1. Description

- SGT MOSFET technology
- Advanced Trench MOS Technology
- Low Gate Charge
- Low $R_{DS(ON)}$
- 100% EAS Guaranteed
- Green Device Available

2. Features

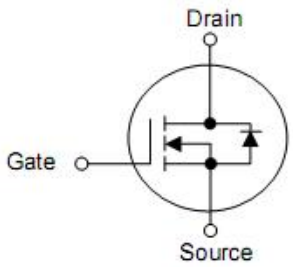
- $R_{DS(ON)}$=7.3mΩ(typ.) @ V_{GS}=10V

3. Applications

- Load Switch
- LED Applications
- Networking Applications
- Quick Charger

4. Pin configuration

TO-220



Pin	Function
1	Gate
2	Drain
3	Source

5. Ordering Information

Part Number	Package	Brand
KCP2915B	TO-220	KIA

6. Absolute maximum ratings

TC=25℃ unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DS}	150	V
Gate-to-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_C=25°C	I_D	130	A
	T_C=100°C	I_D	80	A
Pulsed Drain Current [2]		I_{DM}	450	A
Avalanche Energy [3]		EAS	784	mJ
Avalanche Current		I_{AS}	56	A
Total Power Dissipation [4]		P_D	178	W
Operation Junction Temperature Range		T_J	-55 to 150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C

7. Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient [1]	$R_{\theta JA}$	-	50	°C/W
Thermal Resistance, Junction-to-Case [1]	$R_{\theta JC}$	-	0.7	°C/W

8. Electrical characteristics

(T_J=25°C,unless otherwise notes)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	150	-	-	V
Static Drain-Source On-Resistance 2)	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	7.3	9	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	2	3	4	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=120V,V_{GS}=0V,T_J=25°C	-	-	1	uA
		V_{DS}=120V,V_{GS}=0V,T_J=55°C	-	-	5	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Resistance	R_g	V_{DS}=0V, V_{GS}=0V,f=1MHz	-	1.9	-	Ω
TotalGate Charge	Q_g	V_{DS}=75V, V_{GS}=10V , I_D=20A	-	110	-	nC
Gate-Source Charge	Q_{gs}		-	25.9	-	nC
Gate-Drain Charge	Q_{gd}		-	31.8	-	nC
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=30V,V_{GS}=10V, R_G=3.3Ω,I_D=1A	-	33	-	ns
Rise Time	T_r		-	26	-	ns
Turn-Off DelayTime	$T_{d(off)}$		-	98	-	ns
Fall Time	T_f		-	90	-	ns
Input Capacitance	C_{iss}	V_{DS}=75V , V_{GS}=0V , f=1MHz	-	5750	-	pF
Output Capacitance	C_{oss}		-	414	-	pF
Reverse Transfer Capacitance	C_{rss}		-	9.5	-	pF
Continuous Source Current 1)	I_S	V_G=V_D=0V, Force Current	-	-	130	A
Diode Forward Voltage 2)	V_{SD}	V_{GS}=0V, I_S=1A , T_J=25°C	-	-	1.2	V

Notes:
1) The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2) The data tested by pulsed, pulse width≤300us , duty cycle ≤2%
3) The EAS data shows Max. rating. The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH,I_{AS}=56A
4) The power dissipation is limited by 150℃ junction temperature.
5) The data is theoretically the same as I_D and I_{DM}, in real applications , should be limited by total power dissipation.

