

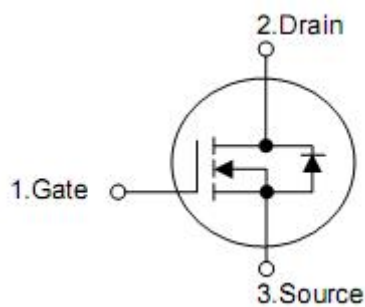
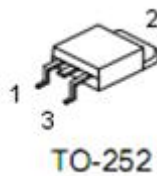
1. Features

- n $R_{DS(ON),typ.}=8.5m\Omega@V_{GS}=10V$
- 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. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND3406C	TO-252	KIA

5. Absolute maximum ratings

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DSS}	60	V
Continuous Drain Current	$T_C=25\text{ }^\circ\text{C}$ (Silicon limit)	I_D	64	A
	$T_C=25\text{ }^\circ\text{C}$ (Package limit)		80	
	$T_C=100\text{ }^\circ\text{C}$ (Silicon limited)		41	
Pulsed Drain Current	($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	I_{DP}	256	
Avalanche Energy single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$)		E_{AS}	60	mJ
Gate-Source voltage		V_{GS}	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$)		P_{tot}	87	W
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient	$R_{\theta JA}$	99	$^\circ\text{C/W}$
Thermal resistance, Junction-case	$R_{\theta JC}$	1.43	

7. Electrical characteristics

(T_J=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units	
Static characteristics							
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V	
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.3	1.8	2.3	V	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	T _J =25°C	-	-	1	μA
			T _J =125°C	-	-	10	
Gate leakage current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	-	10	100	nA	
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	T _J =25 °C	-	8.5	10.5	mΩ
			T _J =150 °C	-	16.7	20.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	10.5	12.5	mΩ	
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =20A	-	50	-	S	
Dynamic characteristics							
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	1.2	-	Ω	
Input capacitance	C _{iSS}	V _{DS} =30V, V _{GS} =0V, F=1MHz	-	1940	-	pF	
Output capacitance	C _{oss}		-	200	-	pF	
Reverse transfer capacitance	C _{rSS}		-	140	-	pF	
Turn-on delay time	t _{d(on)}	V _{GS} =10V, V _{DD} =30V, R _G =24Ω, I _D =20A,	-	22	-	ns	
Rise time	t _r		-	90	-	ns	
Turn-off delay time	t _{d(off)}		-	155	-	ns	
Fall time	t _f		-	145	-	ns	
Gate Charge Characteristics							
Total gate charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =20A, F=1MHz	-	45	-	nC	
Gate-source charge	Q _{gs}		-	8	-	nC	
Gate-drain charge	Q _{gd}		-	12	-	nC	
Diode characteristics							
Diode forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =20A	-	0.8	1.3	V	
Reverse recovery time	t _{rr}	I _F =20A di/dt=100A/μs	-	20	-	ns	
Reverse recovery charge	Q _{rr}		-	16	-	nC	

