

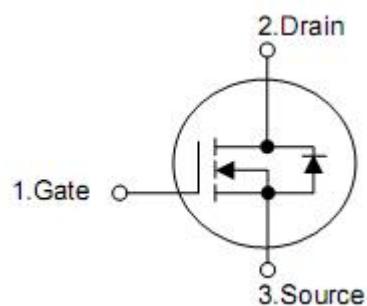
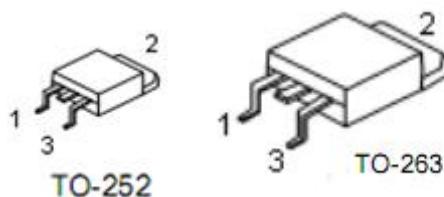
1. Features

- Uses advanced SGT technology
- Extremely low RDS(on).typ=3.7 mΩ@Vgs=10V
- Excellent gate charge x RDS(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
KCB2908A	TO-263	KIA
KCD2908A	TO-252	KIA

5. Absolute maximum ratings

TC=25 °C unless otherwise specified

Parameter	Symbol	Ratings		Unit
		TO-263	TO-252	
Drain-to-Source Voltage	V _{DSS}	85		V
Continuous Drain Current T _C =25 °C	I _D	130	110	A
T _C =100 °C		78	66	
Pulsed drain current (T _C = 25°C, t _p limited by T _{jmax})	I _{DP}	480		
Avalanche energy, single pulse (L=0.5mH, R _g =25Ω)	E _{AS}	625		mJ
Gate-Source voltage	V _{GS}	±20		V
Power dissipation (TC = 25 °C)	P _{tot}	238	85	W
Junction & Storage Temperature Range	T _J & T _{STG}	-55 to 175		°C

6. Thermal characteristics

Parameter	Symbol	Ratings		Units
		TO-263	TO-252	
Thermal resistance, junction-ambient	R _{θJA}	60	60	°C/W
Thermal resistance, Junction-case	R _{θJC}	0.63	1.76	

7. Electrical characteristics

($T_J=25^\circ\text{C}$, unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	85	90	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}}=85\text{V}, V_{\text{GS}}=0\text{V}, T_j=25^\circ\text{C}$	-	-	1	μA
		$V_{\text{DS}}=85\text{V}, V_{\text{GS}}=0\text{V}, T_j=125^\circ\text{C}$	-	-	5	
Gate threshold voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}, T_j=25^\circ\text{C}$	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	$V_{\text{GS}}=20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	100	nA
Drain-source on-resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=40\text{A}$ (TO-252)	-	4.3	5.0	$\text{m}\Omega$
		$V_{\text{GS}}=10\text{V}, I_{\text{D}}=40\text{A}$ (TO-263)	-	3.7	4.6	$\text{m}\Omega$
Transconductance	g_{fs}	$V_{\text{DS}}=5\text{V}, I_{\text{D}}=40\text{A}$	-	90	-	S
Dynamic characteristics						
Gate Resistance	R_{G}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}$ $F=1\text{MHz}$	-	1.9	-	Ω
Input capacitance	C_{iss}	$V_{\text{DS}}=40\text{V}, V_{\text{GS}}=0\text{V},$ $F=1\text{MHz}$	-	5250	-	pF
Output capacitance	C_{oss}		-	625	-	pF
Reverse transfer capacitance	C_{rss}		-	45	-	pF
Turn-on delay time	$t_{\text{d}(\text{on})}$	$V_{\text{DS}}=40\text{V}, T_j=25^\circ\text{C},$ $V_{\text{GS}}=10\text{V}, R_{\text{L}}=3\Omega$	-	20	-	ns
Rise time	t_{r}		-	38	-	ns
Turn-off delay time	$t_{\text{d}(\text{off})}$		-	45	-	ns
Fall time	t_{f}		-	20	-	ns
Gate Charge Characteristics						
Total gate charge	Q_{g}	$V_{\text{DS}}=50\text{V}, I_{\text{D}}=20\text{A},$ $V_{\text{GS}}=10\text{V}, F=1\text{MHz}$	-	77	-	nC
Gate-source charge	Q_{gs}		-	31	-	nC
Gate-drain charge	Q_{gd}		-	17	-	nC
Diode characteristics						
Diode forward voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{SD}}=40\text{A}$	-	0.85	1.4	V
Reverse recovery time	t_{rr}	$I_{\text{F}}=30\text{A}$ $DI_{\text{F}}/dt=500\text{A}/\mu\text{s}$	-	68	-	ns
Reverse recovery charge	Q_{rr}		-	260	-	nC

