FKBE2730

N-Ch 20V Fast Switching MOSFETs

- ★ Low drain-source ON resistance
- ★ Green Device Available
- ★ ESD Protected Embedded

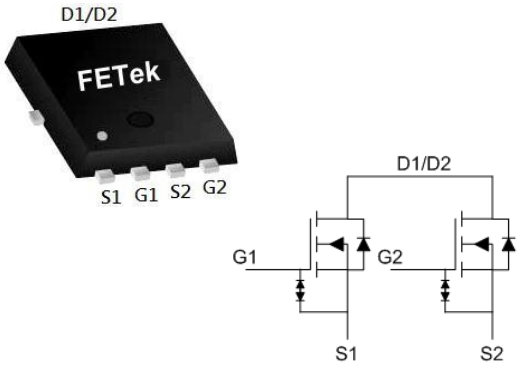
Product Summary

BVDSS	RDSON	ID
20V	17mΩ	7

Description

The FKBE2730 is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.
The FKBE2730 meet the RoHS and Green Product requirement with full function reliability approved.

PRPAK3X3 NEP Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25°C	Continuous Drain Current[1]	7	A
I_D@T_A=70°C	Continuous Drain Current[1]	5.8	A
I_{DM}	Pulsed Drain Current[2]	43	A
P_D@T_A=25°C	Total Power Dissipation[3]	1.47	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	85	°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	20	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.014	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=3A	---	14.5	17	mΩ
		V_{GS}=4.0V , I_D=3A	---	15	18.5	mΩ
		V_{GS}=3.1V , I_D=3A	---	18.5	24.5	mΩ
		V_{GS}=2.5V , I_D=3A	---	22	27	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.5	---	1.2	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-2.09	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	25	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±10	uA
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.83	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=16V , V_{GS}=4.5V , I_D=3A	---	9.86	---	nC
Q_{gs}	Gate-Source Charge		---	1.41	---	
Q_{gd}	Gate-Drain Charge		---	2.48		
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V , V_{GS}=4.5V , R_G=3.3Ω, I_D=3A	---	7	---	ns
T_r	Rise Time		---	36	---	
$T_{d(off)}$	Turn-Off Delay Time		---	46.5	---	
T_f	Fall Time		---	15	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , F=1MHz	---	735	---	pF
C_{oss}	Output Capacitance		---	83	---	
C_{rss}	Reverse Transfer Capacitance		---	81	---	

Diode Characteristics

Symbol	Parameter	Conditions	Max.	Unit
I_S	Continuous Source Current[1,6]	V_G=V_D=0V , Force Current	7	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=7A , T_J=25℃	1.2	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

