

1. Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested

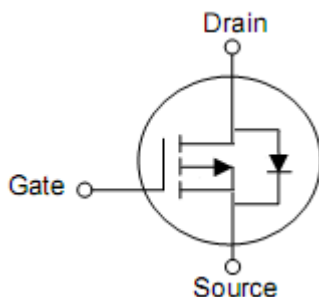
2. Applications

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

3. Pin configuration



TO-252



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KPD7115A	TO-252	KIA

5. Absolute maximum ratings

T _C =25°C unless otherwise specified				
Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V _{DS}	-150	V
Gate-to-Source Voltage		V _{GS}	±20	V
Continuous Drain Current, V _{GS} @ -10V ¹⁾	T _C =25°C	I _D	-20	A
	T _C =100°C	I _D	-12	A
Pulsed Drain Current ²⁾		I _{DM}	-60	A
Total Power Dissipation ⁴⁾	T _C =25°C	P _D	104	W
	T _C =100°C	P _D	42	W
Avalanche Energy ³⁾		EAS	30.2	mJ
Avalanche Current		I _{AS}	-11	A
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

6. Thermal characteristics

Parameter	Symbol	Typ.	Unit
Thermal Resistance, Junction-to-Ambient ¹⁾	R _{θJA}	20	°C/W
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	1.4	°C/W

7. 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	-150	-	-	V
Drain-Source On-State Resistance ²⁾	R _{DS(ON)}	V _{GS} =-10V, I _D =-10A	-	153	200	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-2.0	-	-4.0	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-150V, V _{GS} =0V, T _J =25°C	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Input Capacitance	C _{iss}	V _{DS} =-40V, V _{GS} =0V, f=1MHz	-	2109	-	pF
Output Capacitance	C _{oss}		-	515	-	pF
Reverse Transfer Capacitance	C _{rss}		-	410	-	pF
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V, I _D =-3A	-	30	-	nC
Gate-Source Charge	Q _{gs}		-	6	-	nC
Gate-Drain Charge	Q _{gd}		-	8.1	-	nC
Turn-On Delay Time	T _{d(on)}	V _{DD} =-50V, V _{GS} =-10V, R _G =3Ω, I _D =-3A	-	28	-	ns
Rise Time	T _r		-	30	-	ns
Turn-Off Delay Time	T _{d(off)}		-	230	-	ns
Fall Time	T _f		-	120	-	ns
Continuous Source Current ^{1),5)}	I _S	V _G =V _D =0V, Force Current	-	-	-20	A
Diode Forward Voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =-5A, T _J =25°C	-	-	-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-5A, T _J =25°C di/dt=100A/μs,	-	34	-	nS
Reverse Recovery Charge	Q _{rr}		-	32	-	nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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}=-50V, V_{GS}=-10V, L=0.5mH, I_{AS}=-11A
- 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