8. Typical Characteristics

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

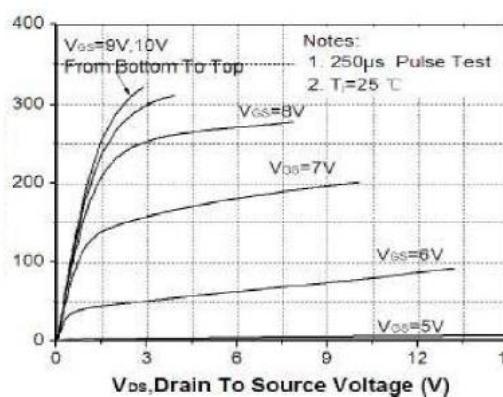


Figure 3. On-Resistance vs. Drain Current Junction and Gate Voltage Figure

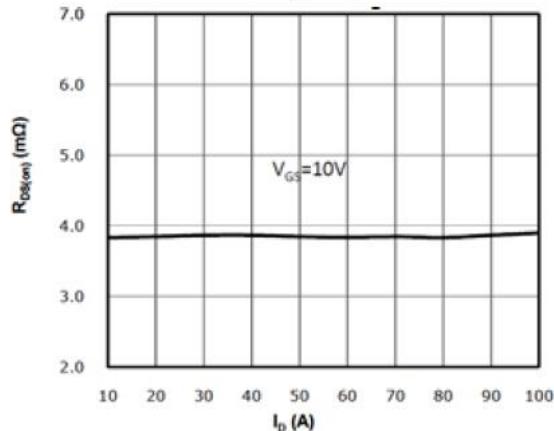


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

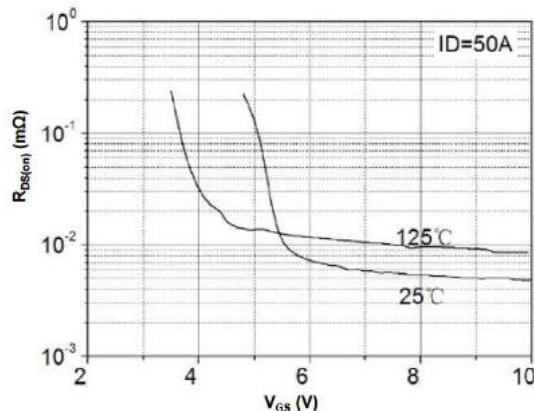


Figure 2. Transfer Characteristics (Junction Temperature)

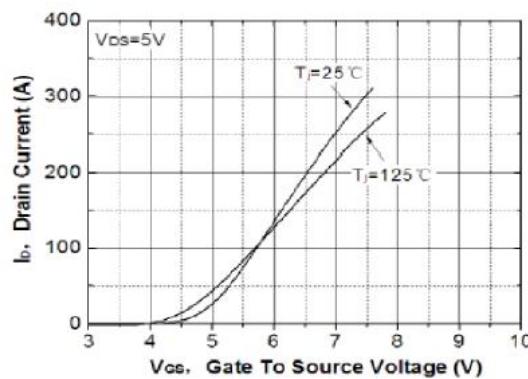


Figure 4. On-Resistance vs. Temperature

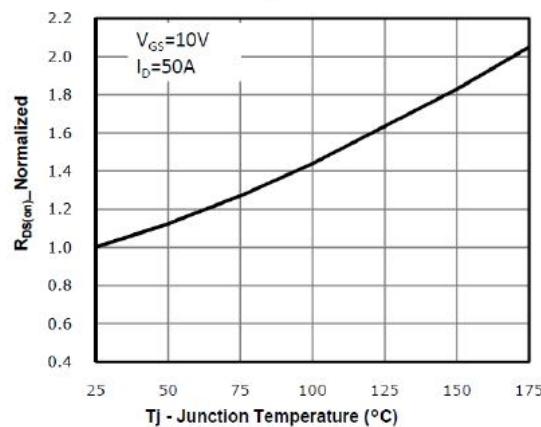


Figure 6. Body-Diode Characteristics (Junction Temperature)

