

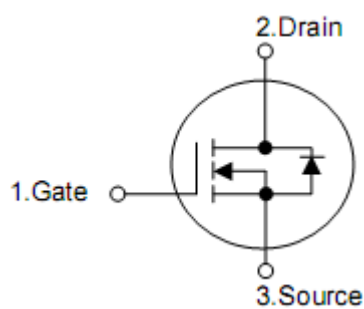
1. Features

- Advanced Trench technology
- $R_{DS(ON)}=2.4m\Omega$ (typ.) @ $V_{GS}=10V$
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- 100% ΔV_{ds} TESTED
- 100% UIS TESTED

2. Pin configuration



TO-252



Pin	Function
1	Gate
2	Drain
3	Source

3. Ordering Information

Part Number	Package	Brand
KND2803C	TO-252	KIA

4. Absolute maximum ratings

$T_A=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage ($V_{GS}=0V$)	V_{DS}	30	V
Gate-to-Source Voltage ($V_{DS}=0V$)	V_{GS}	± 20	V
Continuous Drain Current ¹⁾	$T_C=25^{\circ}\text{C}$ I_D	150	A
	$T_C=100^{\circ}\text{C}$ I_D	95	A
Pulsed Drain Current @ Current-Pulsed ²⁾	I_{DM}	640	A
Total Power Dissipation ($T_C=25^{\circ}\text{C}$) ⁴⁾	P_D	136	W
Avalanche Energy ³⁾	EAS	342	mJ
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

5. Thermal characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case ¹⁾	$R_{\theta JC}$	1.1	$^{\circ}\text{C/W}$

6. Electrical characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V, T_C=25^{\circ}\text{C}$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.5	2.5	V
Static Drain-Source On-Resistance ²⁾	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	2.4	3.0	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	3.2	4.2	m Ω
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0\text{MHz}$	-	1.7	-	Ω
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1.0\text{MHz}$	-	3480	-	pF
Output Capacitance	C_{oss}		-	445	-	pF
Reverse Transfer Capacitance	C_{rss}		-	380	-	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V, V_{GS}=10V, R_G=2.0\Omega, I_D=20A$	-	9.5	-	ns
Rise Time	t_r		-	18	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	ns
Fall Time	t_f		-	17.5	-	ns
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=30A$	-	80	-	nC
Gate-Source Charge	Q_{gs}		-	4.5	-	nC
Gate-Drain Charge	Q_{gd}		-	30	-	nC
Source-Drain Current (Body Diode) ^{1),5)}	I_{SD}	—	-	-	150	A
Diode Forward Voltage ²⁾	V_{SD}	$V_{GS}=0V, I_{SD}=30A, T_J=25^{\circ}\text{C}$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}, I_F=30A, di/dt=100A/\mu s$	-	18	-	nS
Reverse Recovery Charge	Q_{rr}		-	6.8	-	nC
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS +LD)				

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 $\leq 300\mu s$, duty cycle $\leq 2\%$.

3) The test condition is $V_{DD}=20V, V_{GS}=10V, L=0.5mH, I_{AS}=37A$.

4) The power dissipation is limited by 175°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.

