

1. Features

- Si N-Channel trench MOSFET
- $R_{DS(ON)}=4.1m\Omega$ (typ.) @ $V_{GS}=10V$
- Low gate charge
- Low Ciss
- Fast switching

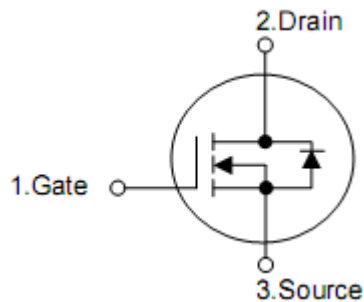
2. Application

- PWM applications
- Load switch
- Power Management

3. Pin configuration



TO-252



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KND3080B	TO-252	KIA

5. Absolute maximum ratings

T _C =25°C unless otherwise specified				
Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V _{DS}	30	V
Gate-to-Source Voltage		V _{GS}	±20	V
Continuous Drain Current ¹⁾	T _C =25°C	I _D	80	A
	T _C =100°C	I _D	50	A
Pulsed Drain Current		I _{DM}	320	A
Total Power Dissipation	T _C =25°C	P _D	70	W
	T _A =25°C	P _D	2.8	W
Avalanche Energy (L=0.5mH, V _D =24V, T _C =25°C)		EAS	110	mJ
Operation Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

6. Thermal characteristics

Parameter	Symbol	Value	Unit
Thermal resistance , Junction to Ambient	R _{θJA}	44	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	1.95	°C/W

7. Electrical characteristics

(T_J=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =15A	-	4.1	6	mΩ
		V _{GS} =4.5V, I _D =10A	-	7.0	10	mΩ
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	5.8	-	Ω
Forward transconductance	g _{fs}	V _{DS} =5V, I _D =20A	-	25	-	S
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	1510	-	pF
Output Capacitance	C _{oss}		-	200	-	pF
Reverse Transfer Capacitance	C _{rss}		-	180	-	pF
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, V _{GS} =10V, R _G =10Ω, I _D =20A	-	9	-	ns
Rise Time	t _r		-	40	-	ns
Turn-Off Delay Time	t _{d(off)}		-	90	-	ns
Fall Time	t _f		-	50	-	ns
Total Gate Charge	Q _g	V _{DS} =24V, V _{GS} =10V, I _D =20A	-	34	-	nC
Gate-Source Charge	Q _{gs}		-	6	-	nC
Gate-Drain Charge	Q _{gd}		-	8	-	nC
Continuous Diode Forward Current	I _S	—	-	-	80	A
Pulse diode forward current	I _{SM}	—	-	-	320	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =15A, di/dt=100A/μs, T _J =25 °C	-	18	-	ns
Reverse Recovery Charge	Q _{rr}		-	10	-	nC

