FKL3103

FETek Technology Corp.

P-Ch 30V Fast Switching MOSFETs

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

Product Summary

BVDSS	RDSON	ID
-30V	32mΩ	-5.8A

SOT223 Pin Configuration

Description

The FKL3103 is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The FKL3103 meet the RoHS and Green Product requirement with full function reliability approved.
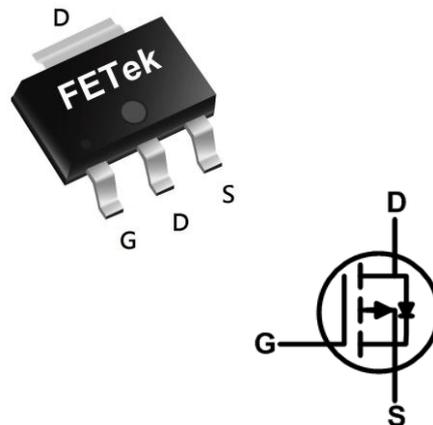
Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ -10V[1]	-5.8	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ -10V[1]	-4.6	A
I_{DM}	Pulsed Drain Current[2]	-24	A
P_D@T_A=25°C	Total Power Dissipation[3]	1.5	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	---	85	°C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	---	30	°C/W

Electrical Characteristics (T$_J$=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V , I$_D$=-250uA	-30	---	---	V
△BV$_{DSS}$/△T$_J$	BV$_{DSS}$ Temperature Coefficient	Reference to 25℃ , I$_D$=-1mA	---	-0.022	---	V/℃
R$_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V$_{GS}$=-10V , I$_D$=-5A	---	26	32	mΩ
		V$_{GS}$=-4.5V , I$_D$=-4A	---	36	45	
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-1.0	-1.5	-2.5	V
△V$_{GS(th)}$	V$_{GS(th)}$ Temperature Coefficient		---	4.6	---	mV/℃
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=-24V , V$_{GS}$=0V , T$_J$=25℃	---	---	-1	uA
		V$_{DS}$=-24V , V$_{GS}$=0V , T$_J$=55℃	---	---	-5	
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
gfs	Forward Transconductance	V$_{DS}$=-5V , I$_D$=-5A	---	17	---	S
R$_g$	Gate Resistance	V$_{DS}$=0V , V$_{GS}$=0V , f=1MHz	---	13	26	Ω
Q$_g$	Total Gate Charge (-4.5V)	V$_{DS}$=-15V , V$_{GS}$=-4.5V , I$_D$=-5A	---	12.6	17.6	nC
Q$_{gs}$	Gate-Source Charge		---	4.8	6.7	
Q$_{gd}$	Gate-Drain Charge		---	4.8	6.7	
T$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=-15V , V$_{GS}$=-10V , R$_G$=3.3Ω, I$_D$=-5A	---	4.6	9.2	ns
T$_r$	Rise Time		---	14.8	26.6	
T$_{d(off)}$	Turn-Off Delay Time		---	41	82	
T$_f$	Fall Time		---	19.6	39.2	
C$_{iss}$	Input Capacitance	V$_{DS}$=-15V , V$_{GS}$=0V , f=1MHz	---	1345	1883	pF
C$_{oss}$	Output Capacitance		---	194	272	
C$_{rss}$	Reverse Transfer Capacitance		---	158	221	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I$_S$	Continuous Source Current[1,4]	V$_G$=V$_D$=0V , Force Current	---	---	-5.8	A
I$_{SM}$	Pulsed Source Current[2,4]		---	---	-24	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$_F$=-5A , dI/dt=100A/μs , T$_J$=25℃	---	16.3	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	5.9	---	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 power dissipation is limited by 150℃ junction temperature
4.The data is theoretically the same as I$_D$ and I$_{DM}$, in real applications , should be limited by total power dissipation.

