

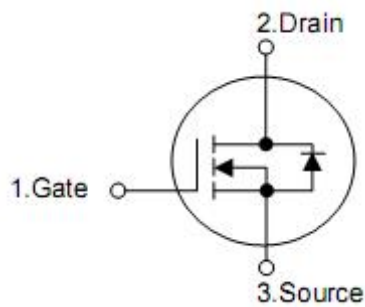
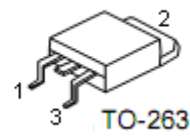
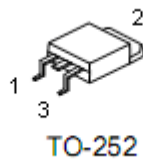
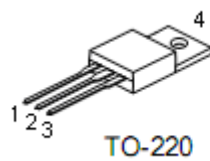
## 1. Features

- n  $R_{DS(on)}=9.5m\Omega$  (typ.) @  $V_{GS}=10V$
- n 100% avalanche tested
- n Reliable and rugged
- n Lead free and green device available (RoHS Compliant)

## 2. Applications

- n Switching application
- n Power management for inverter systems

## 3. Symbol

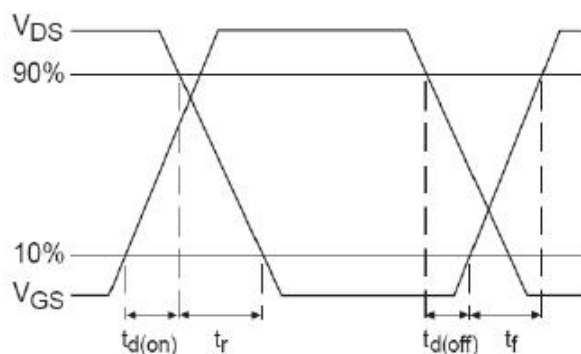
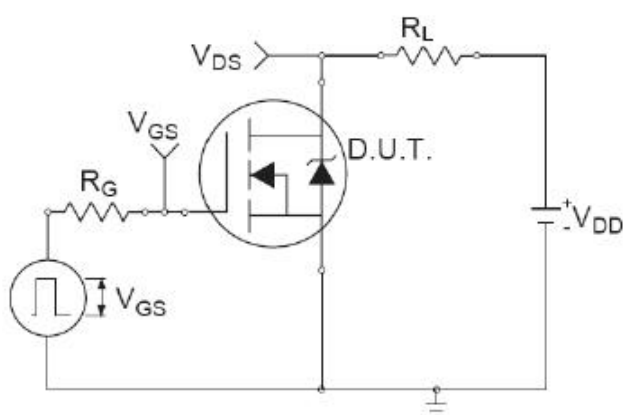


Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

#### 4. Ordering Information

Part Number	Package	Brand
KNB3508A	TO-263	KIA
KND3508A	TO-252	KIA
KNP3508A	TO-220	KIA

#### 5. Switching Time Test Circuit and Waveforms



#### 5. Absolute maximum ratings

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

Parameter	Symbol	Rating		Units	
		To-220/263	To-252		
Drain-source voltage	$V_{DSS}$	80		V	
Gate-source voltage	$V_{GSS}$	$\pm 25$		V	
Maximum junction temperature	$T_J$	175		$^{\circ}\text{C}$	
Storage temperature range	$T_{STG}$	-55 to 175		$^{\circ}\text{C}$	
Continuous drain current	$I_D^3$	$T_C=25^{\circ}\text{C}$	70	60	A
		$T_C=100^{\circ}\text{C}$	46	36	A
Pulsed drain current	$I_{DP}$	$T_C=25^{\circ}\text{C}$ 240		A	
Avalanche current	$I_{AS}$	70		A	

