FKK3107

FETek Technology Corp.

P-Ch 30V Fast Switching MOSFETs

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

Product Summary

BVDSS	RDSON	ID
-30V	70mΩ	-3.9A

Description

The FKK3107 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 FKK3107 meet the RoHS and Green Product requirement with full function reliability approved.

SOT89 Pin Configuration
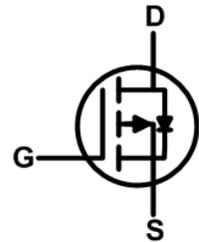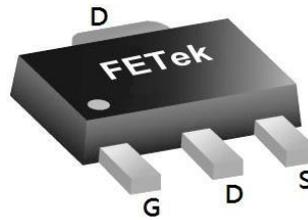
Absolute Maximum Ratings

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]	-3.9	A
$I_D@T_A=70°C$	Continuous Drain Current, V_{GS} @ -10V[1]	-3.1	A
I_{DM}	Pulsed Drain Current[2]	-16	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]	---	60	°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
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.02	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-3A	---	55	70	mΩ
		V_{GS}=-4.5V , I_D=-1.5A	---	90	120	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	-1.5	-2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.32	---	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=-3A	---	4.8	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	24	48	Ω
Q_g	Total Gate Charge (-4.5V)		---	5.22	---	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-20V , V_{GS}=-4.5V , I_D=-3A	---	1.25	---	
Q_{gd}	Gate-Drain Charge		---	2.3	---	
$T_{d(on)}$	Turn-On Delay Time		---	18.4	---	ns
T_r	Rise Time	V_{DD}=-15V , V_{GS}=-10V , R_G=3.3Ω	---	11.4	---	
$T_{d(off)}$	Turn-Off Delay Time	I_D=-1A	---	39.4	---	
T_f	Fall Time		---	5.2	---	
C_{iss}	Input Capacitance		---	463	---	pF
C_{oss}	Output Capacitance	V_{DS}=-15V , V_{GS}=0V , f=1MHz	---	82	---	
C_{rss}	Reverse Transfer Capacitance		---	68	---	

Diode Characteristics

| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	-3.9	A
I_{SM}	Pulsed Source Current[2,4]		---	---	-16	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1	V

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.
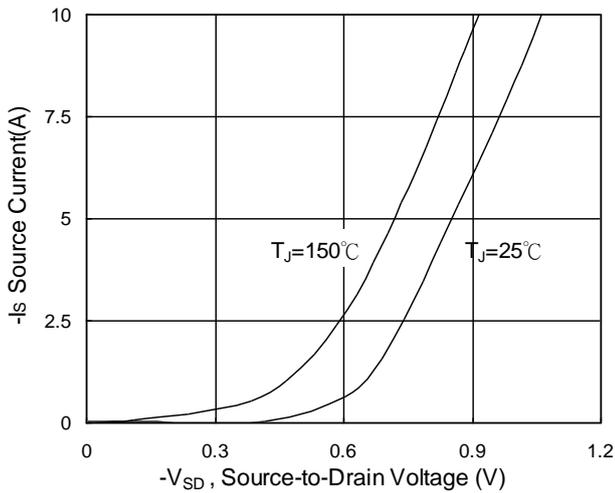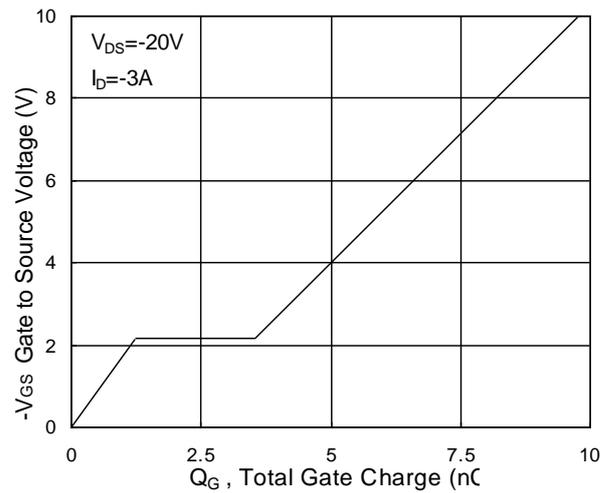
Typical Characteristics
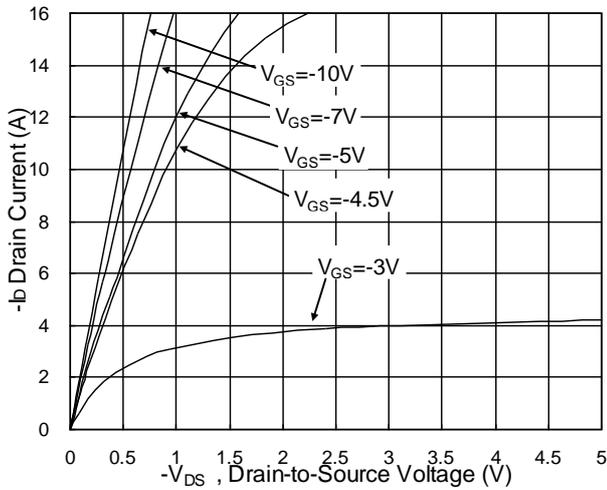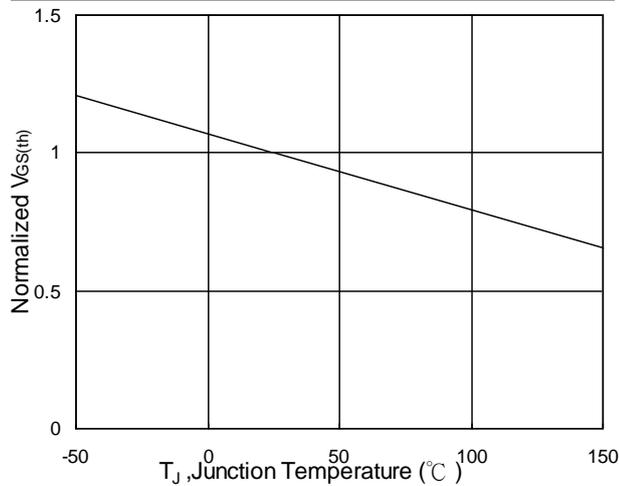

