



- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ ESD Protection
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench

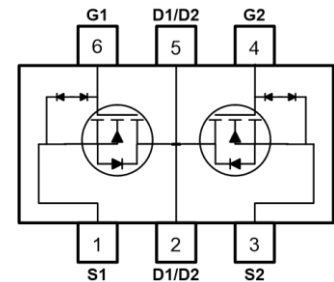
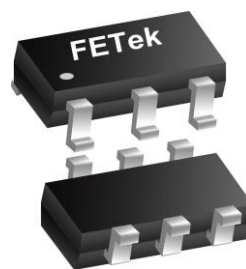
Product Summary

BVDSS	RDSON	ID
20V	23.5mΩ	5.5A

Description

The FKQ2721 is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.

The FKQ2721 meet the RoHS and Green Product requirement with full function reliability approved.

TSOP6 Pin Configuration

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current ¹	5.5	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current ¹	4.4	A
I_{DM}	Pulsed Drain Current ²	22	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation ³	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	100	$^\circ C/W$

**N-Channel Electrical Characteristics (T_J=25 °C, 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 =2.75A	17.5	20.5	23.5	mΩ
		V _{GS} =4.0V, I _D =2.75A	18.5	21.5	24.5	
		V _{GS} =3.7V, I _D =2.75A	19.0	22.5	26.5	
		V _{GS} =3.1V, I _D =2.75A	19.5	24.5	29.5	
		V _{GS} =2.5V, I _D =2.75A	21.5	28.5	35.5	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.5	0.7	1.2	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =16V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =16V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±8V, V _{DS} =0V	---	---	±10	uA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =3A	---	18	---	S
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _D =6A	---	10.4	---	nC
Q _{gs}	Gate-Source Charge		---	1.6	---	
Q _{gd}	Gate-Drain Charge		---	2.9	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =10V, V _{GS} =4.5V, R _G =3.3Ω I _D =3A	---	3.4	---	ns
T _r	Rise Time		---	11.0	---	
T _{d(off)}	Turn-Off Delay Time		---	35	---	
T _f	Fall Time		---	4.2	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	635	---	pF
C _{oss}	Output Capacitance		---	67	---	
C _{rss}	Reverse Transfer Capacitance		---	61	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	5.5	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	0.75	1.2	V

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, t ≤ 10s.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 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.

