

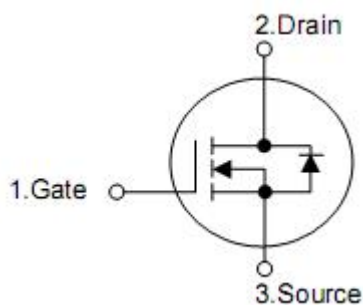
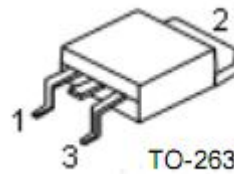
## 1. Features

- Uses advanced SGT technology
- Extremely low  $R_{DS(on)}$ .typ=4.5 mΩ@Vgs=10V
- Excellent gate charge x  $R_{DS(on)}$  product(FOM)

## 2. Description

- Motor Drives
- SR(Synchronous Rectification)
- DC/DC Converters
- General purpose applications

## 3. Pin configuration



Pin DFN5*6	Pin TO-252、TO-263	Function
4	1	Gate
5,6,7,8	2	Drain
1,2,3	3	Source

#### 4. Ordering Information

Part Number	Package	Brand
KCB3008A	TO-263	KIA
KCY3008A	DFN5*6	KIA
KCD3008A	TO-252	KIA

#### 5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter	Symbol	Ratings			Unit	
		TO-263	DFN5*6	TO-252		
Drain-to-Source Voltage	V <sub>DSS</sub>	85			V	
Continuous Drain Current	I <sub>D</sub>	T <sub>C</sub> =25 °C(Silicon limited)	160	100	100	A
		T <sub>C</sub> =25 °C(Package limited)	120	90	80	
		T <sub>C</sub> =100 °C(Silicon limited)	100	70	60	
Pulsed drain current (T <sub>C</sub> = 25°C, t <sub>p</sub> limited by T <sub>jmax</sub> )	I <sub>DP</sub>	480				
Avalanche energy, single pulse (L=0.5mH, R <sub>g</sub> =25Ω)	E <sub>AS</sub>	560			mJ	
Gate-Source voltage	V <sub>GS</sub>	±20			V	
Power dissipation (TC = 25 °C)	P <sub>tot</sub>	220	90	85	W	
Junction & Storage Temperature Range	T <sub>J</sub> & T <sub>STG</sub>	-55 to 175			°C	

#### 6. Thermal characteristics

Parameter	Symbol	Ratings			Units
		TO-263	DFN5*6	TO-252	
Thermal resistance, junction-ambient	R <sub>θJA</sub>	60	60	60	°C/W
Thermal resistance, Junction-case	R <sub>θJC</sub>	0.68	1.66	1.76	

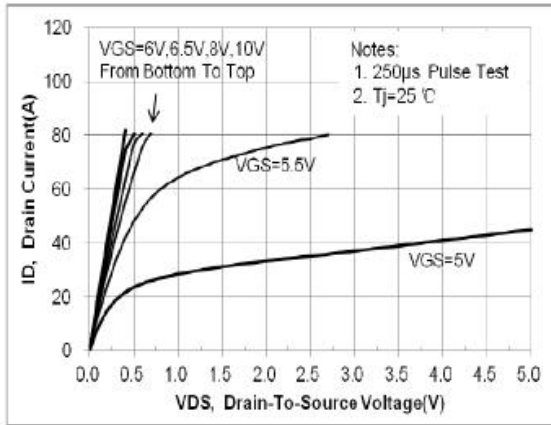
## 7. Electrical characteristics

(T<sub>J</sub>=25°C, unless otherwise notes)

