

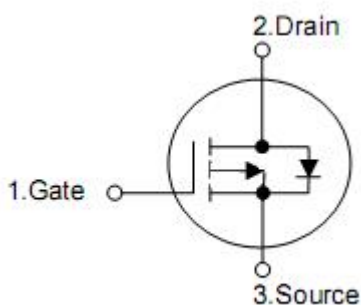
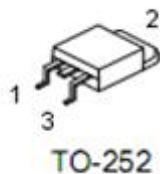
## 1. Features

- Uses CRM(CQ) advanced Trench technology
- Extremely low on-resistance  $R_{DS(on)}$
- Excellent  $Q_{gx}R_{DS(on)}$  product(FOM)
- Qualified according to JEDEC criteria

## 2. Applications

- $R_{DS(ON),typ.}=60m\Omega@V_{GS}=10V$
- Motor control and drive
- Battery management
- UPS (Uninterruptible Power Supplies)

## 3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source

#### 4. Ordering Information

Part Number	Package	Brand
KPD7910A	TO-252	KIA

#### 5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V <sub>DSS</sub>	-100	V
Continuous Drain Current	T <sub>C</sub> =25 °C	I <sub>D</sub>	-28	A
	T <sub>C</sub> =100 °C		-17	
Pulsed Drain Current	(T <sub>C</sub> = 25°C, tp limited by Tjmax)	I <sub>DP</sub>	-112	
Avalanche Energy single pulse (L=1mH)		E <sub>AS</sub>	242	mJ
Gate-Source voltage		V <sub>GS</sub>	±20	v
Power dissipation (T <sub>C</sub> = 25°C)		P <sub>D</sub>	102	w
Junction & Storage Temperature Range		T <sub>J</sub> & T <sub>STG</sub>	-55 to 150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)		T <sub>sold</sub>	260	°C

#### 6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient <sup>2</sup>	R <sub>θJA</sub>	62	°C/W
Thermal resistance, Junction-case	R <sub>θJC</sub>	1.22	

## 7. Electrical characteristics

(T<sub>J</sub>=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units	
Static characteristics							
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	-100	-	-	V	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	-1.5	-2.0	-2.5	V	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V	T <sub>J</sub> =25 °C	-	-	-1	μA
			T <sub>J</sub> =125 °C	-	-	-20	
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V	-	-	-100	nA	
Drain-source on-resistance <sup>1</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A	-	60	70	mΩ	
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A	-	70	90		
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-10A	-	25	-	S	
Dynamic characteristics							
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V Frequency=1MHz	-	20	-	Ω	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-25V, V <sub>GS</sub> =0V, F=1MHz	-	3800	-	pF	
Output capacitance	C <sub>oss</sub>		-	1200	-	pF	
Reverse transfer capacitance	C <sub>rss</sub>		-	650	-	pF	
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =-50V, I <sub>D</sub> =-10A, V <sub>GS</sub> =-10V, R <sub>G</sub> =2.7Ω	-	10	-	ns	
Rise time	t <sub>r</sub>		-	25	-	ns	
Turn-off delay time	t <sub>d(off)</sub>		-	112	-	ns	
Fall time	t <sub>f</sub>		-	75	-	ns	
Gate Charge Characteristics							
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =-50V, I <sub>D</sub> =-22A, V <sub>GS</sub> =-10V, F=1MHz	-	52	-	nC	
Gate-source charge	Q <sub>gs</sub>		-	13	-	nC	
Gate-drain charge	Q <sub>gd</sub>		-	10	-	nC	
Diode characteristics							
Diode forward voltage <sup>1</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>SD</sub> =-10A	-	-	-1.5	V	
Body Diode Continuous Forward Current <sup>1</sup>	I <sub>S</sub>	T <sub>C</sub> = 25°C			-28	A	
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =-10A DI <sub>F</sub> /dt=100A/μs	-	35	-	ns	
Reverse recovery charge	Q <sub>rr</sub>		-	42	-	nC	

