

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

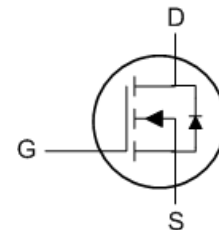
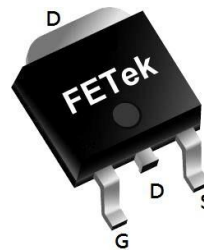
**Product Summary**


BVDSS	RDSON	ID
100V	100mΩ	14.6A

**Description**

The FKD0034 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The FKD0034 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

**TO252 Pin Configuration**

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	14.6	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	10	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	25	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	10.1	mJ
$I_{AS}$	Avalanche Current	4.5	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation <sup>4</sup>	30	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 <sup>1</sup>	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	3	°C/W

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	100	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V , I <sub>D</sub> =5A	---	---	100	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =3A	---	---	110	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2	---	2.9	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =80V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	10	uA
		V <sub>DS</sub> =80V , V <sub>GS</sub> =0V , T <sub>J</sub> =55°C	---	---	100	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V , I <sub>D</sub> =5A	---	14	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz	---	3	---	Ω
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>DS</sub> =50V , V <sub>GS</sub> =10V , I <sub>D</sub> =5A	---	16.3	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	3.68	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	2.97	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =50V , V <sub>GS</sub> =10V , R <sub>G</sub> =3Ω I <sub>D</sub> =5A	---	38	---	ns
T <sub>r</sub>	Rise Time		---	25.8	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	16	---	
T <sub>f</sub>	Fall Time		---	8.8	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V , V <sub>GS</sub> =0V , f=1MHz	---	1009	---	pF
C <sub>oss</sub>	Output Capacitance		---	32	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	23	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,5</sup>	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	14.6	A
I <sub>SM</sub>	Pulsed Source Current <sup>2,5</sup>		---	---	25	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	---	---	1.2	V

## Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=25V,V<sub>GS</sub>=10V,L=1mH,I<sub>AS</sub>=4.5A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