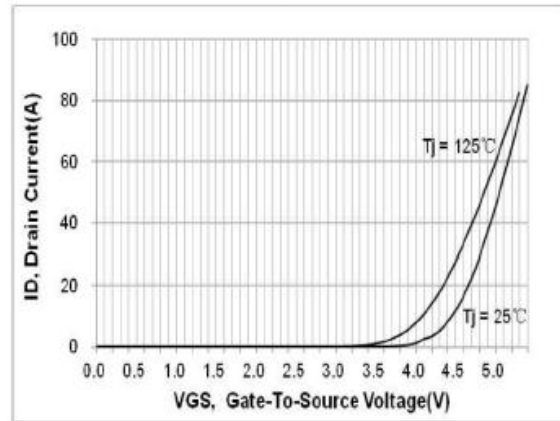
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	85	90	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =85V, V <sub>GS</sub> =0V, T <sub>J</sub> =25 °C	-	-	1	μA
		V <sub>DS</sub> =85V, V <sub>GS</sub> =0V, T <sub>J</sub> =125 °C	-	5	-	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA, T <sub>J</sub> =25 °C	2.0	3.0	4.0	V
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =20V, V <sub>DS</sub> =0V	-	-	100	nA
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =50A, T <sub>J</sub> =25 °C	-	4.5	5.5	mΩ
Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =50A	-	80	-	S
Dynamic characteristics						
Gate Resistance	R <sub>G</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V F=1MHz	-	1.5	-	Ω
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, F=1MHz	-	4030	-	pF
Output capacitance	C <sub>oss</sub>		-	545	-	pF
Reverse transfer capacitance	C <sub>rss</sub>		-	35	-	pF
Turn-on delay time	t <sub>d(on)</sub>		V <sub>DS</sub> =40V, T <sub>J</sub> =25 °C, V <sub>GS</sub> =10V, R <sub>L</sub> =3Ω	-	20	-
Rise time	t <sub>r</sub>	-		38	-	ns
Turn-off delay time	t <sub>d(off)</sub>	-		45	-	ns
Fall time	t <sub>f</sub>	-		20	-	ns
Gate Charge Characteristics						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =40V, I <sub>D</sub> =25A, V <sub>GS</sub> =10V, F=1MHz	-	65	-	nC
Gate-source charge	Q <sub>gs</sub>		-	25	-	nC
Gate-drain charge	Q <sub>gd</sub>		-	14	-	nC
Diode characteristics						
Diode forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>SD</sub> =50A	-	0.85	1.4	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =20A DI <sub>F</sub> /dt=500A/μs	-	60	-	ns
Reverse recovery charge	Q <sub>rr</sub>		-	340	-	nC

**8. Typical Characteristics**

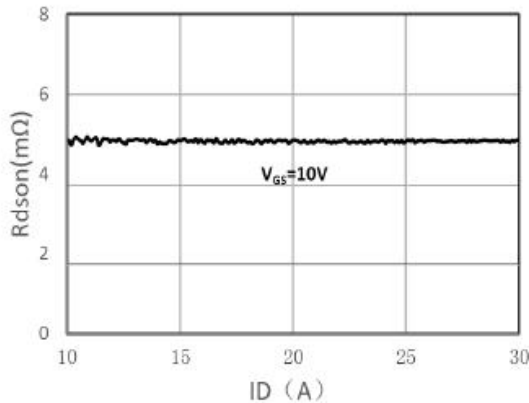
**Figure 1. Typ. Output Characteristics ( $T_j=25^\circ\text{C}$ )**



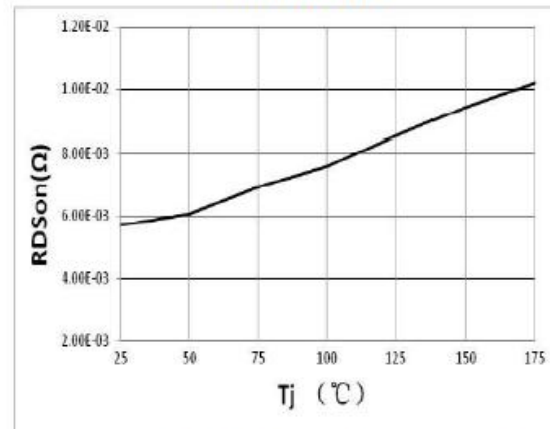
**Figure 2. Transfer Characteristics (Junction Temperature)**



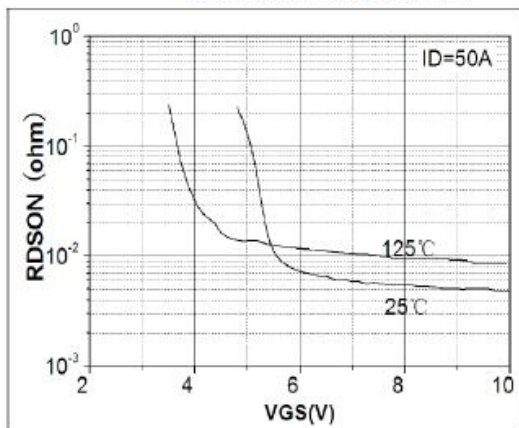
**Figure 3. On-Resistance vs. Drain Current and Gate Voltage Figure**



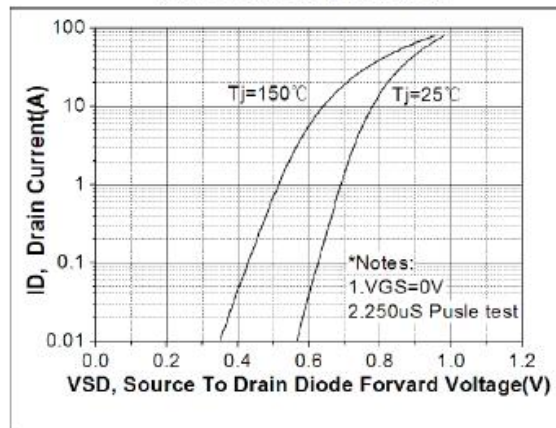
**Figure 4. On-Resistance vs. Junction Temperature**



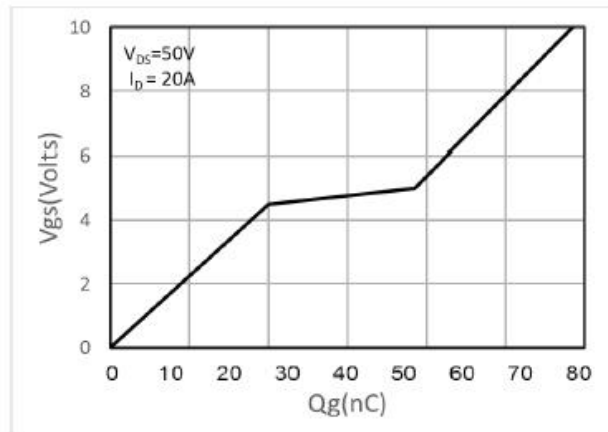
**Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)**



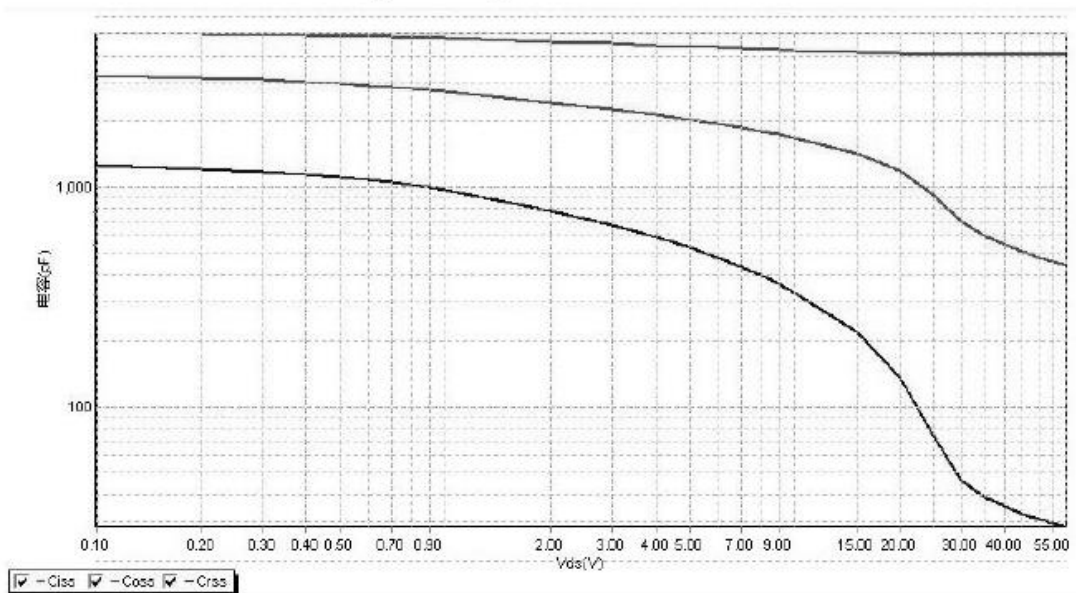
**Figure 6. Body-Diode Characteristics (Junction Temperature)**



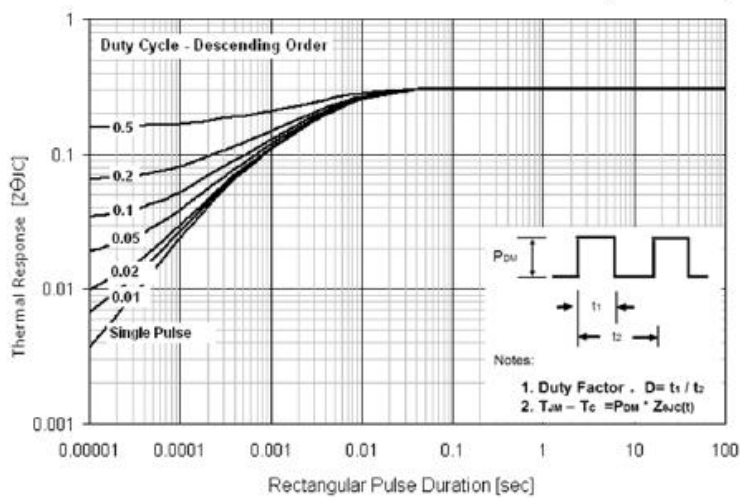
**Figure 7. Gate-Charge Characteristics**



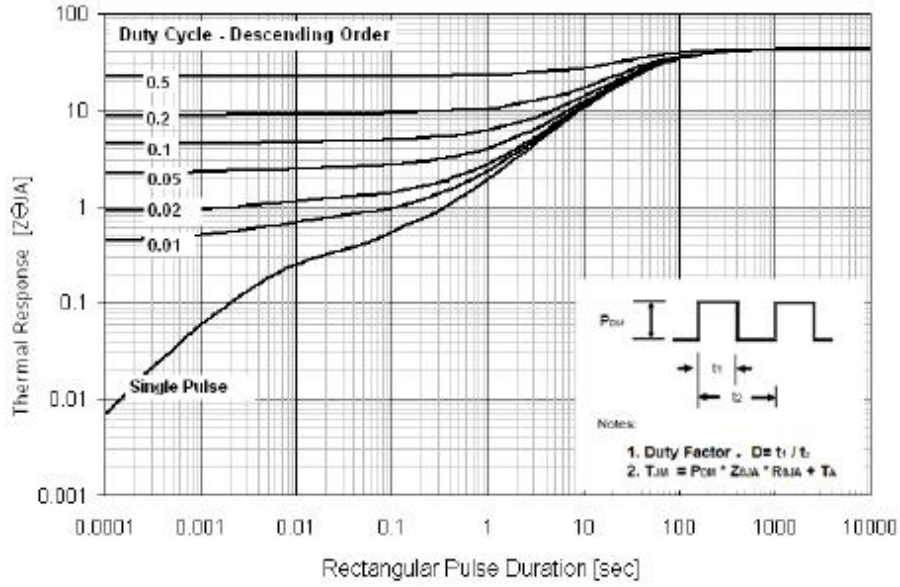
**Figure 8. Capacitance Characteristics**



**Figure 9: Normalized Maximum Transient Thermal Impedance ( $R_{thJC}$ )**



**Figure 10: Normalized Maximum Transient Thermal Impedance ( $R_{thJA}$ )**



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