8. Typical Characteristics

Fig 1: Output Characteristics

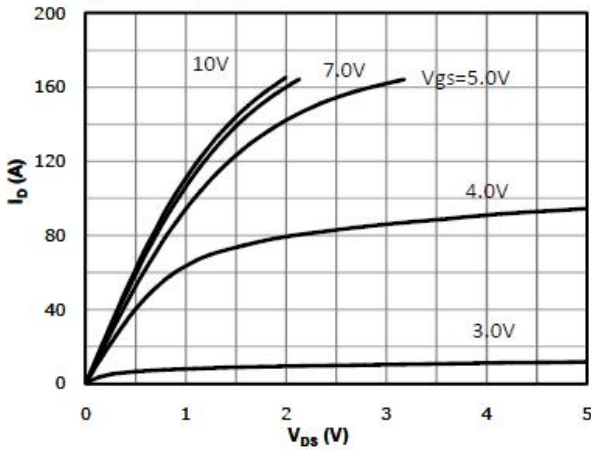


Fig 2: Transfer Characteristics

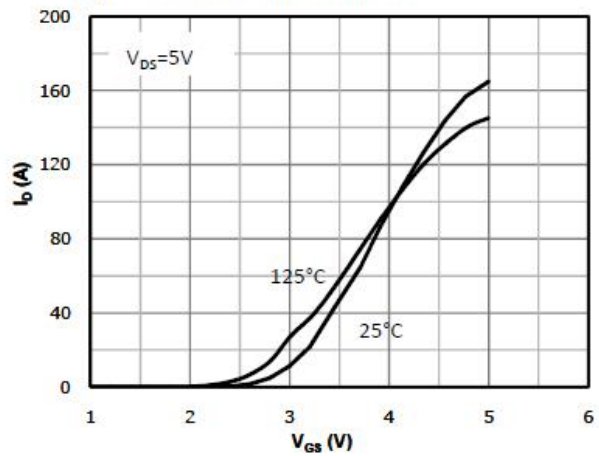


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

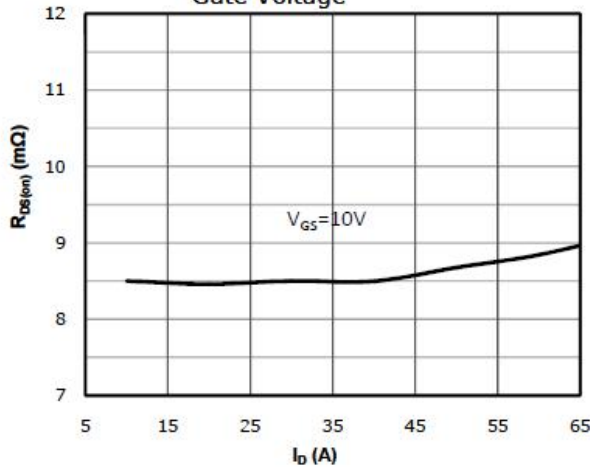


Fig 4: $R_{DS(on)}$ vs Gate Voltage

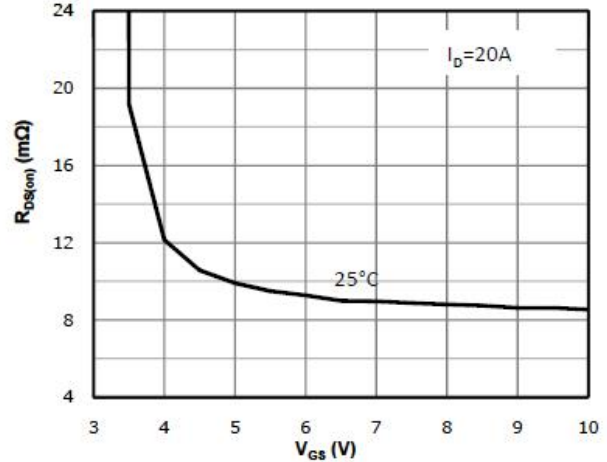


