

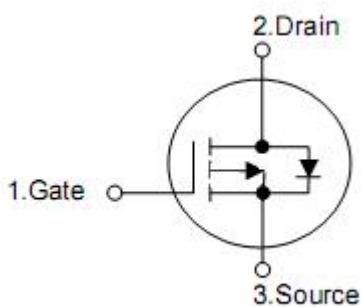
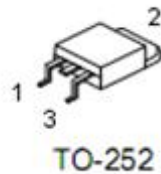
1. Features

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

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient ²	R _{θJA}	62	°C/W
Thermal resistance, Junction-case	R _{θJC}	1.22	

7. Electrical characteristics

($T_J=25^{\circ}\text{C}$, unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units	
Static characteristics							
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	-100	-	-	V	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	-1.5	-2.0	-2.5	V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V$	$T_J=25^{\circ}\text{C}$	-	-	-1	μA
			$T_J=125^{\circ}\text{C}$	-	-	-20	
Gate leakage current	I_{GSS}	$V_{GS}=-20V, V_{DS}=0V$	-	-	-100	nA	
Drain-source on-resistance ¹	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$	-	60	70	m Ω	
		$V_{GS}=-4.5V, I_D=-5A$	-	70	90		
Forward Transconductance	g_{fs}	$V_{DS}=-5V, I_D=-10A$	-	25	-	S	
Dynamic characteristics							
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=0V$ Frequency=1MHz	-	20	-	Ω	
Input capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V,$ $F=1\text{MHz}$	-	3800	-	pF	
Output capacitance	C_{oss}		-	1200	-	pF	
Reverse transfer capacitance	C_{rss}		-	650	-	pF	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-50V, I_D=-10A,$ $V_{GS}=-10V, R_G=2.7\Omega$	-	10	-	ns	
Rise time	t_r		-	25	-	ns	
Turn-off delay time	$t_{d(off)}$		-	112	-	ns	
Fall time	t_f		-	75	-	ns	
Gate Charge Characteristics							
Total gate charge	Q_g	$V_{DS}=-50V, I_D=-22A,$ $V_{GS}=-10V, F=1\text{MHz}$	-	52	-	nC	
Gate-source charge	Q_{gs}		-	13	-	nC	
Gate-drain charge	Q_{gd}		-	10	-	nC	
Diode characteristics							
Diode forward voltage ¹	V_{SD}	$V_{GS}=0V, I_{SD}=-10A$	-	-	-1.5	V	
Body Diode Continuous Forward Current ¹	I_S	$T_C = 25^{\circ}\text{C}$			-28	A	
Reverse recovery time	t_{rr}	$I_F=-10A$ $DI_F/dt=100A/\mu s$	-	35	-	ns	
Reverse recovery charge	Q_{rr}		-	42	-	nC	

Note:1.The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

2.The value of R_{thJA} 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 $V_{DD}=-50V, V_{GS}=-10V, L=1\text{mH}, I_{AS}=-22A$.