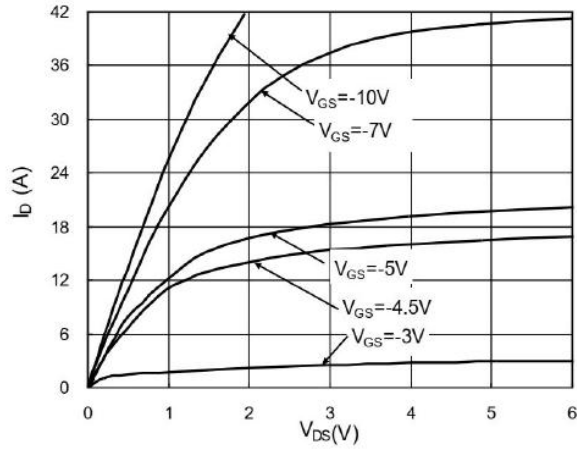


Fig.1 Typical Output Characteristics

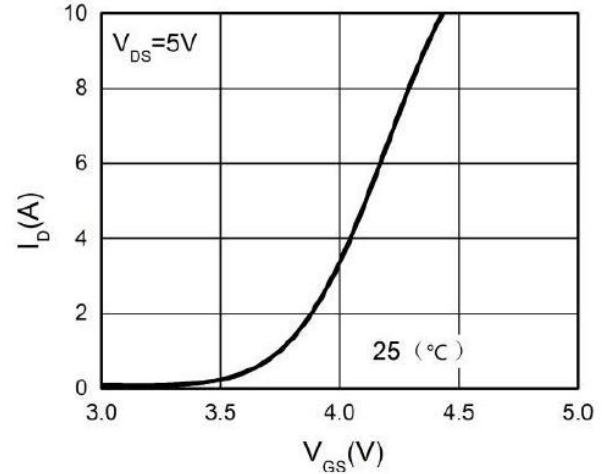


Fig.2 Transfer Characteristics

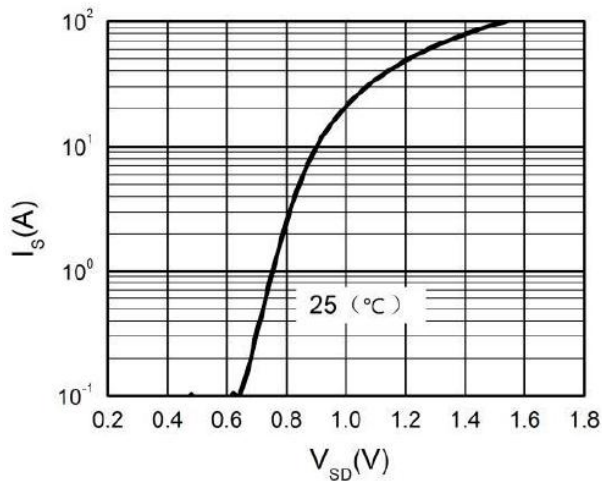


Fig.3 Forward Characteristics Of Reverse

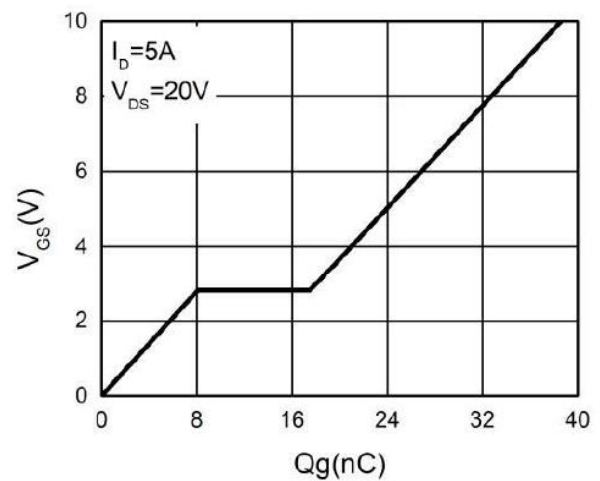


Fig.4 Gate-Charge Characteristics

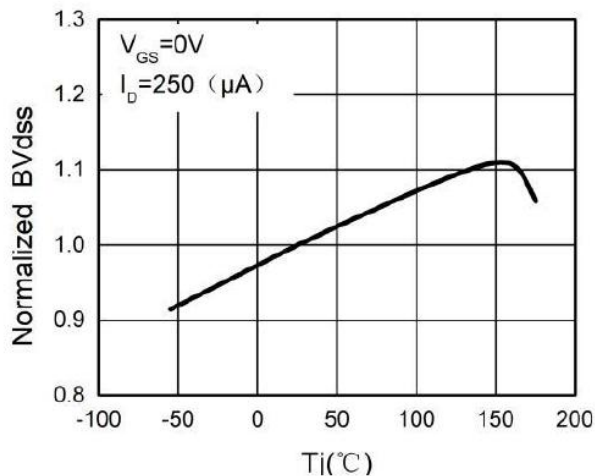


Fig.5 Normalized BV_{DS} vs. T_J

