

1. Description

- Advanced Trench MOS Technology
- 100% EAS Guaranteed
- Reliable and Rugged
- Green Device Available

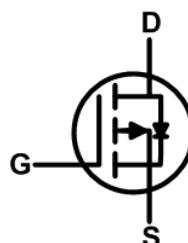
2. Features

- $R_{DS(ON)}=170m\Omega$ (typ.) @ $V_{GS}=-10V$
- $R_{DS(ON)}=190m\Omega$ (typ.) @ $V_{GS}=-4.5V$

3. Applications

- Power Management
- DC Motor Control

4. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source

5. Ordering Information

Part Number	Package	Brand
KPD6610B	TO-252	KIA

6. Absolute maximum ratings

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage	V_{DS}	-100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	$T_C=25^{\circ}\text{C}$ I_D	-15	A
	$T_C=100^{\circ}\text{C}$ I_D	-10.5	A
Pulsed Drain Current ²⁾	I_{DM}	-60	A
Avalanche Energy ³⁾	EAS	49	mJ
Avalanche Current	I_{AS}	-14	A
Total Power Dissipation ⁴⁾	P_D	61	W
Operation Junction Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$

7. Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ¹⁾	$R_{\theta JA}$	-	55	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case ¹⁾	$R_{\theta JC}$	-	2.05	$^{\circ}\text{C/W}$

