FKBE2738

Dual N-Ch 20V Fast Switching MOSFETs

★ High-speed switching
★ Green Device Available
★ ESD Protected Embedded

Product Summary

Green

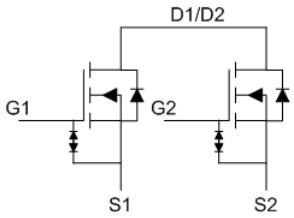
BVDSS	RDSON	ID
20V	9.5mΩ	12A

Description

The FKBE2738 is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion one cell battery pack applications.

The FKBE2738 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, V_{GS} @ 4.5V[1]	12	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	9.6	A
I_{DM}	Pulsed Drain Current	72	A
P_D@T_A=25°C	Total Power Dissipation[3]	1.32	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
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1] (Steady State)	---	95	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1] (t<10S)	---	55	°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
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=3A	---	8.0	9.5	mΩ
		V_{GS}=4.0V , I_D=3A	---	8.5	9.8	mΩ
		V_{GS}=3.1V , I_D=3A	---	10.5	12.5	mΩ
		V_{GS}=2.5V , I_D=3A	---	12.0	15.0	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.5	---	1.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±5	uA
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D =6A	---	28	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=10A	---	13.5	---	nC
Q_{gs}	Gate-Source Charge		---	2.2	---	
Q_{gd}	Gate-Drain Charge		---	7.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=4.5V , R_G=6.0Ω, I_D=6A	---	22	---	ns
T_r	Rise Time		---	85	---	
$T_{d(off)}$	Turn-Off Delay Time		---	125	---	
T_f	Fall Time		---	46	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	775	----	pF
C_{oss}	Output Capacitance		---	255	---	
C_{rss}	Reverse Transfer Capacitance		---	230	---	

Diode Characteristics

Symbol	Parameter	Conditions	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	12	A
I_{SM}	Pulsed Source Current[2,4]		72	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , 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