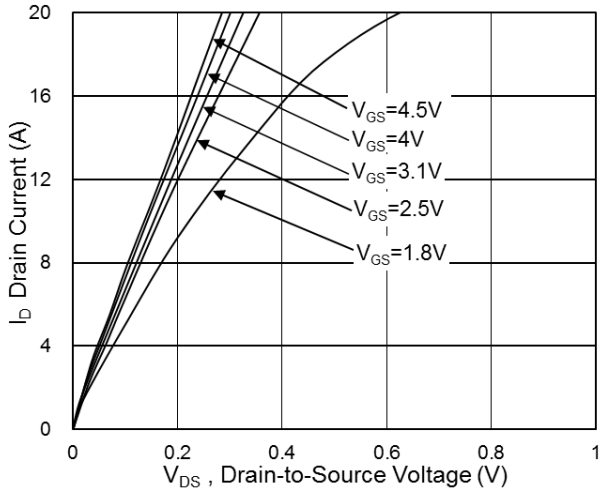


Fig.1 Typical Output Characteristics

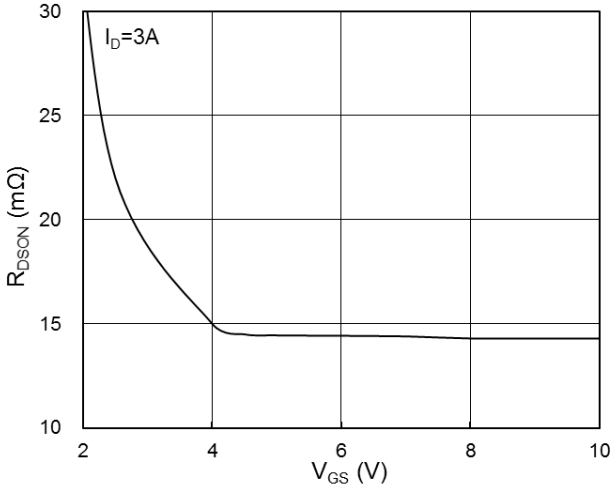


Fig.2 On-Resistance vs. Gate-Source Voltage

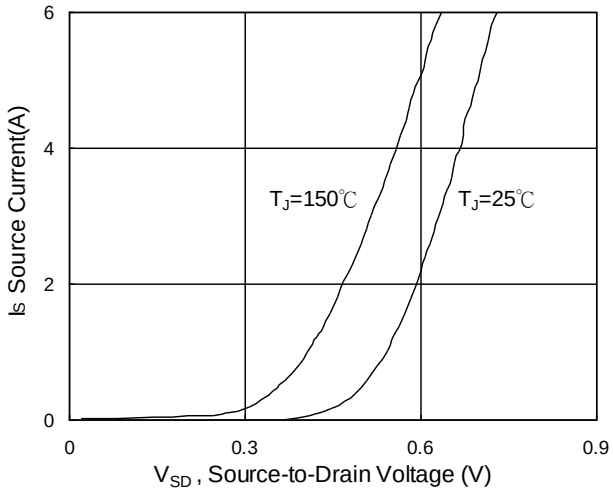


Fig.3 Forward Characteristics of Reverse

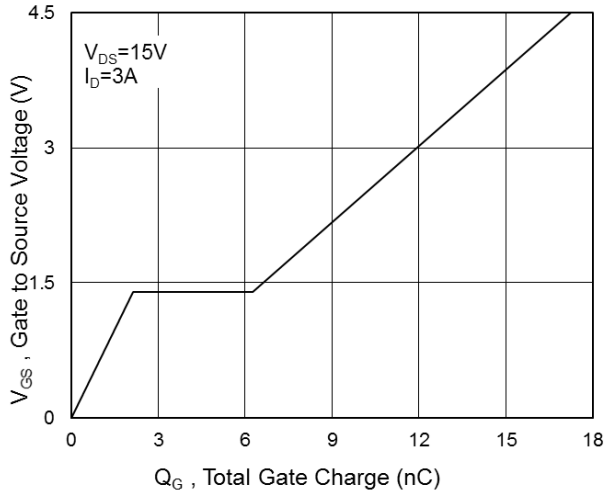


