1. Features

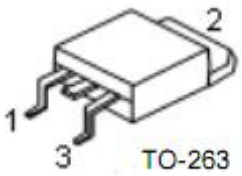
- Low RDS(on) & FOM
- Extremely low switching loss
- Uses advanced SGT technology
- Excellent stability and uniformity
- Fast switching and soft recovery

2. Features

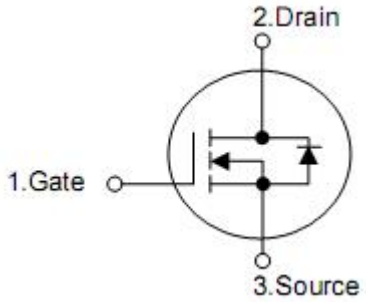
- Power switching application
- Low On-Resistance (typ.) RDS(on)=5.0mΩ
- Hard switched and high frequency circuits
- Uninterruptible power supply

3. Pin configuration

DFN5*6



TO-263



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

4. Ordering Information

Part Number	Package	Brand
KCB3310A	TO-263	KIA
KCY3310A	DFN5*6	KIA

5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter		Symbol	Ratings		Unit
			TO-263	DFN5*6	
Drain-to-Source Voltage		V_{DSS}	100		V
Continuous Drain Current	T_C=25 °C	I_D	90	85	A
	T_C=100 °C		57	56	
Pulsed drain current(note1)		I_{DM}	360	340	
Avalanche energy(note2)		E_{AS}	529		mJ
Gate-Source voltage		V_{GS}	±20		V
Power dissipation(note3)	T_C=25 °C	P_D	166	90	W
	T_C=100 °C		66.4	36	
Junction & Storage Temperature Range		T_J& T_{STG}	-55 to 150		°C

6. Thermal characteristics

Parameter		Symbol	Ratings		Units
			TO-263	DFN5*6	
Thermal resistance, junction-ambient(note4)	t≤10S	$R_{\theta JA}$	15	20	°C/W
Thermal resistance, junction-ambient(note4)	Steady-State		60	50	
Thermal resistance, Junction-case	Steady-State	$R_{\theta JC}$	0.75	1.38	

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	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V , V_{GS}=0V	-	-	1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	2.8	4	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=20A	-	5.0	5.8	mΩ
Dynamic characteristics						
Gate Resistance	R_G	Frequency=1MHz,open drain	-	0.9	-	Ω
Input capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V, F=1MHz	-	4600	-	pF
Output capacitance	C_{oss}		-	1250	-	pF
Reverse transfer capacitance	C_{rss}		-	43	-	pF
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V,I_D=20A, V_{GS}=10V,R_G=2.2Ω	-	17.6	-	ns
Rise time	t_r		-	30.2	-	ns
Turn-off delay time	$t_{d(off)}$		-	33.6	-	ns
Fall time	t_f		-	39.6	-	ns
Gate Charge Characteristics						
Total gate charge	Q_g	V_{DS}=50V,I_D=20A, V_{GS}=10V, F=1MHz	-	66	-	nC
Gate-source charge	Q_{gs}		-	23	-	nC
Gate-drain charge	Q_{gd}		-	6.6	-	nC
Diode characteristics						
Diode forward voltage	V_{SD}	V_{GS}=0V,I_S=20A	-	-	1.3	V
Body Diode Continuous Forward Current	I_S		-	-	90	A
Reverse recovery time	t_{rr}	I_F=20A DI$_F$/dt=100A/μs	-	65	-	ns
Reverse recovery charge	Q_{rr}		-	90	-	nC

NOTE:

1.Repetitive rating; pulse width limited by max. junction temperature.
2.V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=46A.
3. Pd is based on max. junction temperature, using junction-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C. The Power dissipation PDSM is based on RθJA t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given applicationdepends on the user's specific board design.