9. Typical Characteristics

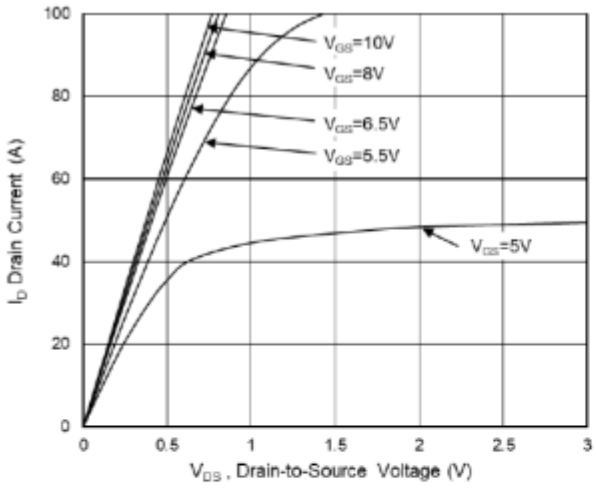


Fig.1 Typical Output Characteristics

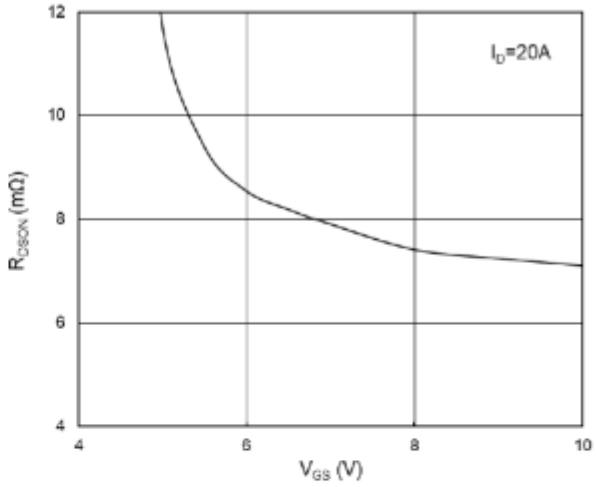


Fig.2 On-Resistance vs G-S Voltage

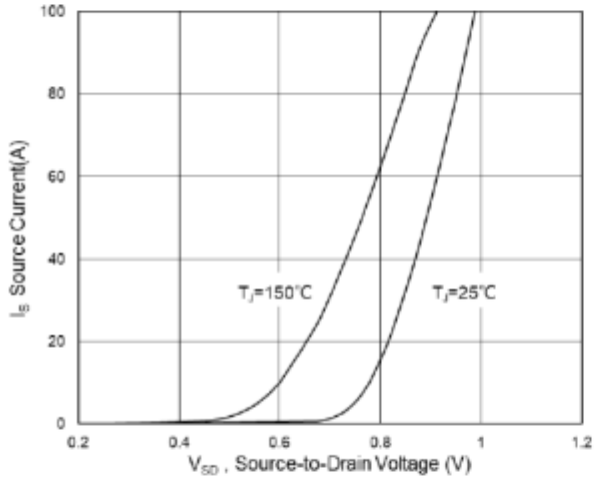


Fig.3 Source Drain Forward Characteristics

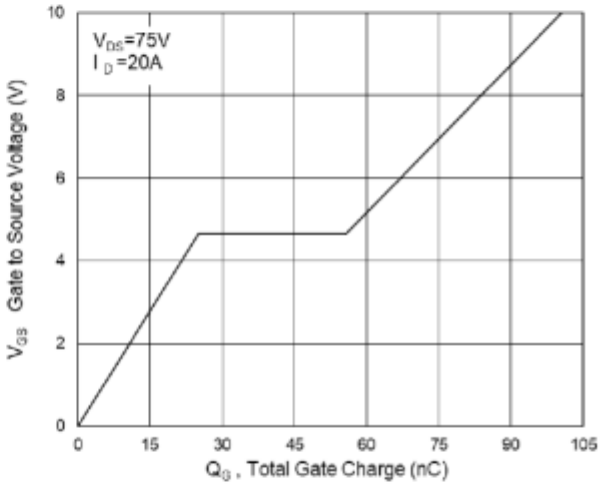


