

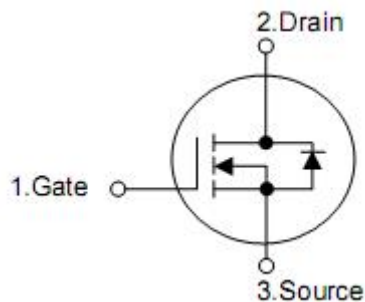
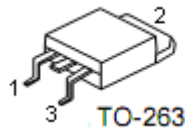
1. Features

- n Uses advanced SGT technology
- n Extremely low $R_{DS(on)}$.typ=4.5 m Ω @Vgs=10V
- n Excellent gate charge x $R_{DS(on)}$ 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}	± 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_J=25°C, unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	85	90	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =85V, V _{GS} =0V, T _J =25 °C	-	-	1	μA
		V _{DS} =85V, V _{GS} =0V, T _J =125 °C	-	5	-	
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA, T _J =25 °C	2.0	3.0	4.0	V
Gate leakage current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	-	-	100	nA
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A, T _J =25 °C	-	4.5	5.5	mΩ
Transconductance	g _{fs}	V _{DS} =5V, I _D =50A	-	80	-	S
Dynamic characteristics						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V F=1MHz	-	1.5	-	Ω
Input capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V, F=1MHz	-	4030	-	pF
Output capacitance	C _{oss}		-	545	-	pF
Reverse transfer capacitance	C _{rss}		-	35	-	pF
Turn-on delay time	t _{d(on)}		V _{DS} =40V, T _J =25 °C, V _{GS} =10V, R _L =3Ω	-	20	-
Rise time	t _r	-		38	-	ns
Turn-off delay time	t _{d(off)}	-		45	-	ns
Fall time	t _f	-		20	-	ns
Gate Charge Characteristics						
Total gate charge	Q _g	V _{DS} =40V, I _D =25A, V _{GS} =10V, F=1MHz	-	65	-	nC
Gate-source charge	Q _{gs}		-	25	-	nC
Gate-drain charge	Q _{gd}		-	14	-	nC
Diode characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =50A	-	0.95	1.4	V
Reverse recovery time	t _{rr}	I _F =20A DI _F /dt=500A/μs	-	60	-	ns
Reverse recovery charge	Q _{rr}		-	340	-	nC

8. Typical Characteristics

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

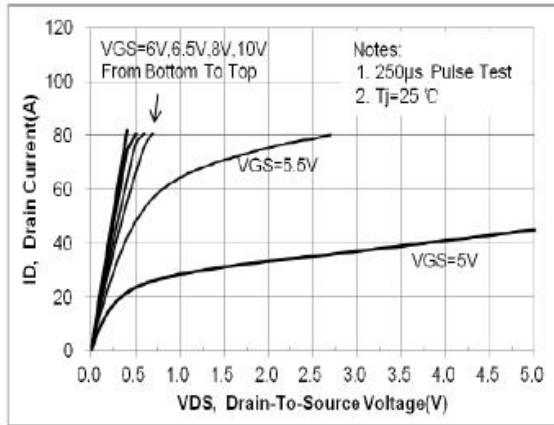


Figure 2. Transfer Characteristics (Junction Temperature)