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Typical Characteristics
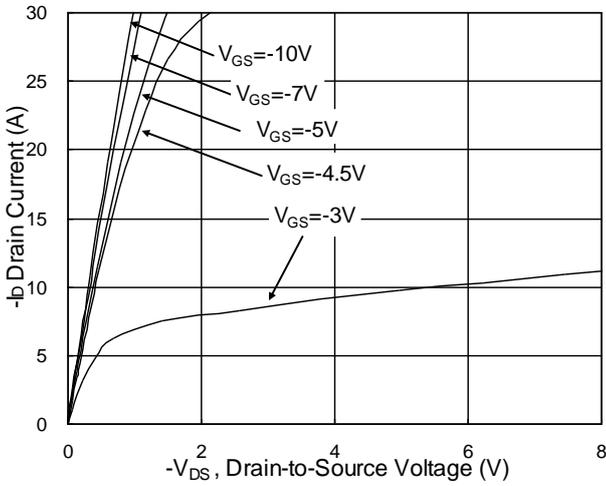
**Fig.1 Typical Output Characteristics**
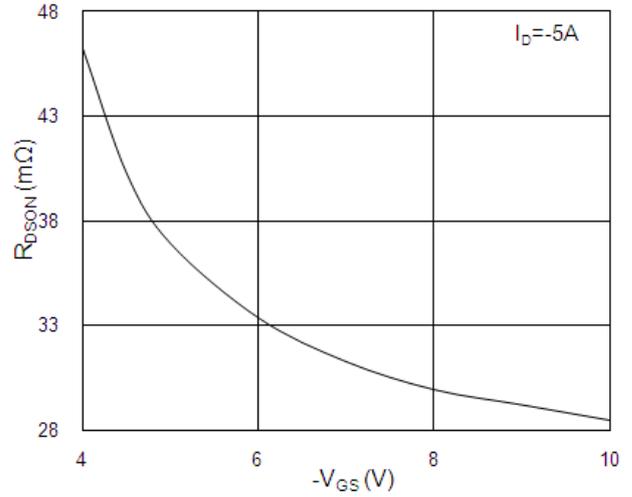

Fig.2 On-Resistance v.s Gate-Source
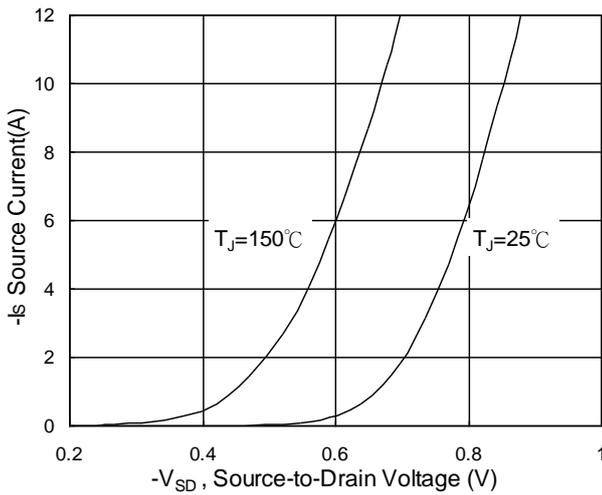
**Fig.3 Forward Characteristics of Reverse**
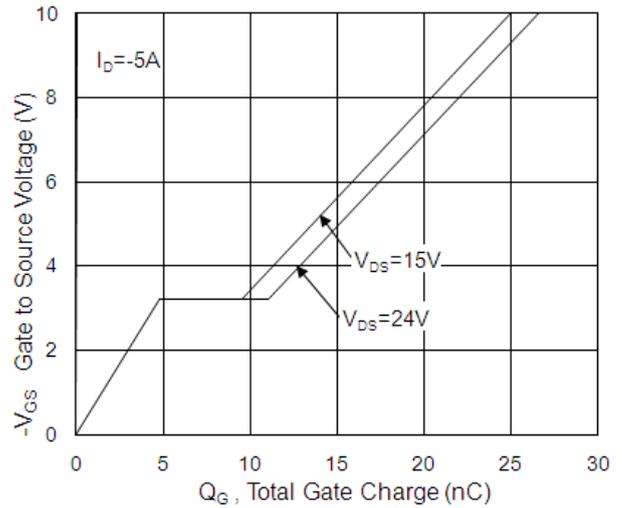
Fig.4 Gate-Charge Characteristics
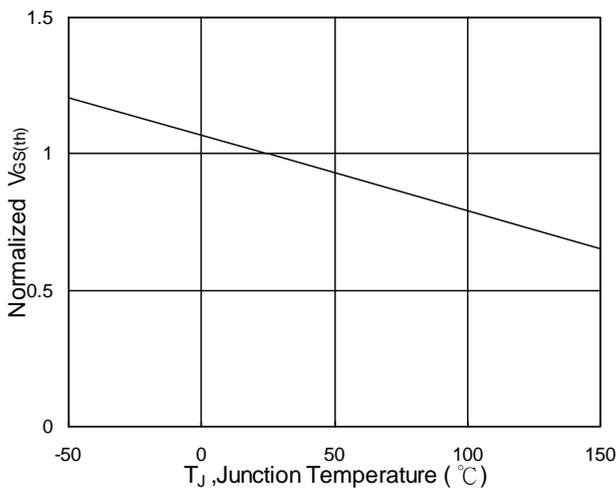
Fig.5 Normalized $V_{GS(th)}$ vs. T_J
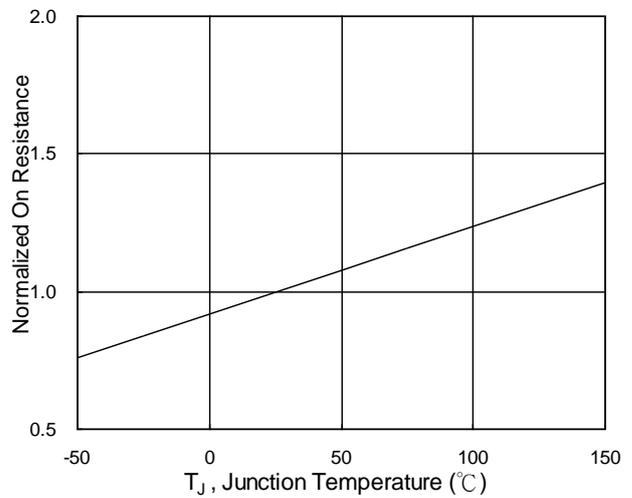
Fig.6 Normalized R_{DSON} vs. T_J

