

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

Product Summary



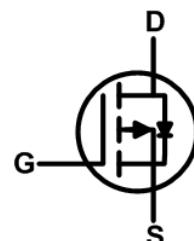
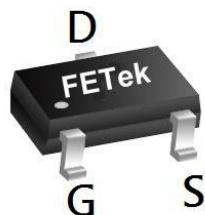
BVDSS	RDS(ON)	ID
-30V	32mΩ	-4.8A

Description

The FKN3103 is the high cell density trenched P-ch MOSFETs, which provide excellent RDS(ON) and gate charge for most of the synchronous buck converter applications.

The FKN3103 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOT23 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		10s	Steady State	
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	-5.5	-4.8	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ -10V ¹	-4.3	-3.8	A
I _{DM}	Pulsed Drain Current ²	-24		A
P _D @T _A =25°C	Total Power Dissipation ³	1.32	1	W
P _D @T _A =70°C	Total Power Dissipation ³	0.84	0.64	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	---	125	°C/W
R _{θJA}	Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	---	95	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	80	°C/W



FETek Technology Corp.

FKN3103

P-Ch 30V Fast Switching MOSFETs

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}$, $I_D=-250\mu\text{A}$	-30	---	---	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	BV _{DSS} Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	---	-0.022	---	$\text{V}/^\circ\text{C}$
$R_{\text{DS(ON)}}$	Static Drain-Source On-Resistance ²	$V_{\text{GS}}=-10\text{V}$, $I_D=-4\text{A}$	---	---	32	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}$, $I_D=-2\text{A}$	---	---	45	
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}$, $I_D=-250\mu\text{A}$	-1.0	---	-2.5	V
$\Delta V_{\text{GS(th)}}$	$V_{\text{GS(th)}}$ Temperature Coefficient		---	4.6	---	$\text{mV}/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{\text{DS}}=-24\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_J=25^\circ\text{C}$	---	---	1	uA
		$V_{\text{DS}}=-24\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 20\text{V}$, $V_{\text{DS}}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{\text{DS}}=-5\text{V}$, $I_D=-4\text{A}$	---	15	---	S
R_g	Gate Resistance	$V_{\text{DS}}=0\text{V}$, $V_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	13	---	Ω
Q_g	Total Gate Charge (-4.5V)	$V_{\text{DS}}=-15\text{V}$, $V_{\text{GS}}=-4.5\text{V}$, $I_D=-4\text{A}$	---	9.7	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{\text{d(on)}}$	Turn-On Delay Time	$V_{\text{DD}}=-15\text{V}$, $V_{\text{GS}}=-10\text{V}$, $R_g=3.3\Omega$, $I_D=-4\text{A}$	---	16.4	---	ns
T_r	Rise Time		---	20.2	---	
$T_{\text{d(off)}}$	Turn-Off Delay Time		---	55	---	
T_f	Fall Time		---	10	---	
C_{iss}	Input Capacitance	$V_{\text{DS}}=-15\text{V}$, $V_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	942	---	pF
C_{oss}	Output Capacitance		---	165	---	
C_{rss}	Reverse Transfer Capacitance		---	137	---	