8. Typical Characteristics

Fig 1: Output Characteristics $T_J=25^\circ\text{C}$

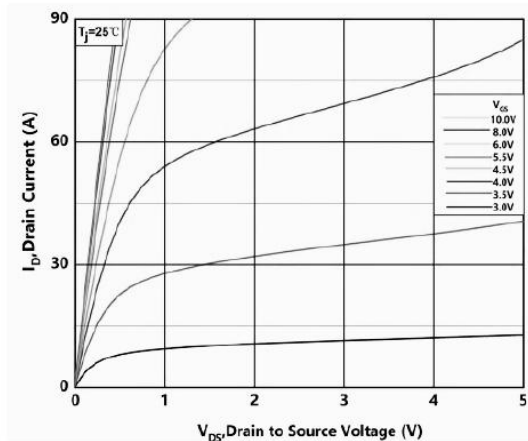


Fig 2: Transfer Characteristic for Various Junction Temperatures

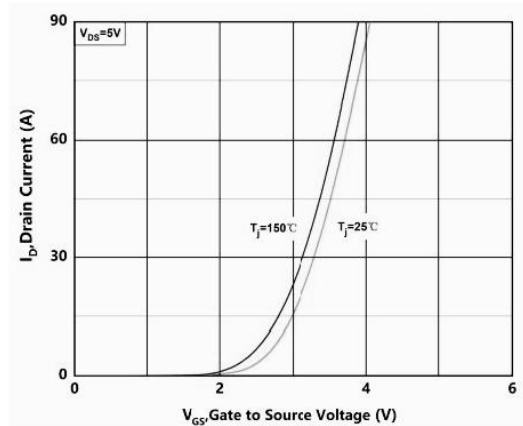


Fig 3: On-Resistance vs. Drain Current and Gate Voltage

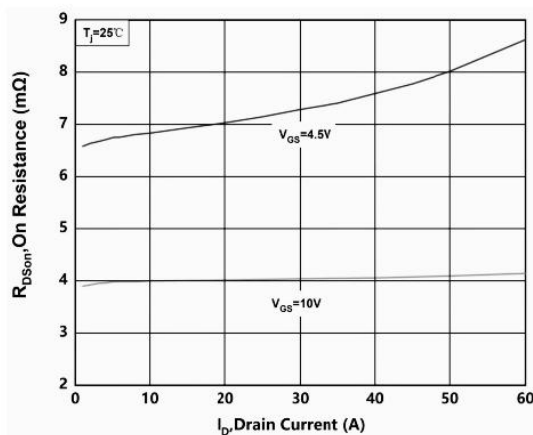


Fig 4: Typical On-Resistance vs. Junction Temperature

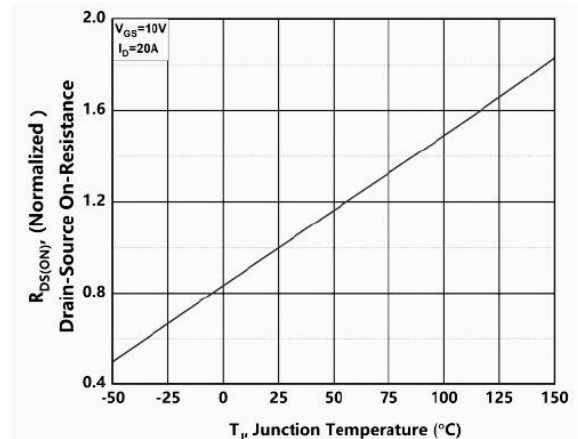