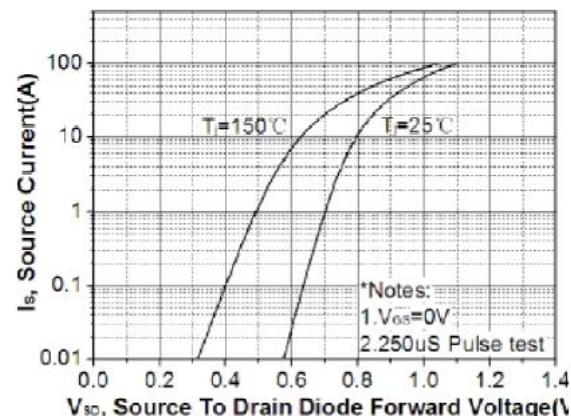


Figure 7. Gate-Charge Characteristics

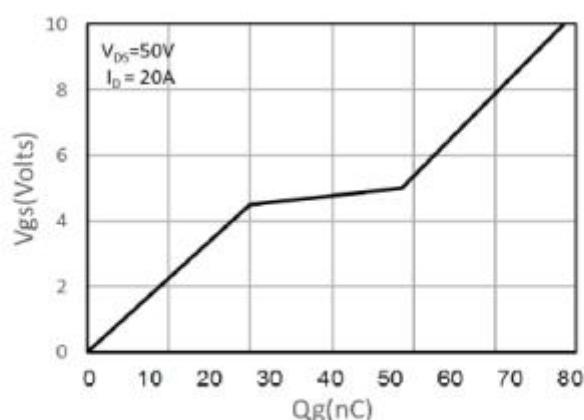


Figure 8. Capacitance Characteristics

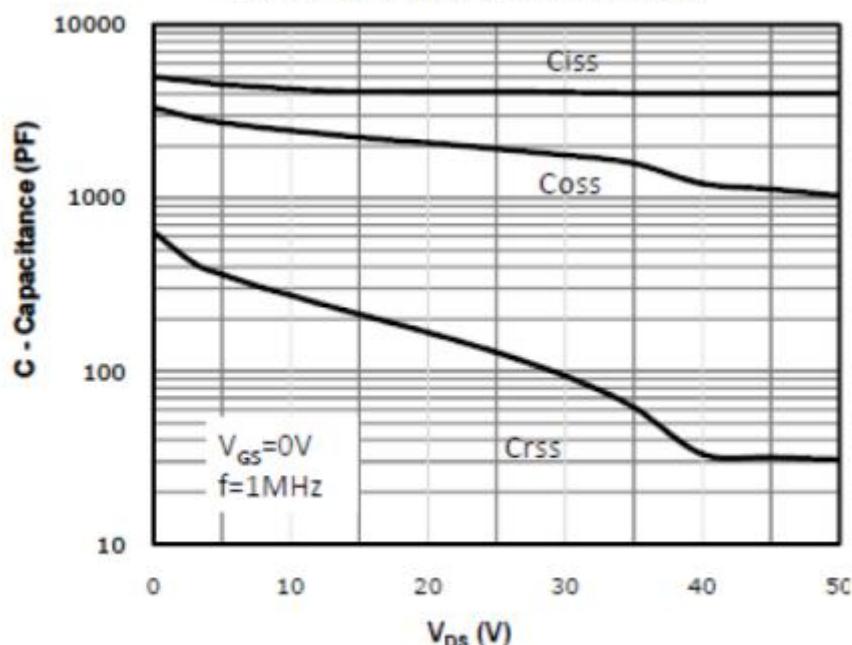


Figure 10. Normalized Maximum Transient Thermal Impedance (R_{thJC})

