

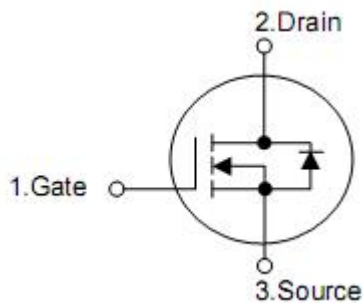
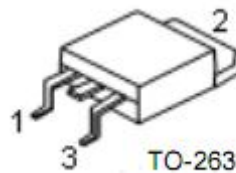
## 1. Features

- Uses advanced SGT technology
- Extremely low  $R_{DS(on)}$ .typ=4.5 m $\Omega$ @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	Function
1	Gate
2	Drain
3	Source

## 4. Ordering Information

Part Number	Package	Brand
KCB3008B	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	$I_D$	$T_C=25\text{ °C}$ (Silicon limited)	160
		$T_C=25\text{ °C}$ (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 ( $L=0.5\text{mH}$ , $R_g=25\Omega$ )	$E_{AS}$	560	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

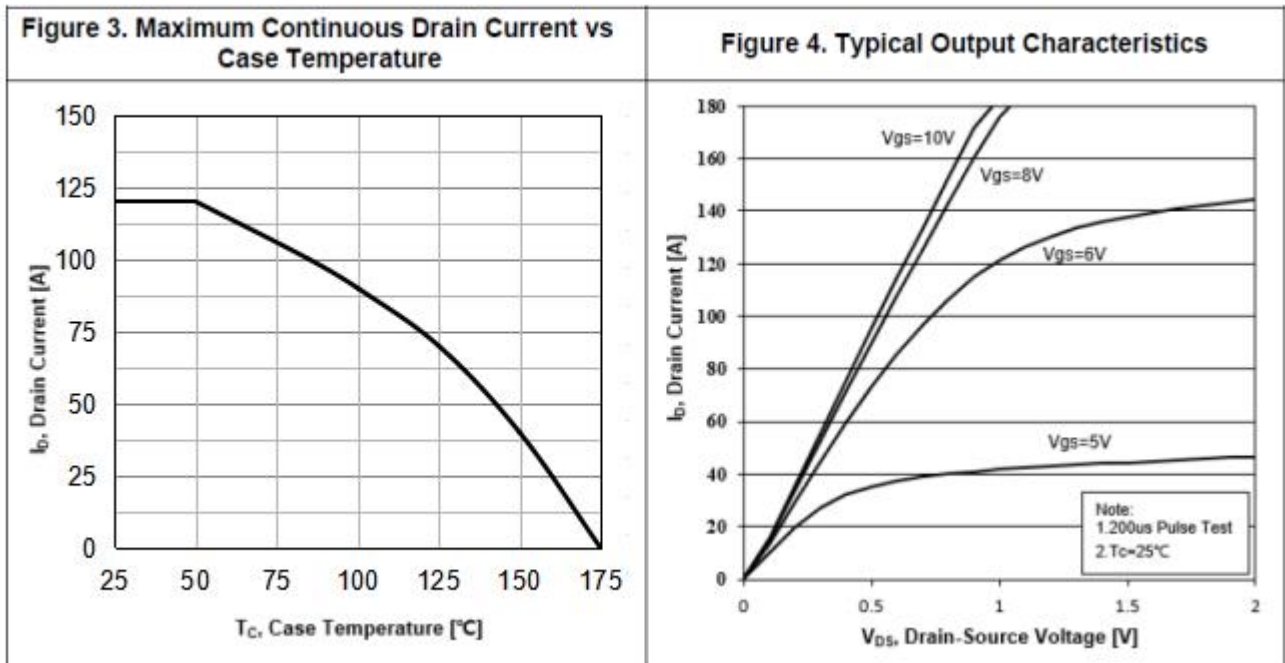
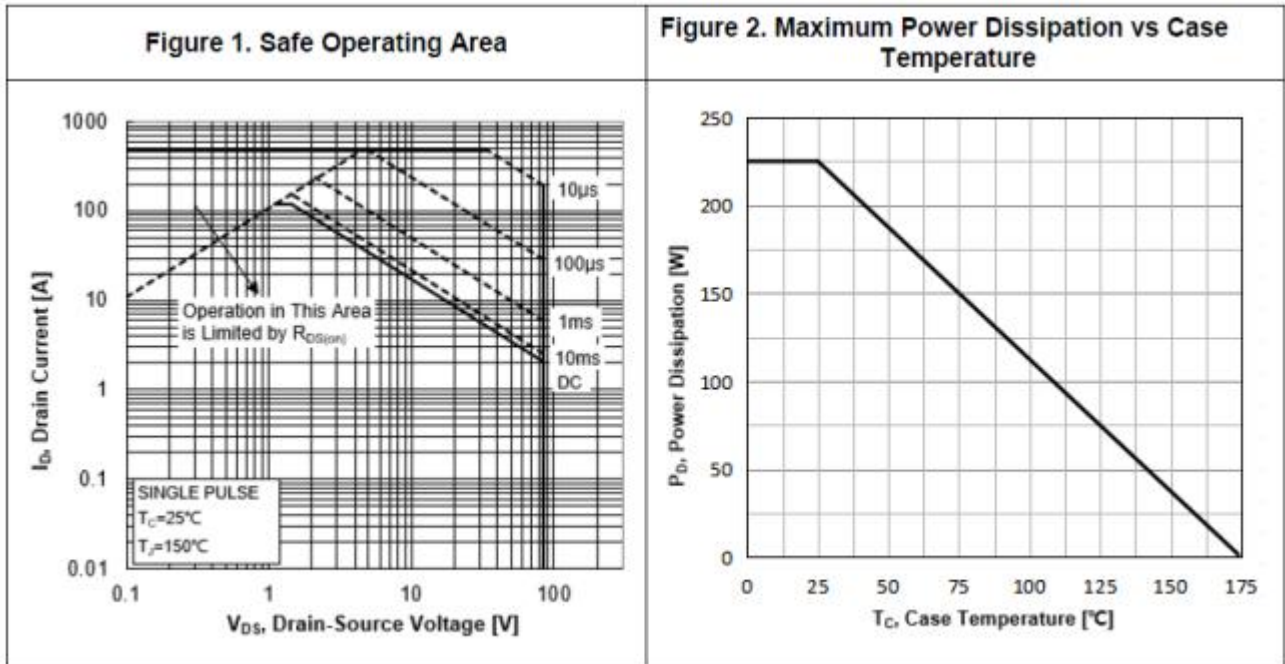
Parameter	Symbol	Ratings	Units
Thermal resistance, junction-ambient	$R_{\theta JA}$	60	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	0.68	

## 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> =68V, 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
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	-	2.0	-	Ω
Input capacitance	C <sub>iSS</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, F=1MHz	-	4050	-	pF
Output capacitance	C <sub>oss</sub>		-	650	-	pF
Reverse transfer capacitance	C <sub>rSS</sub>		-	20	-	pF
Turn-on delay time	t <sub>d(on)</sub>		-	21	-	ns
Rise time	t <sub>r</sub>	V <sub>DS</sub> =40V, T <sub>J</sub> =25 °C, I <sub>D</sub> =50A, V <sub>GS</sub> =10V, R <sub>L</sub> =3Ω	-	41	-	ns
Turn-off delay time	t <sub>d(off)</sub>		-	47	-	ns
Fall time	t <sub>f</sub>		-	25	-	ns
Gate Charge Characteristics						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =40V, I <sub>D</sub> =50A, V <sub>GS</sub> =10V, F=1MHz	-	80	-	nC
Gate-source charge	Q <sub>gs</sub>		-	23	-	nC
Gate-drain charge	Q <sub>gd</sub>		-	24	-	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=100A/μs	-	60	-	ns
Reverse recovery charge	Q <sub>rr</sub>		-	136	-	uC

