

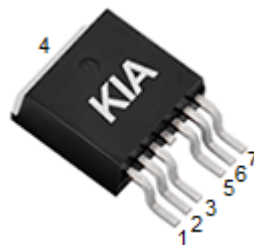
1. Features

- Uses advanced SGT technology
- Extremely low $R_{DS(on)}$.typ=1.7m Ω @ $V_{GS}=10V$
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

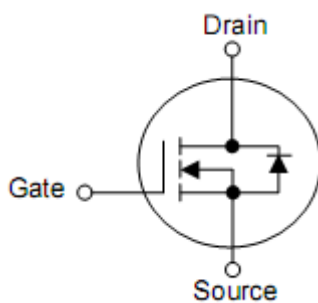
2. Application

- Motor control and drives
- Battery management
- DC/DC Converters
- General purpose applications

3. Pin configuration



TO-263-6



Pin	Function
1	Gate
4	Drain
2,3,5,6,7	Source

4. Ordering Information

Part Number	Package	Brand
KCC1808A	TO-263-6	KIA

5. Absolute maximum ratings

$T_C=25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Ratings	Unit
Drain-to-Source Voltage	V_{DS}	80	V
Continuous Drain Current	I_D	$T_C=25\text{ }^\circ\text{C}$ (Silicon limited)	270
		$T_C=25\text{ }^\circ\text{C}$ (Package limited)	200
		$T_C=100\text{ }^\circ\text{C}$ (Silicon limited)	170
Pulsed drain current ($T_C = 25\text{ }^\circ\text{C}$, t_p limited by T_{Jmax})	I_{DP}	750	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$)	E_{AS}	2500	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation	P_{tot}	223	W
Junction & Storage Temperature Range	T_J & T_{STG}	-55 to 150	$^\circ\text{C}$

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, Junction-case	$R_{\theta JC}$	0.54	$^\circ\text{C/W}$
Thermal resistance, junction-ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$

7. Electrical characteristics

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

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	80	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A, T_J=25^{\circ}\text{C}$	2	3	4	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=64V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	-	-	10	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A, T_J=25^{\circ}\text{C}$	-	1.7	2	m Ω
Transconductance	g_{fs}	$V_{DS}=5V, I_D=40A$	-	145	-	S
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=40V, f=1\text{MHz}$	-	13621	-	pF
Output Capacitance	C_{oss}		-	2345	-	
Reverse Transfer Capacitance	C_{rss}		-	949	-	
Gate Total Charge	Q_G	$V_{GS}=10V, V_{DS}=40V, I_D=50A$	-	207	-	nC
Gate-Source charge	Q_{gs}		-	56	-	
Gate-Drain charge	Q_{gd}		-	42	-	
Turn-on delay time	$t_{d(on)}$	$T_J=25^{\circ}\text{C}, V_{GS}=10V, V_{DS}=40V, R_L=3\Omega$	-	36	-	ns
Rise time	t_r		-	130	-	
Turn-off delay time	$t_{d(off)}$		-	124	-	
Fall time	t_f		-	150	-	
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	-	1.85	-	Ω
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=50A$	-	0.85	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=30A, dI/dt=500A/\mu s$	-	112	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=30A, dI/dt=500A/\mu s$	-	213	-	nC

8. Typical Characteristics

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

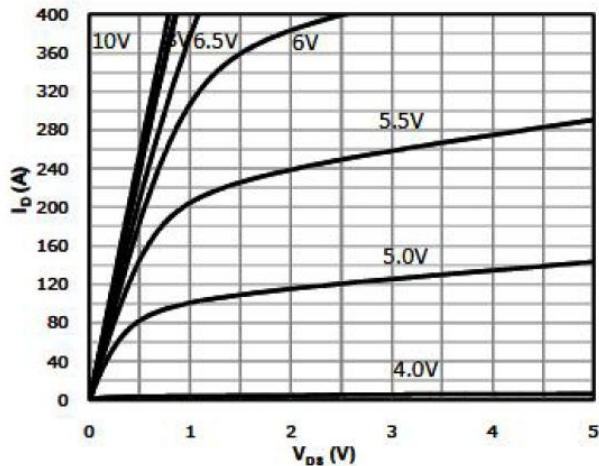


Figure 2. Transfer Characteristics (Junction Temperature)