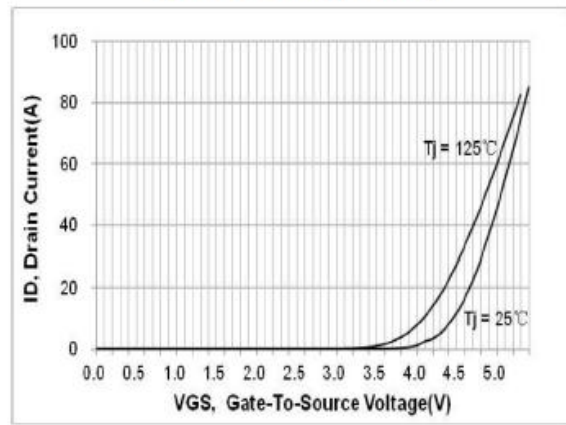


Figure 3. On-Resistance vs. Drain Current and Gate Voltage Figure

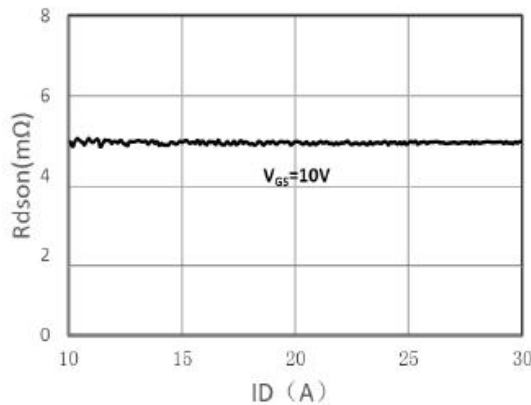


Figure 4. On-Resistance vs. Junction Temperature

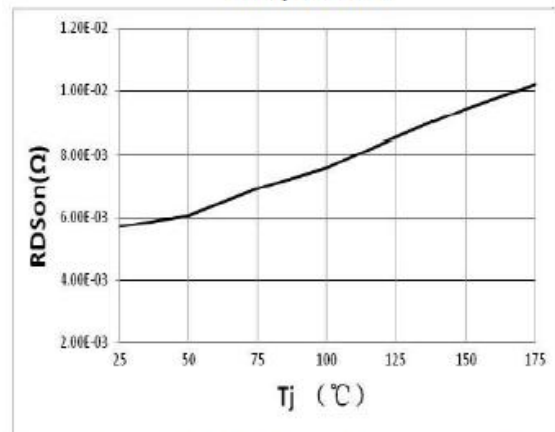


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

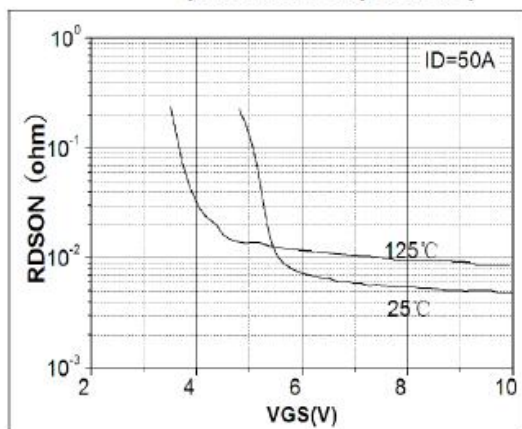


Figure 6. Body-Diode Characteristics (Junction Temperature)