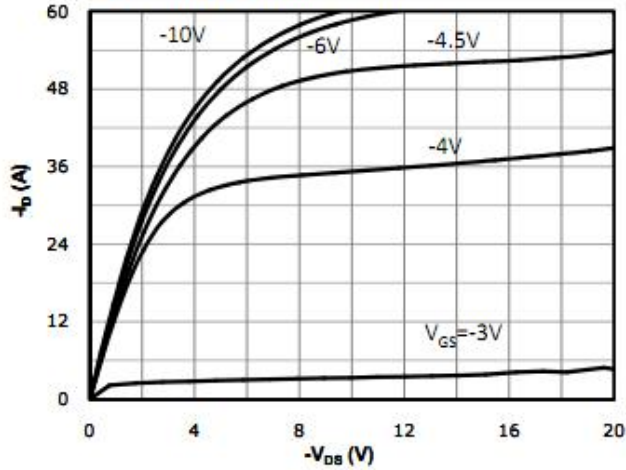
Note:1.The data tested by pulsed, pulse width≤300μs,duty cycle≤2%

2.The value of R<sub>thJA</sub> is measured by placing the device in a still air box which is one cubic foot.

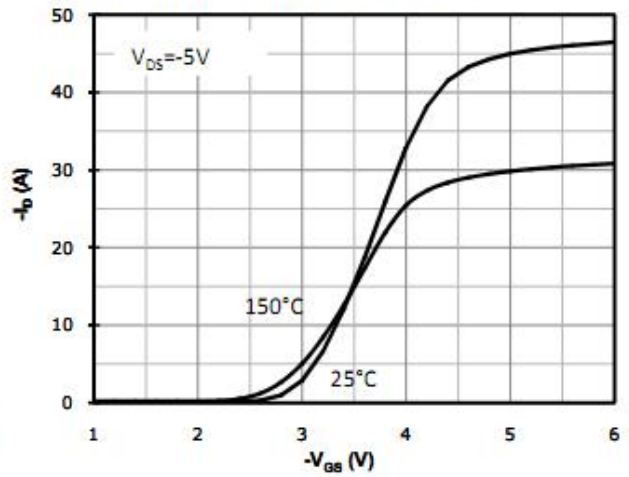
3.The EAS data shows Max.rating. The test condition is V<sub>DD</sub>=-50V, V<sub>GS</sub>=-10V, L=1mH.I<sub>AS</sub>=-22A.