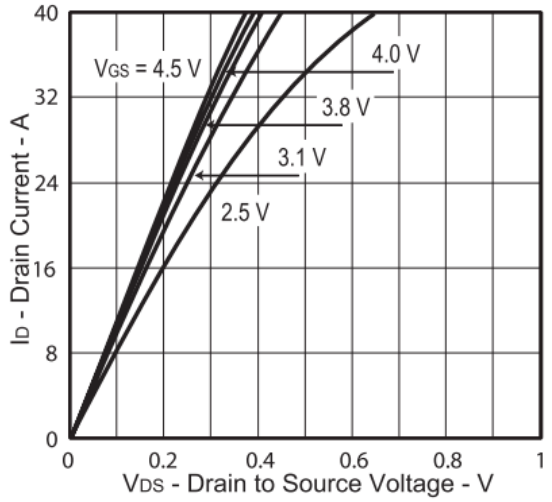


Fig.1 Typical Output Characteristics

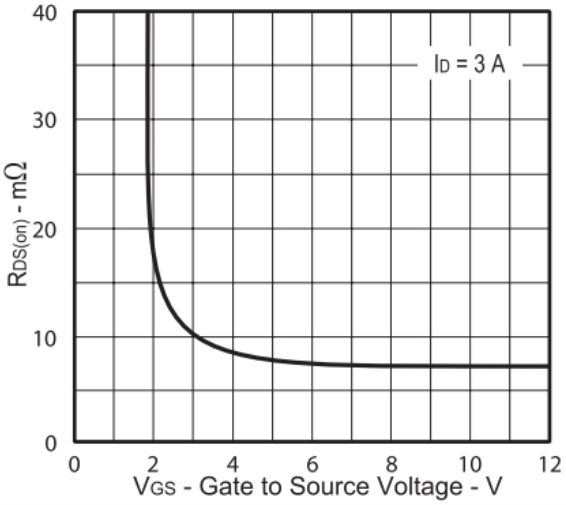


Fig.2 On-Resistance vs. Gate-Source

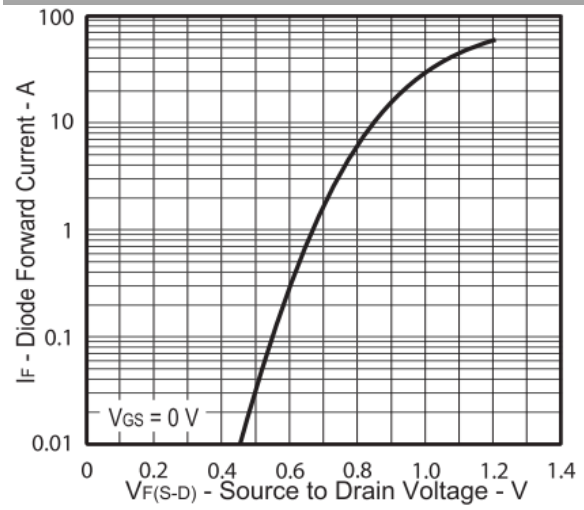


Fig.3 Forward Characteristics Of Reverse

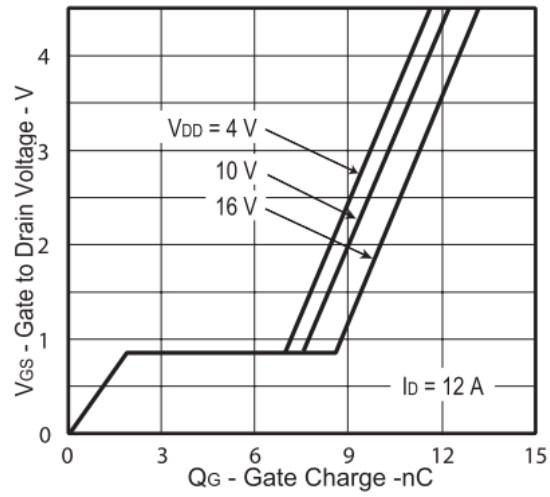


Fig.4 Gate-Charge Characteristics

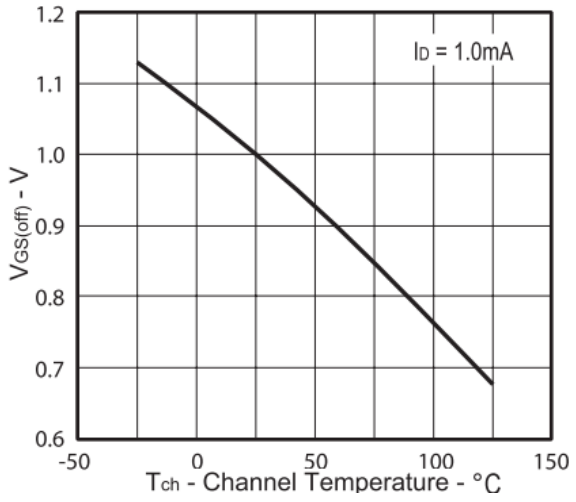


Fig.5 $V_{GS(th)}$ vs. T_{CH}

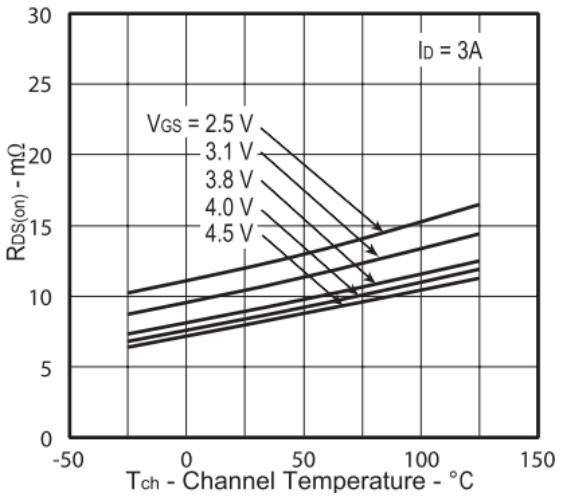