8. Typical Characteristics

Fig 1: Output Characteristics

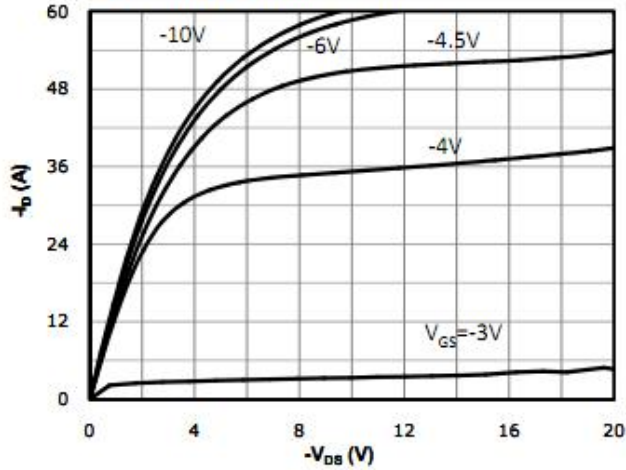


Fig 2: Transfer Characteristics

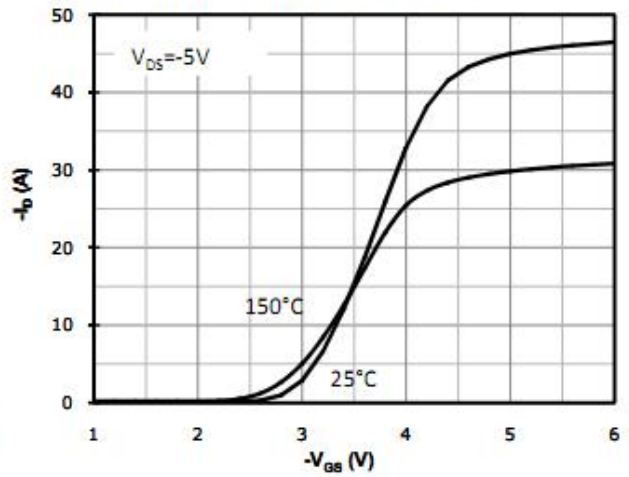


Fig 3: Rds(on) vs Drain Current and Gate Voltage

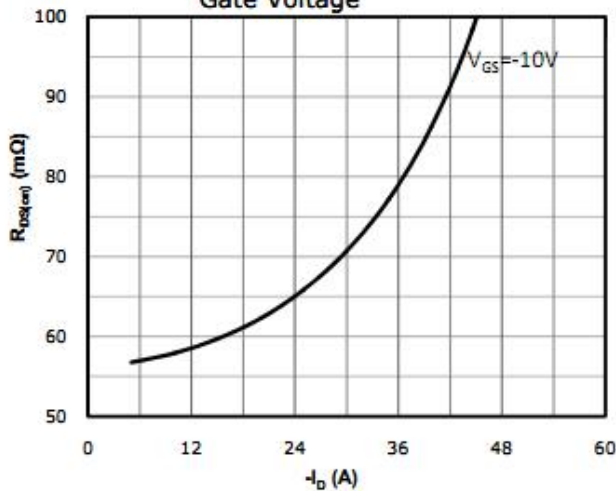


Fig 4: Rds(on) vs Gate Voltage

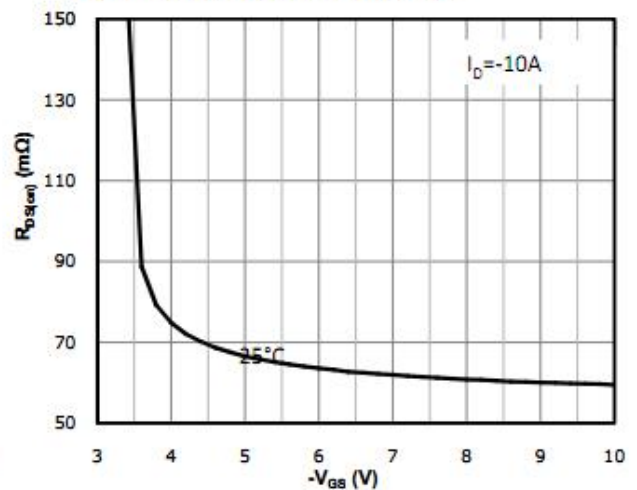


Fig 5: Rds(on) vs. Temperature

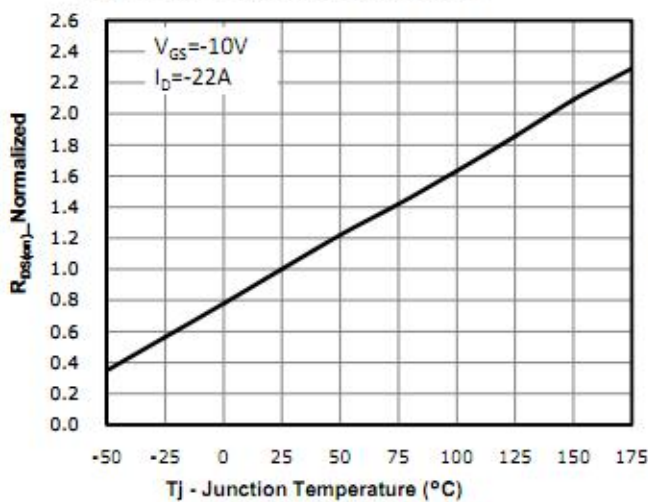


Fig 6: Capacitance Characteristics