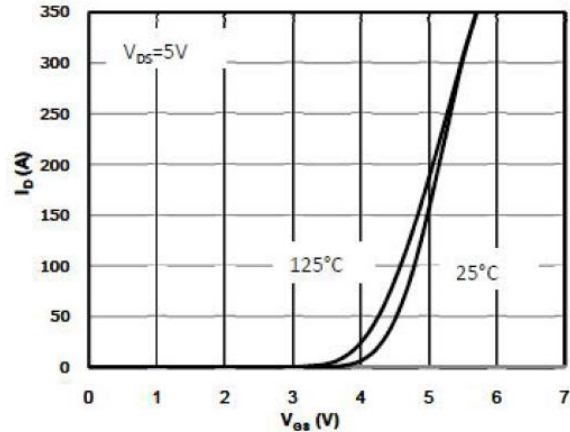


Figure 3. On-Resistance vs. Drain Current Junction and Gate Voltage Figure

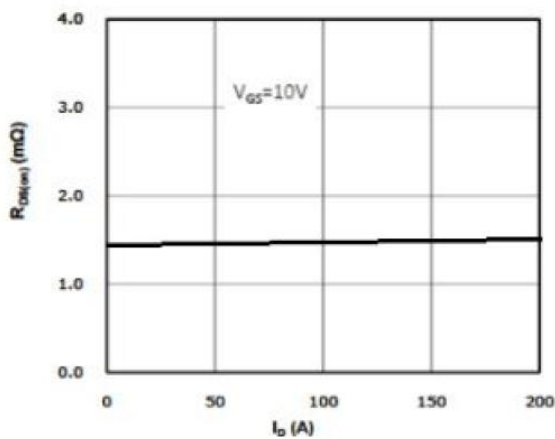


Figure 4. On-Resistance vs. Temperature

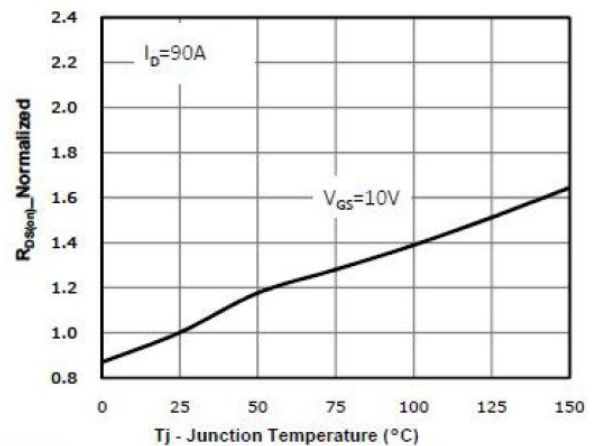


Figure 5. On-Resistance vs. Gate-Source Voltage (Junction Temperature)

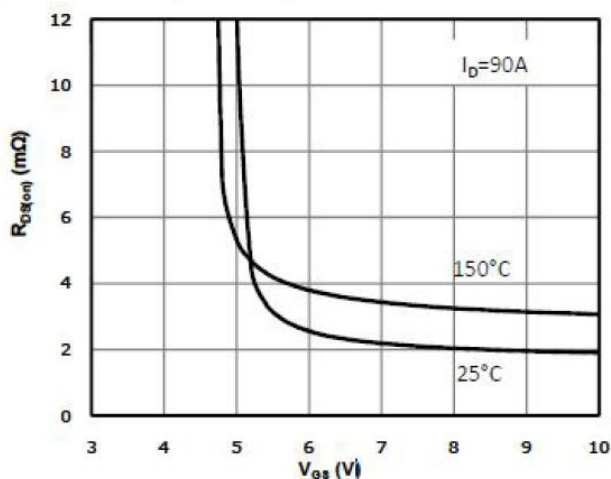


Figure 6. Body-Diode Characteristics (Junction Temperature)