7. Typical Characteristics

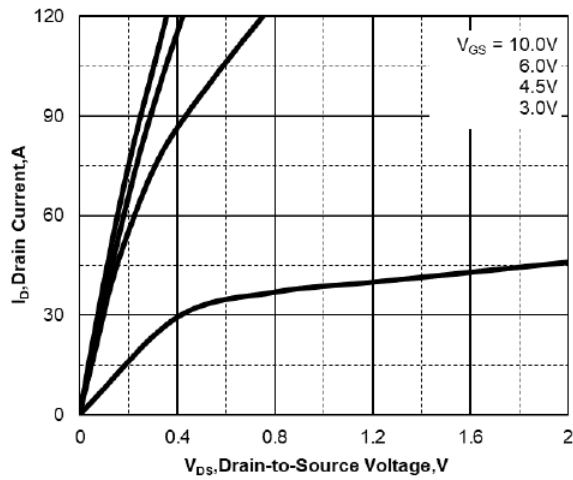


Fig1: Typical Output Characteristics

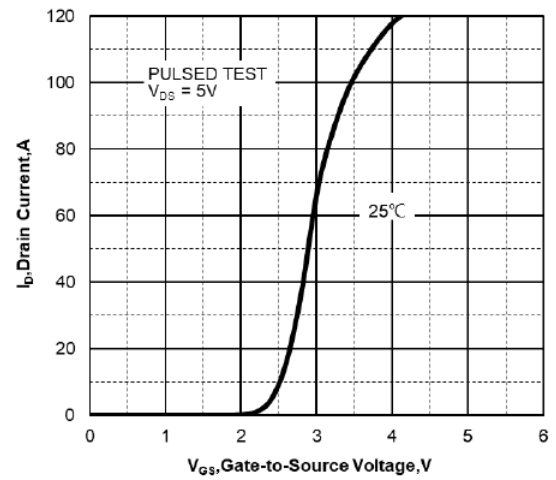


Fig 2: Typical Transfer Characteristics

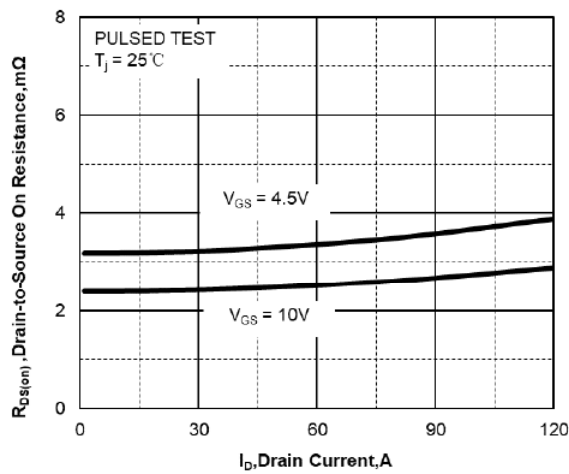


Fig 3: On-Resistance VS. Drain Current

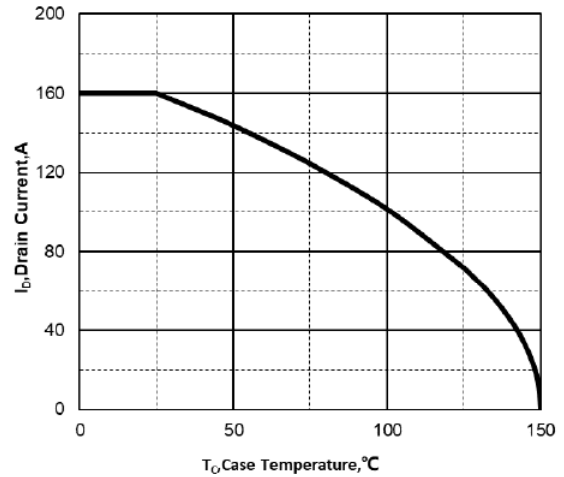