## 6. Electrical characteristics

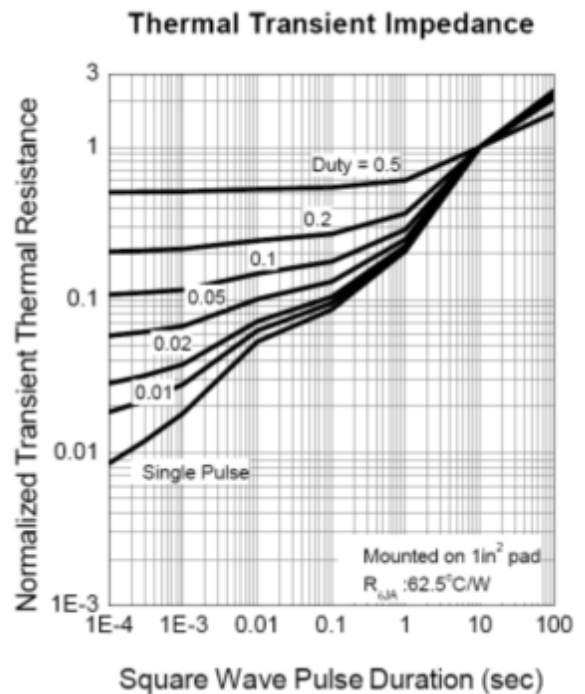
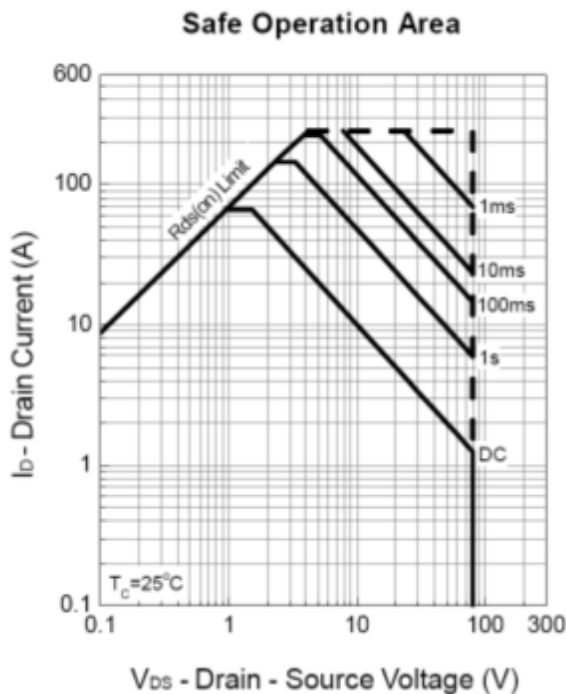
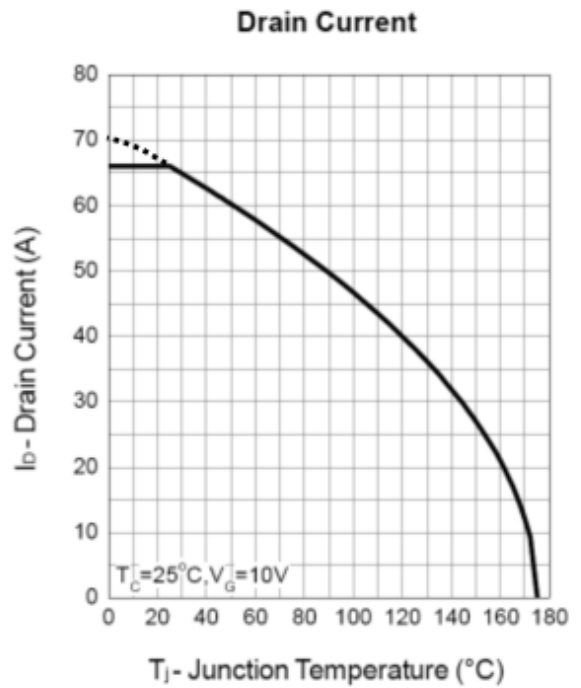
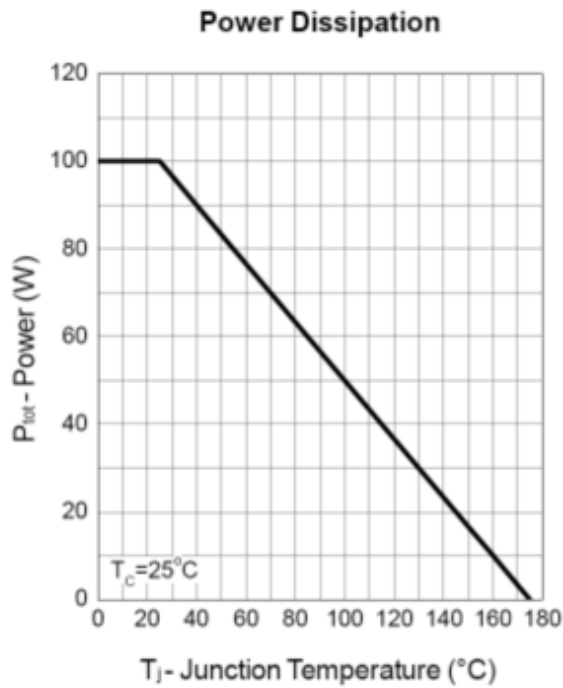
(T<sub>A</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	80	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	-	-	1	μA
		T <sub>J</sub> =85°C	-	-	30	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0	3.0	4.0	V
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0V	-	-	±100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>DS</sub> =35A	-	9.5	11	mΩ
Gate resistance	R <sub>g</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	-	1.5	-	Ω
Diode forward voltage	V <sub>SD</sub>	I <sub>SD</sub> =20A, V <sub>GS</sub> =0V	-	0.8	1.3	V
Reverse recovery time	t <sub>rr</sub>	I <sub>SD</sub> =35A , dI <sub>SD</sub> /dt=100A/μs	-	44	-	nS
Reverse recovery charge	Q <sub>rr</sub>		-	60	-	nC
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz	-	2900	-	pF
Output capacitance	C <sub>oss</sub>		-	290	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	175	-	
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>DS</sub> =1A, R <sub>L</sub> =30Ω, V <sub>GEN</sub> =-10V R <sub>G</sub> =6Ω	-	14	-	ns
Rise time	t <sub>r</sub>		-	11	-	
Turn-off delay time	t <sub>d(off)</sub>		-	51	-	
Fall time	t <sub>f</sub>		-	22	-	
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V I <sub>DS</sub> =35A	-	55	-	nC
Gate-source charge	Q <sub>gs</sub>		-	12	--	
Gate-drain charge	Q <sub>gd</sub>		-	16	--	