N-Channel Typical Characteristics

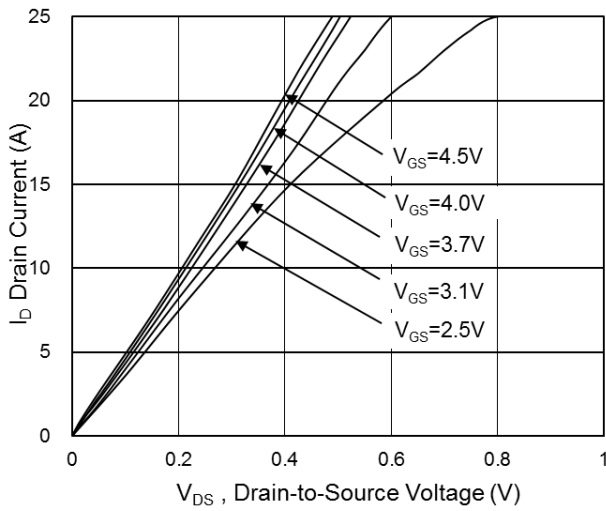


Fig.1 Typical Output Characteristics

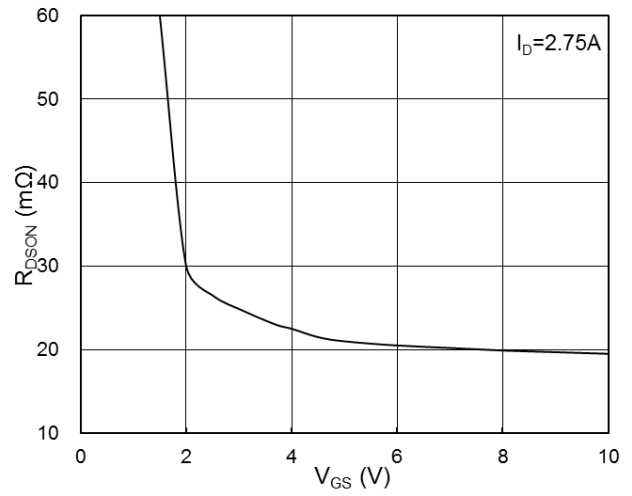


Fig.2 On-Resistance vs. G-S voltage

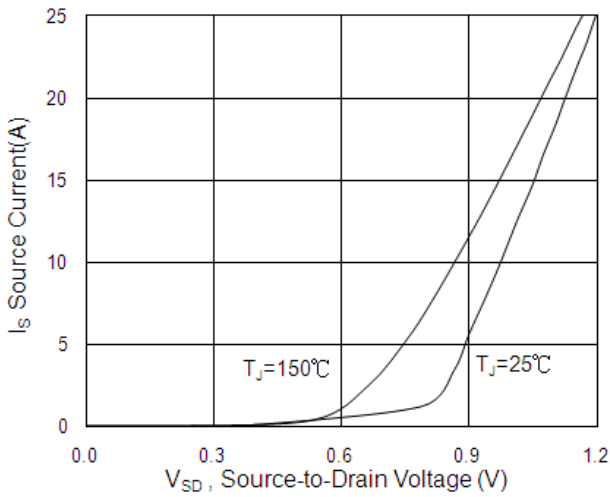


Fig.3 Forward Characteristics of Reverse