Typical Characteristics

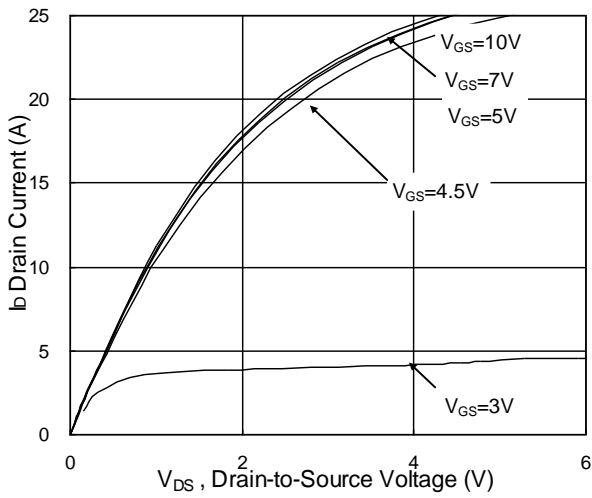


Fig.1 Typical Output Characteristics

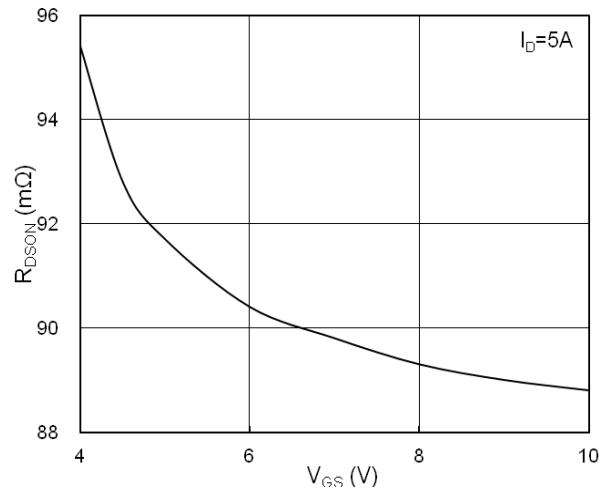


Fig.2 On-Resistance vs G-S Voltage

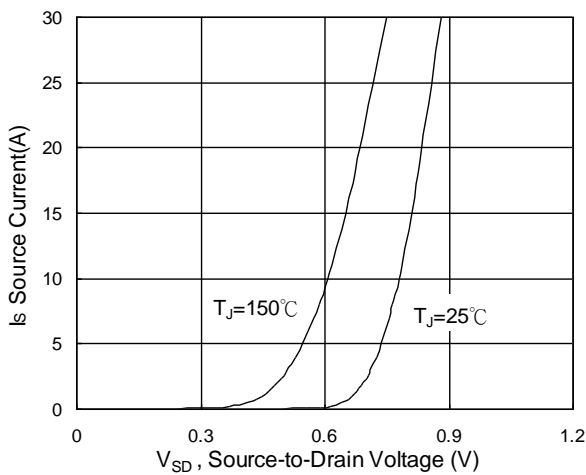


Fig.3 Source Drain Forward Characteristics

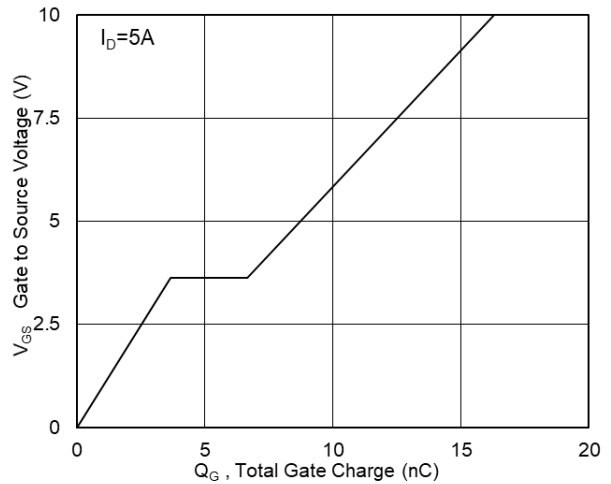


Fig.4 Gate-Charge Characteristics

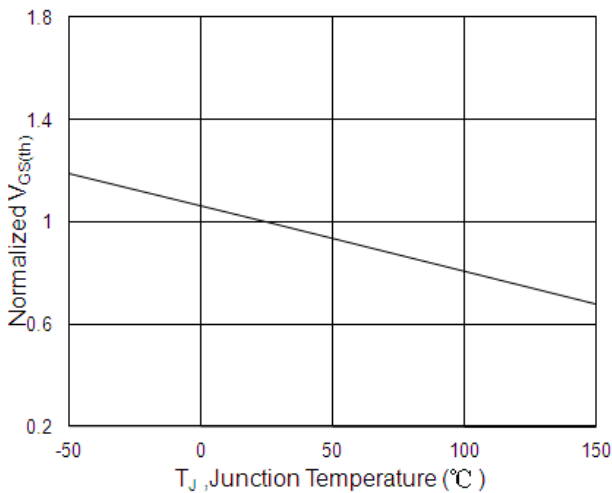


Fig.5 Normalized V<sub>GS(th)</sub> vs T<sub>J</sub>

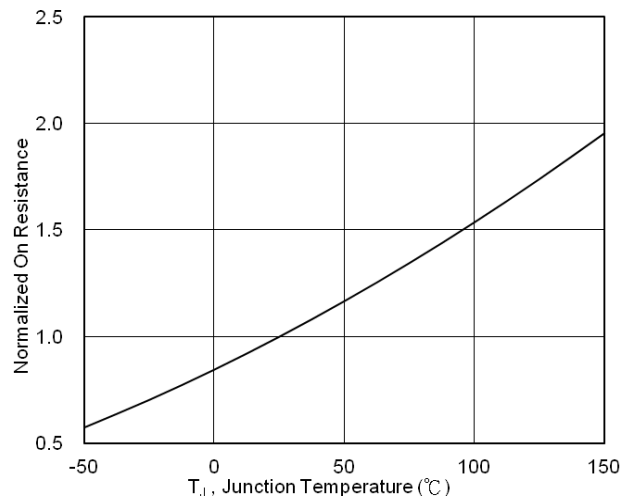


