

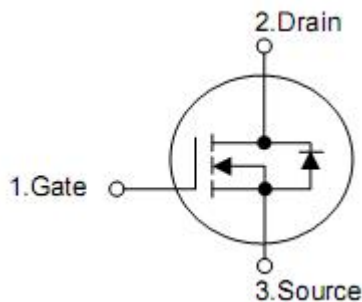
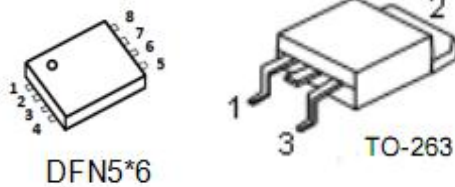
1. Features

- 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



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	I_D	$T_C=25\text{ °C}$	90	85	A
		$T_C=100\text{ °C}$	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)	P_D	$T_C=25\text{ °C}$	166	90	W
		$T_C=100\text{ °C}$	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)	$t \leq 10S$	$R_{\theta JA}$	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	-
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_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The Power dissipation P_{DSM} is based on R_{θJA} t ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

8. Typical Characteristics

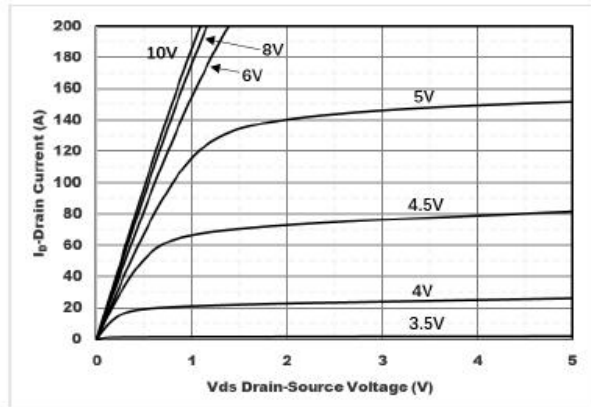


Figure1. Output Characteristics

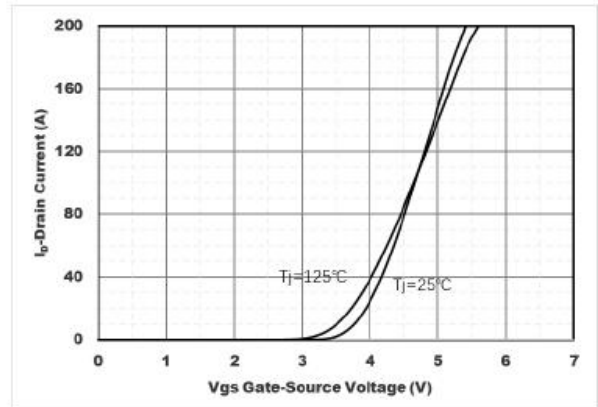


Figure2. Transfer Characteristics

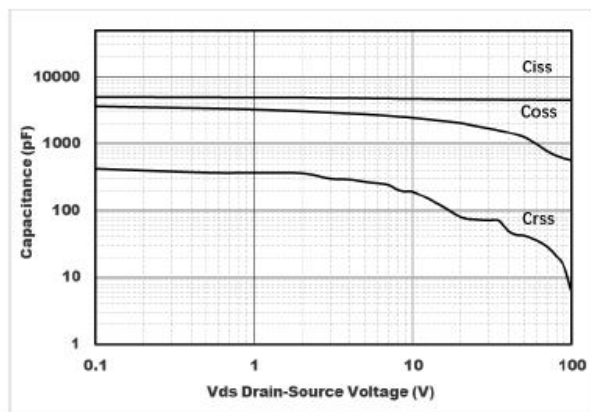


Figure3. Capacitance Characteristics

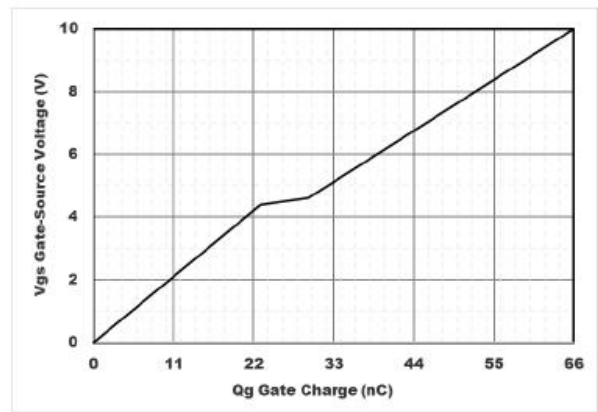


Figure4. Gate Charge

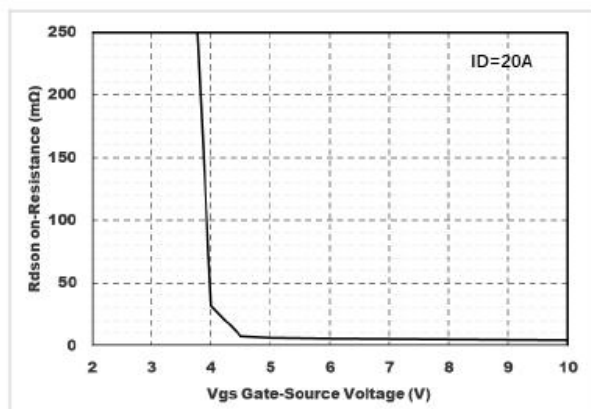


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

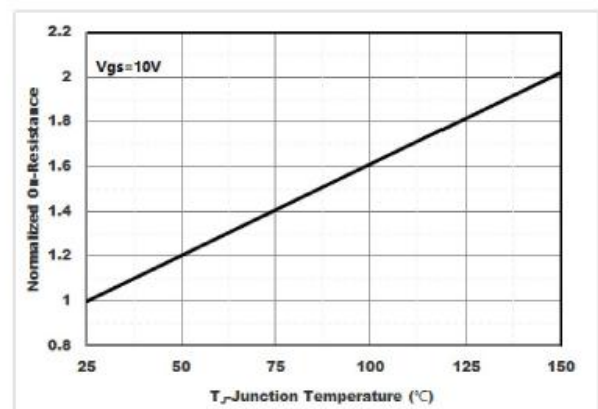


Figure6. Normalized On-Resistance

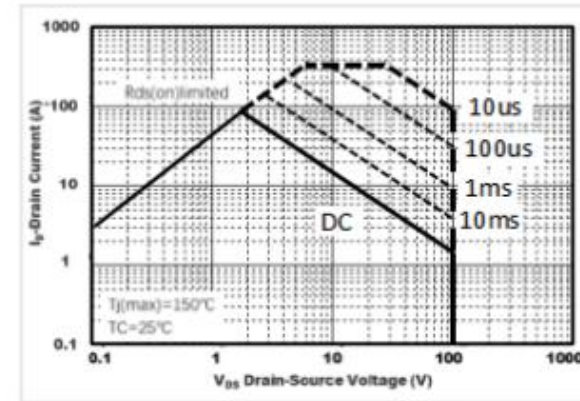
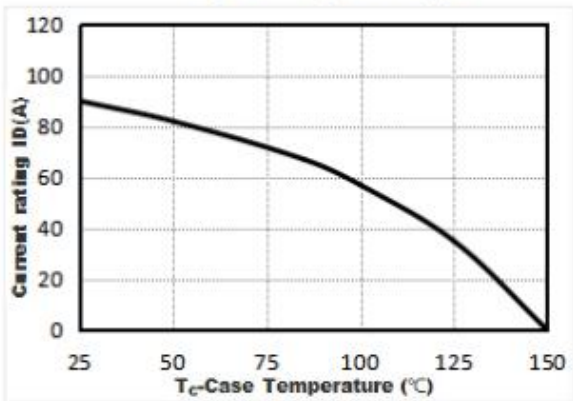
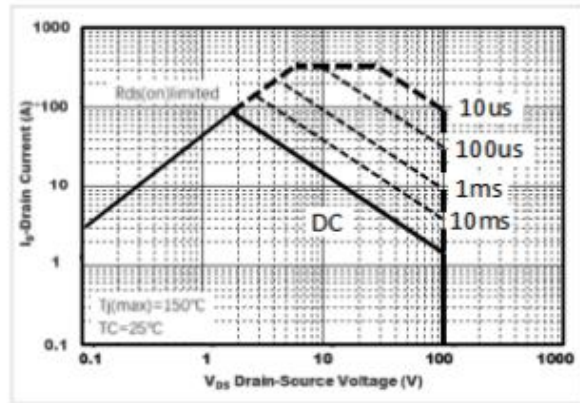
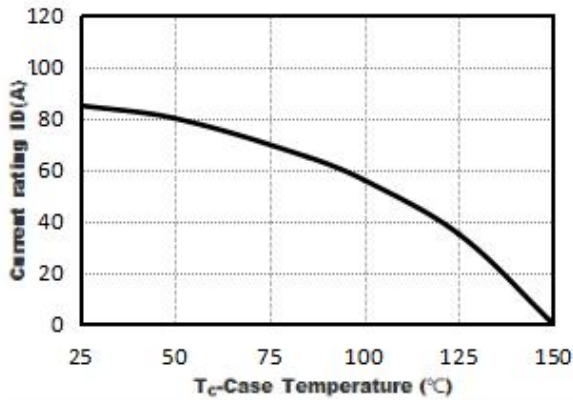