Fig.1 Typical Output Characteristics
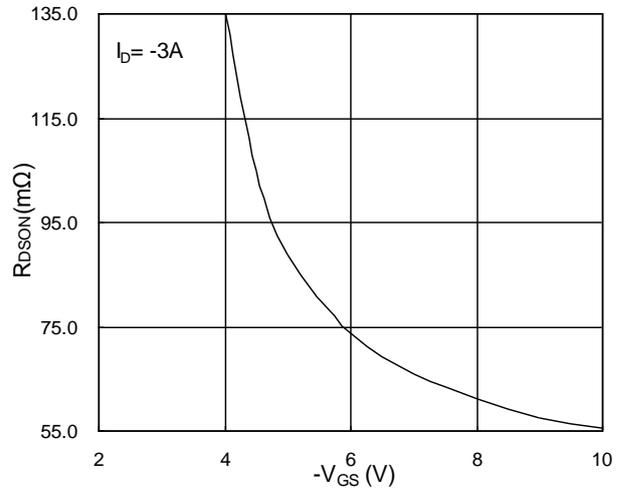
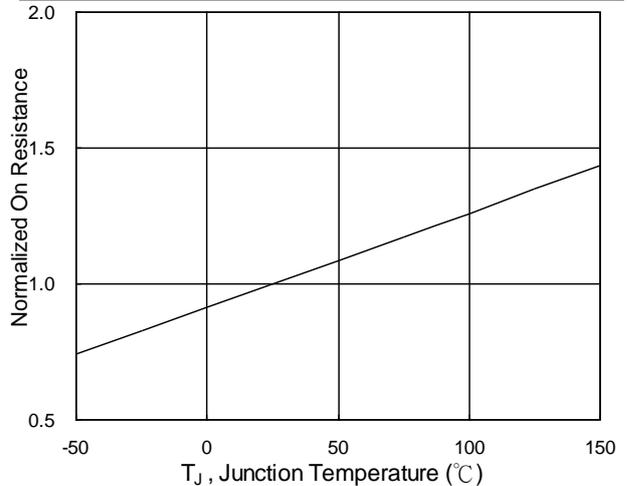**Fig.2 On-Resistance vs. G-S Voltage**

Fig.3 Forward Characteristics of Reverse

Fig.4 Gate-Charge Characteristics

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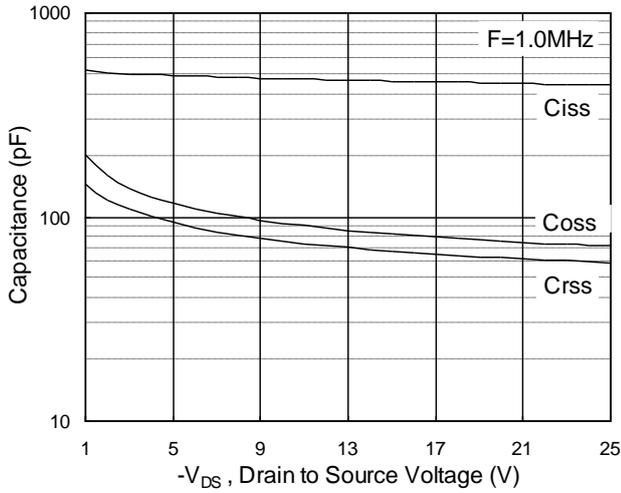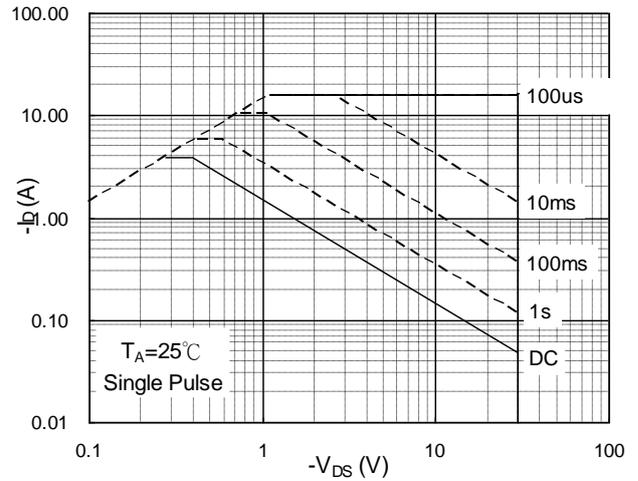