**8. Typical Characteristics**

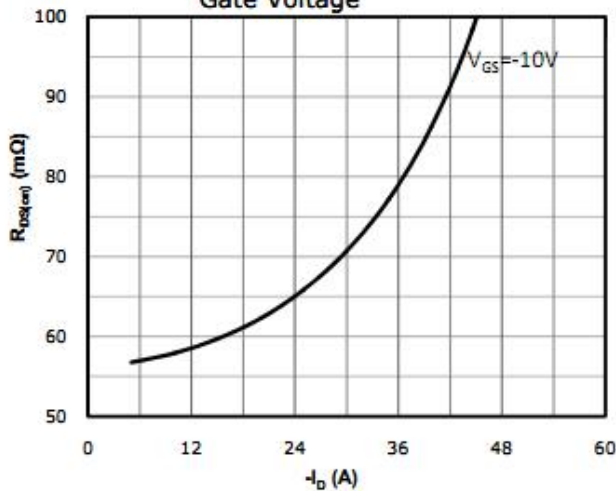
**Fig 1: Output Characteristics**



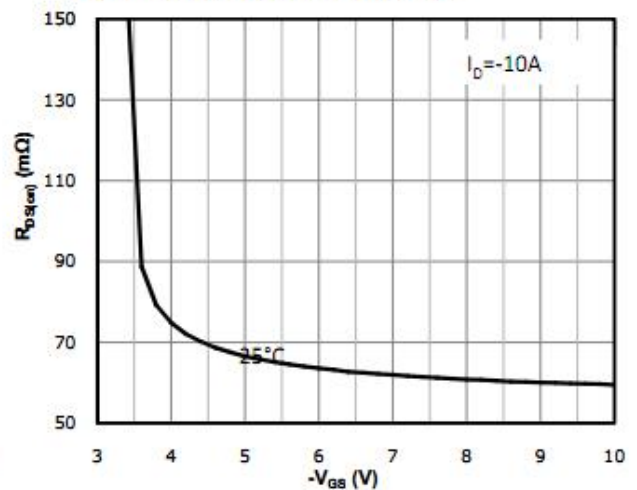
**Fig 2: Transfer Characteristics**



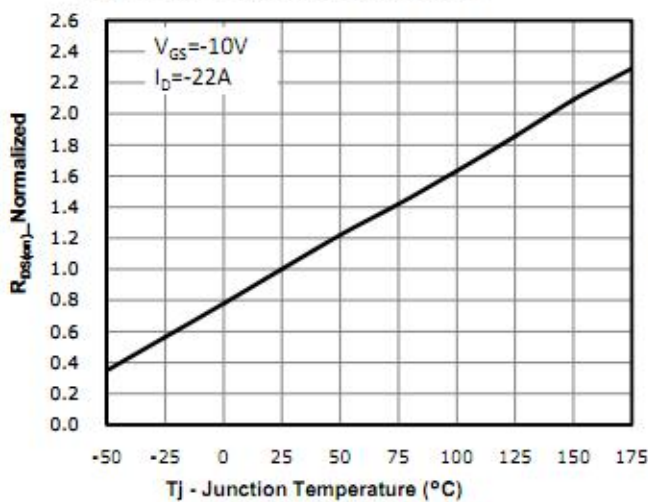
**Fig 3: Rds(on) vs Drain Current and Gate Voltage**



