

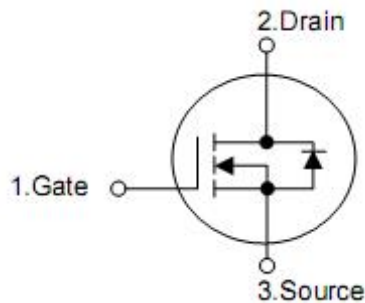
1. Features

- n $R_{DS(on)}=3.1m\Omega @ V_{GS}=10V$
- n Uses CRM(CQ) advanced Trench MOS technology
- n Extremely low on-resistance $R_{DS(on)}$
- n Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- n Qualified according to JEDEC criteria

2. Applications

- n Motor control and drive
- n Battery management
- n UPS (Uninterruptible Power Supplies)

3.Symbol



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering information

Part Number	Package	Brand
KND3203A	TO-252	KIA

5. Absolute maximum ratings

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-source voltage	V_{DS}	30	V
Continuous drain current	I_D	$T_C=25^{\circ}\text{C}$ (Silicon limit)	100
		$T_C=25^{\circ}\text{C}$ (Package limit)	80
		$T_C=100^{\circ}\text{C}$ (Silicon limit)	72
Pulse drain current ($T_C = 25^{\circ}\text{C}$, t_p limited by T_{jmax})	I_{DP}	320	A
Avalanche energy, single pulse ($L=0.5\text{mH}$)	E_{AS}	90	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation ($T_C = 25^{\circ}\text{C}$)	P_{tot}	101	W
Operating junction and storage temperature	T_J, T_{STG}	-55- 150	$^{\circ}\text{C}$

6. Thermal characteristics

Parameter	Symbol	Max	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	105	$^{\circ}\text{C}/\text{W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	1.24	$^{\circ}\text{C}/\text{W}$

7. Electrical characteristics

($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	1.8	2.3	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=24V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	-	-	10	
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=24A, T_J=25^{\circ}\text{C}$	-	3.1	4.0	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	4.7	7.0	
Forward transconductance	g_{fs}	$V_{DS}=5V, I_D=30A$	-	73	-	S
Input capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V,$ $f=1\text{MHz}$	-	2340	-	μF
Output capacitance	C_{oss}		-	460	-	
Reverse transfer capacitance	C_{rss}		-	305	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=15V, I_D=30A,$ $R_{G_ext}=3\Omega, V_{GS}=10V$	-	11	-	nS
Rise time	t_r		-	102	-	
Turn-off delay time	$t_{d(off)}$		-	34	-	
Fall time	t_f		-	95	-	
Total gate charge	Q_g	$V_{DS}=15V, V_{GS}=10V$ $I_D=30A, f=1\text{MHz}$	-	50	-	nC
Gate-source charge	Q_{gs}		-	9.5	-	
Gate-drain charge	Q_{gd}		-	13.2	-	
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.4	-	Ω
Body Diode forward voltage	V_{SD}	$V_{GS}=0V, I_{SD}=200A$	-	-	1.3	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=30A,$ $di/dt=100A/\mu s$	-	21	-	nS
Body Diode Reverse Recovery charge	Q_{rr}		-	12	-	nC