Fig 5: $R_{DS(on)}$ vs. Temperature

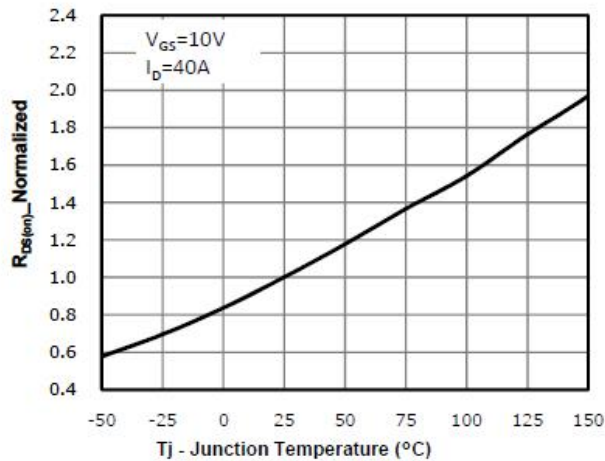


Fig 6: Capacitance Characteristics

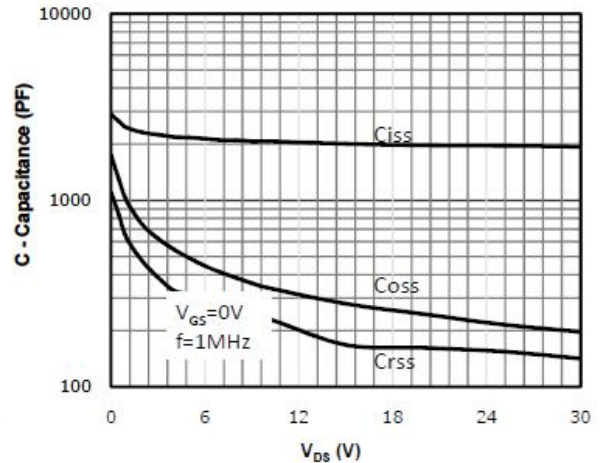


Fig 7: Gate Charge Characteristics

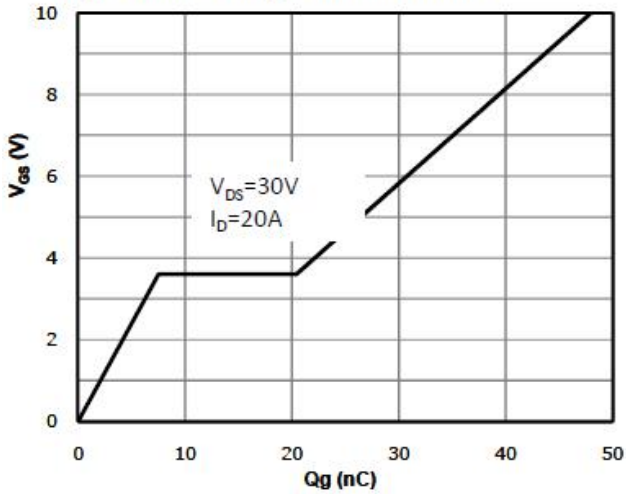


Fig 8: Body-diode Forward Characteristics

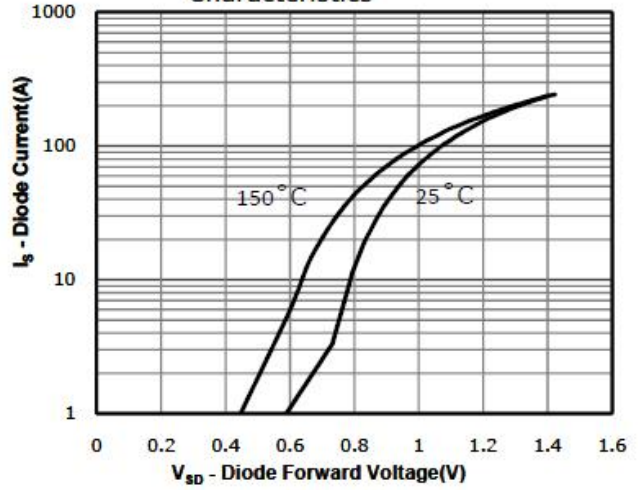


