

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

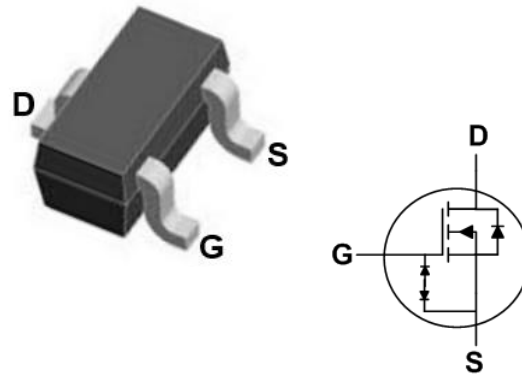
**Product Summary**


BVDSS	RDSON	ID
20V	450mΩ	700mA

**Description**

The FKUB2546 is the high cell density trench N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications

The FKUB2546 meet the RoHS and Green Product requirement with full function reliability approved.

**SOT523 Pin Configuration**

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 8$	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	0.7	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	0.6	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	2.1	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation <sup>3</sup>	0.4	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 <sup>1</sup>	---	280	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=4V, I_D=600mA$	---	230	450	m $\Omega$
		$V_{GS}=2.5V, I_D=400mA$	---	300	760	m $\Omega$
		$V_{GS}=1.8V, I_D=200mA$	---	400	850	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	---	1	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	$\pm 30$	$\mu A$
$Q_g$	Total Gate Charge (4.5V)	$V_{DS}=16V, V_{GS}=4.5V, I_D=1A$	---	1.2	---	nC
$Q_{gs}$	Gate-Source Charge		---	0.24	---	
$Q_{gd}$	Gate-Drain Charge		---	0.3	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=10V, V_{GS}=4.5V, R_G=3.3\Omega, I_D=0.5A$	---	1.1	---	ns
$T_r$	Rise Time		---	20	---	
$T_{d(off)}$	Turn-Off Delay Time		---	5	---	
$T_f$	Fall Time		---	48	---	
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, F=1MHz$	---	47	---	pF
$C_{oss}$	Output Capacitance		---	16	---	
$C_{riss}$	Reverse Transfer Capacitance		---	11	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current <sup>1,6</sup>	$V_G=V_D=0V$ , Force Current	---	---	0.56	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=0.5A, T_J=25^\circ\text{C}$	---	---	1.0	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  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3.The power dissipation is limited by  $150^\circ\text{C}$  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