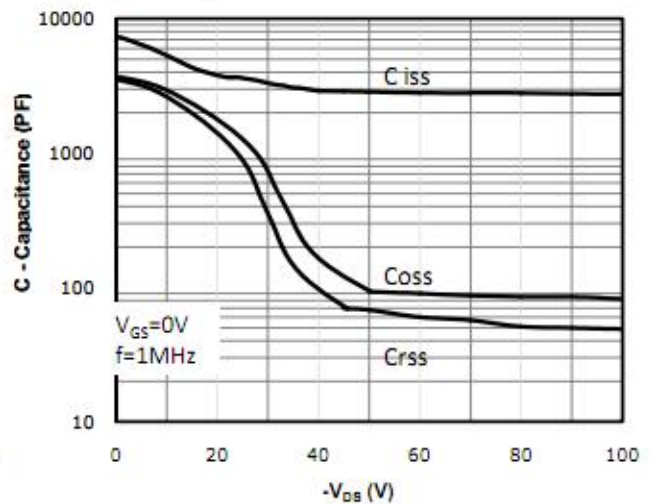


Fig 7: Gate Charge Characteristics

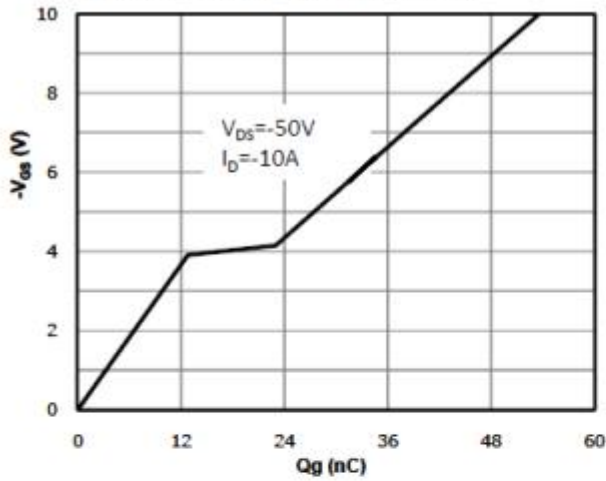


Fig 8: Body-diode Forward Characteristics

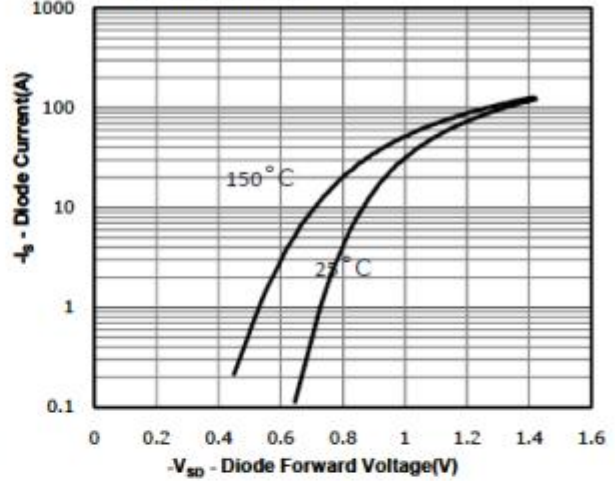


Fig 9: Power Dissipation

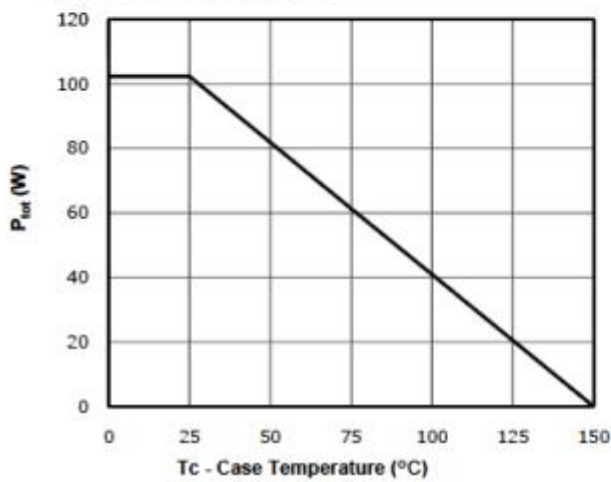


Fig 10: Drain Current Derating

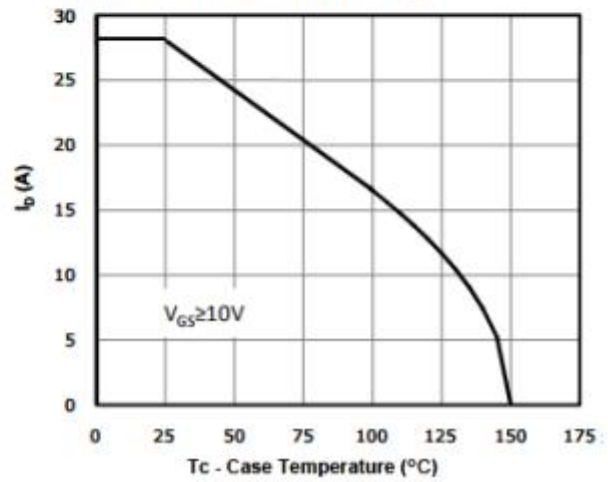


Fig 11: Safe Operating Area

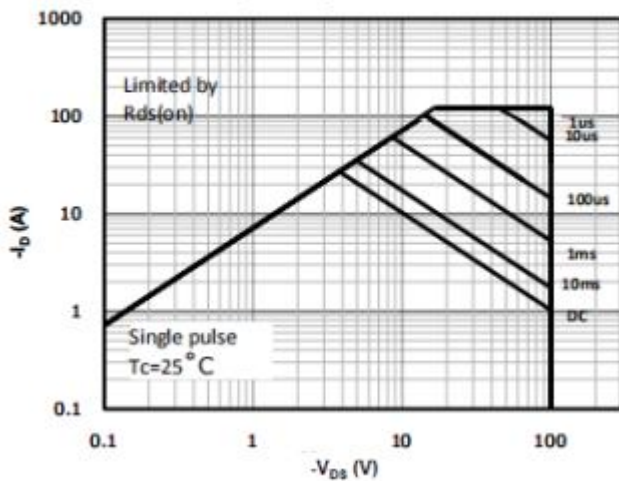


Fig 12: Max. Transient Thermal Impedance