Fig 9: Power Dissipation

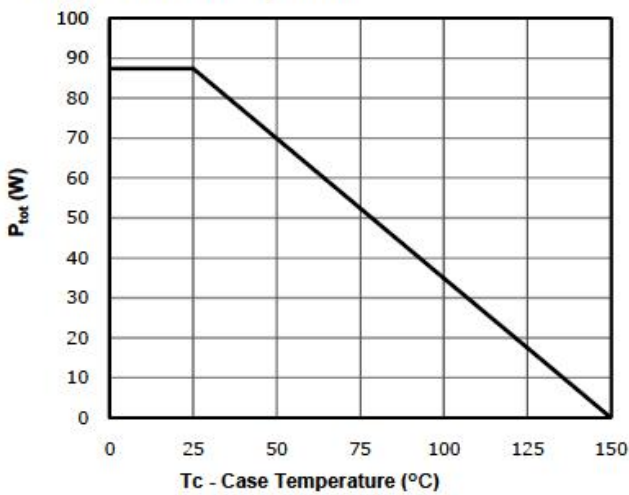


Fig 10: Drain Current Derating

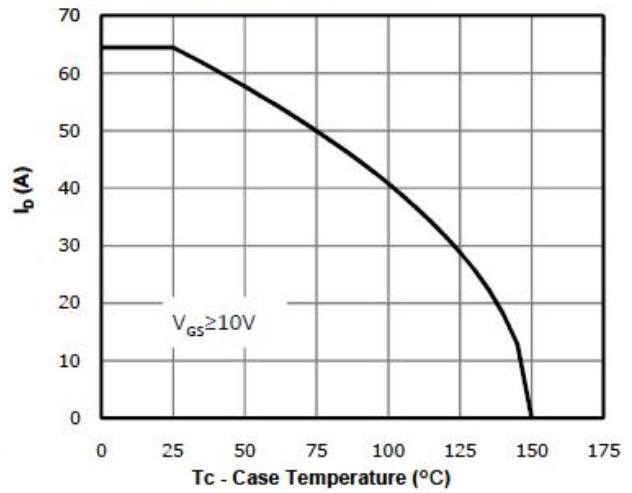


Fig 11: Safe Operating Area

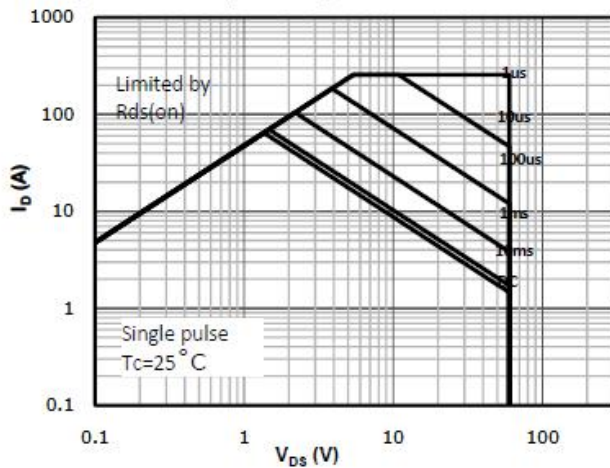
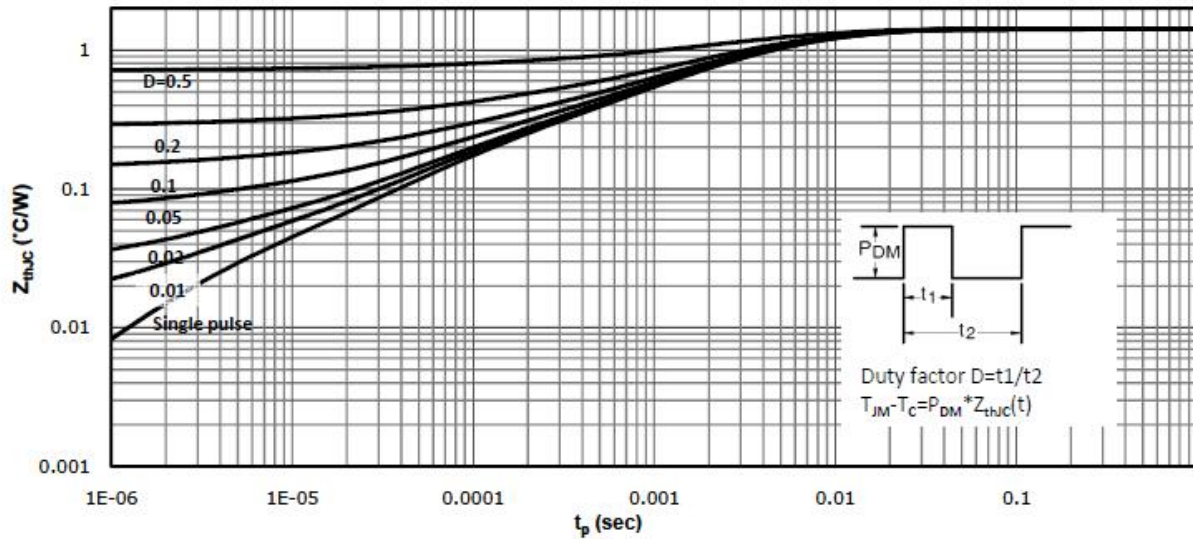
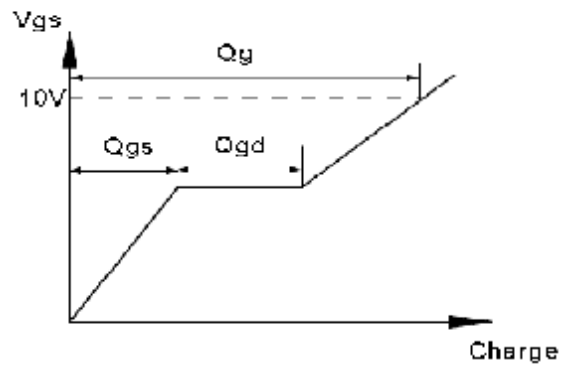
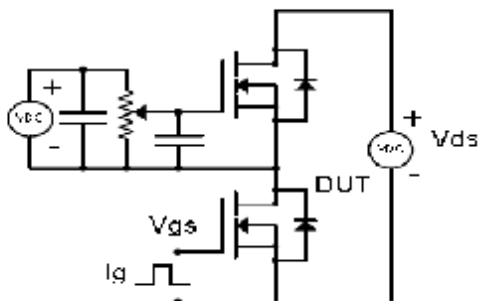