Fig.4 Gate-Charge Characteristics

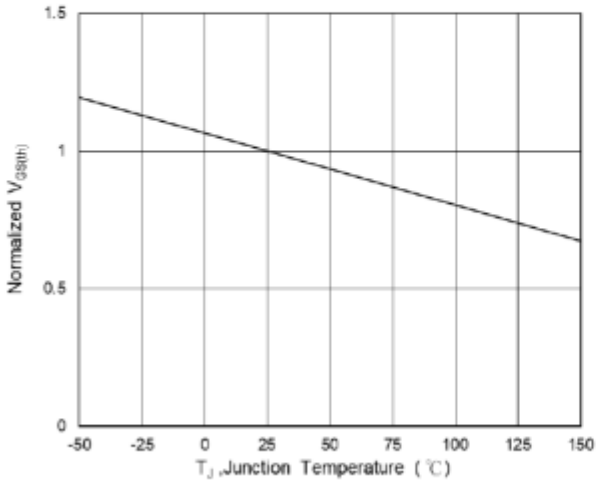


Fig.5 Normalized $V_{GS(th)}$ vs T_J

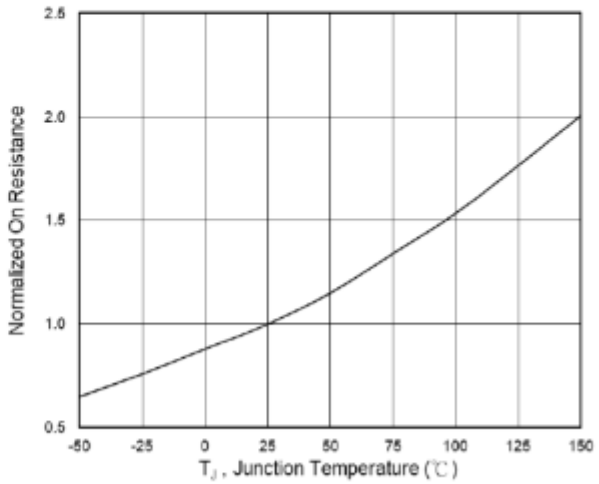


Fig.6 Normalized R_{DSON} vs T_J

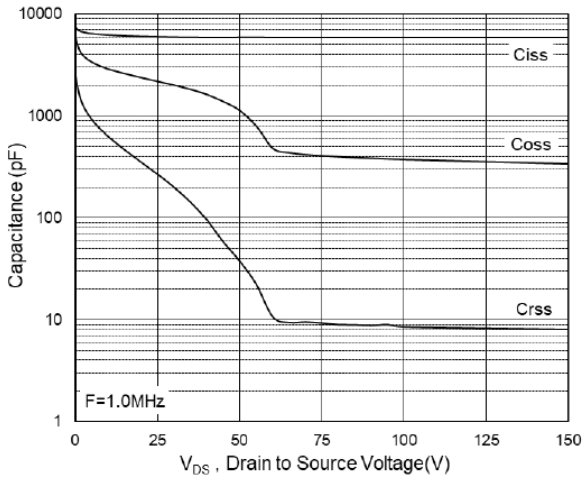


Fig.7 Capacitance

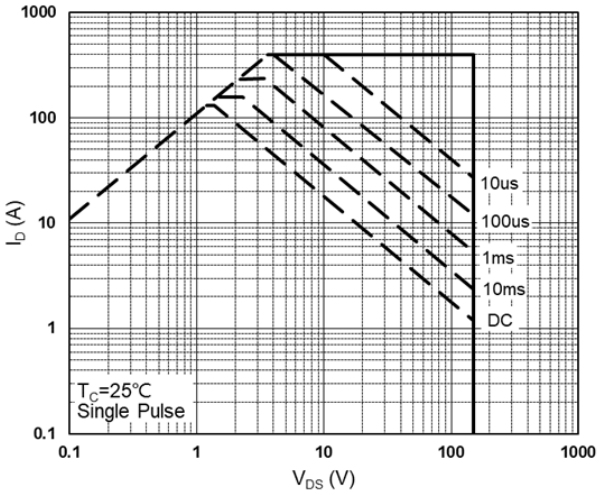