8. Typical Characteristics



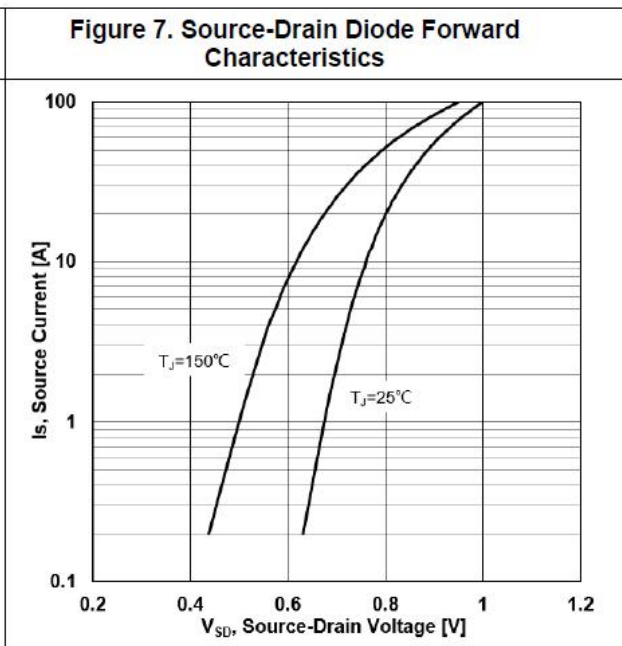
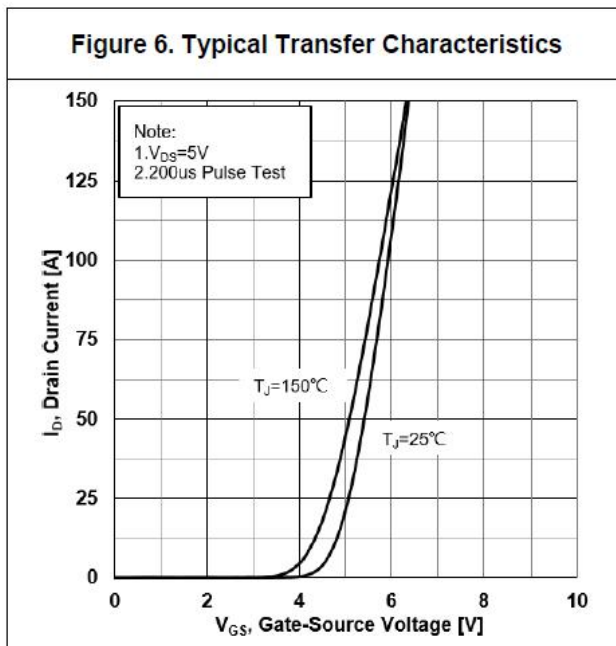
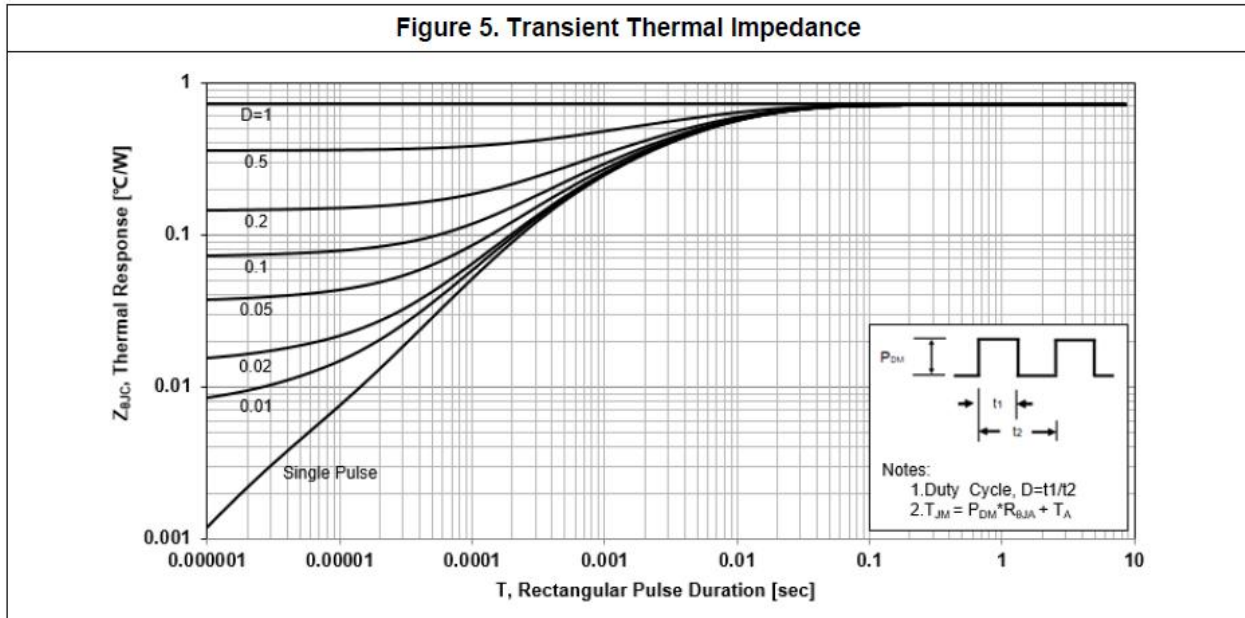