Fig.6 R_{DSON} vs. T_{CH}

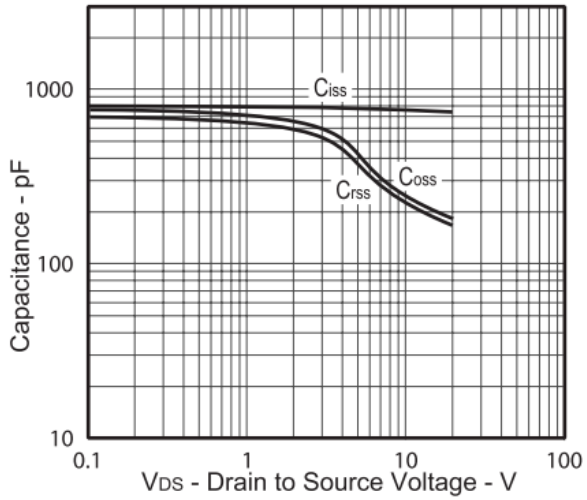


Fig.7 Capacitance

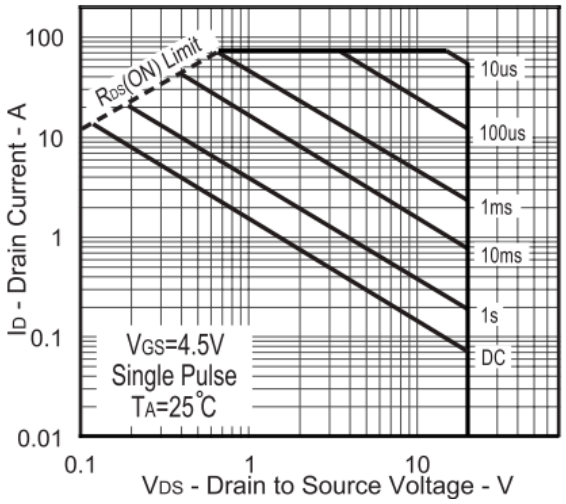


Fig.8 Safe Operating Area

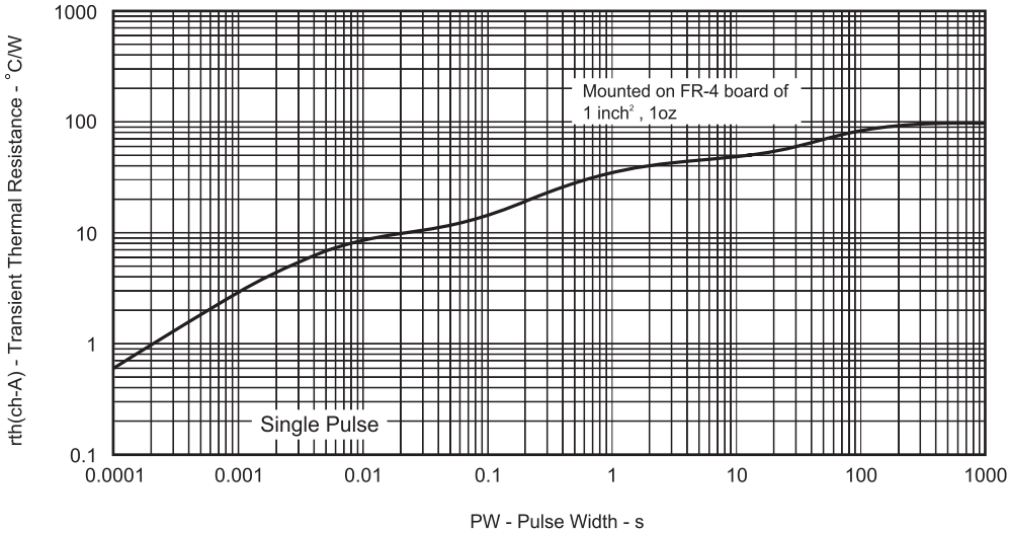


Fig.9 Normalized Maximum Transient Thermal Impedance

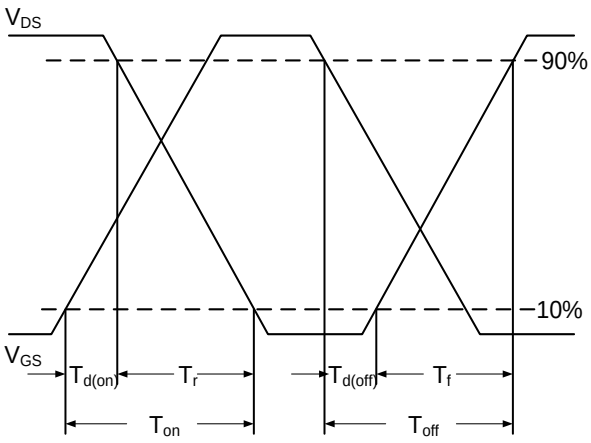


Fig.10 Switching Time Waveform

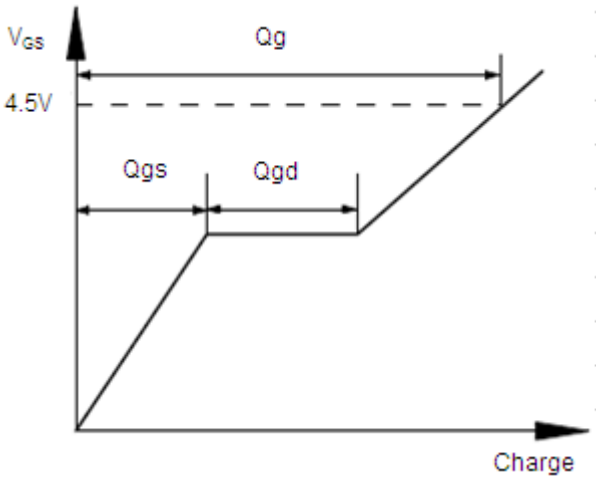


Fig.11 Gate Charge Waveform