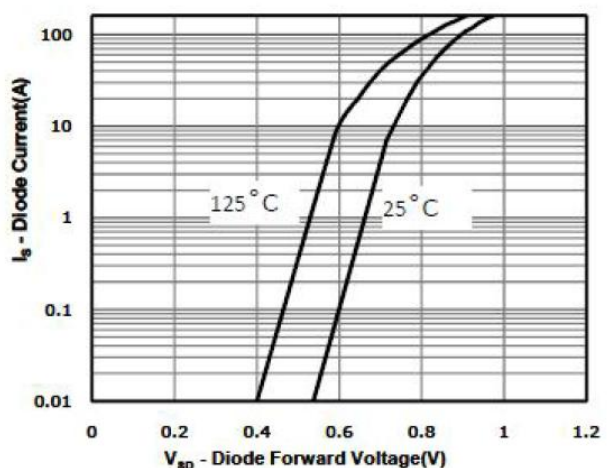


Figure 7. Gate-Charge Characteristics

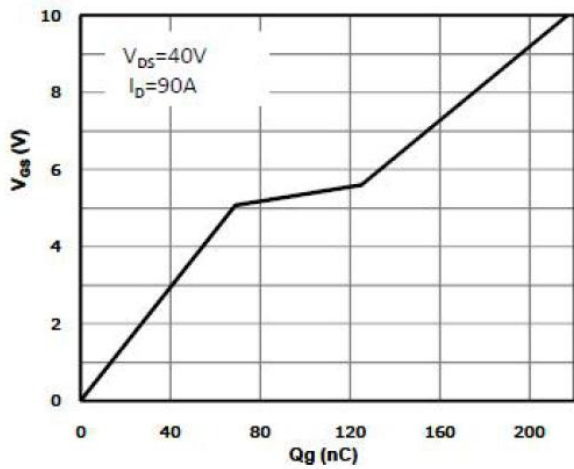


Figure 8. Drain Current Derating

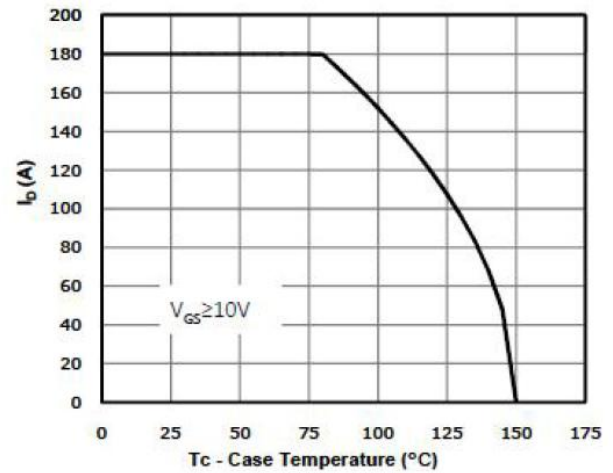