8. Electrical characteristics

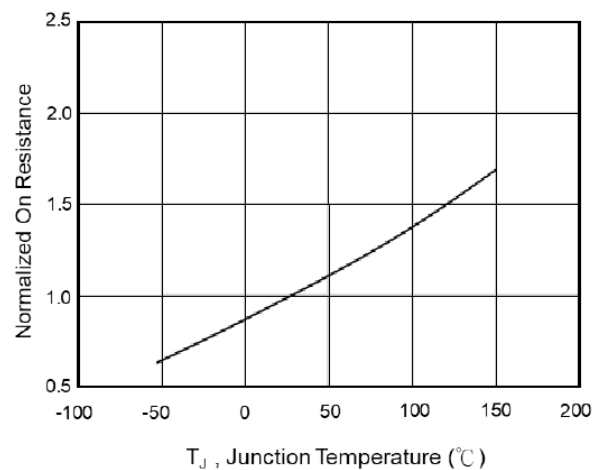
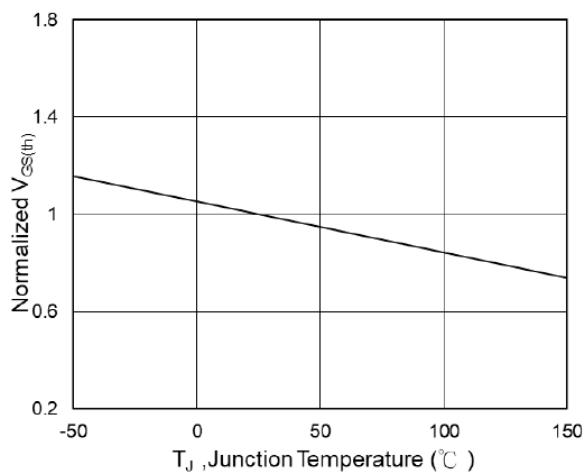
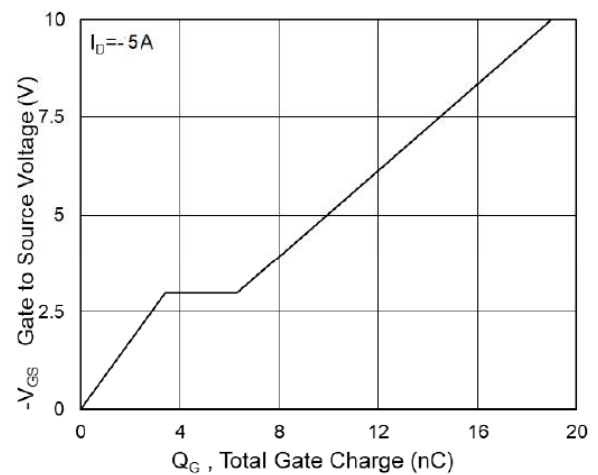
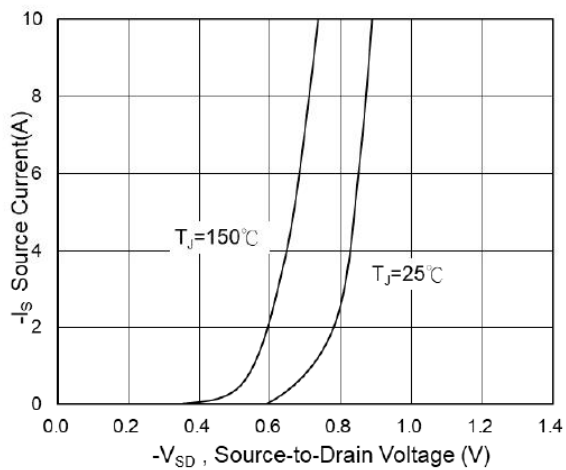
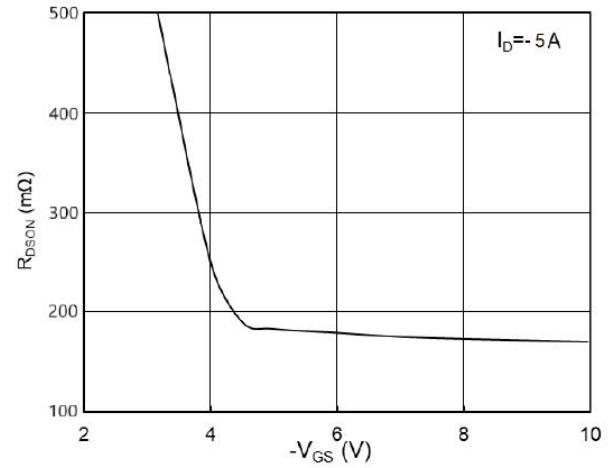
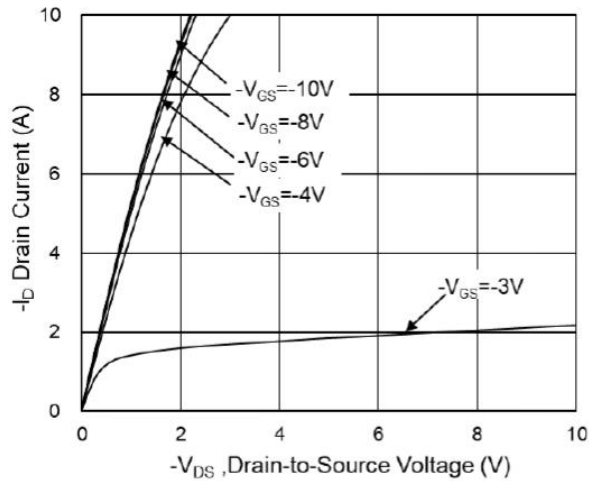
(T_J=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-100	-	-	V
Static Drain-Source On-Resistance ²⁾	R _{DS(ON)}	V _{GS} =-10V, I _D =-5A	-	170	210	mΩ
		V _{GS} =-4.5V, I _D =-5A	-	190	240	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1.2	-	-2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-80V, V _{GS} =0V, T _J =25°C	-	-	1	uA
		V _{DS} =-80V, V _{GS} =0V, T _J =85°C	-	-	30	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	13	-	Ω
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V, I _D =-5A	-	19	-	nC
Gate-Source Charge	Q _{gs}		-	3.4	-	nC
Gate-Drain Charge	Q _{gd}		-	2.9	-	nC
Turn-On Delay Time	T _{d(on)}	V _{DD} =-30V, V _{GS} =-10V, R _G =3.3Ω, I _D =-1A	-	9	-	ns
Rise Time	T _r		-	6	-	ns
Turn-Off Delay Time	T _{d(off)}		-	39	-	ns
Fall Time	T _f		-	33	-	ns
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f=1MHz	-	1228	-	pF
Output Capacitance	C _{oss}		-	41	-	pF
Reverse Transfer Capacitance	C _{rss}		-	29	-	pF
Continuous Source Current ^{1),5)}	I _S	V _G =V _D =0V, Force Current	-	-	-5	A
Diode Forward Voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	-	-	-1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch² 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_{DD}=-25V, V_{GS}=-10V, L=0.5mH, I_{AS}=-14A
4. The power dissipation is limited by 150°C junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