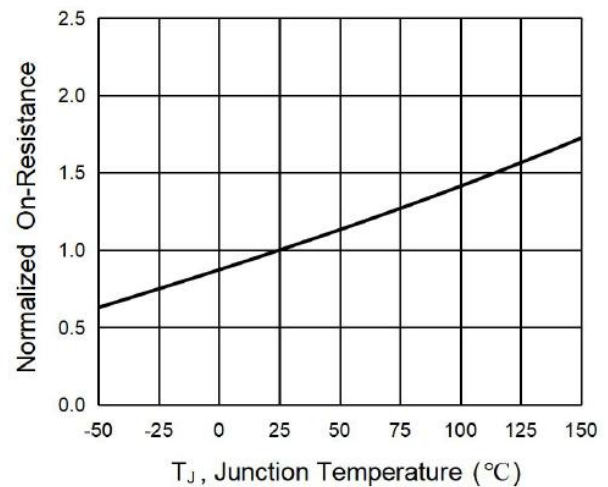


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

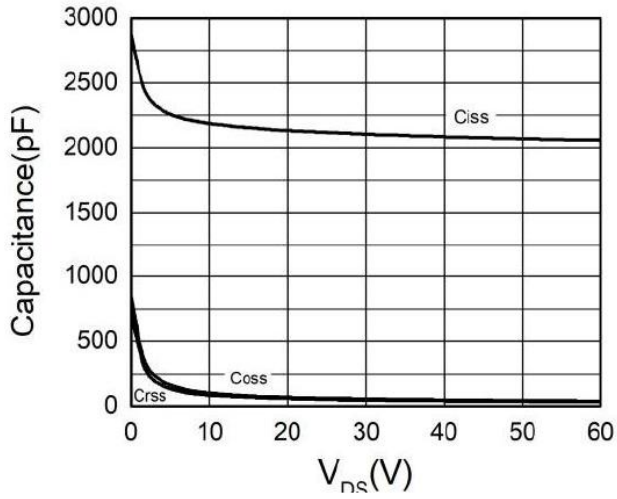


Fig.7 Capacitance

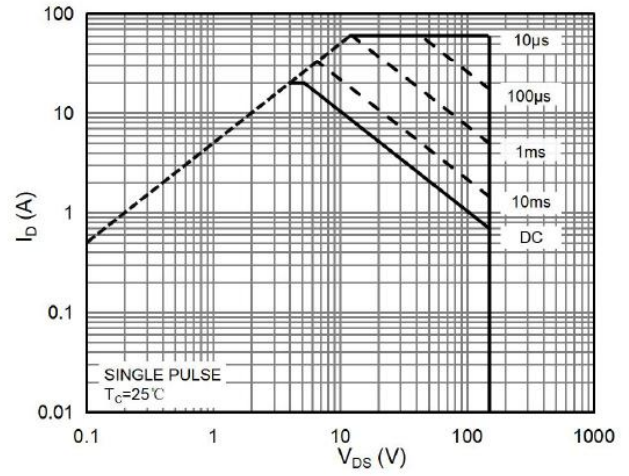


Fig.8 Safe Operating Area

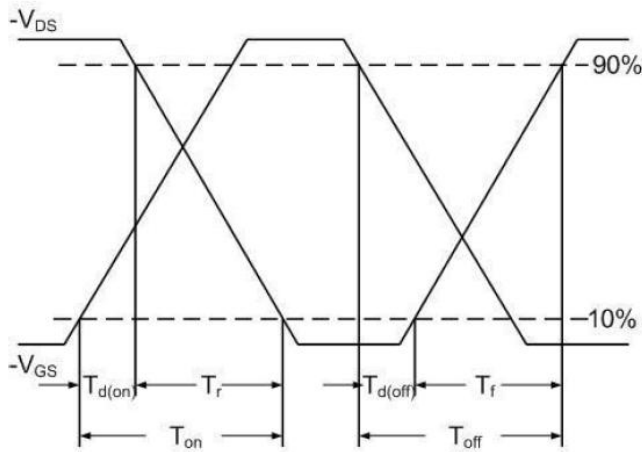


Fig.9 Switching Time Waveform

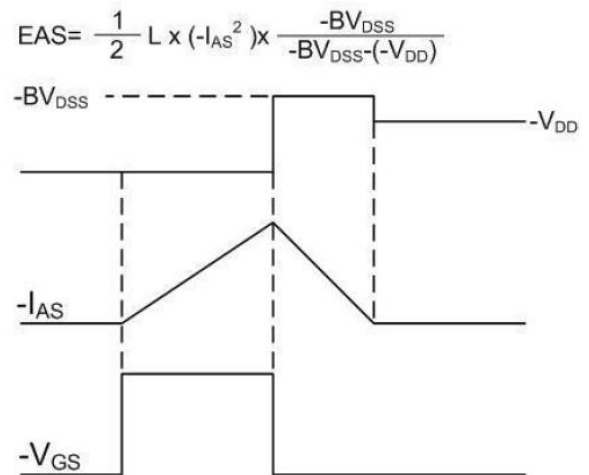


Fig.10 Unclamped Inductive Switching Waveform