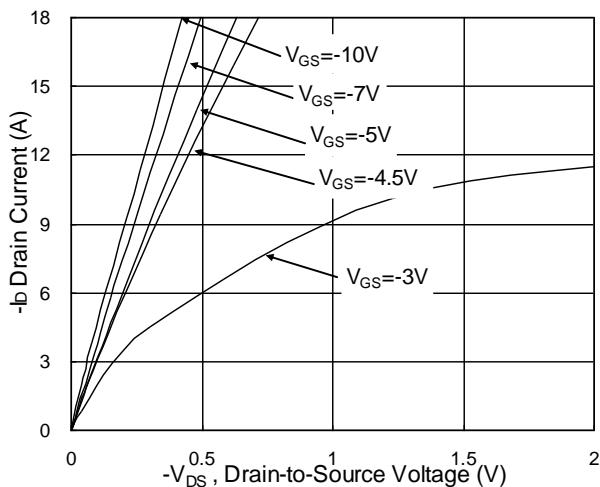
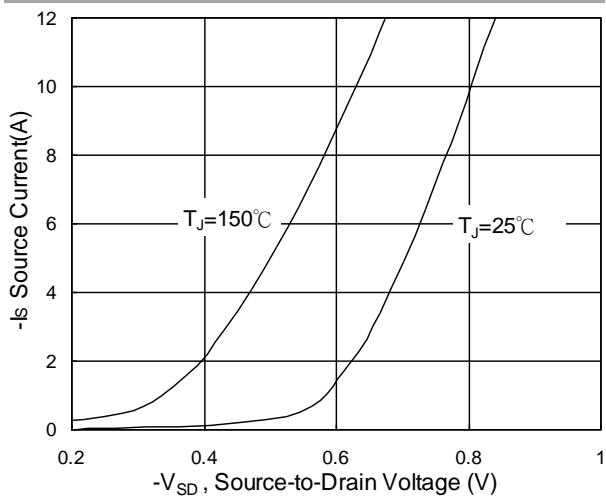
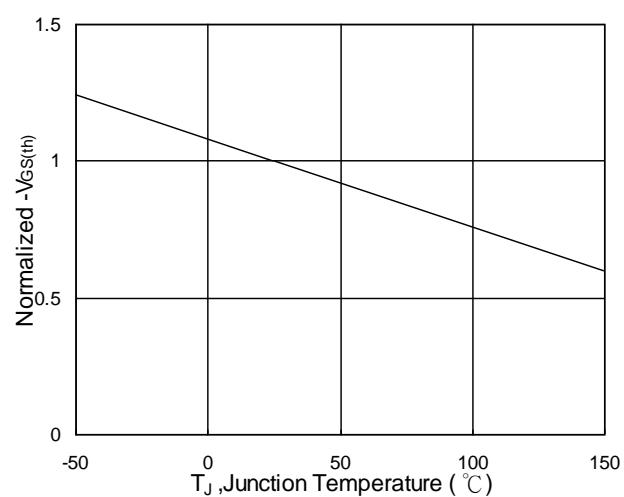
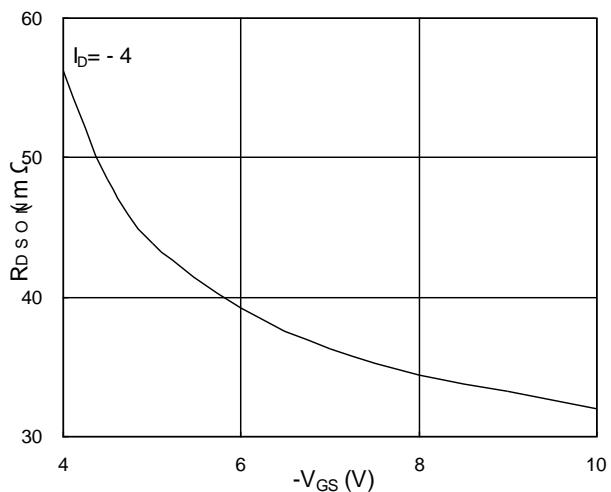
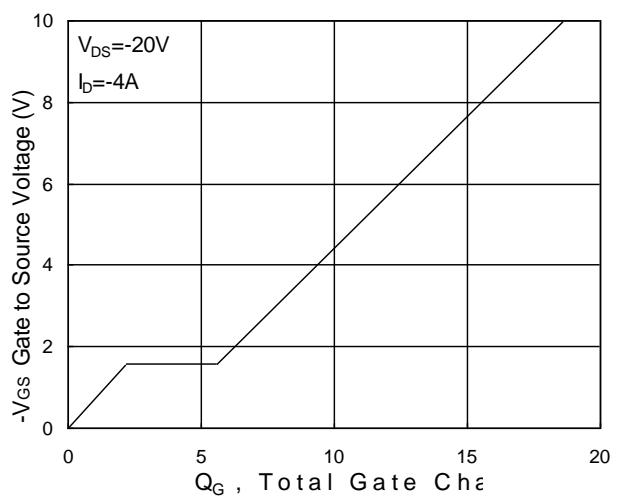
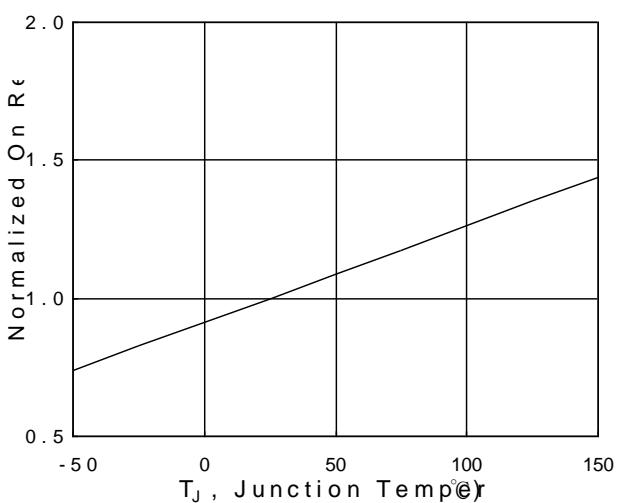
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_s	Continuous Source Current ^{1,4}	$V_G=V_D=0\text{V}$, Force Current	---	---	-4.8	A
I_{SM}	Pulsed Source Current ^{2,4}		---	---	-24	A
V_{SD}	Diode Forward Voltage ²	$V_{\text{GS}}=0\text{V}$, $I_s=-1\text{A}$, $T_J=25^\circ\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$ I =4\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$	---	18.3	---	nS
Q_{rr}	Reverse Recovery Charge		---	7.2	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150°C 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.3 Forward Characteristics of Reverse