Data and specifications subject to change without notice.
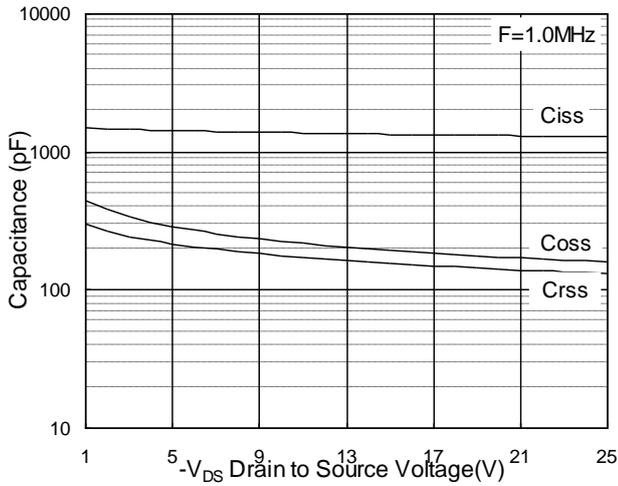
**Fig.7 Capacitance**
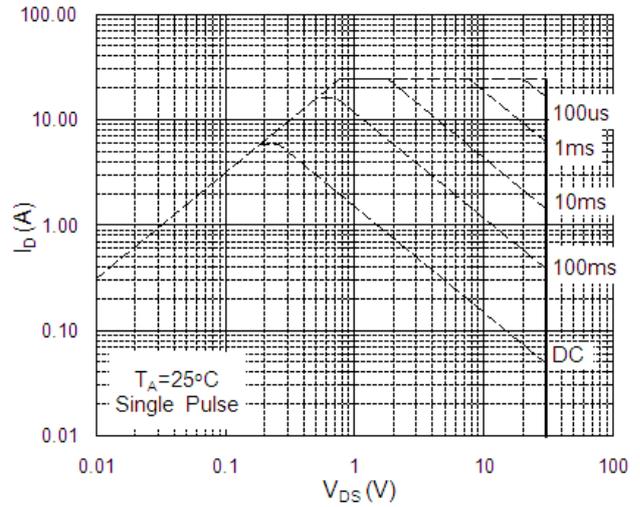
Fig.8 Safe Operating Area
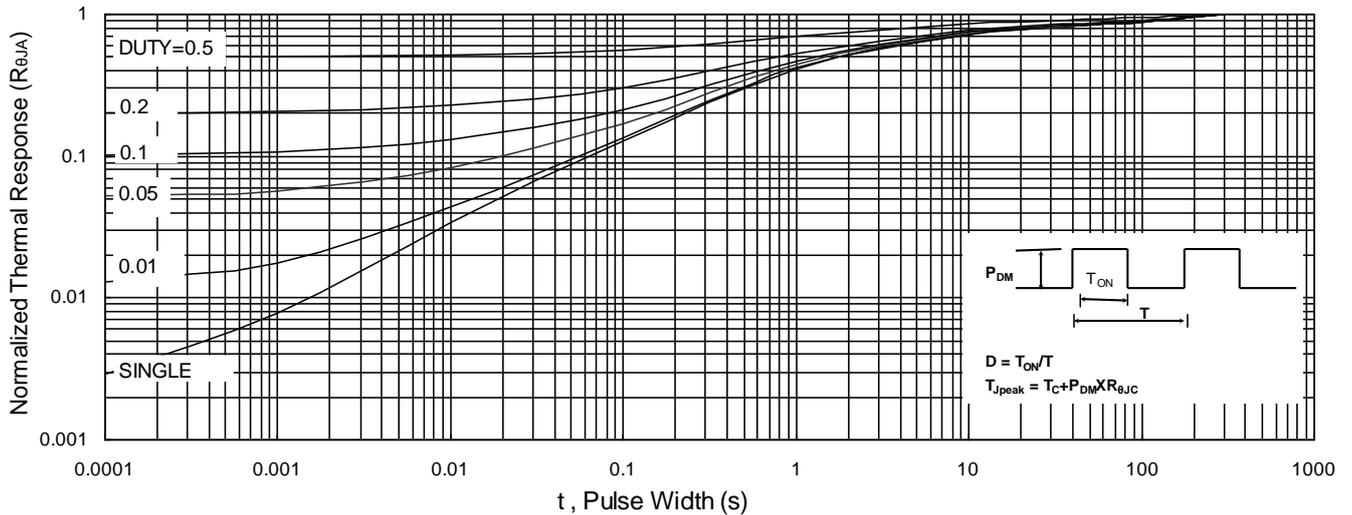