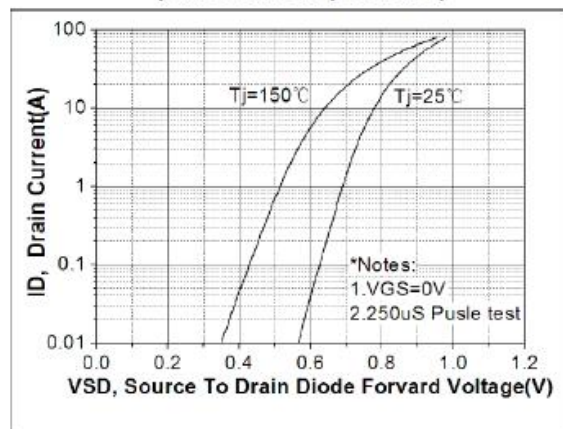


Figure 7. Gate-Charge Characteristics

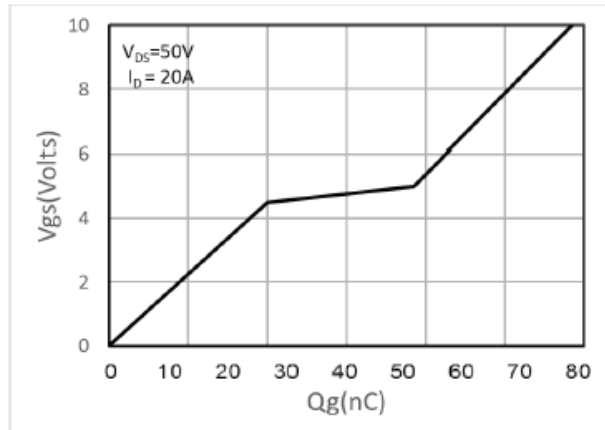


Figure 8. Capacitance Characteristics

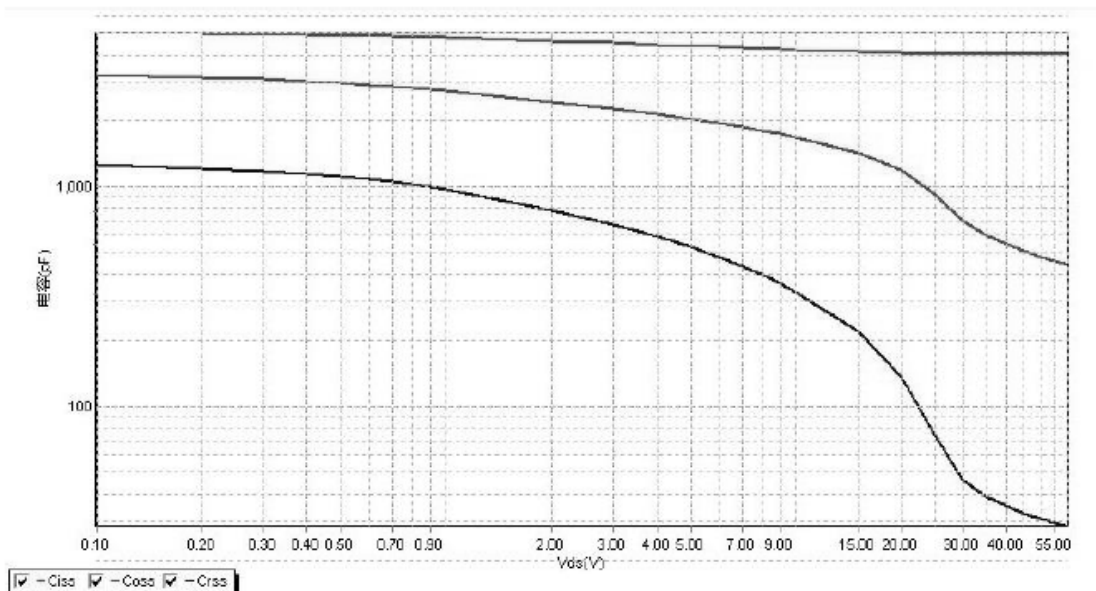


Figure 9: Normalized Maximum Transient Thermal Impedance (R_{thJC})

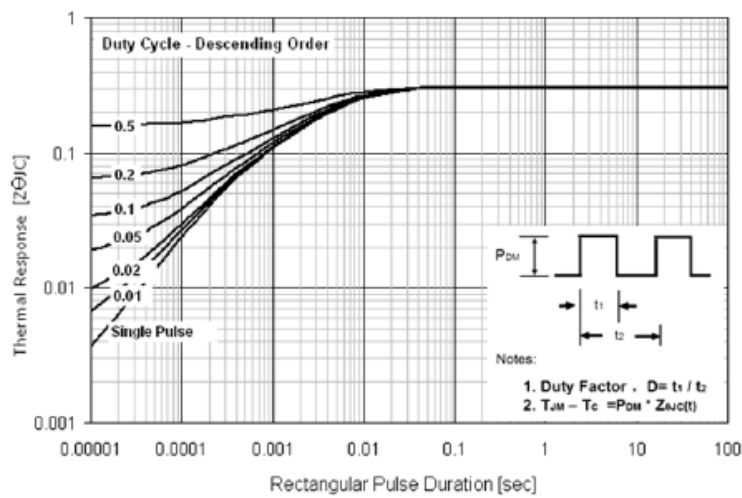
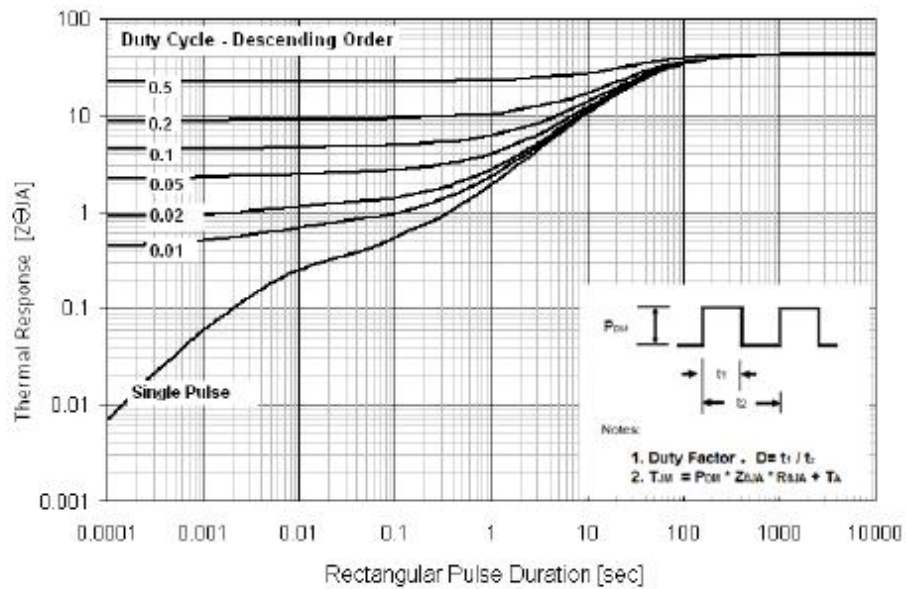


Figure 10: Normalized Maximum Transient Thermal Impedance (R_{thJA})



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