Figure 8. Drain-Source On-Resistance vs Drain Current

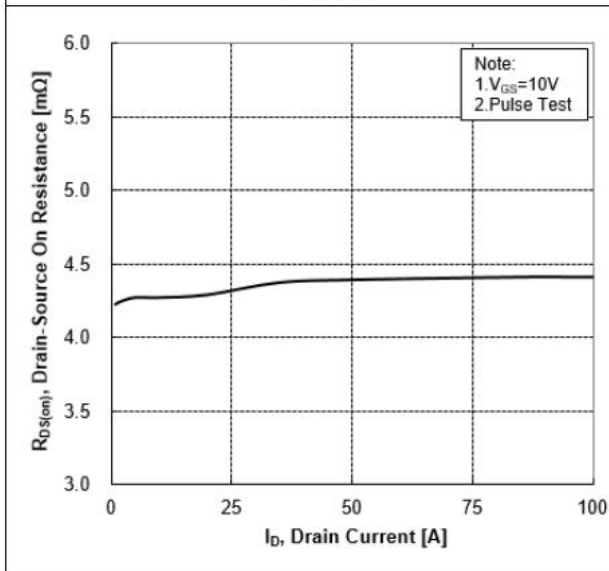


Figure 9. Normalized On-Resistance vs Junction Temperature

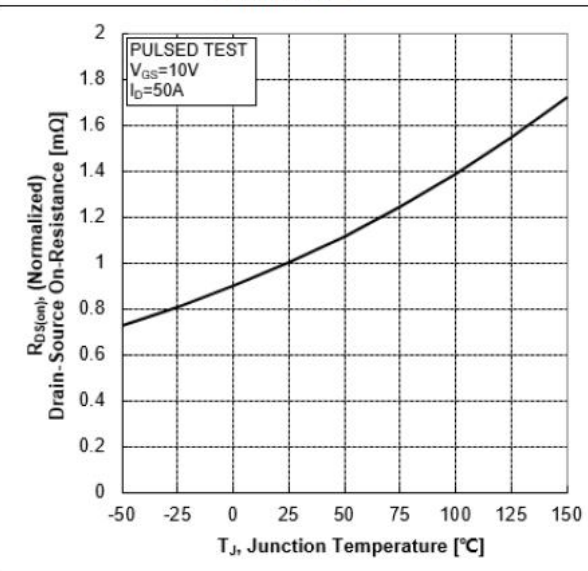


Figure 10. Normalized Threshold Voltage vs Junction Temperature