Figure7. Drain current

Figure8.Safe Operation Area

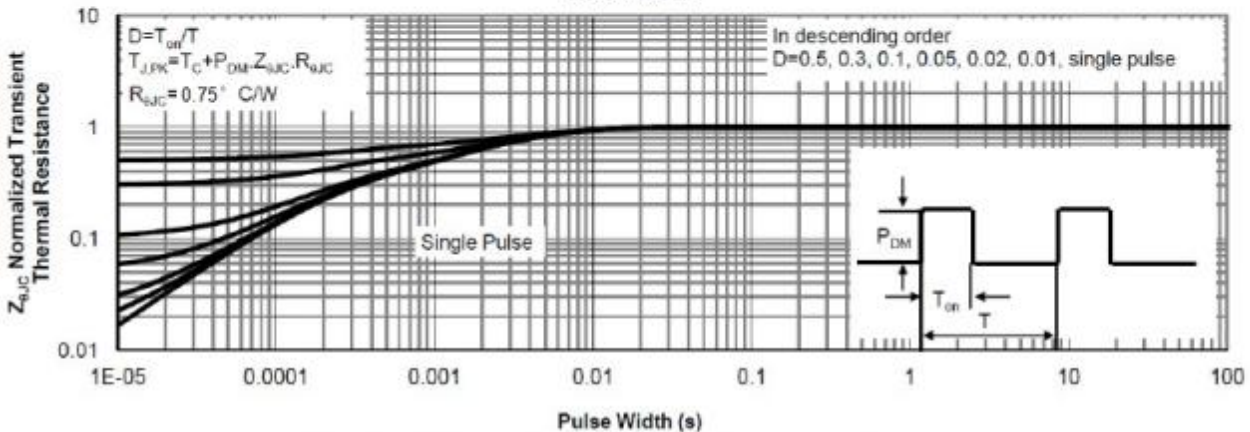
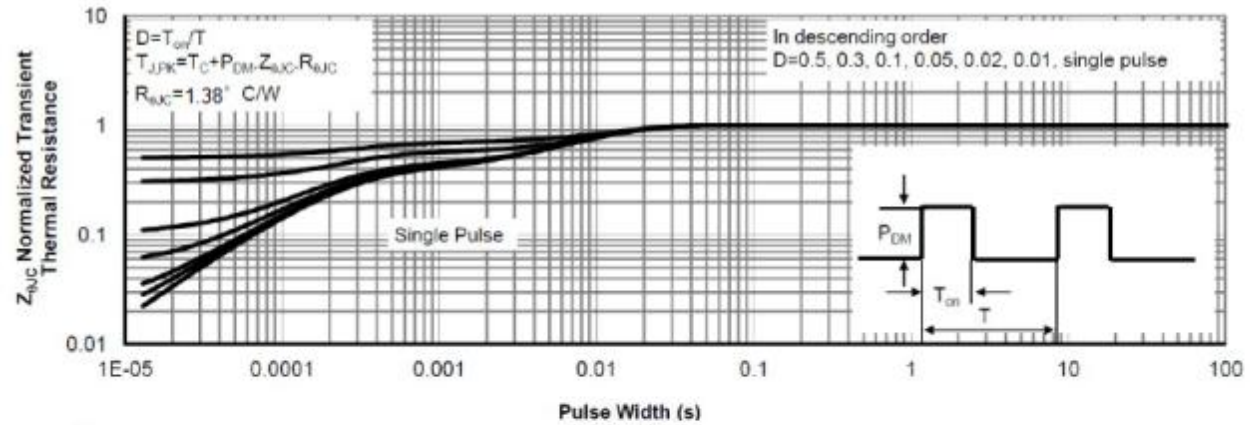


Figure9.Normalized Maximum Transient thermal impedance