

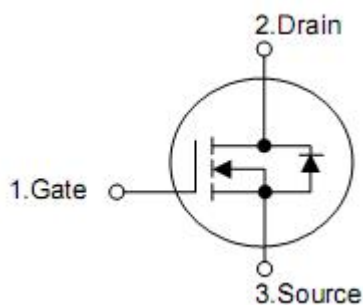
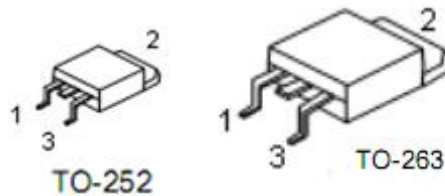
1. Features

- Uses advanced SGT technology
- Extremely low $R_{DS(on)}$.typ=3.7 mΩ@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
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	I_D	$T_C=25\text{ °C}$	130	110	A
		$T_C=100\text{ °C}$	78	66	
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}	625		mJ	
Gate-Source voltage	V_{GS}	± 20		V	
Power dissipation ($T_C = 25\text{ °C}$)	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	$R_{\theta JA}$	60	60	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	0.63	1.76	

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 =40A (TO-252)	-	4.3	5.0	mΩ
		V _{GS} =10V, I _D =40A (TO-263)	-	3.7	4.6	mΩ
Transconductance	g _{fs}	V _{DS} =5V, I _D =40A	-	90	-	S
Dynamic characteristics						
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V F=1MHz	-	1.9	-	Ω
Input capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V, F=1MHz	-	5250	-	pF
Output capacitance	C _{oss}		-	625	-	pF
Reverse transfer capacitance	C _{rss}		-	45	-	pF
Turn-on delay time	t _{d(on)}		-	20	-	ns
Rise time	t _r	V _{DS} =40V, T _J =25 °C, V _{GS} =10V, R _L =3Ω	-	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} =50V, I _D =20A, V _{GS} =10V, F=1MHz	-	77	-	nC
Gate-source charge	Q _{gs}		-	31	-	nC
Gate-drain charge	Q _{gd}		-	17	-	nC
Diode characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0V, I _{SD} =40A	-	0.85	1.4	V
Reverse recovery time	t _{rr}	I _F =30A DI _F /dt=500A/μs	-	68	-	ns
Reverse recovery charge	Q _{rr}		-	260	-	nC

8. Typical Characteristics

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

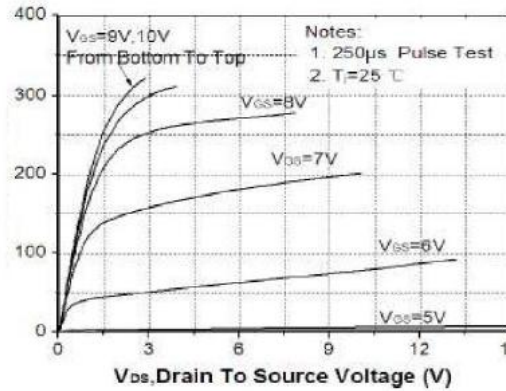


Figure 2. Transfer Characteristics (Junction Temperature)