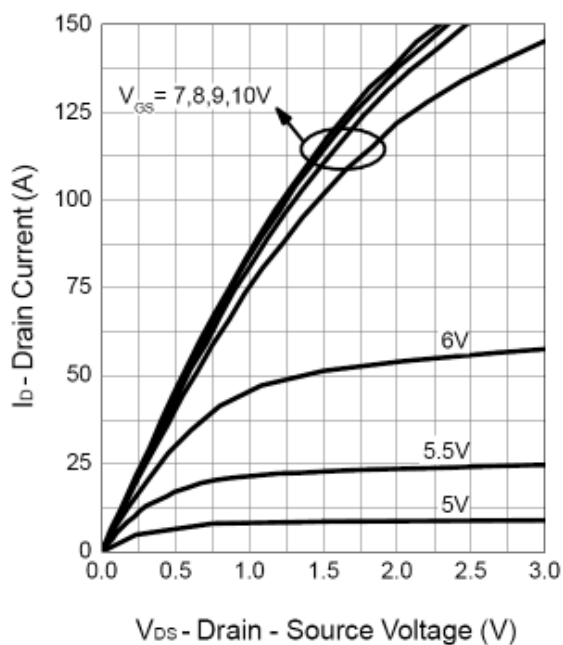
Note : 1. Pulse test; pulse width ≤ 300μs duty cycle ≤ 2%.