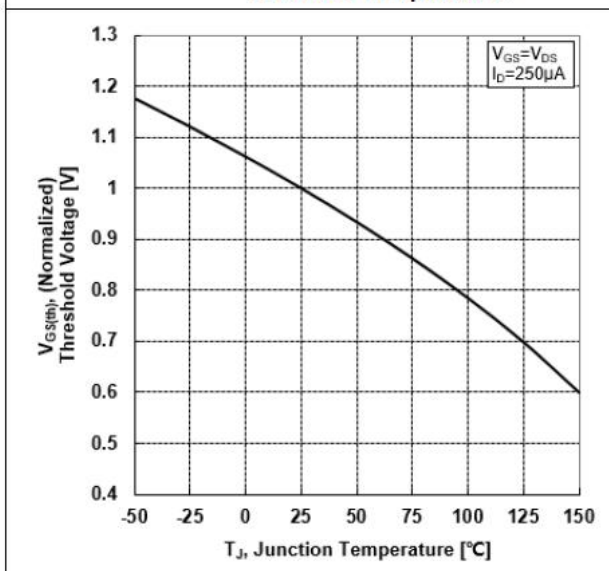


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

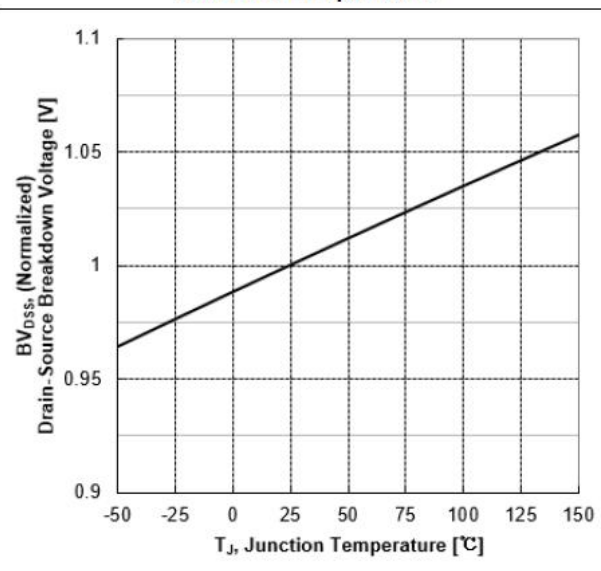


Figure 12. Capacitance Characteristics

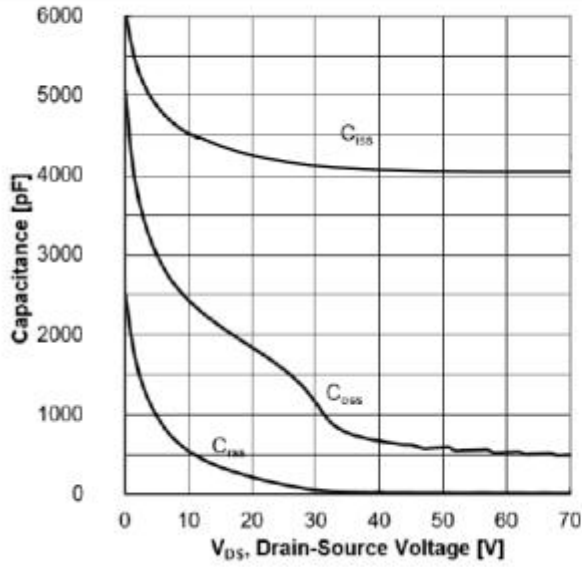


Figure 13. Typical Gate Charge vs Gate-Source Voltage