Figure 9. Capacitance Characteristics

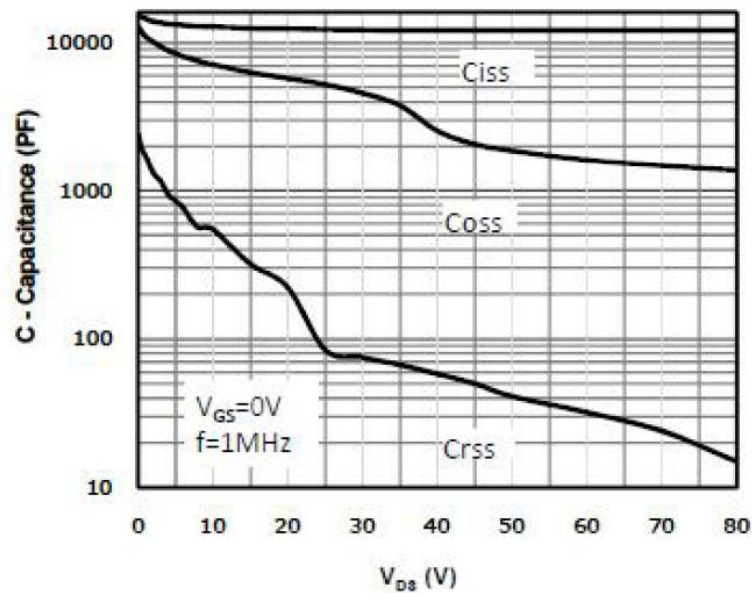
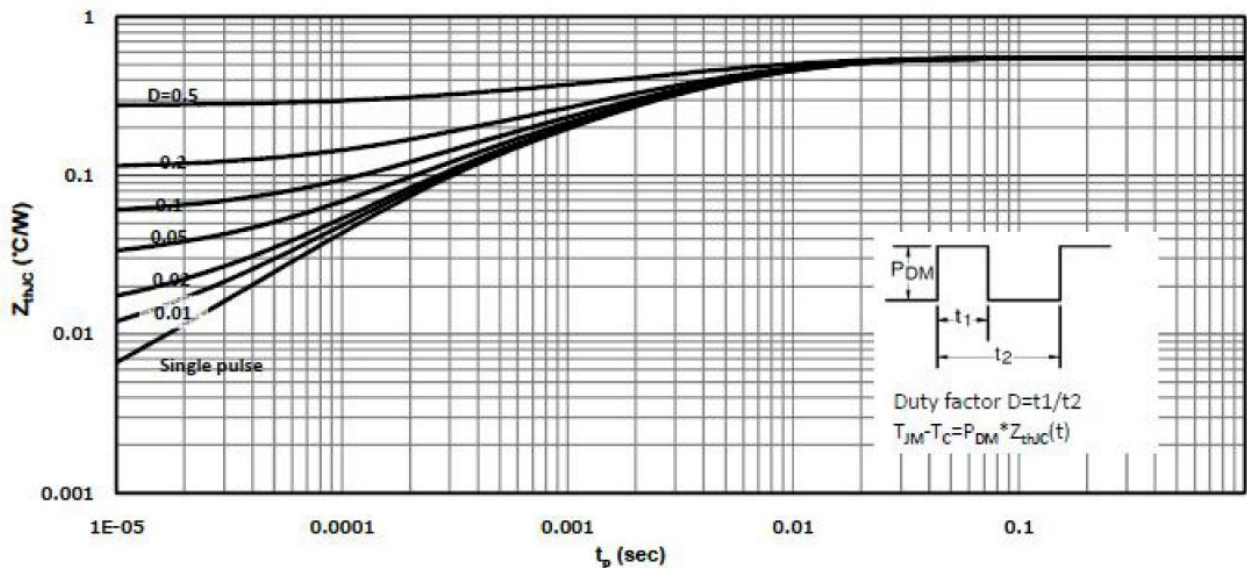
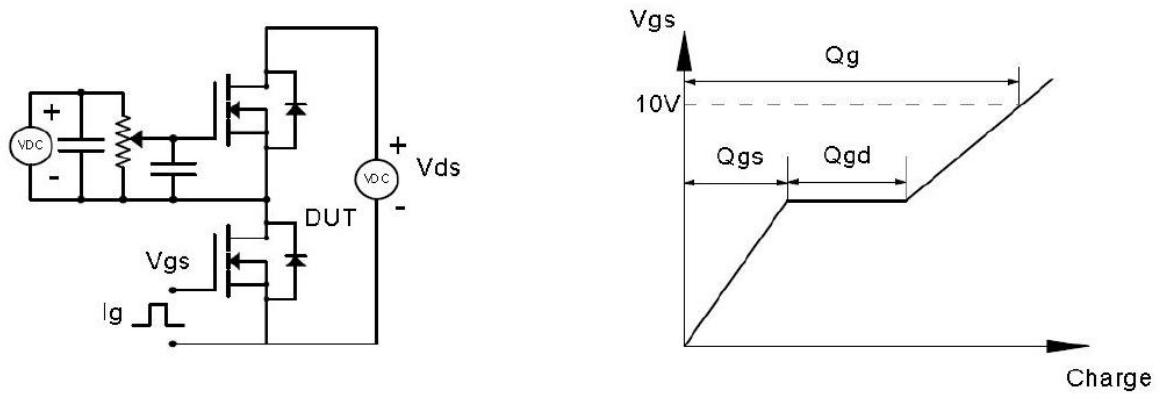


Figure 10. Normalized Maximum Transient Thermal Impedance (R_{thJC})