Fig 5: Typical Threshold Voltage vs. Junction Temperature

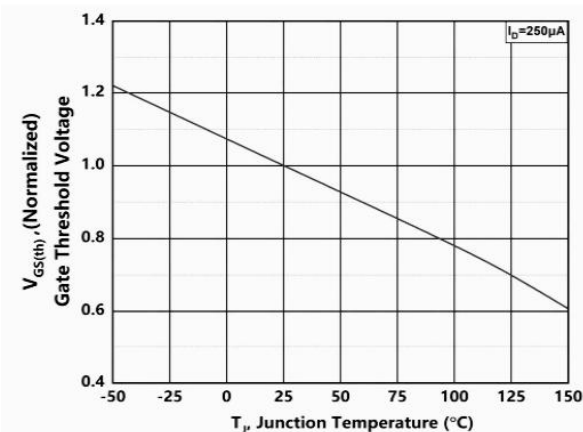


Fig 6: Typical Breakdown Voltage vs. Junction Temperature

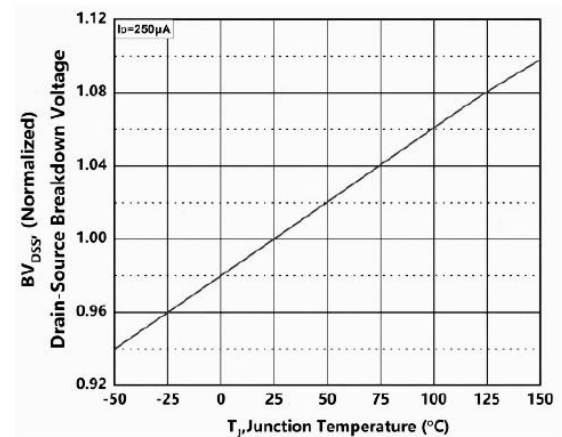


Fig 7: Typical Capacitance vs Drain to Source Voltage

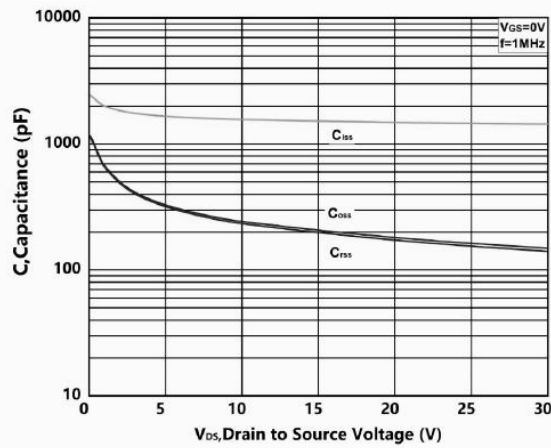


Fig 8: Typical Gate Charge vs Gate to Source Voltage

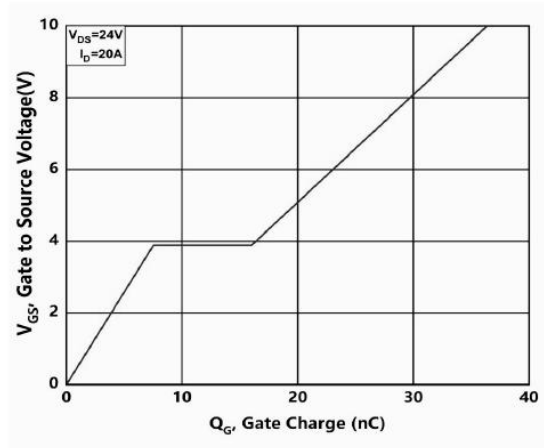


Fig 9: Typical Body Diode Characteristics