9. Typical Characteristics



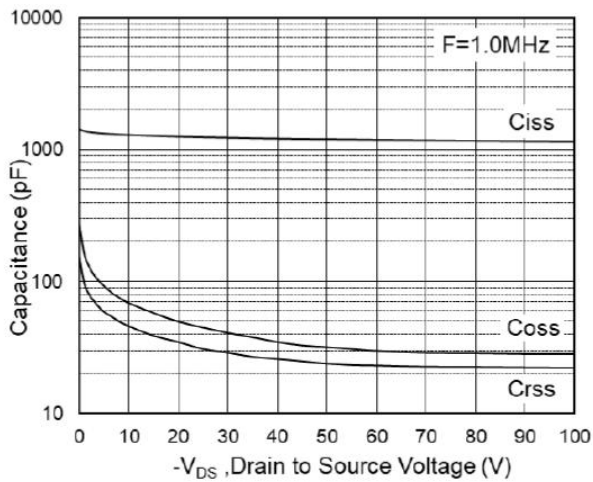


Fig.7 Capacitance

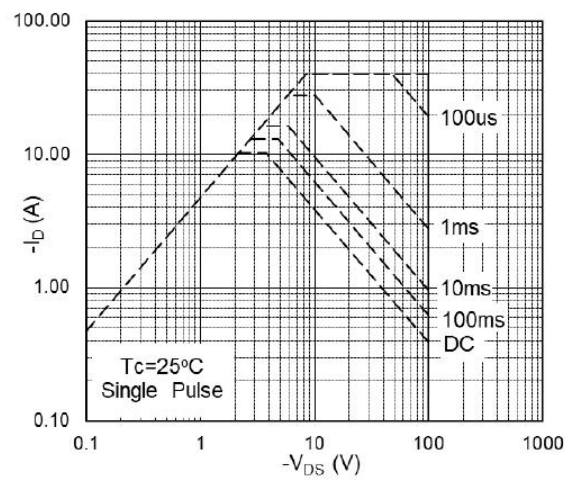


Fig.8 Safe Operating Area

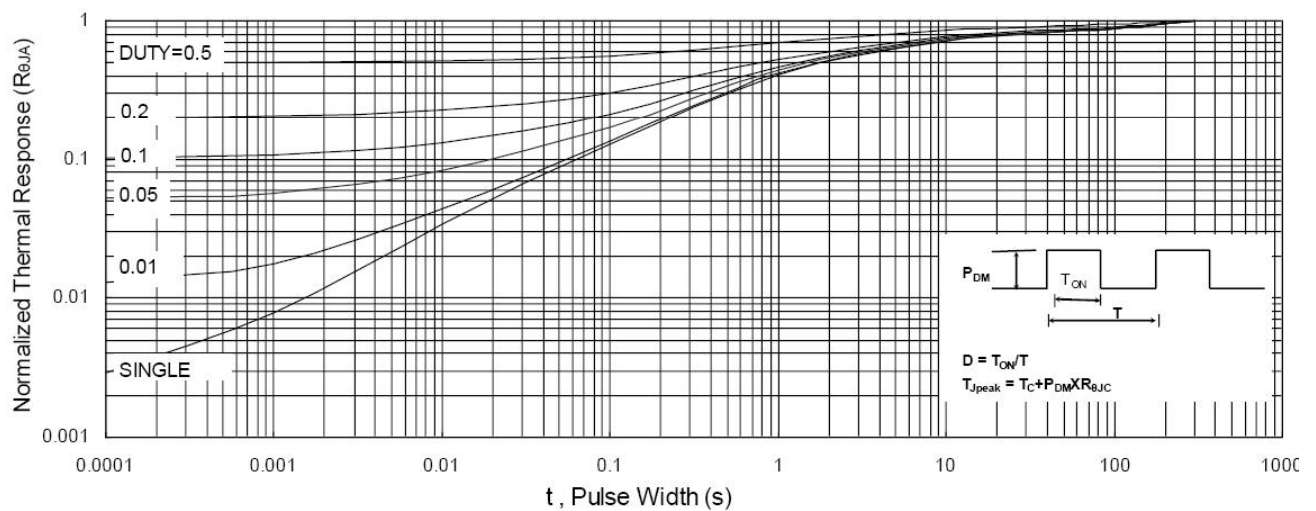


Fig.9 Normalized Maximum Transient Thermal Impedance

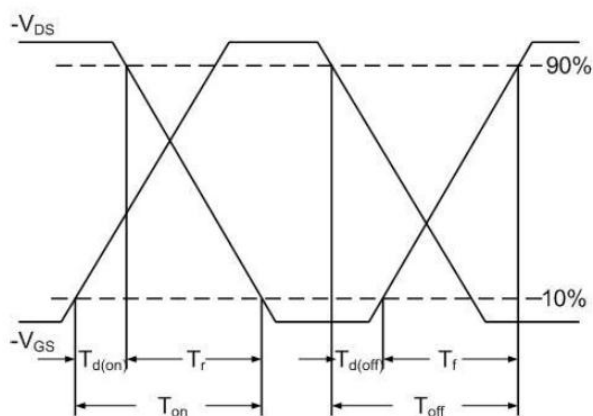


Fig.10 Switching Time Waveform

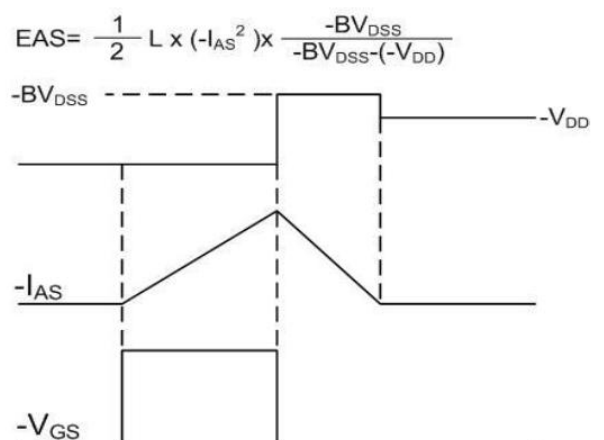


Fig.11 Unclamped Inductive Waveform