Fig.6 Normalized R<sub>DSON</sub> vs T<sub>J</sub>

N-Ch 100V Fast Switching MOSFETs

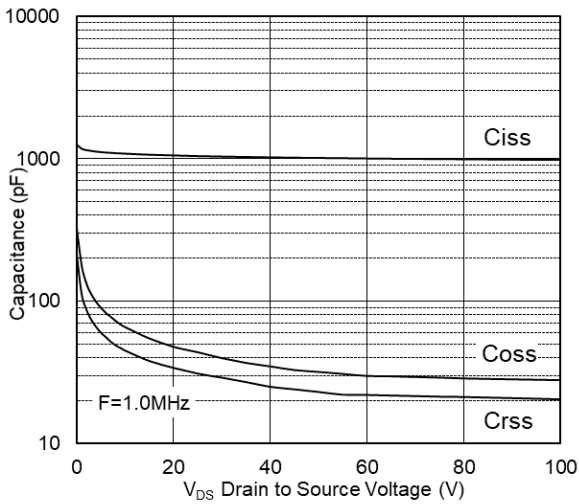


Fig.7 Capacitance

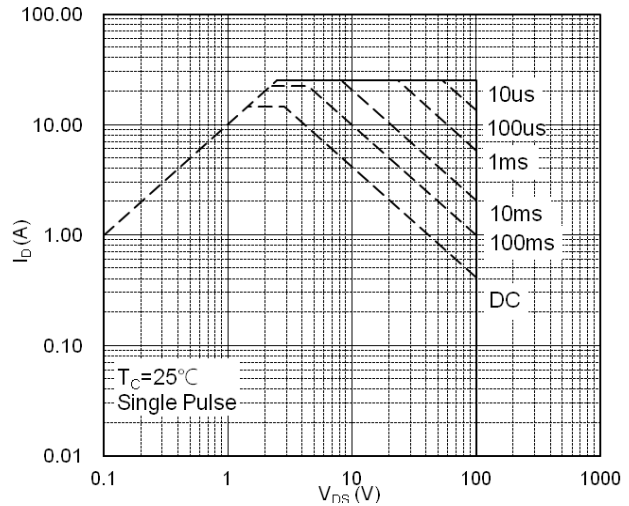


Fig.8 Safe Operating Area

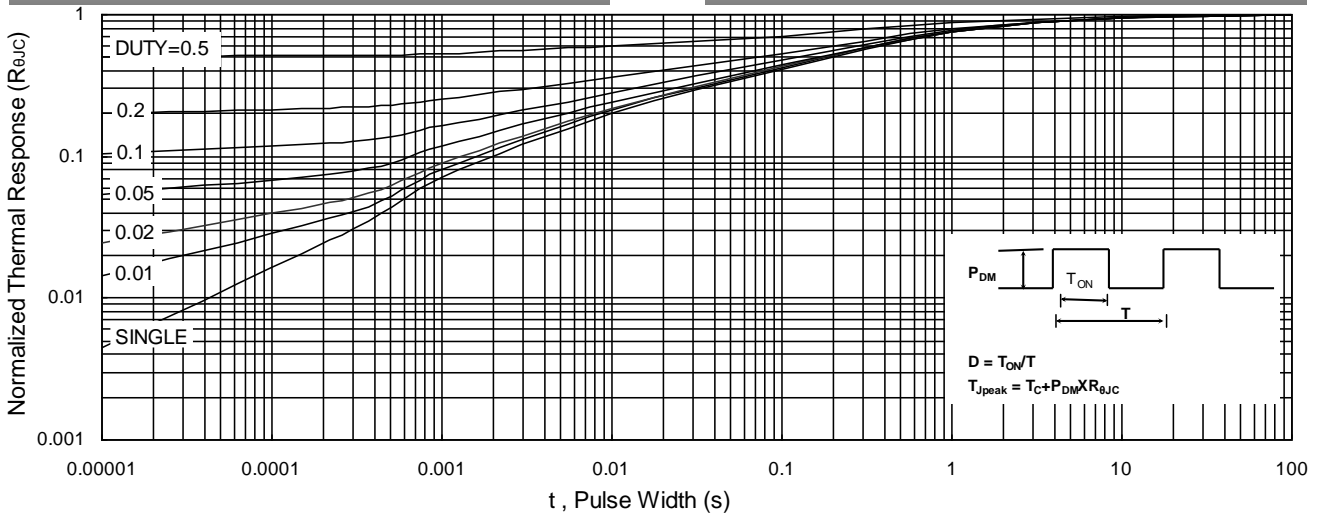


Fig.9 Normalized Maximum Transient Thermal Impedance

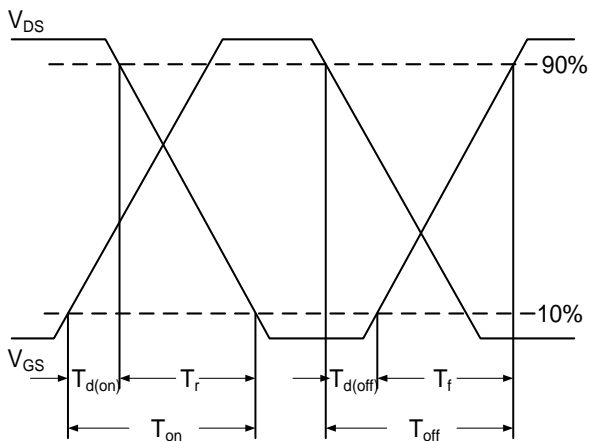


Fig.10 Switching Time Waveform

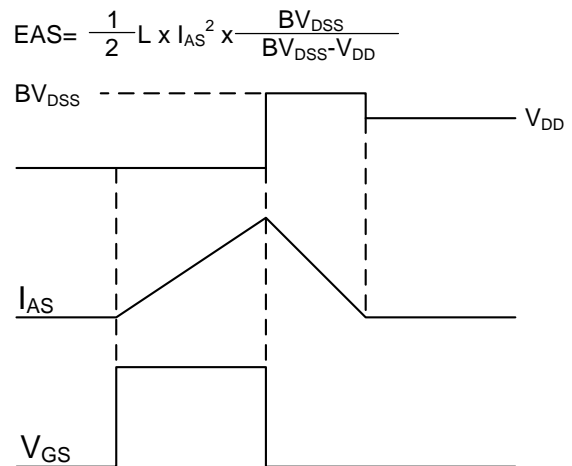


Fig.11 Unclamped Inductive Switching Waveform