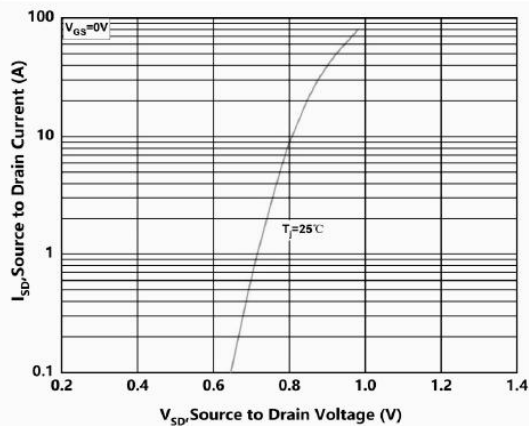


Fig 10: Maximum power Dissipation Derating vs Case Temperature

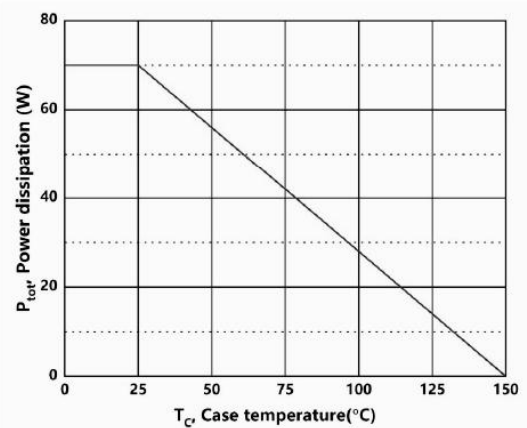


Fig 11: Continuous Drain Current Derating vs Case Temperature

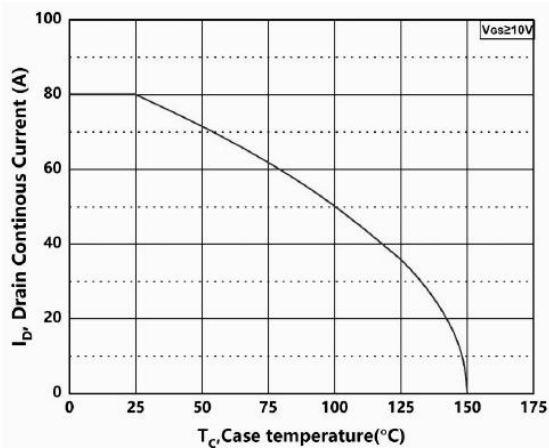


Fig 12: Safe Operating Area

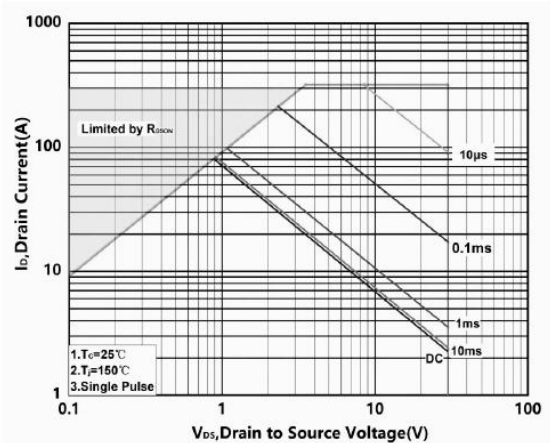
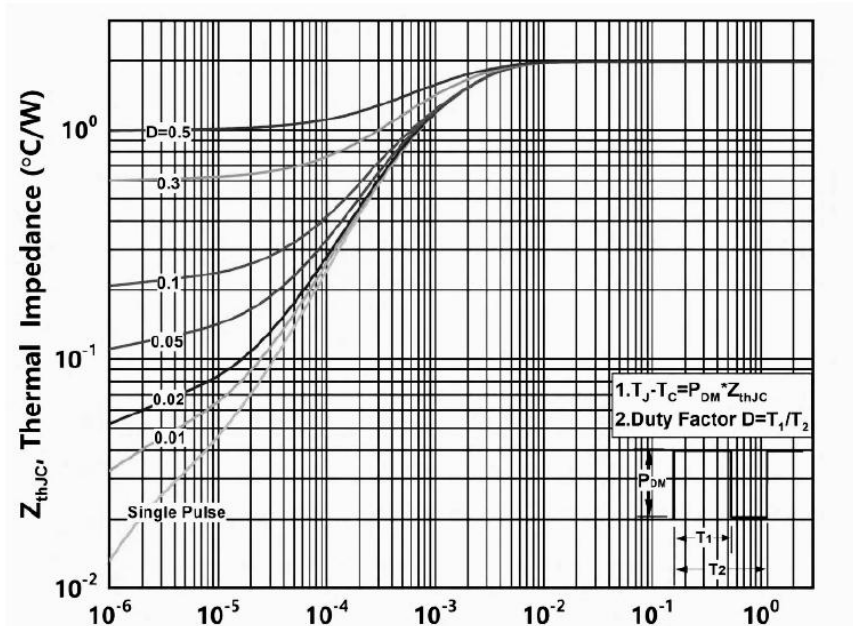


Fig 13: Transient Thermal Impedance (Junction - Case)