Fig 4: Maximum Continuous Drain Current VS. Case Temperature

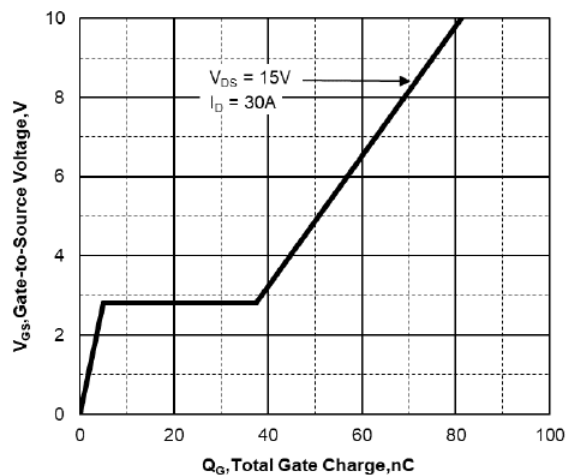


Fig 5: Gate Charge Characteristics

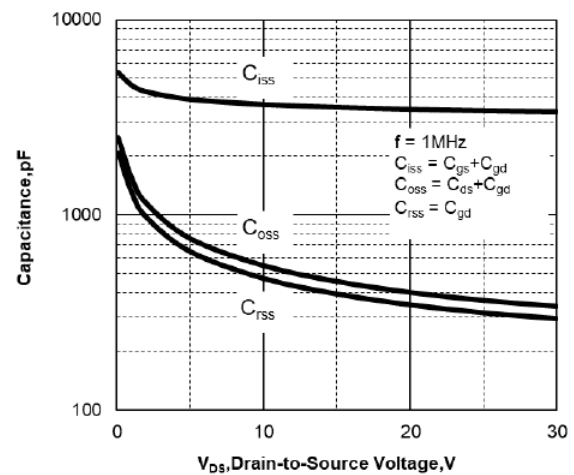


Fig 6: Capacitance Characteristics

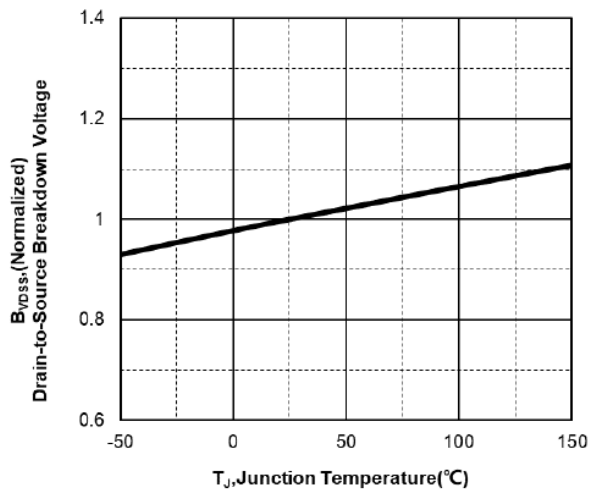


Fig 7: Normalized Breakdown Voltage VS. Junction Temperature

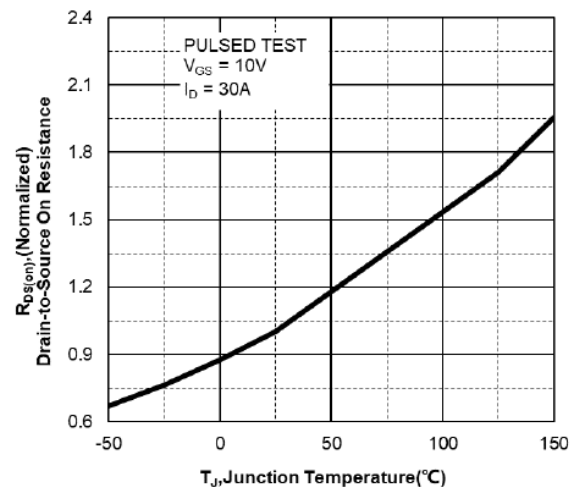