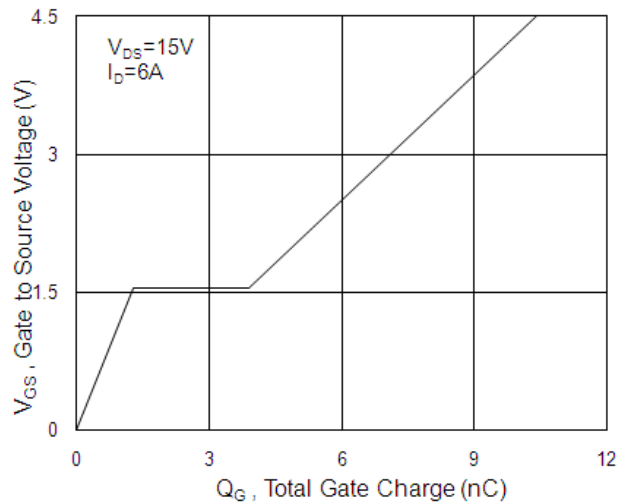


Fig.4 Gate-Charge Characteristics

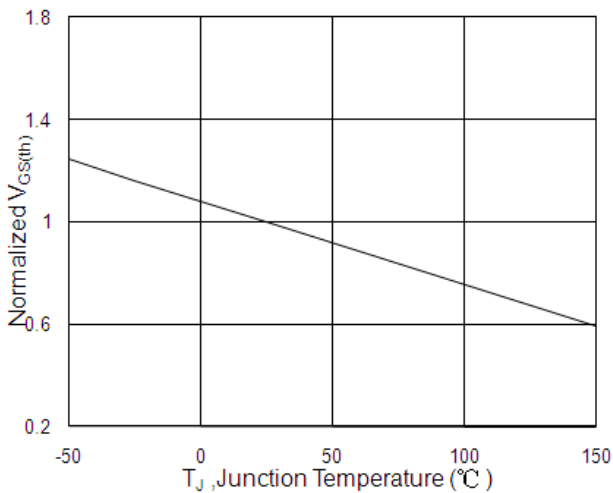


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

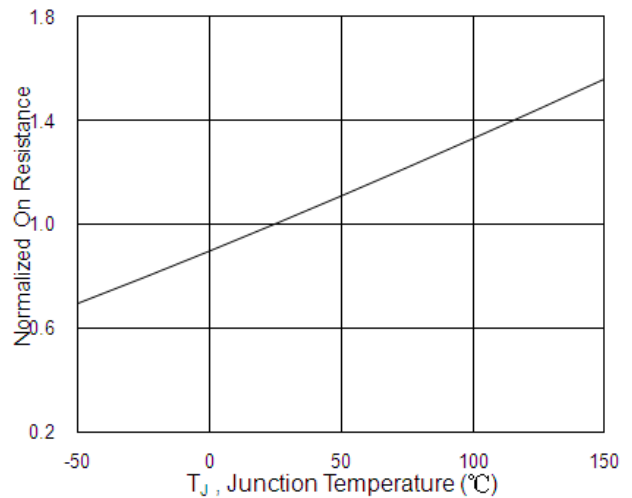


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

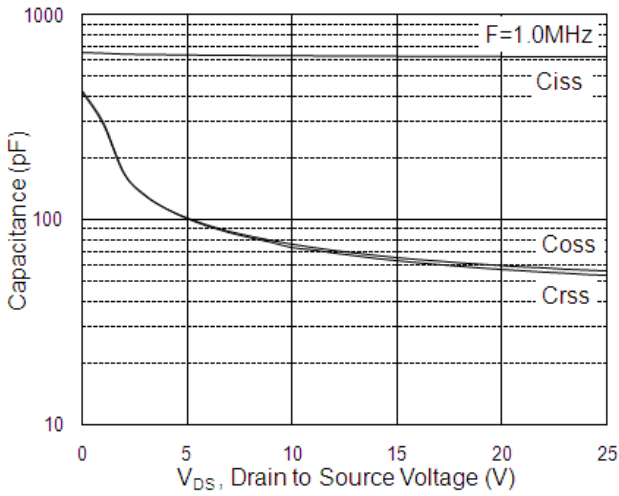