Fig 12: Max. Transient Thermal Impedance

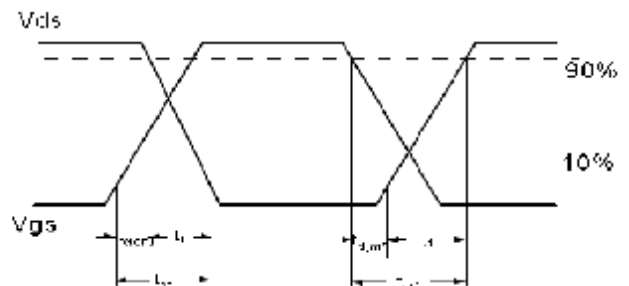
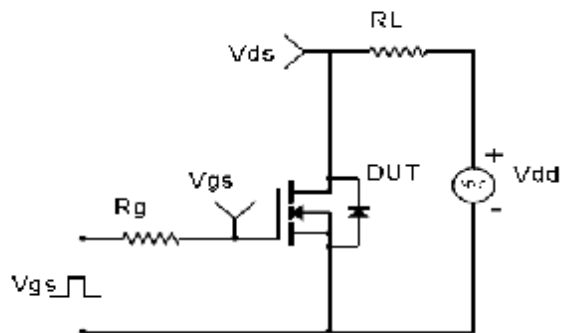


9. Typical Characteristics

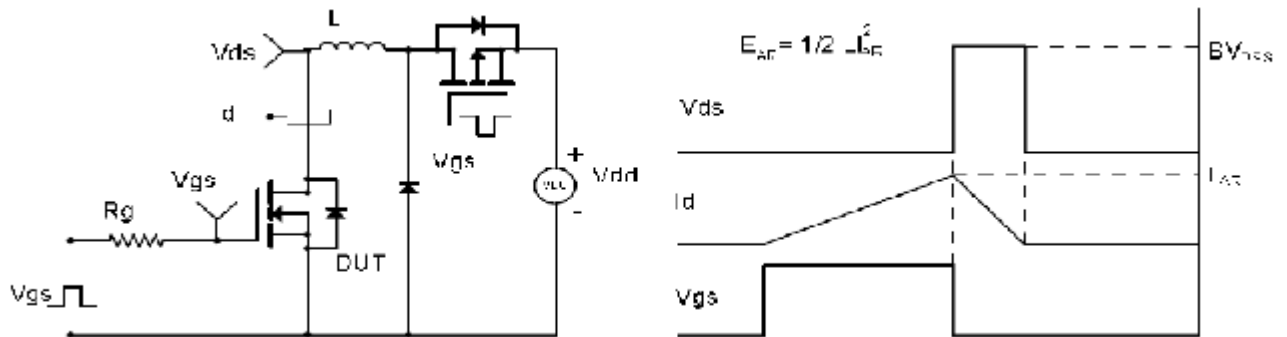
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