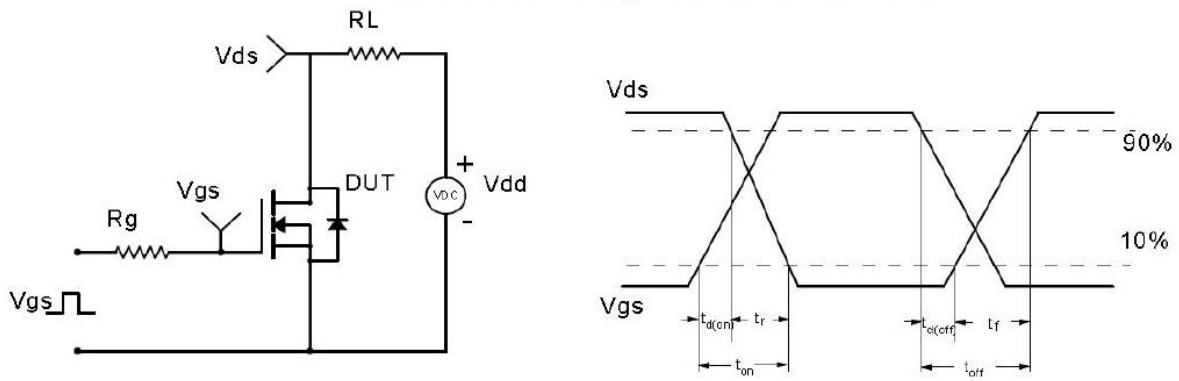


9. Test Circuit & Waveform

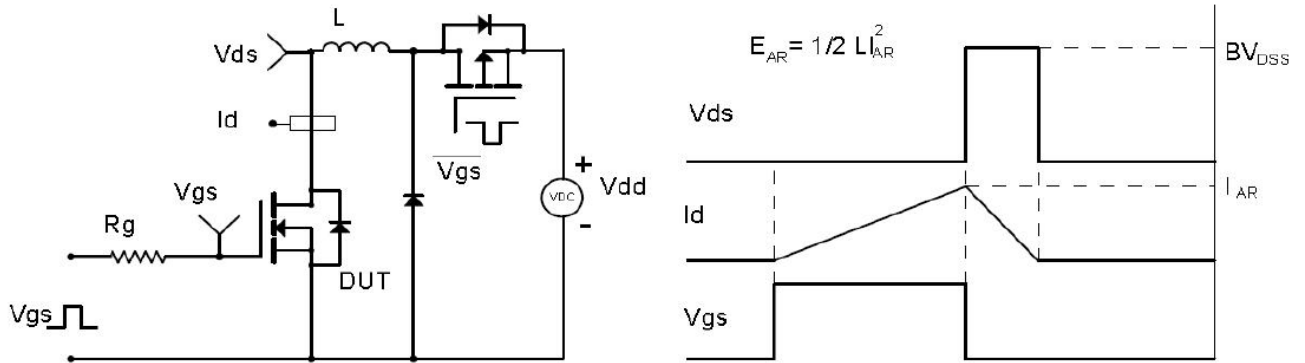
Gate Charge Test Circuit & Waveform



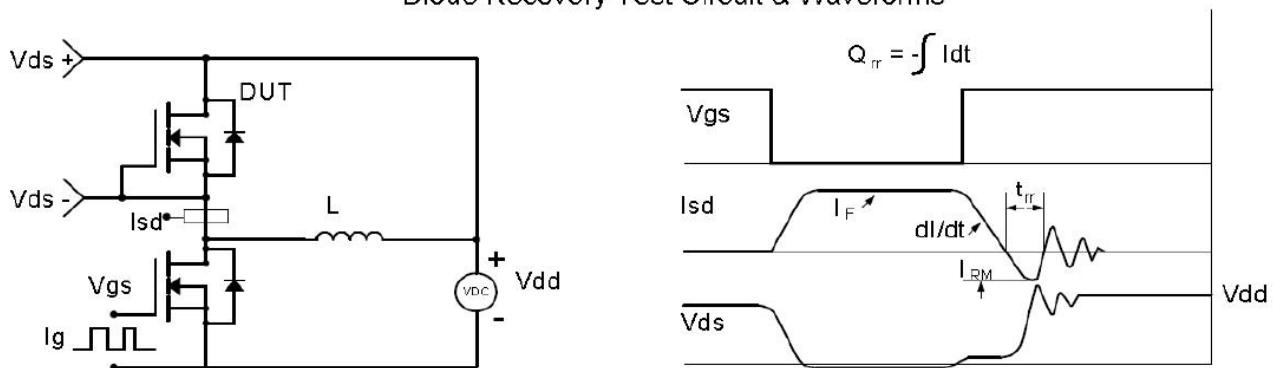
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



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