Fig.7 Capacitance

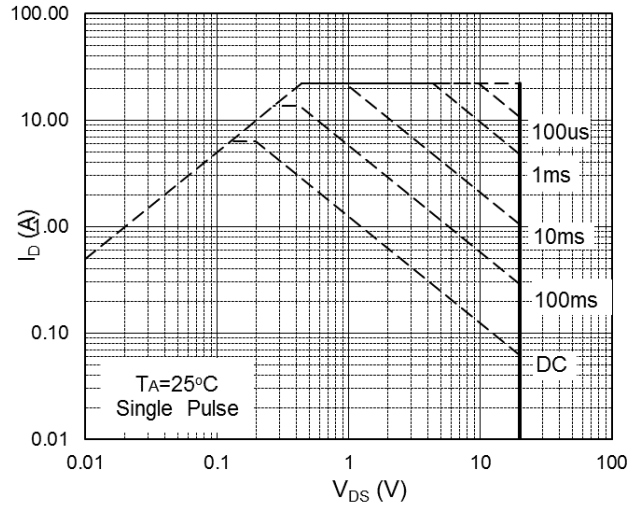


Fig.8 Safe Operating Area

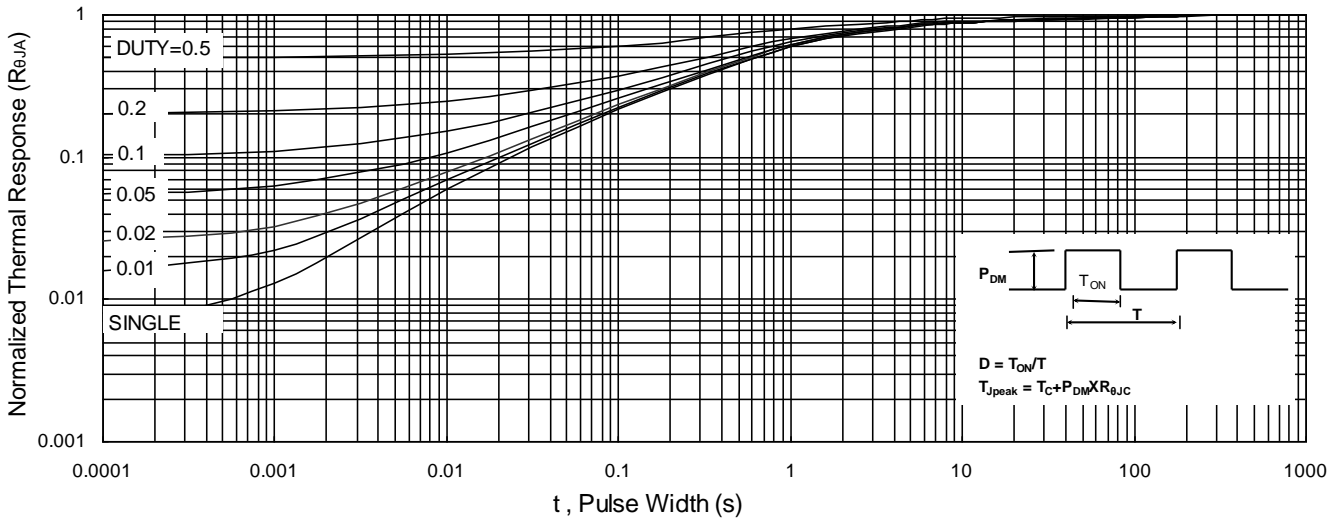


Fig.9 Normalized Maximum Transient Thermal Impedance

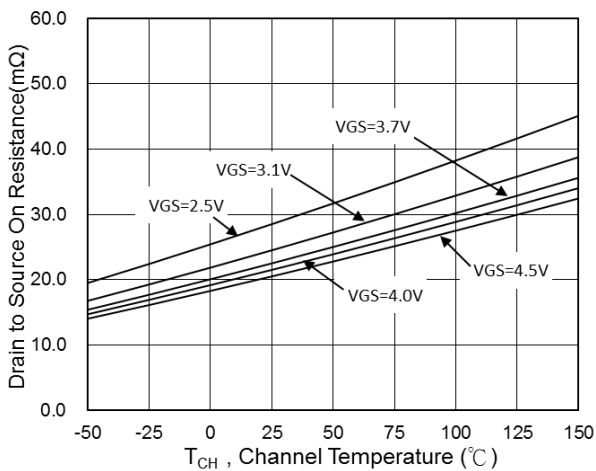
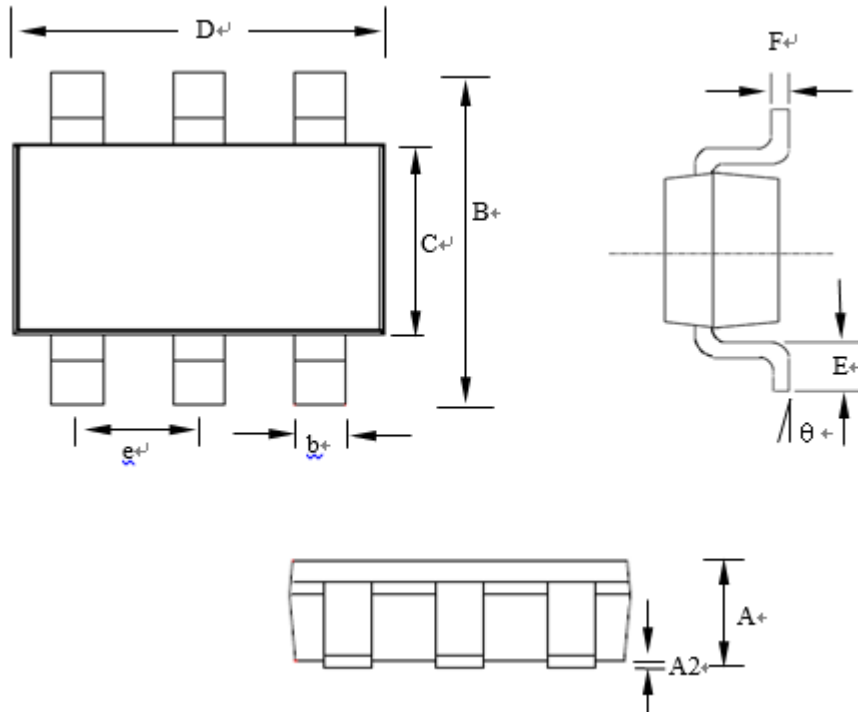