Fig.6 Normalized R_{DSON} vs. T_J

Data and specifications subject to change without notice.
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Fig.7 Capacitance

Fig.8 Safe Operating Area
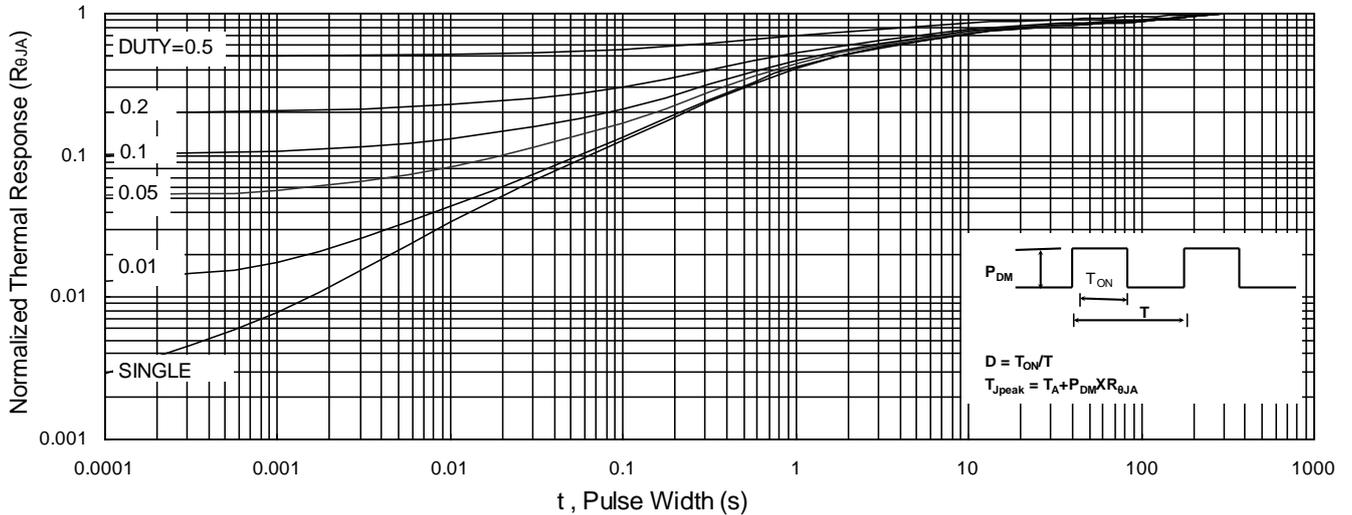
Fig.9 Normalized Maximum Transient Thermal Impedance

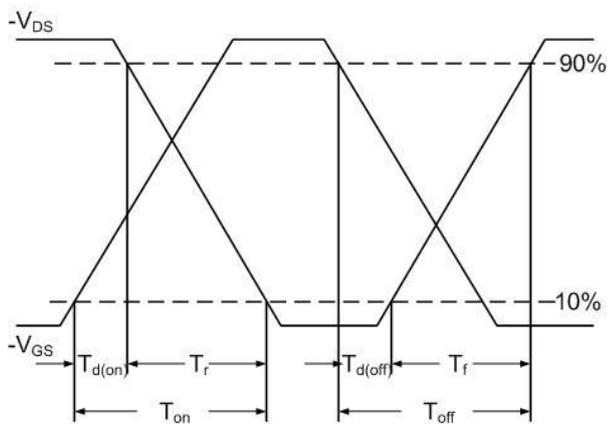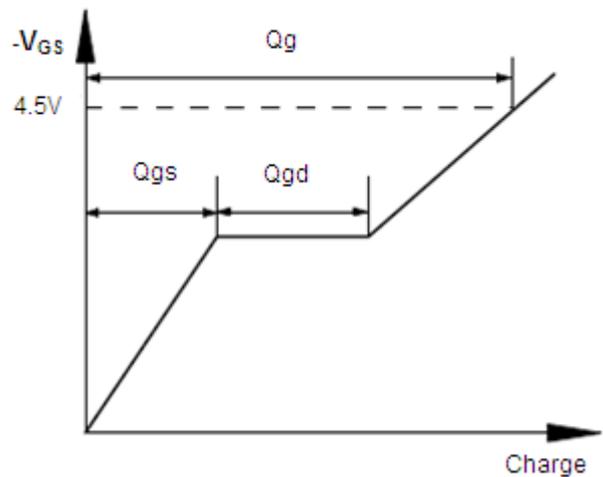$$D = T_{ON}/T$$
$$T_{Jpeak} = T_A + P_{DM} X R_{\theta JA}$$

Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform