

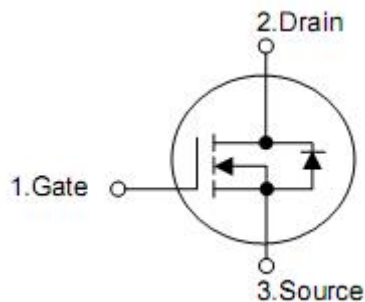
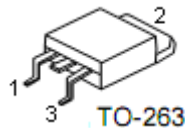
## 1. Features

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

## 2. Features

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

## 3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source

#### 4. Ordering Information

Part Number	Package	Brand
KCB3008A	TO-263	KIA

#### 5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		$V_{DSS}$	85	V
Continuous Drain Current	$T_C=25\text{ °C}$ (Silicon limited)	$I_D$	160	A
	$T_C=25\text{ °C}$ (Package limited)		120	
	$T_C=100\text{ °C}$ (Silicon limited)		100	
Pulsed drain current ( $T_C = 25\text{ °C}$ , $t_p$ limited by $T_{jmax}$ )		$I_{DP}$	480	
Avalanche energy, single pulse ( $L=0.5\text{mH}$ , $R_g=25\Omega$ )		$E_{AS}$	60	mJ
Gate-Source voltage		$V_{GS}$	$\pm 20$	V
Power dissipation ( $T_C = 25\text{ °C}$ )		$P_{tot}$	220	W
Junction & Storage Temperature Range		$T_J$ & $T_{STG}$	-55 to 175	°C

#### 6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient	$R_{\theta JA}$	0.7	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	60	

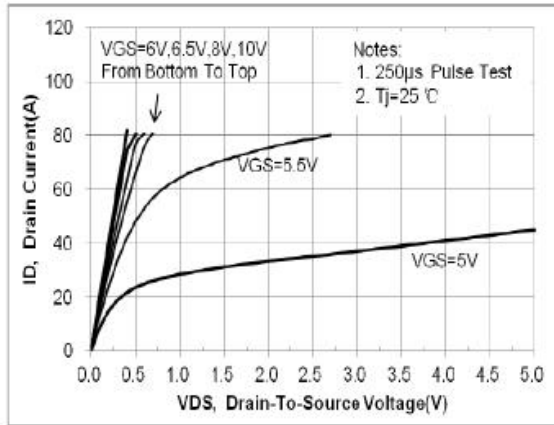
## 7. Electrical characteristics

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

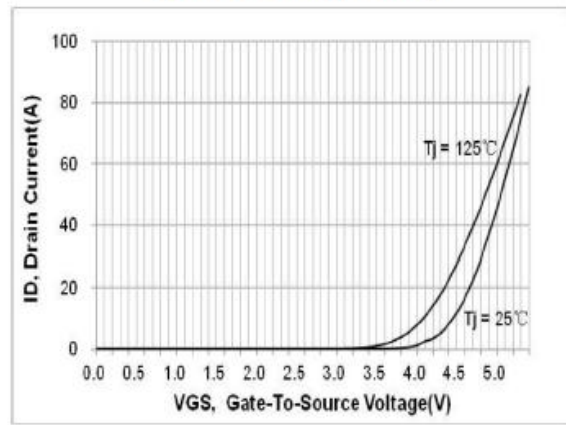
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	85	90	-	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =85V, V <sub>GS</sub> =0V, T <sub>J</sub> =25 °C	-	-	1	μA
		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	-	0.95	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**

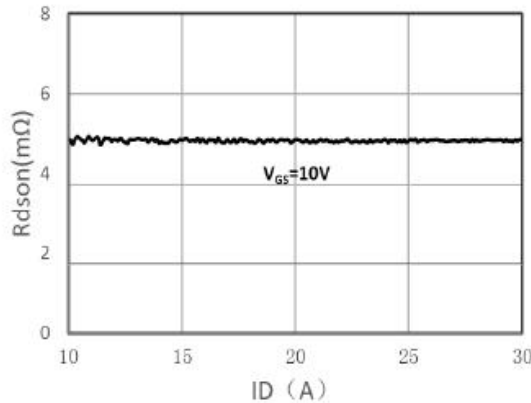
**Figure 1. Typ. Output Characteristics ( $T_j=25^\circ\text{C}$ )**



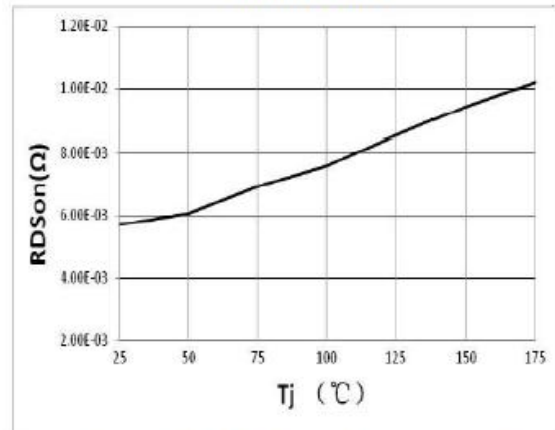
**Figure 2. Transfer Characteristics (Junction Temperature)**



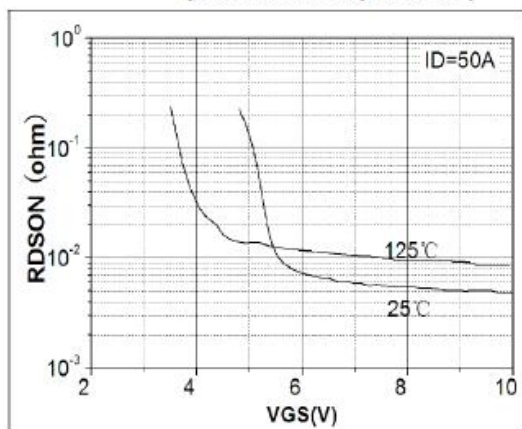
**Figure 3. On-Resistance vs. Drain Current and Gate Voltage Figure**



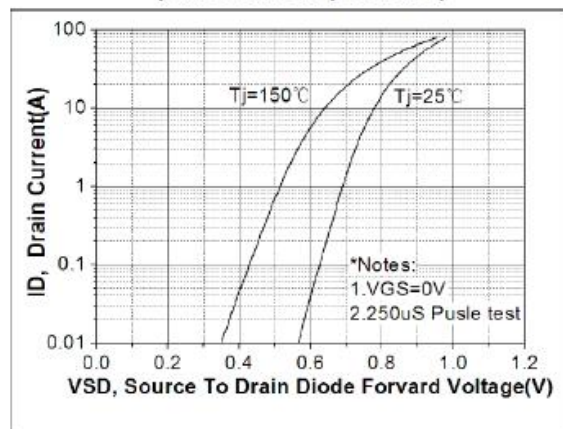
**Figure 4. On-Resistance vs. Junction Temperature**



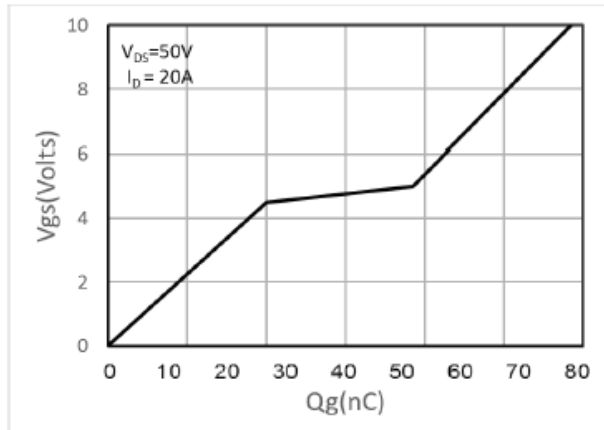
**Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)**



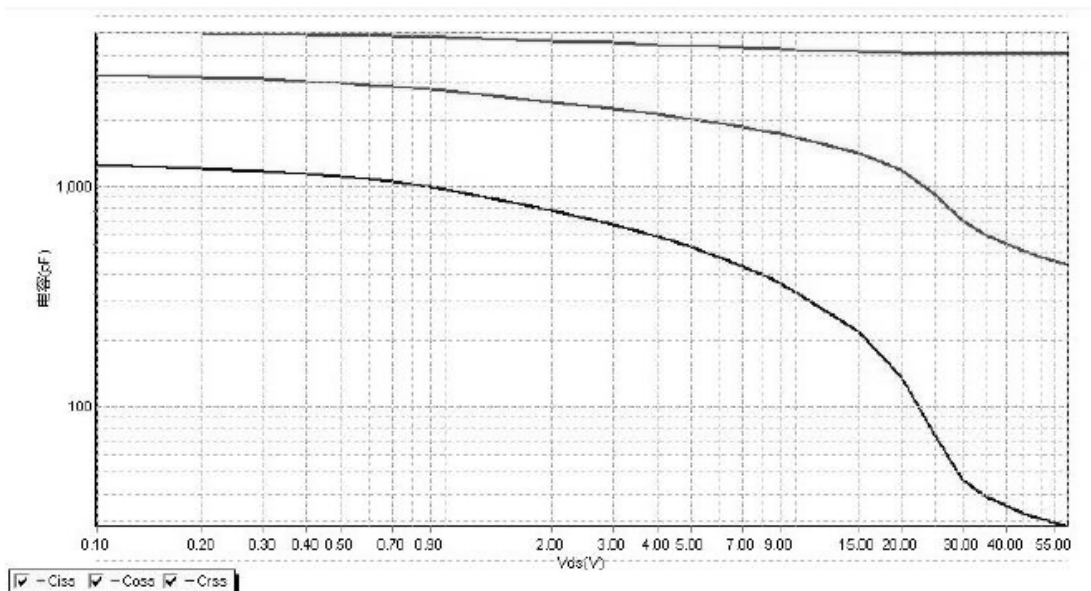
**Figure 6. Body-Diode Characteristics (Junction Temperature)**



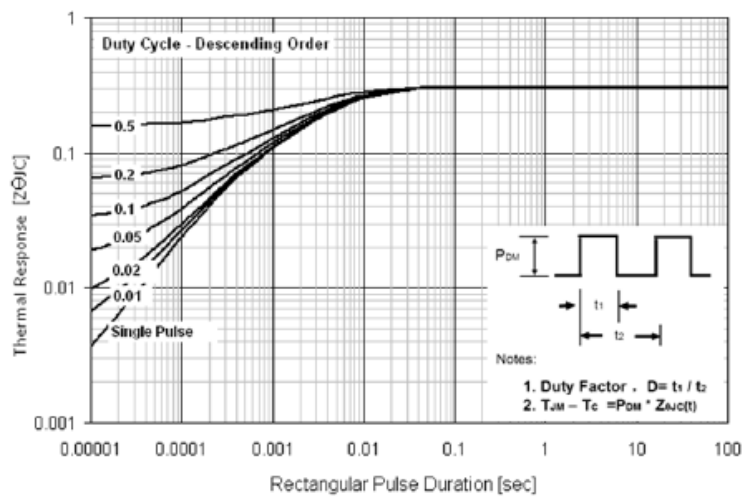
**Figure 7. Gate-Charge Characteristics**



**Figure 8. Capacitance Characteristics**



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



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