Fig.8 Safe Operating Area

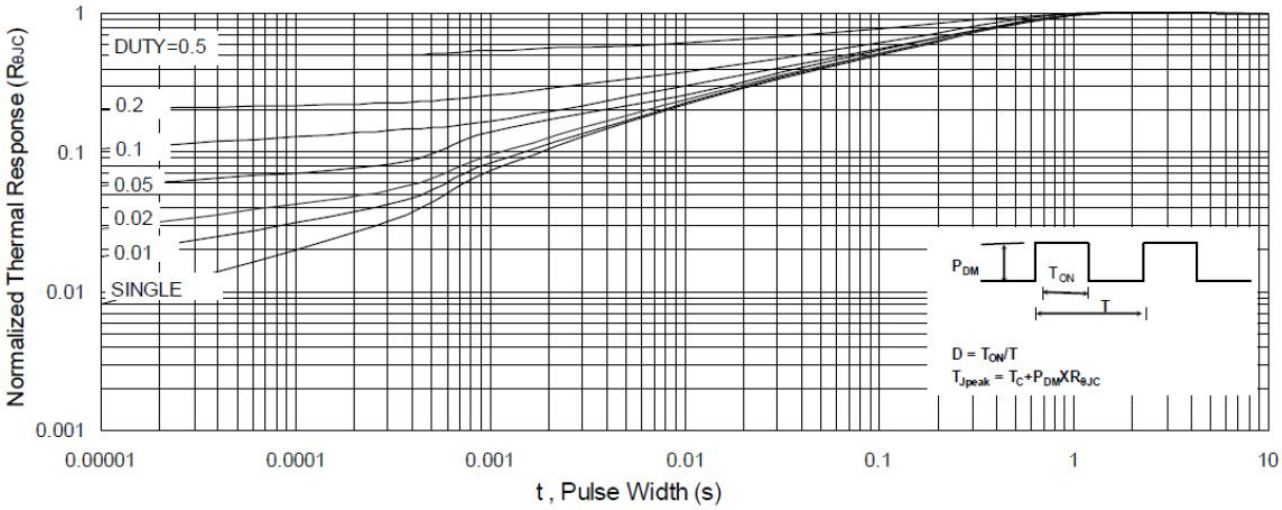


Fig.9 Normalized Maximum Transient Thermal Impedance

10. Test Circuits and Waveforms

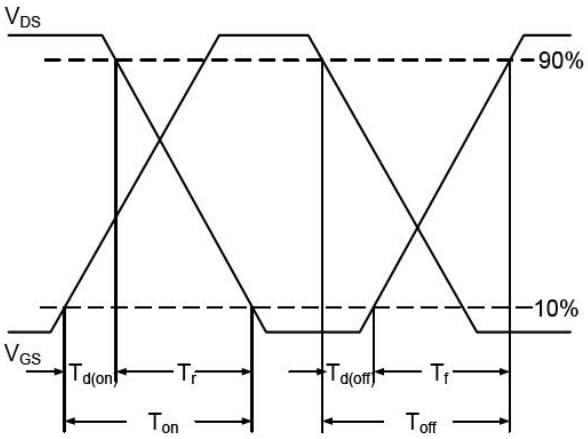


Fig.10 Switching Time Waveform

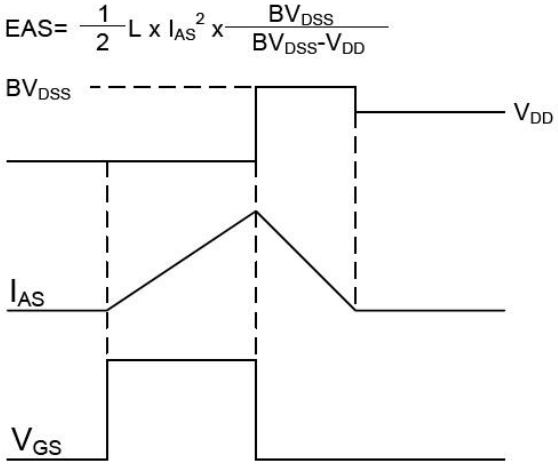


Fig.11 Unclamped Inductive Switching Waveform