Fig.4 Gate-Charge Characteristics

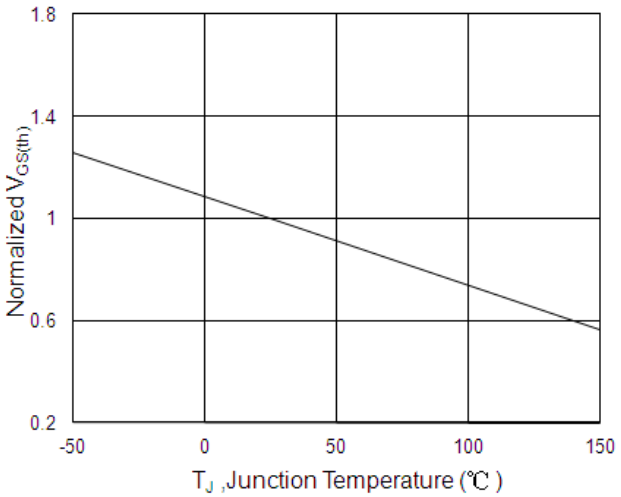


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

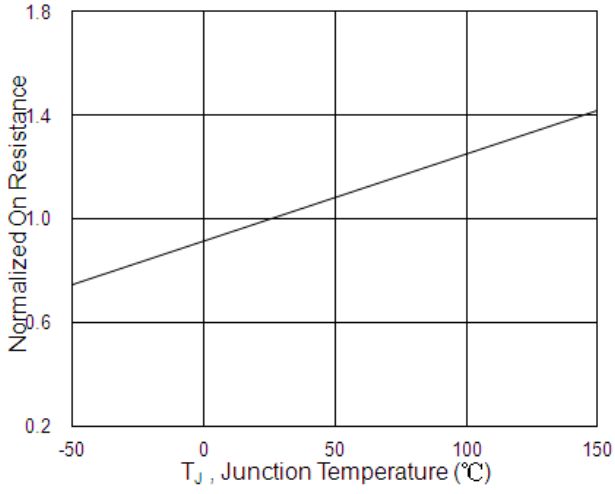


Fig.6 Normalized R_{DSON} vs. T_J

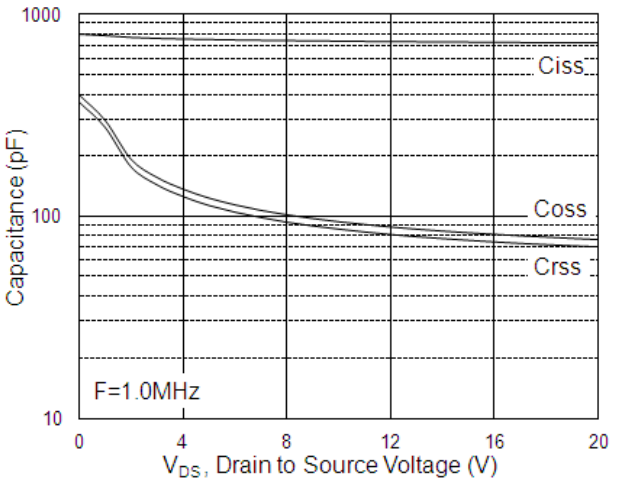


Fig.7 Capacitance