9. Test Circuit & Waveform

Fig A: Peak Diode Recovery dv/dt Test Circuit & Waveforms

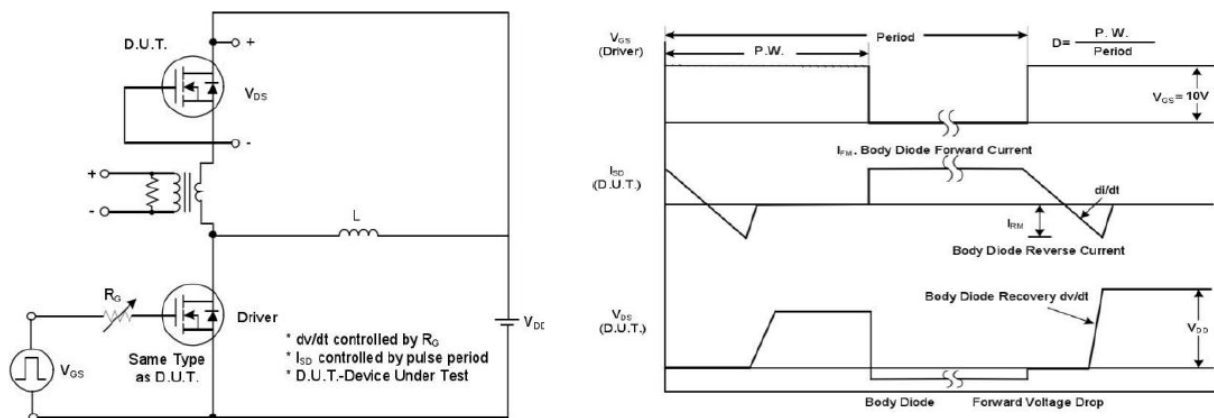


Fig B: Switching Test Circuit & Waveforms

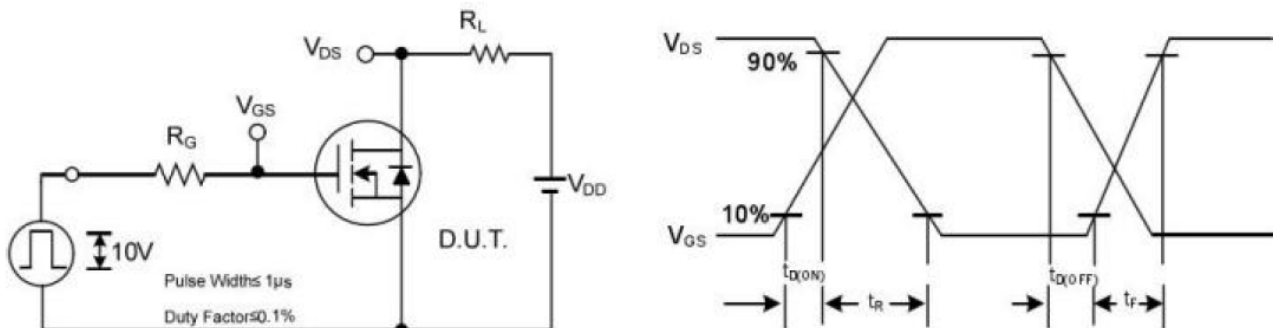


Fig C: Unclamped Inductive Switching Test Circuit & Waveforms

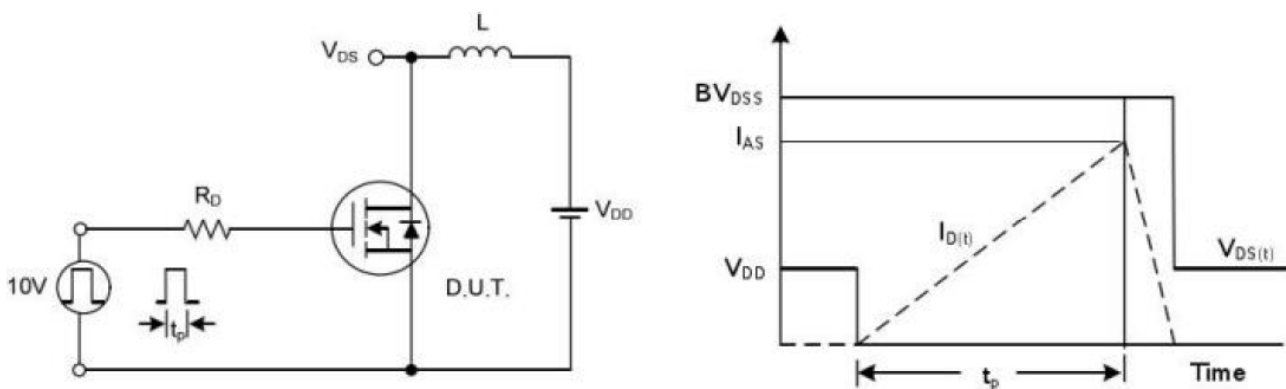


Fig D: Gate Charge Test Circuit & Waveforms

