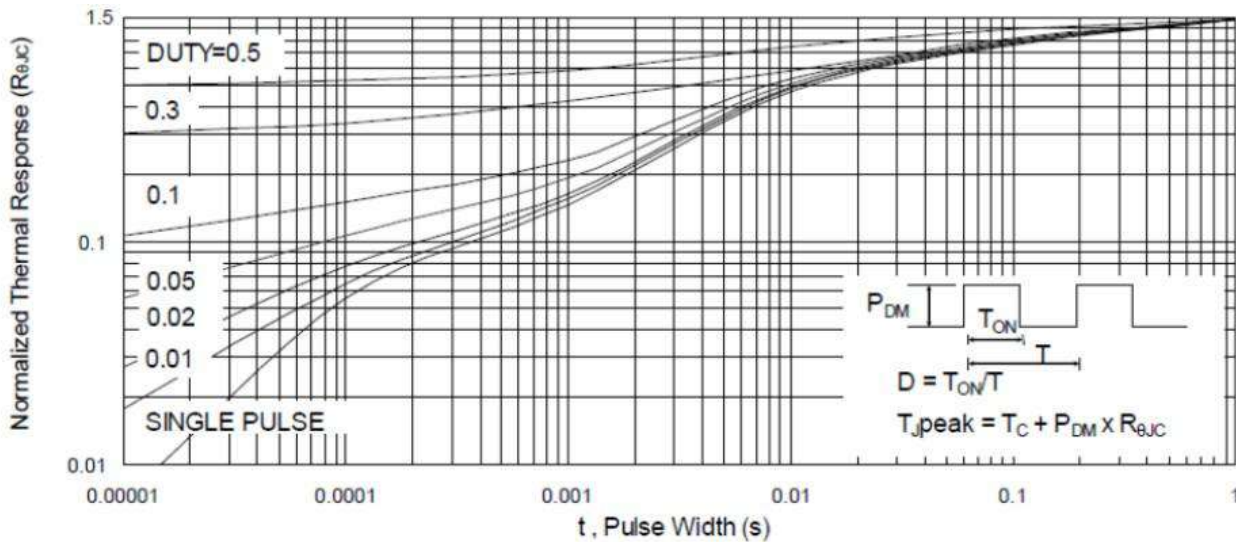


Fig.9 Normalized Maximum Transient Thermal Impedance

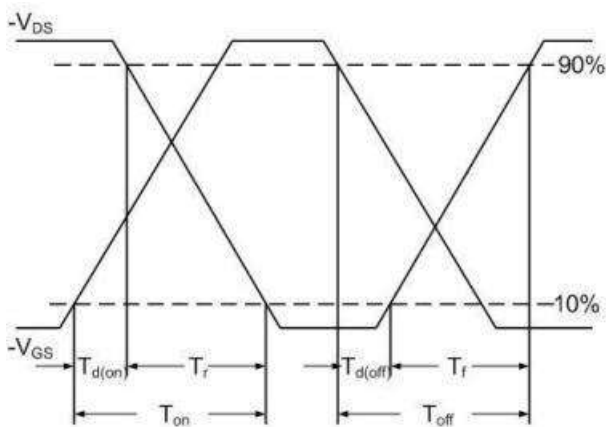


Fig.10 Switching Time Waveform

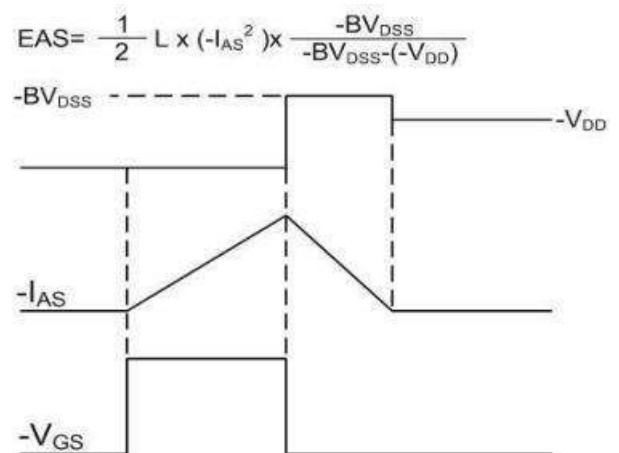


Fig.11 Unclamped Inductive Waveform