Fig 8: Normalized on Resistance VS. Junction Temperature

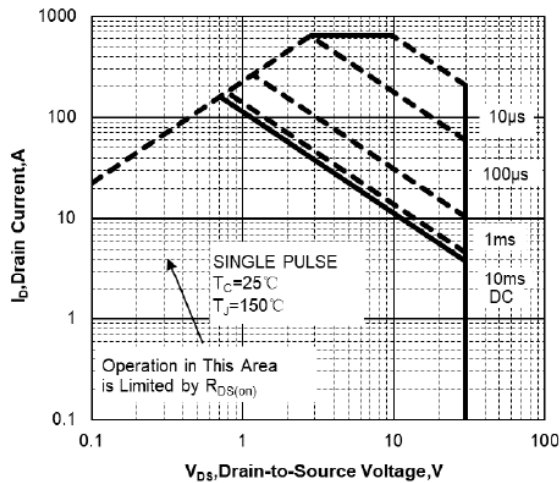


Fig 9: Maximum Safe Operating Area

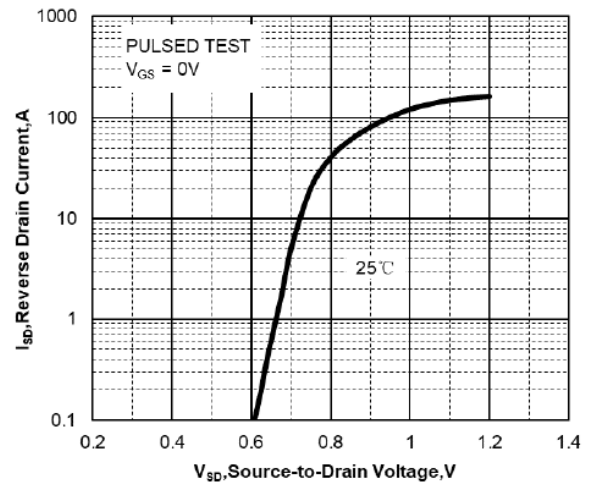


Fig 10: Body Diode Forward Characteristics

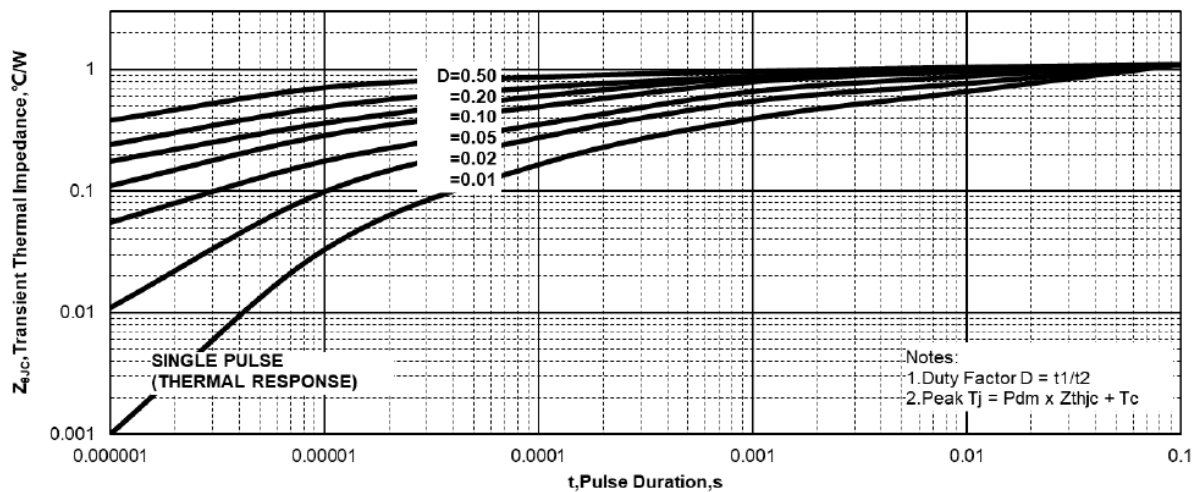


Fig.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