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

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

Fig.4 Gate-Charge Characteristics

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

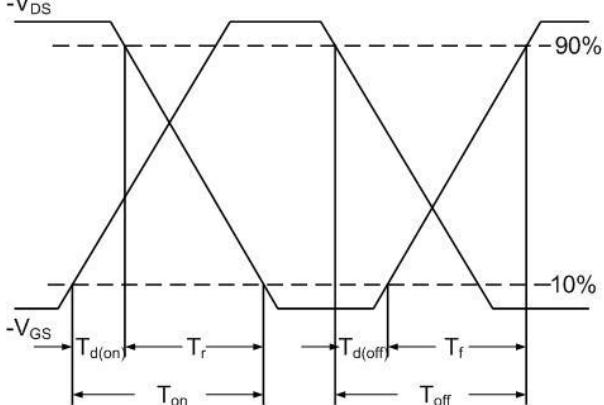
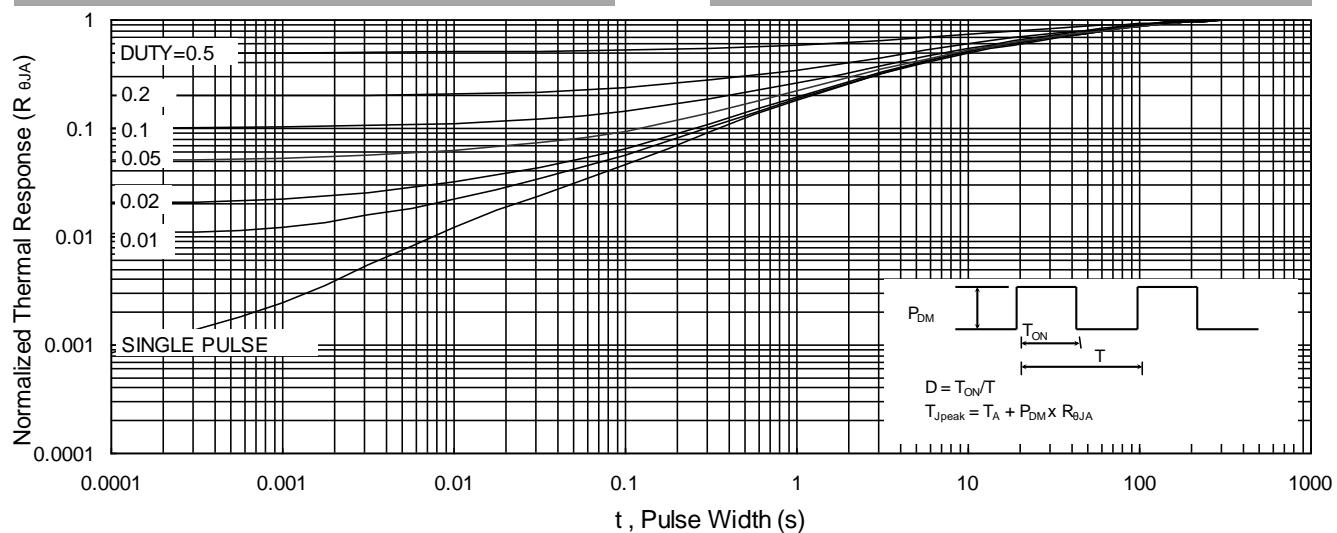
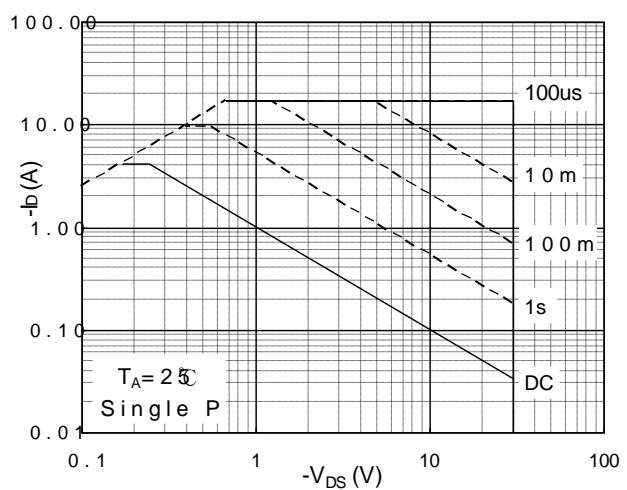
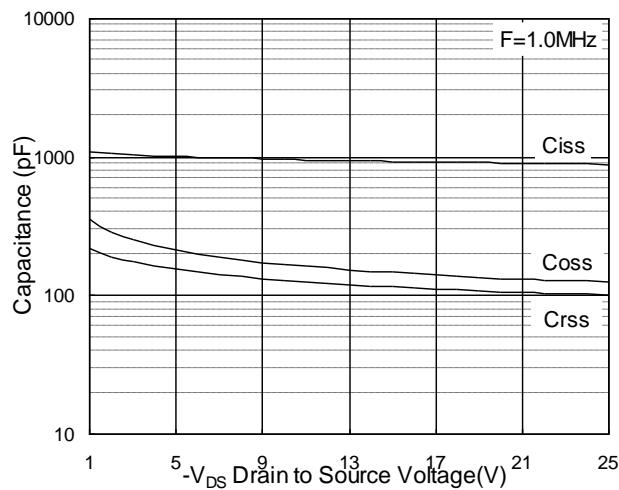


Fig.10 Switching Time Waveform