2. Guaranteed by design, not subject to production testing.

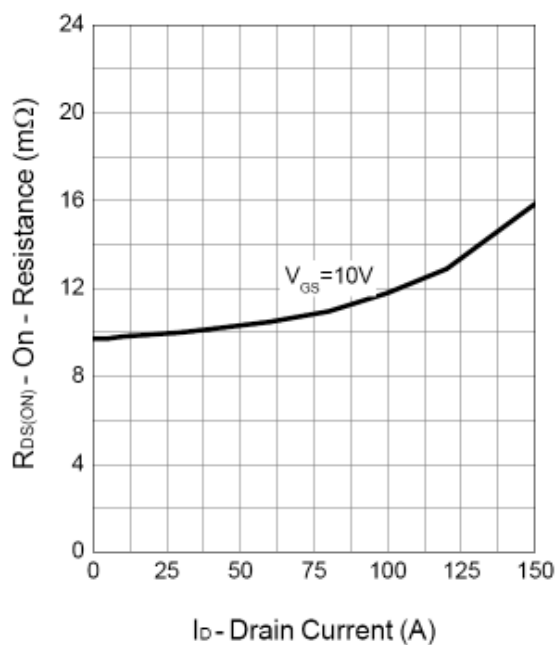
**7. Test circuits and waveforms**



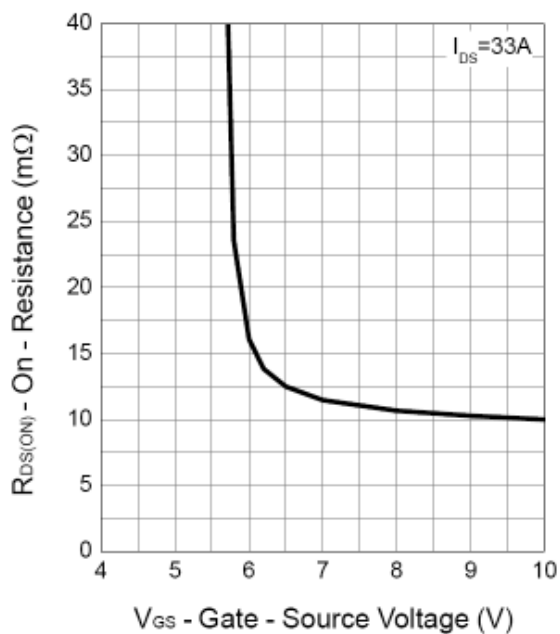
**Output Characteristics**



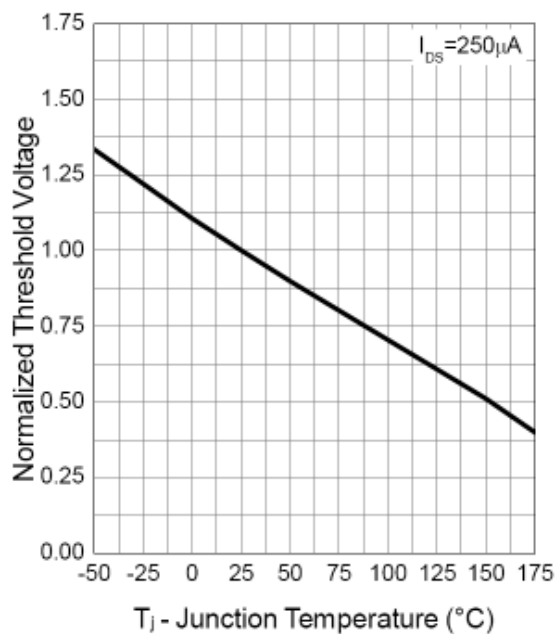
**Drain-Source On Resistance**



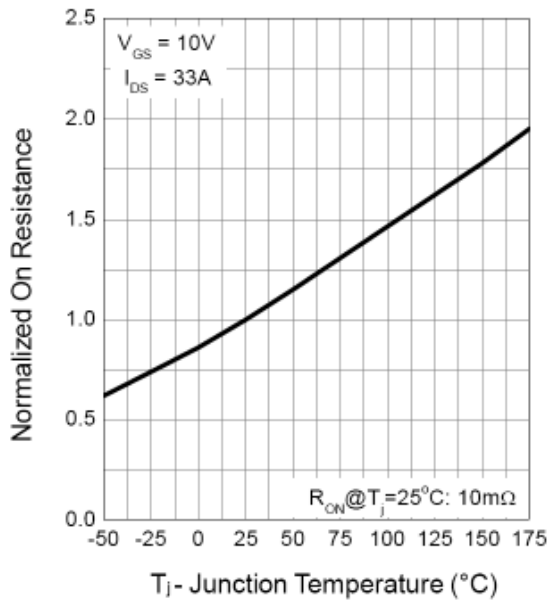
**Gate-Source On Resistance**



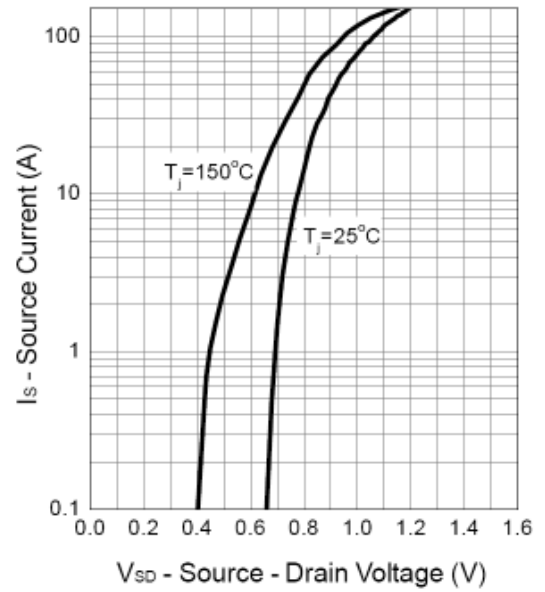
**Gate Threshold Voltage**



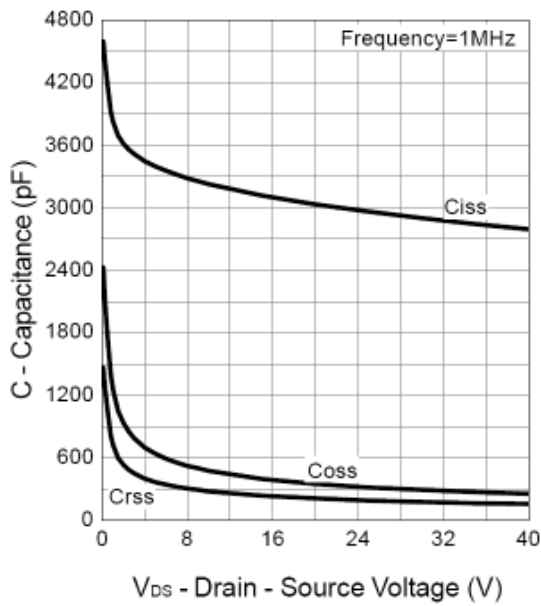
**Drain-Source On Resistance**



**Source-Drain Diode Forward**



**Capacitance**



**Gate Charge**