8. Test circuits and waveforms

Fig 1: Output Characteristics

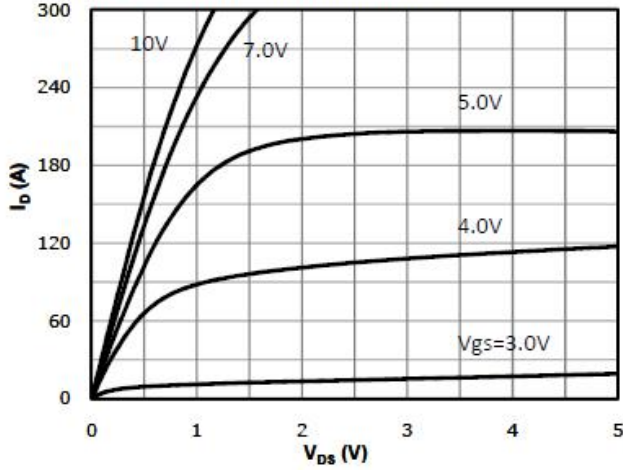


Fig 2: Transfer Characteristics

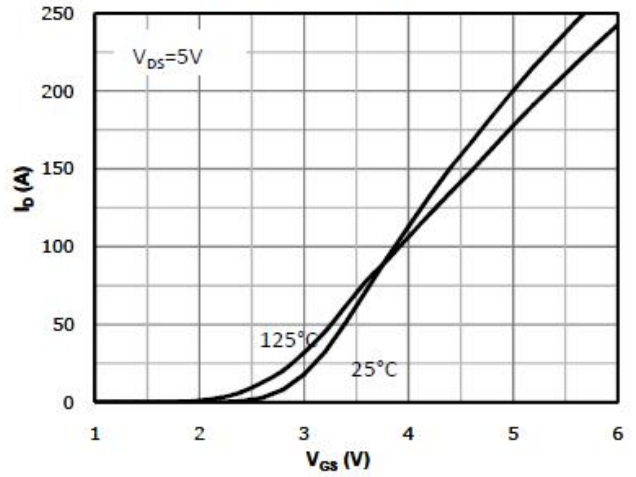


Fig 3: Rds(on) vs Drain Current and Gate Voltage

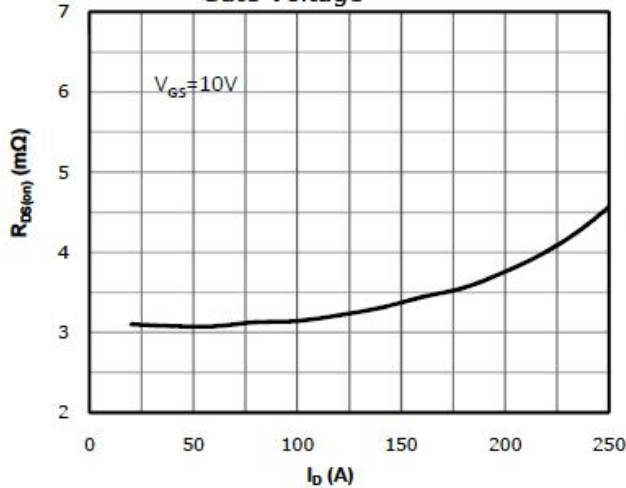


Fig 4: Rds(on) vs Gate Voltage

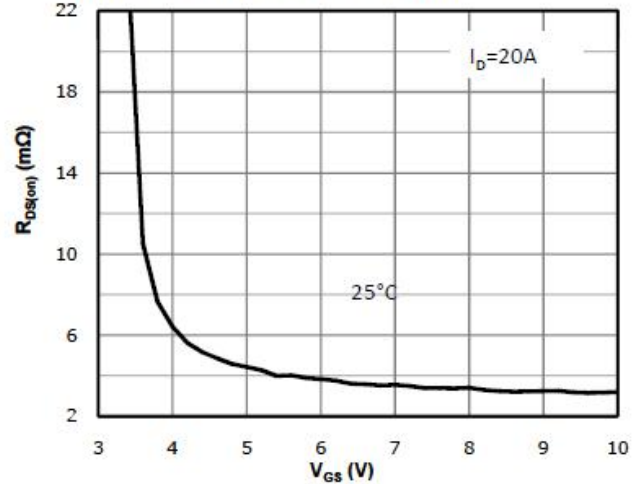


Fig 5: Rds(on) vs. Temperature

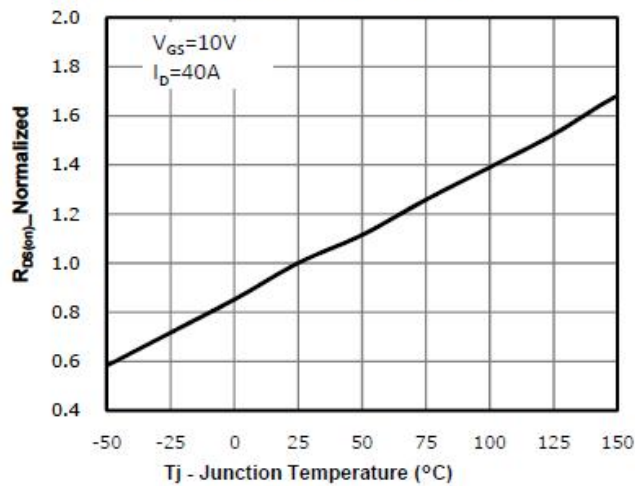


Fig 6: Capacitance Characteristics