8. Typical Characteristics

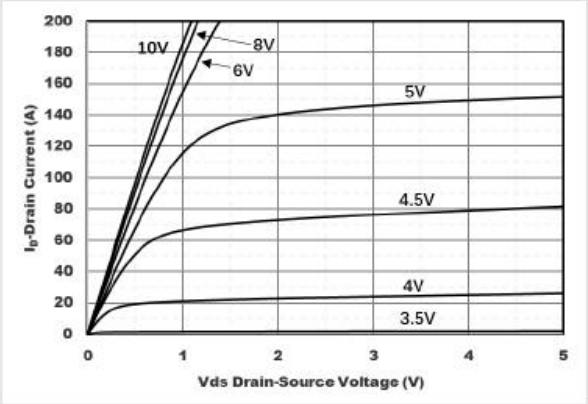


Figure1. Output Characteristics

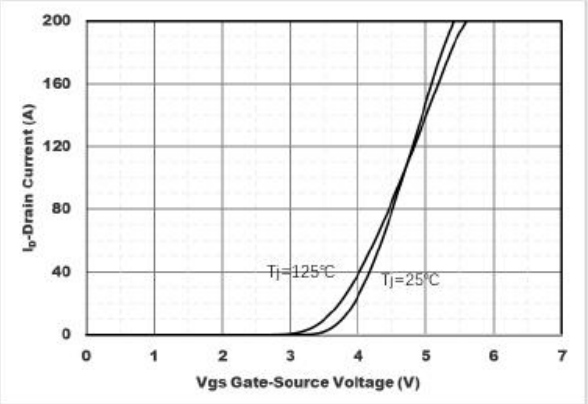


Figure2. Transfer Characteristics

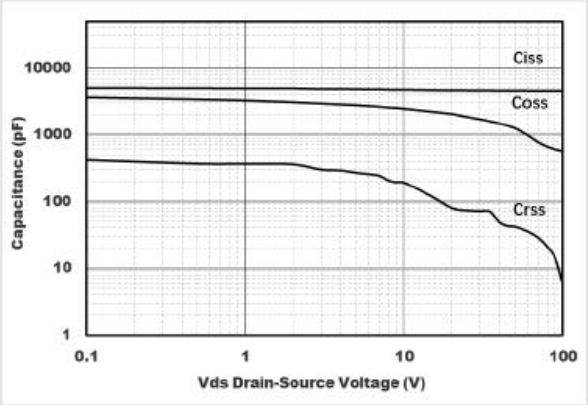


Figure3. Capacitance Characteristics