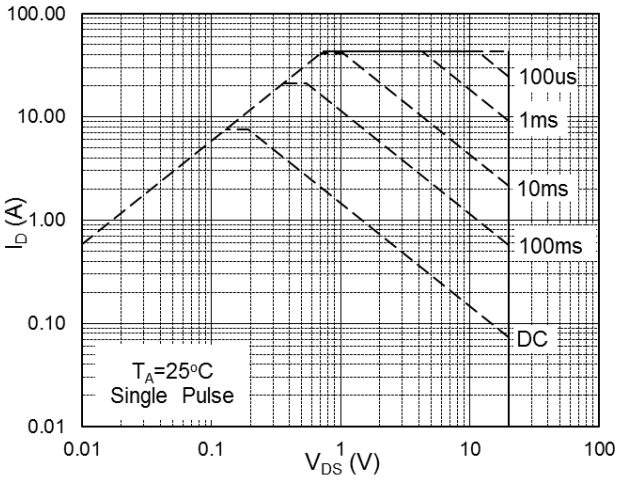


Fig.8 Safe Operating Area

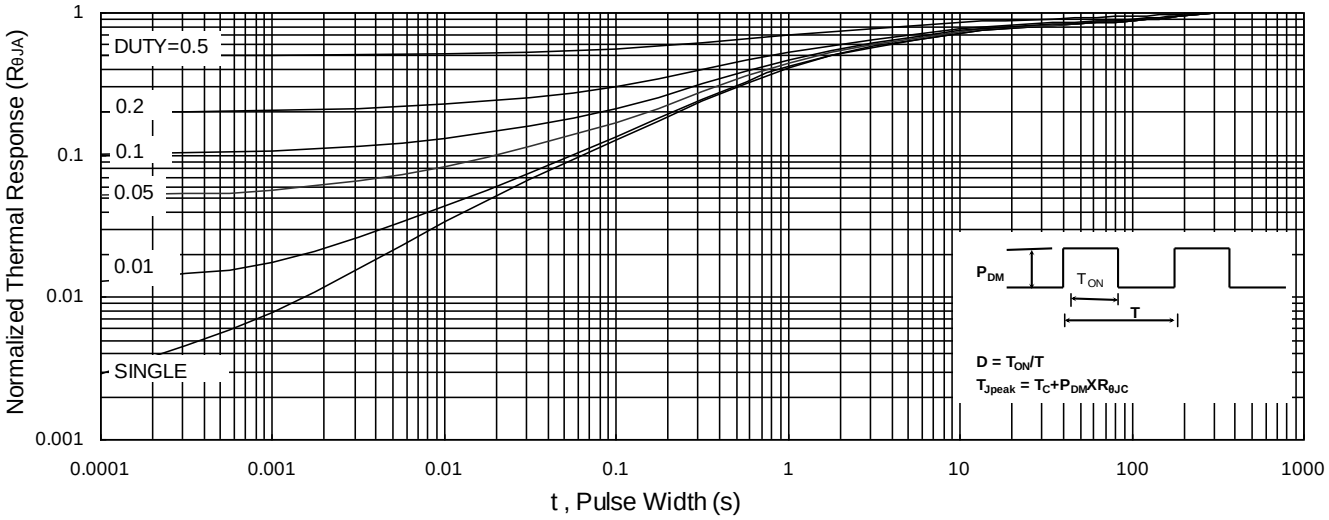


Fig.9 Normalized Maximum Transient Thermal Impedance

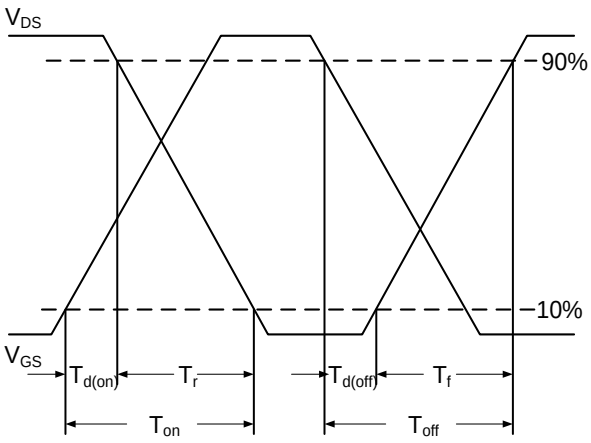


Fig.10 Switching Time Waveform

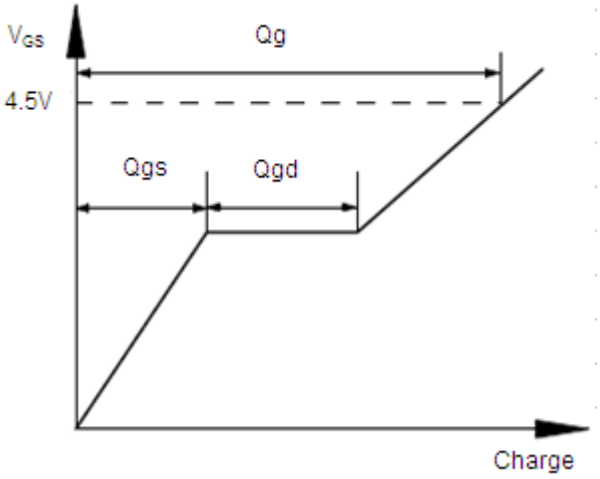


Fig.11 Gate Charge Waveform