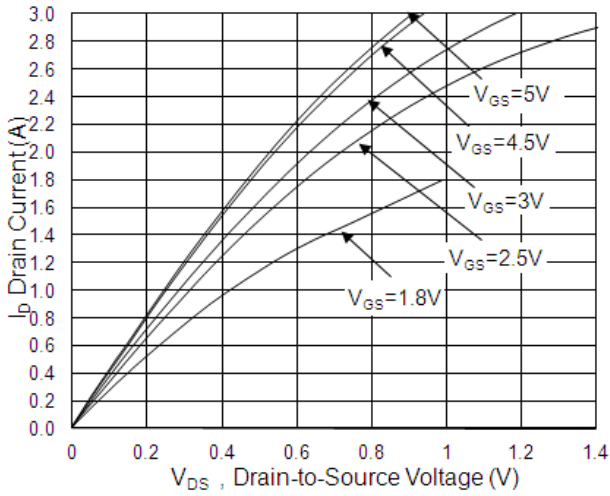


Fig.1 Typical Output Characteristics

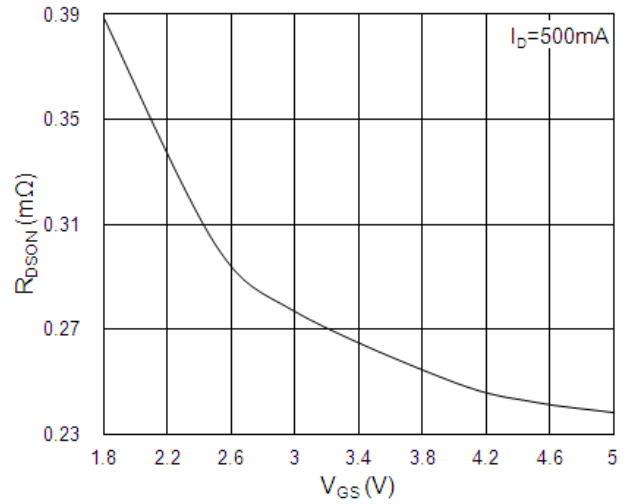


Fig.2 On-Resistance vs. Gate-Source

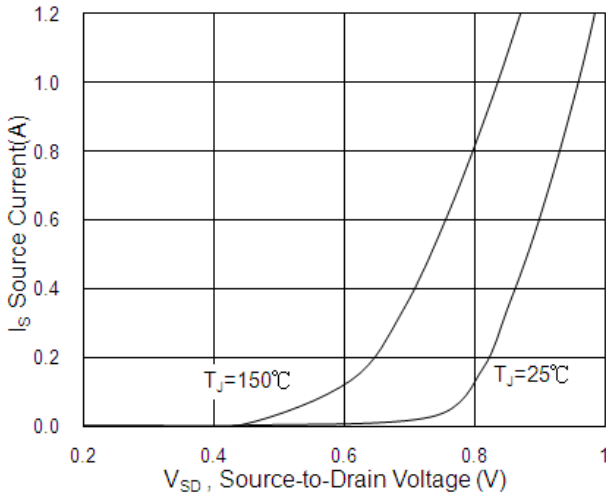


Fig.3 Forward Characteristics of Reverse

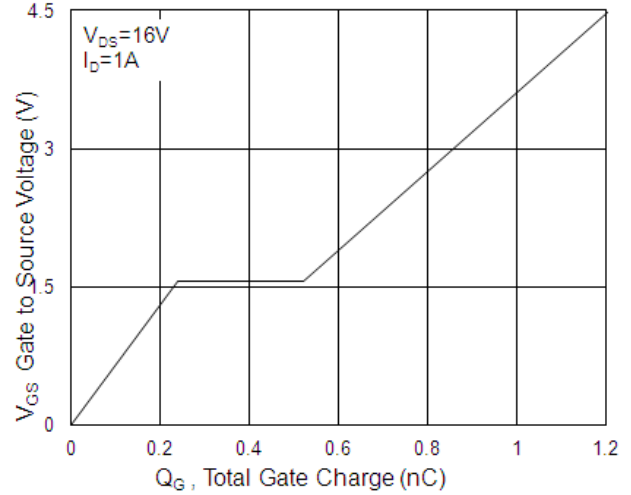


Fig.4 Gate-Charge Characteristics

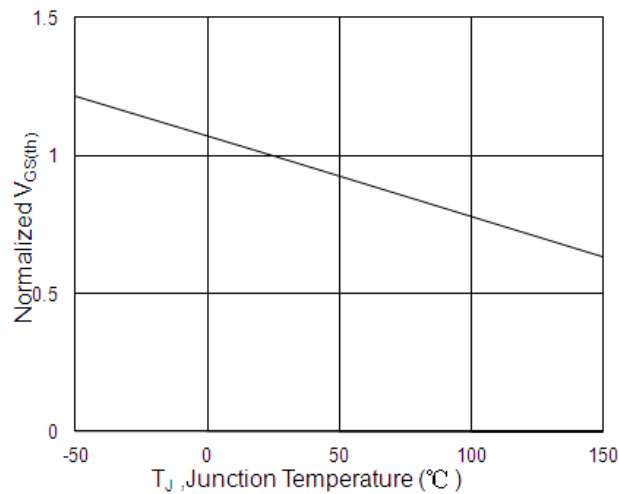


Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$

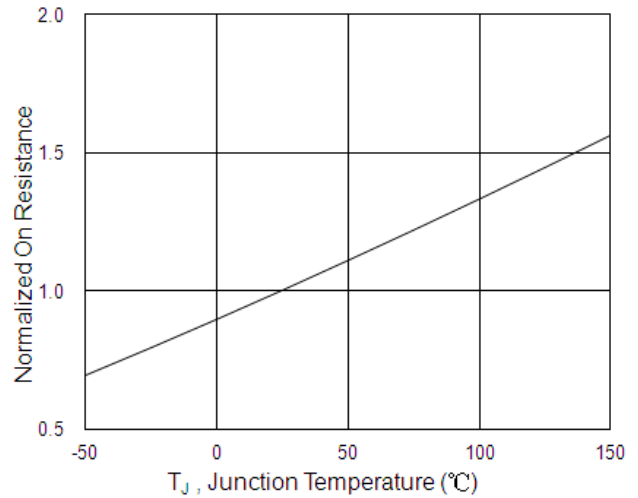


Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$

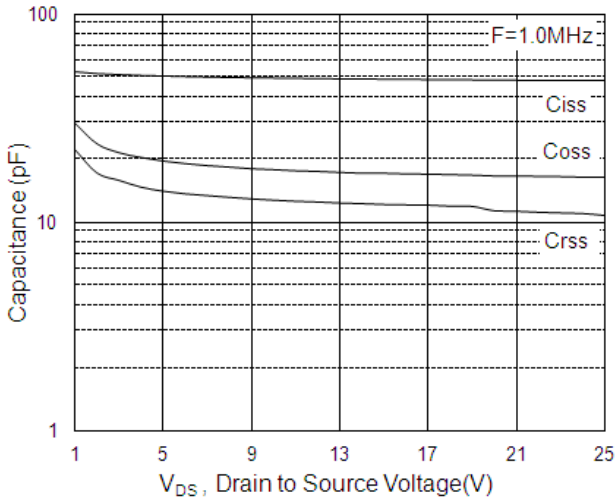


Fig.7 Capacitance

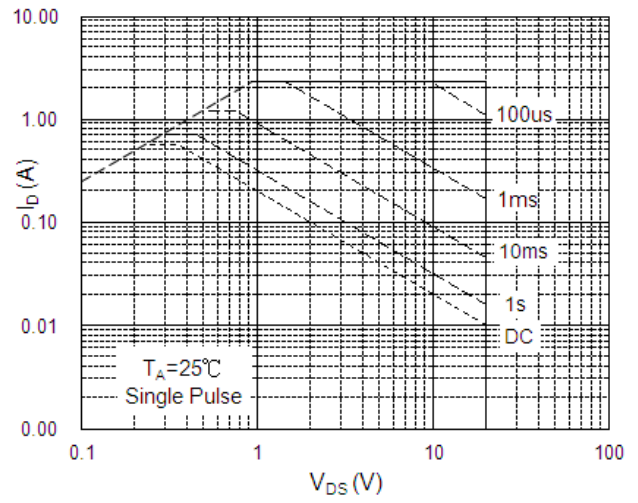


Fig.8 Safe Operating Area

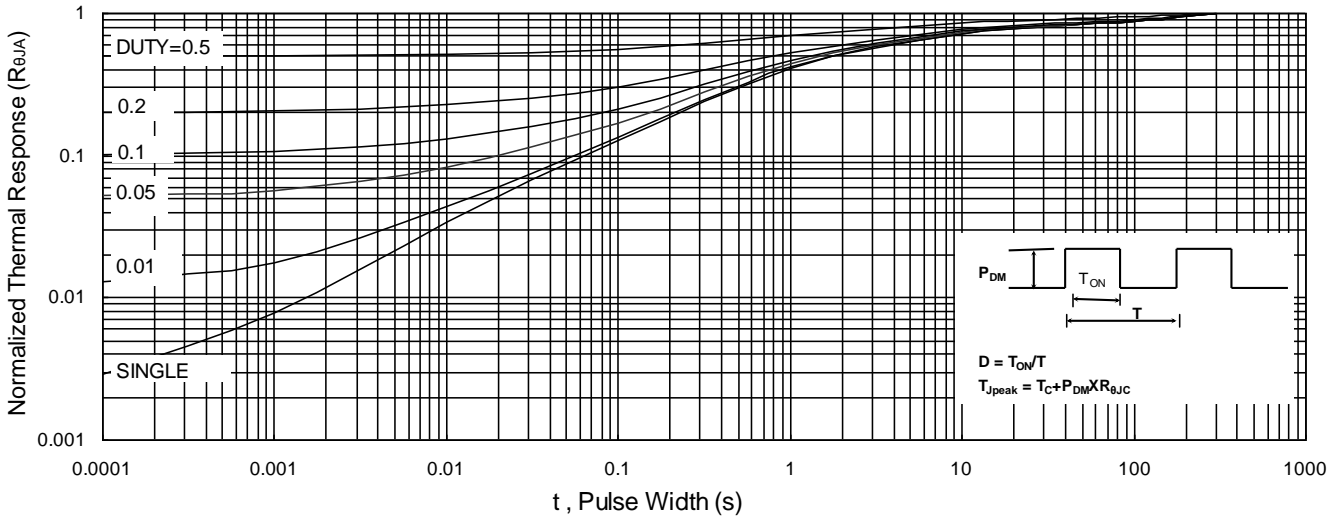


Fig.9 Normalized Maximum Transient Thermal Impedance

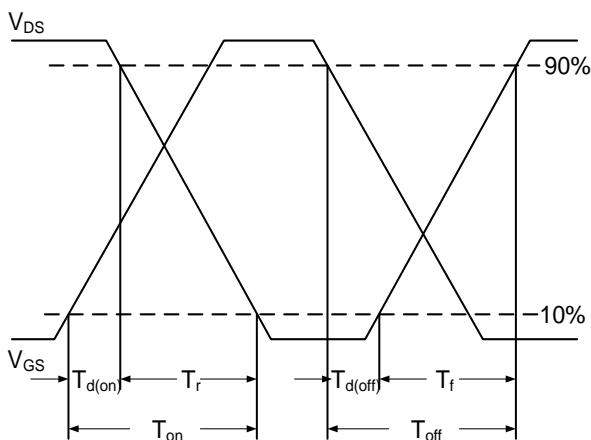


Fig.10 Switching Time Waveform

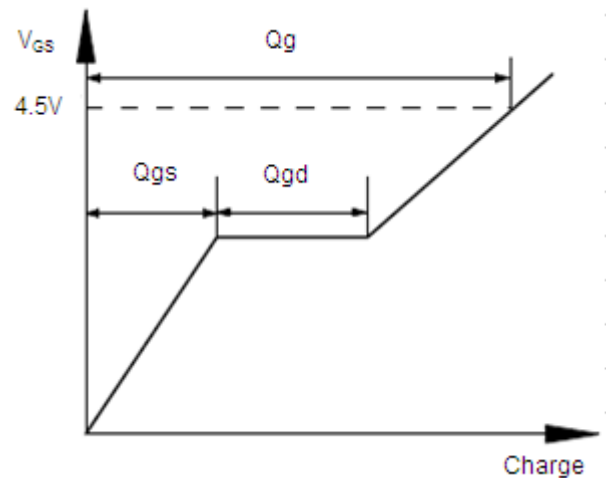


Fig.11 Gate Charge Waveform