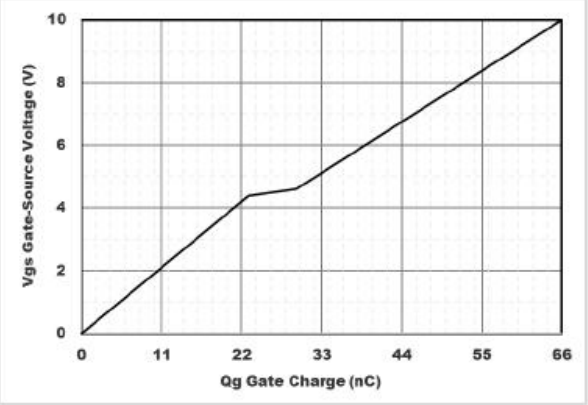


Figure4. Gate Charge

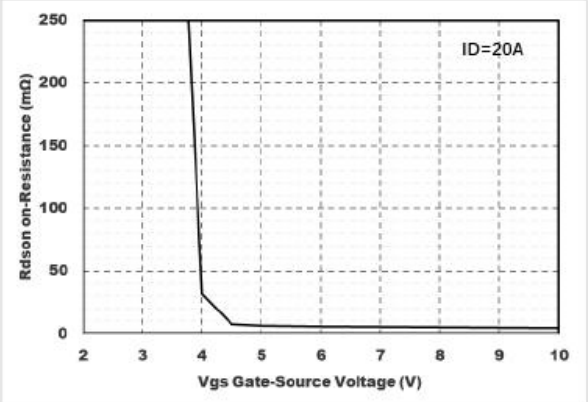


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

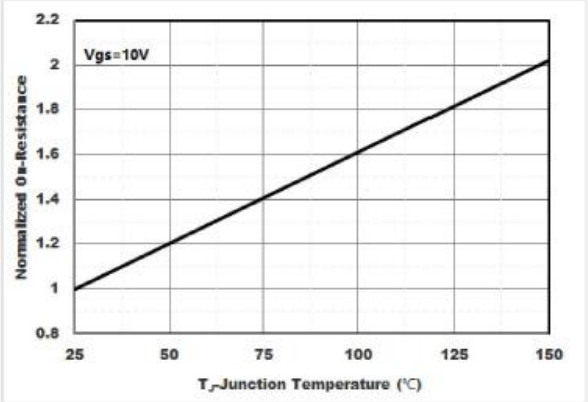
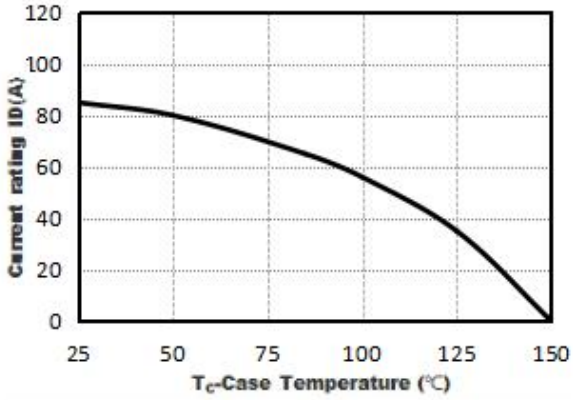
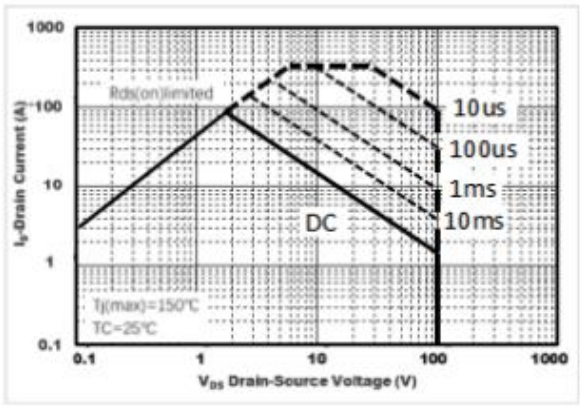