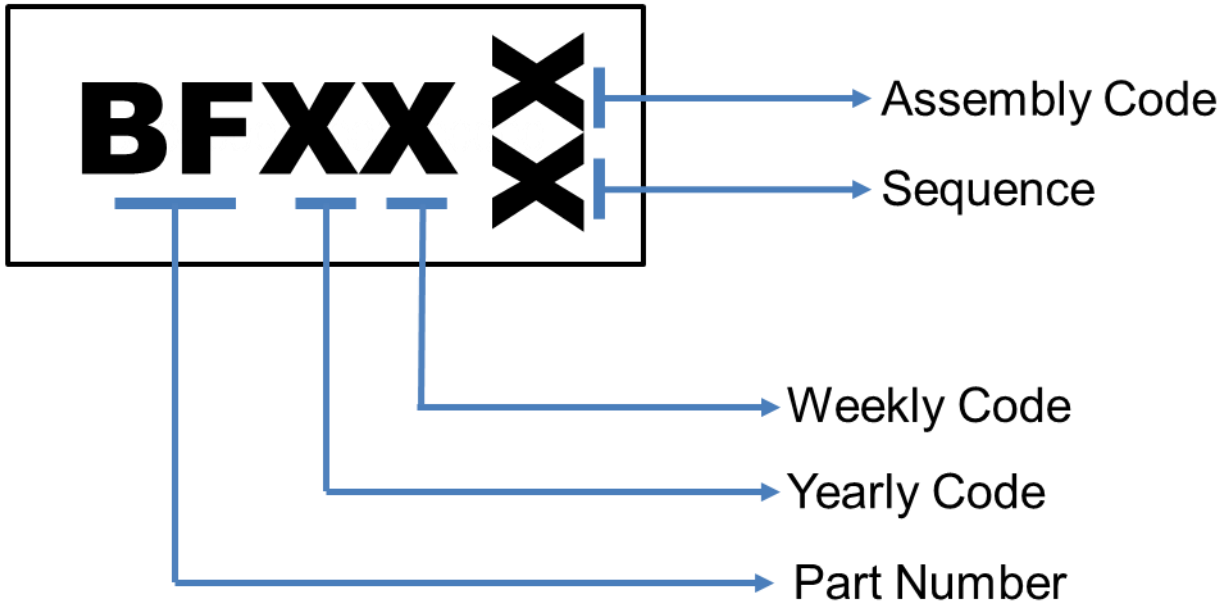
Fig.10 On-Resistance vs. Channel Temperature

TSOP6 Package Outline Dimensions



SYMBOLS	MILLIMETERS [⌀]			INCHES [⌀]		
	MIN [⌀]	NOM [⌀]	MAX [⌀]	MIN [⌀]	NOM [⌀]	MAX [⌀]
A [⌀]	0.70 [⌀]	-- [⌀]	0.9 [⌀]	0.028 [⌀]	-- [⌀]	0.035 [⌀]
A2 [⌀]	0.00 [⌀]	-- [⌀]	0.10 [⌀]	0.000 [⌀]	-- [⌀]	0.004 [⌀]
B [⌀]	2.60 [⌀]	2.80 [⌀]	3.00 [⌀]	0.102 [⌀]	0.110 [⌀]	0.118 [⌀]
C [⌀]	1.40 [⌀]	1.60 [⌀]	1.80 [⌀]	0.055 [⌀]	0.063 [⌀]	0.071 [⌀]
D [⌀]	2.70 [⌀]	2.90 [⌀]	3.10 [⌀]	0.106 [⌀]	0.114 [⌀]	0.122 [⌀]
E [⌀]	0.30 [⌀]	0.40 [⌀]	0.60 [⌀]	0.012 [⌀]	0.016 [⌀]	0.024 [⌀]
F [⌀]	0.07 [⌀]	0.127 [⌀]	0.20 [⌀]	0.003 [⌀]	0.005 [⌀]	0.008 [⌀]
b [⌀]	0.30 [⌀]	0.40 [⌀]	0.50 [⌀]	0.012 [⌀]	0.016 [⌀]	0.020 [⌀]
e [⌀]	-- [⌀]	0.95 [⌀]	-- [⌀]	-- [⌀]	0.037 [⌀]	-- [⌀]
θ°	0 [⌀]	5 [⌀]	10 [⌀]	0 [⌀]	5 [⌀]	10 [⌀]

Marking Instruction



TSOP6 Tape and Reel Data