**Fig.9 Normalized Maximum Transient Thermal Impedance**
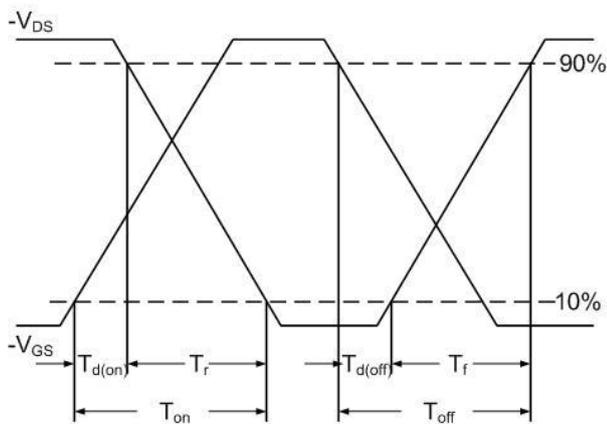
Fig.10 Switching Time Waveform
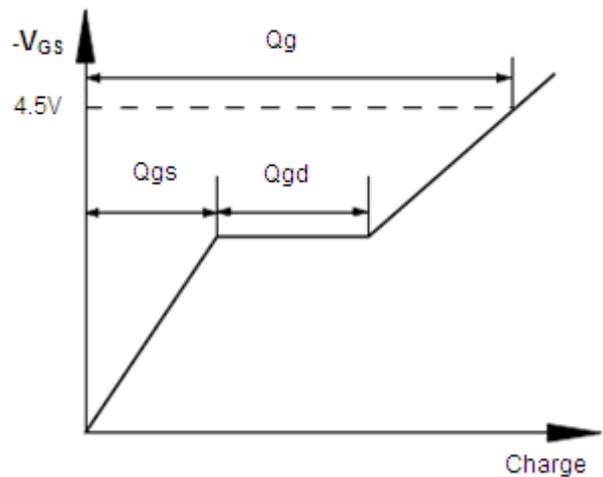
Fig.11 Gate Charge Waveform