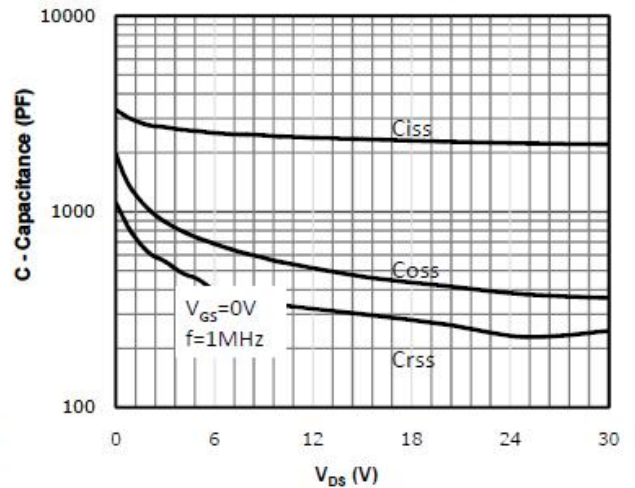


Fig 7: Gate Charge Characteristics

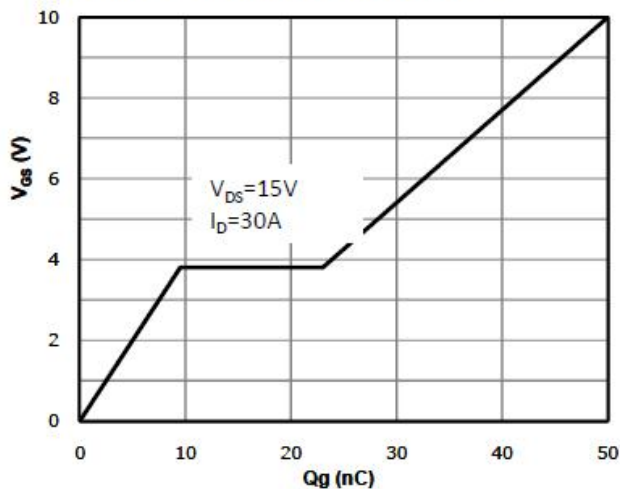


Fig 8: Body-diode Forward Characteristics

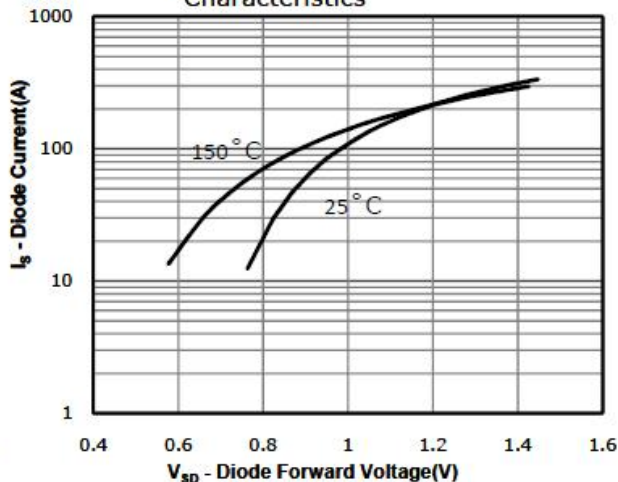


Fig 9: Power Dissipation

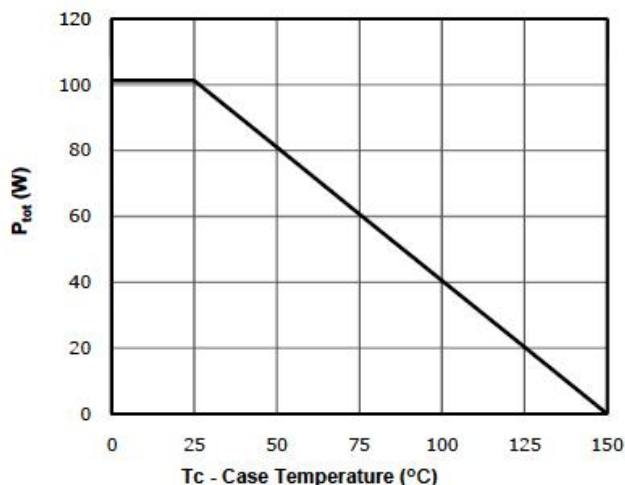


Fig 10: Drain Current Derating

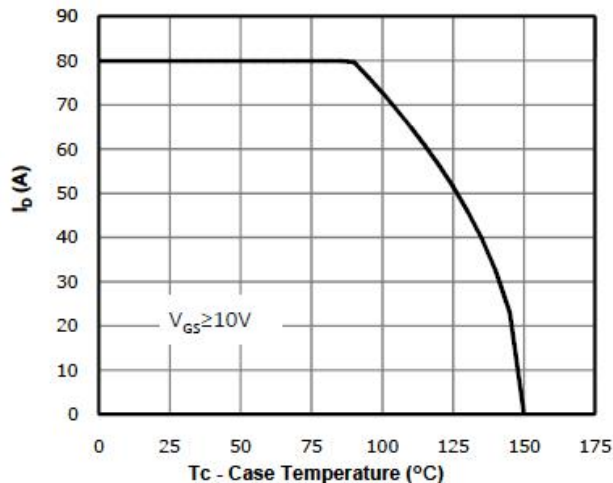


Fig 11: Safe Operating Area

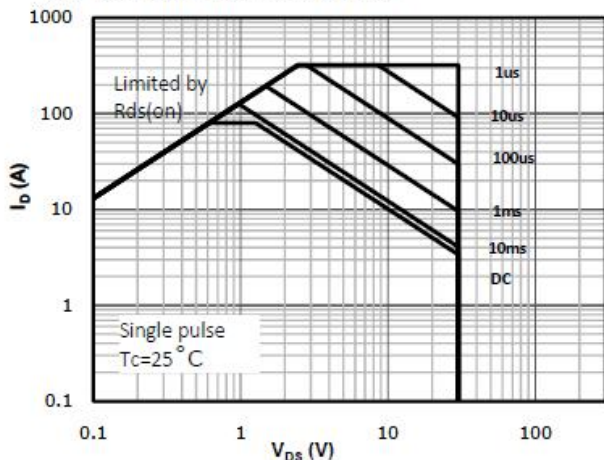


Fig 12: Max. Transient Thermal Impedance