8. Test Circuit & Waveform

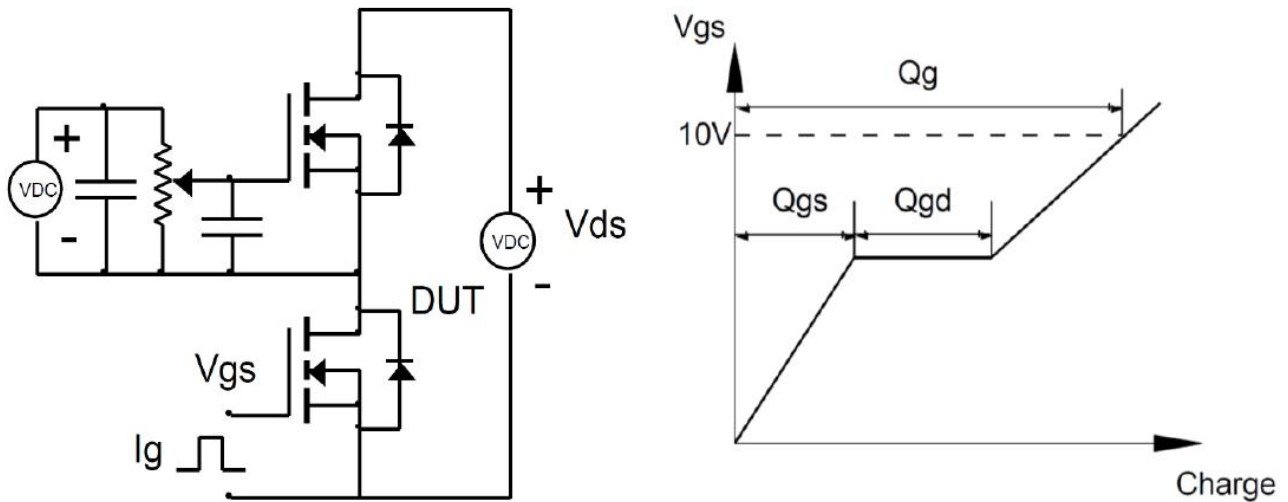


Fig 12: Gate Charge Test Circuit and Waveforms

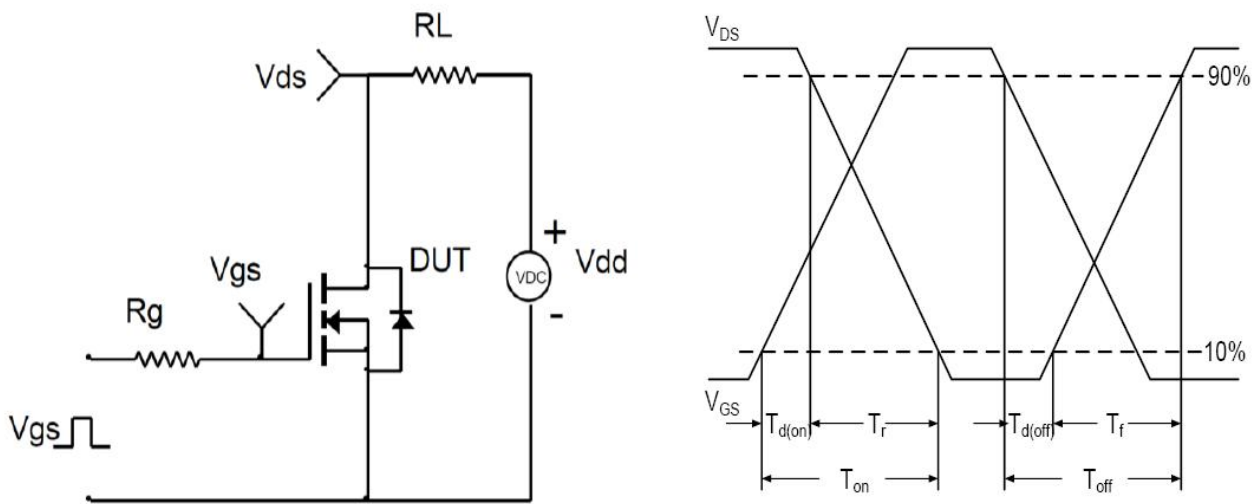


Fig 13: Resistive Switching Test Circuit and Waveforms

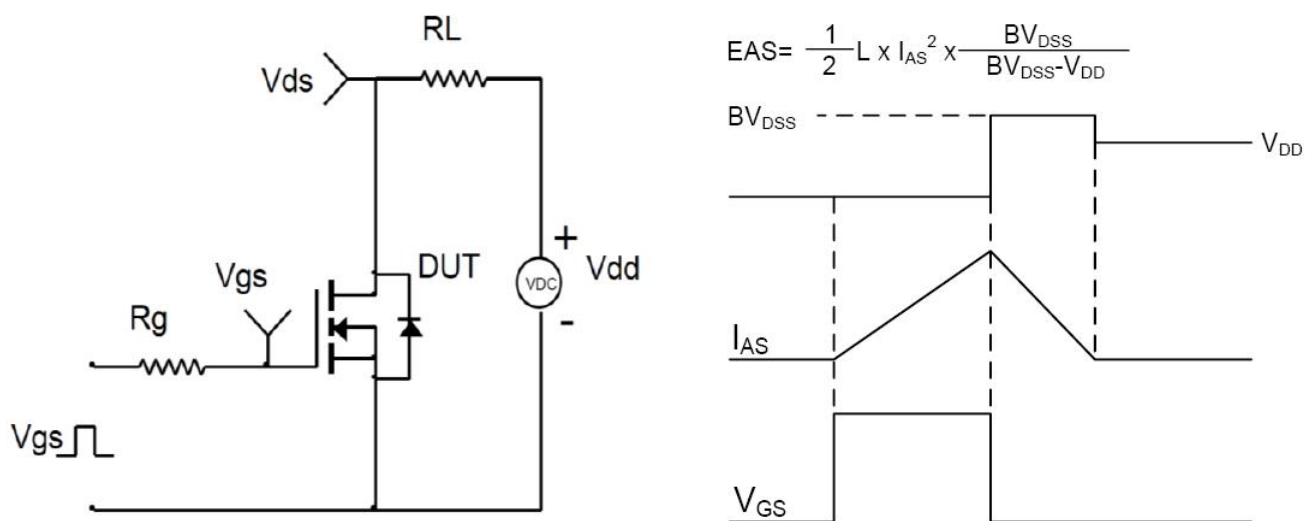


Fig 14: Unclamped Inductive Switching Test Circuit and Waveforms