Figure6.Normalized On-Resistance





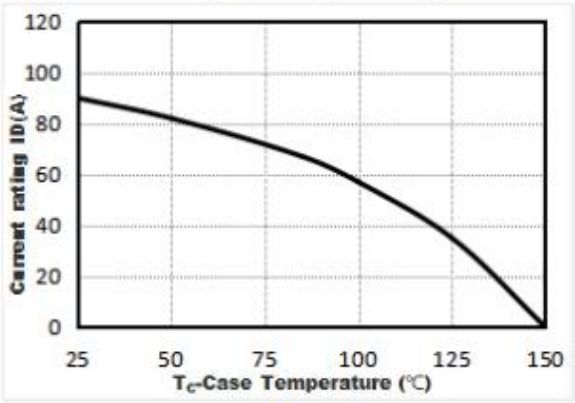


Figure7. Drain current

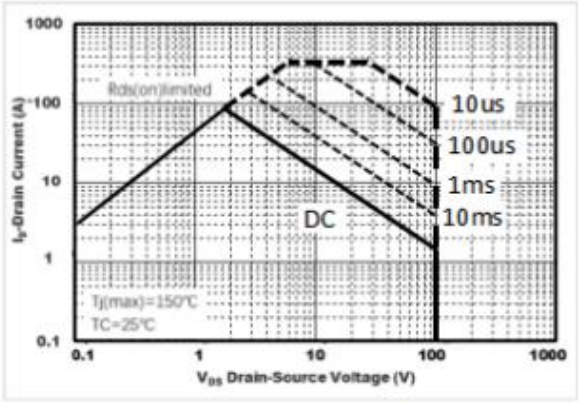
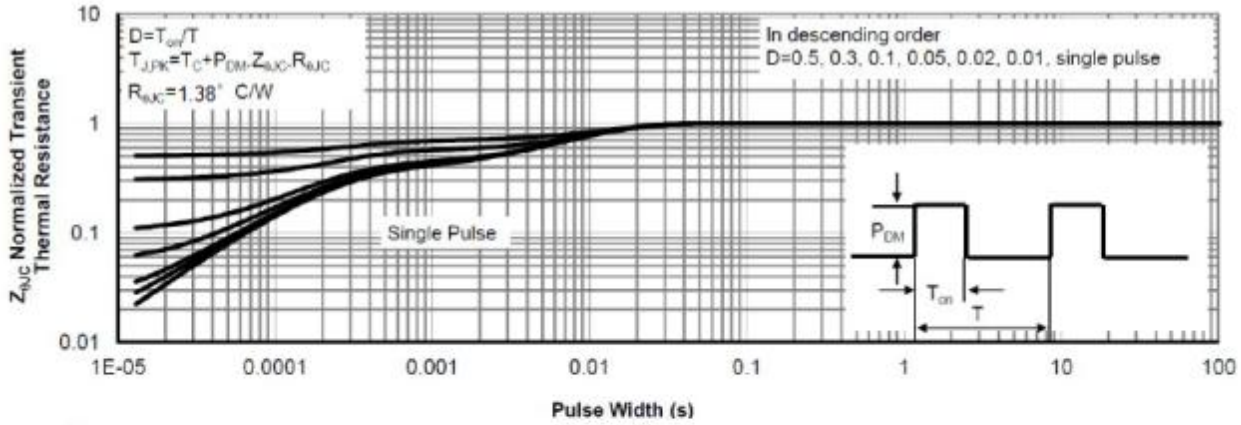


Figure8.Safe Operation Area



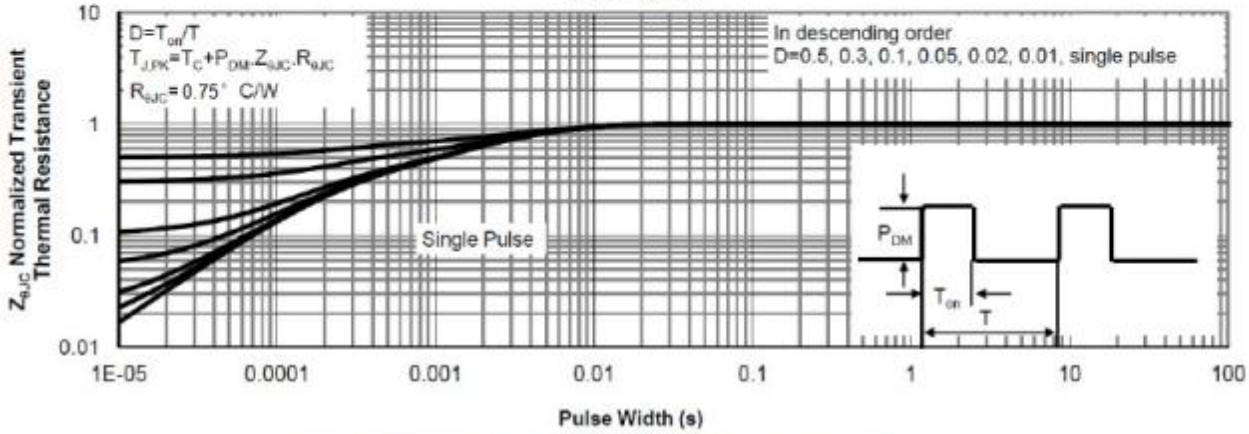


Figure9.Normalized Maximum Transient thermal impedance

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