**Fig 4: Rds(on) vs Gate Voltage**



**Fig 5: Rds(on) vs. Temperature**



**Fig 6: Capacitance Characteristics**

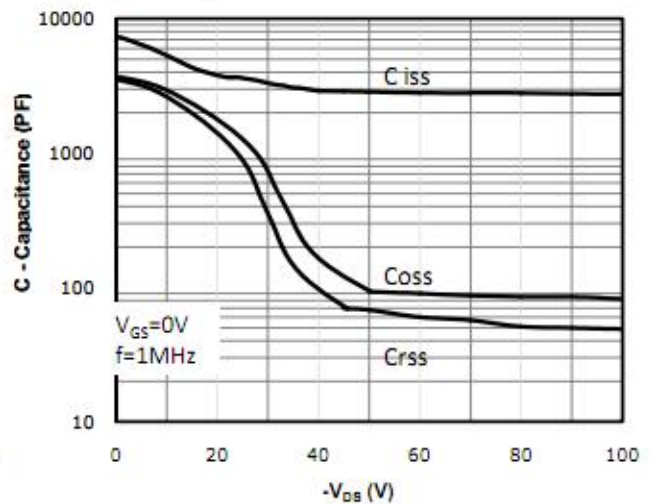


Fig 7: Gate Charge Characteristics

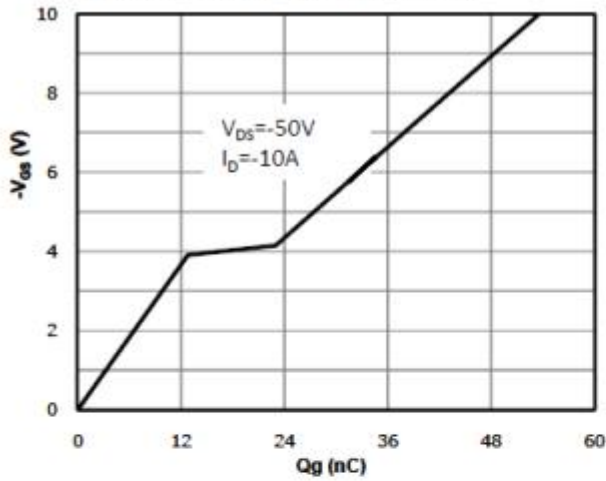


Fig 8: Body-diode Forward Characteristics

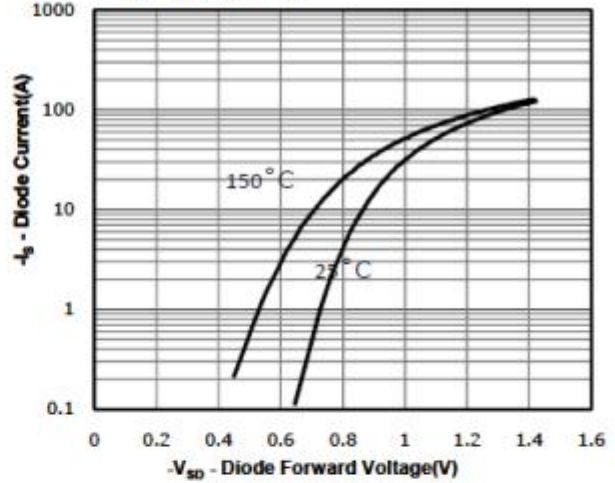


Fig 9: Power Dissipation

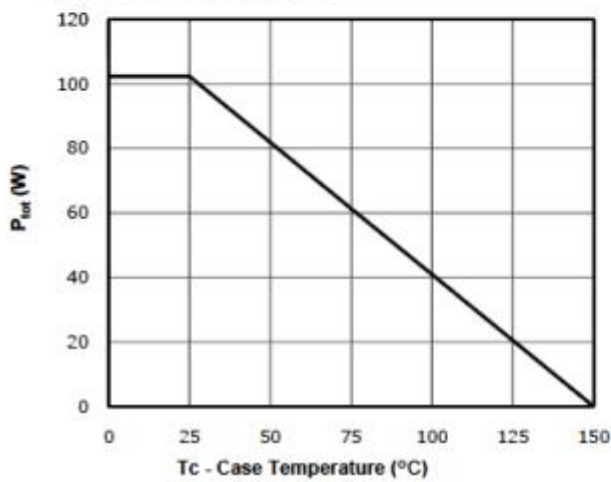


Fig 10: Drain Current Derating

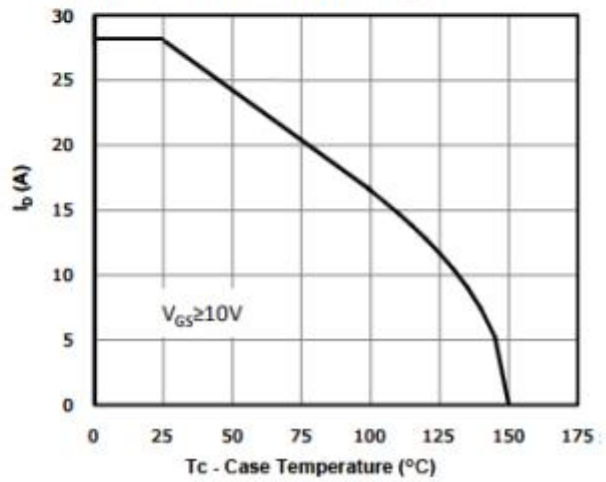


Fig 11: Safe Operating Area

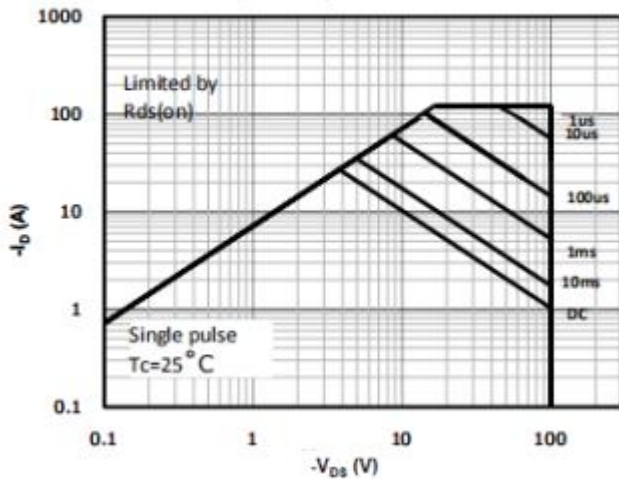


Fig 12: Max. Transient Thermal Impedance