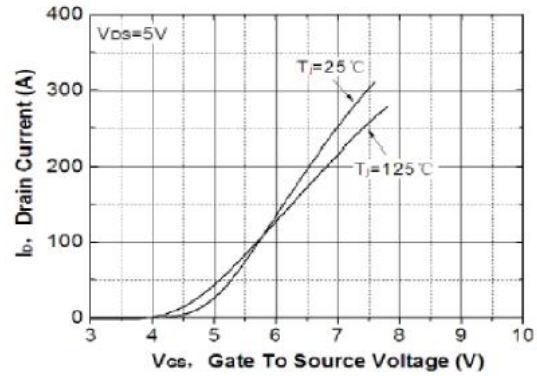


Figure 3. On-Resistance vs. Drain Current Junction and Gate Voltage Figure

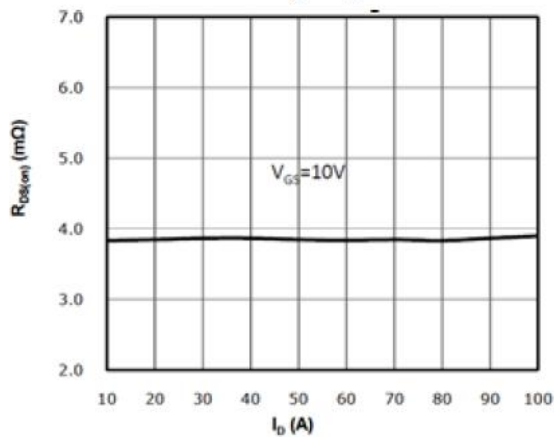


Figure 4. On-Resistance vs. Temperature

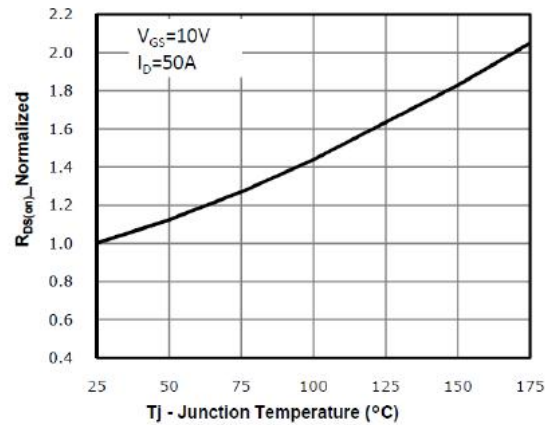


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

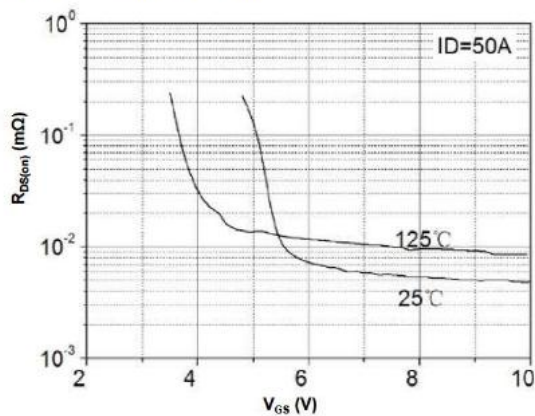


Figure 6. Body-Diode Characteristics (Junction Temperature)

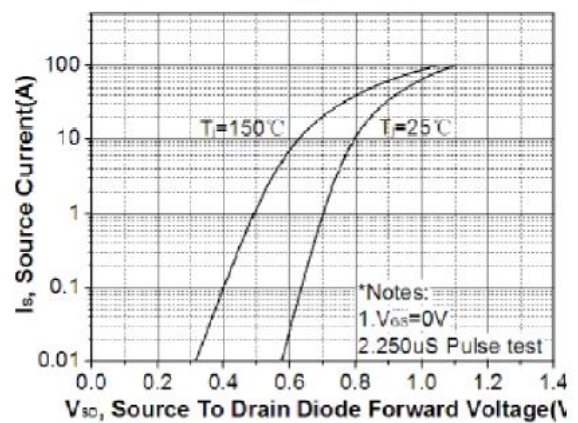


Figure 7. Gate-Charge Characteristics

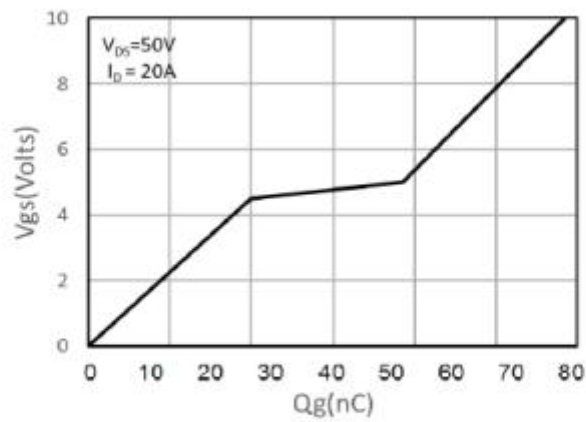


Figure 8. Capacitance Characteristics

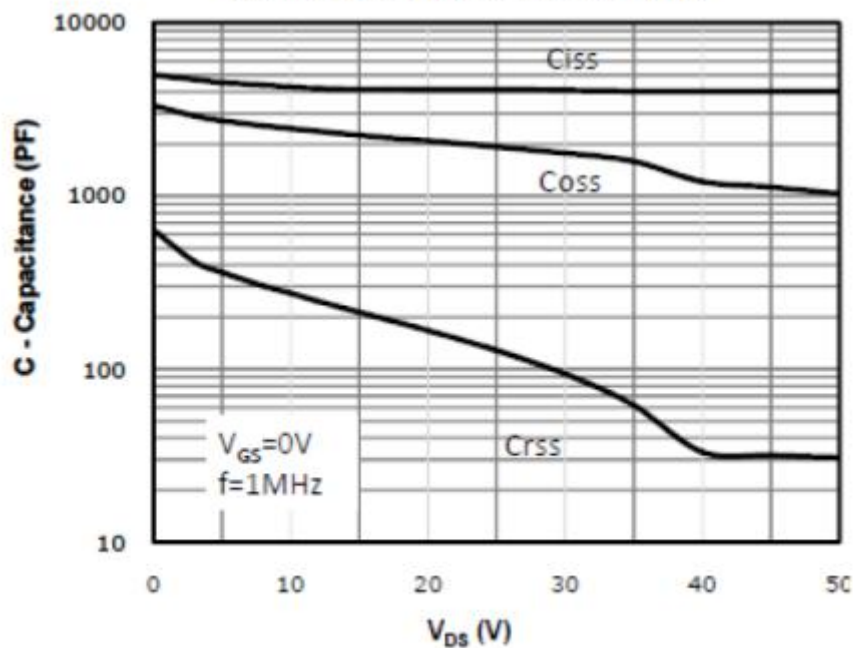


Figure 10. Normalized Maximum Transient Thermal Impedance (R_{thJC})

