

1. Description

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

2. Features

- n $R_{DS(ON)}=7.3m\Omega$ (typ.) @ $V_{GS}=10V$

3. Applications

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

4. Pin configuration



Pin	Function
1	Gate
2, 4	Drain
3	Source

5. Ordering Information

Part Number	Package	Brand
KCP2915B	TO-220	KIA

6. Absolute maximum ratings

TC=25°C 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⁾	$T_C=25^\circ\text{C}$	I_D	130	A
	$T_C=100^\circ\text{C}$	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
Total Gate 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 =3.3, I _D =1A	-	33	-	ns
Rise Time	T _r		-	26	-	ns
Turn-Off Delay Time	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 inch² 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°C 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

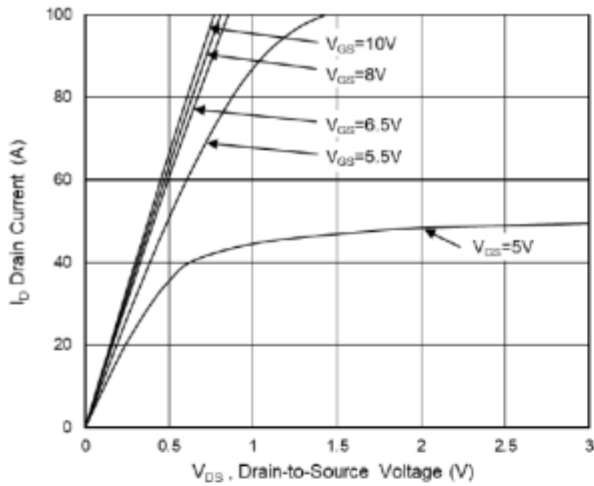


Fig.1 Typical Output Characteristics

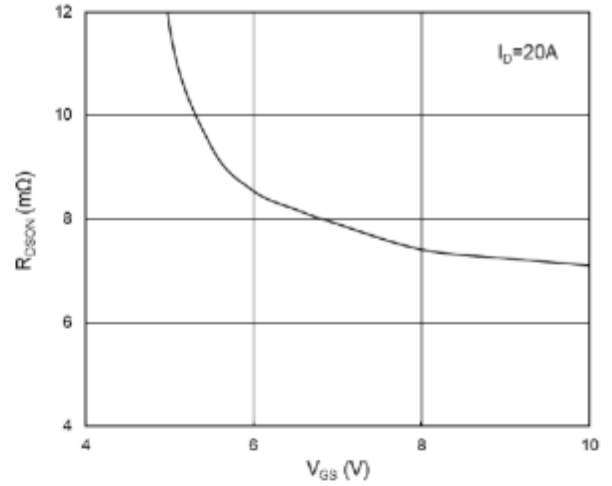


Fig.2 On-Resistance vs G-S Voltage

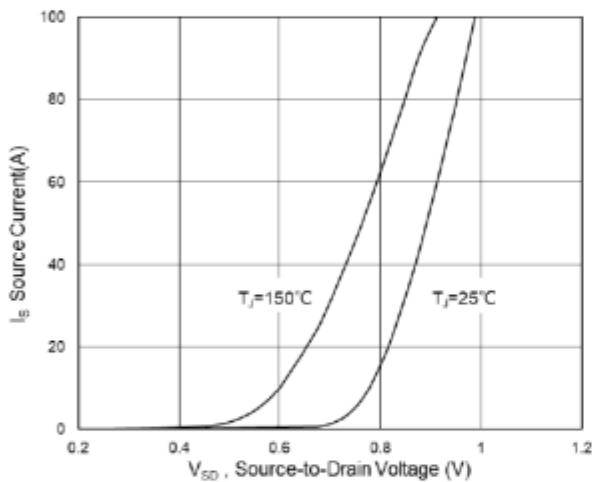


Fig.3 Source Drain Forward Characteristics

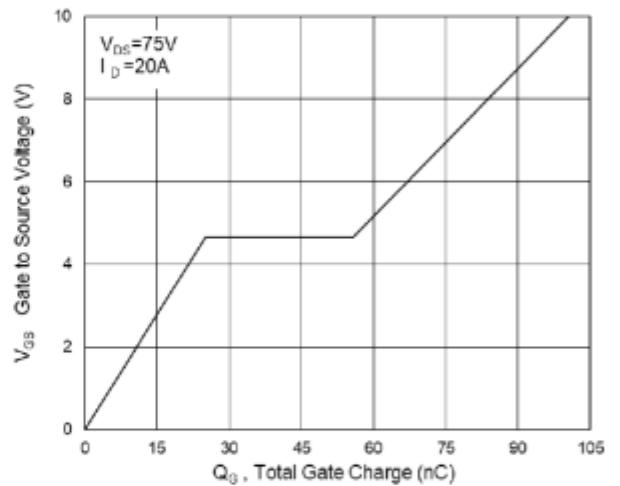


Fig.4 Gate-Charge Characteristics

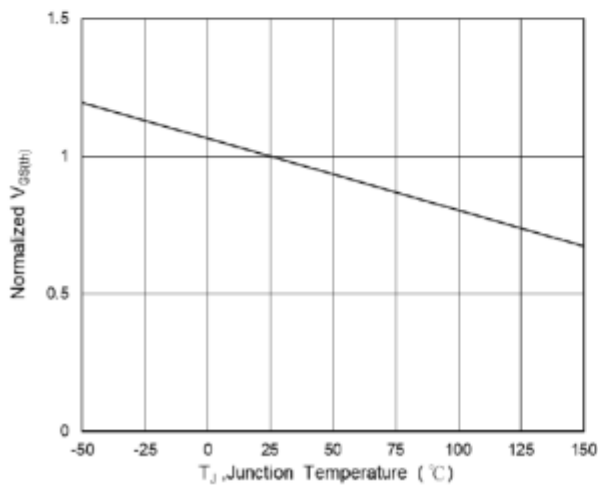


Fig.5 Normalized $V_{GS(th)}$ vs T_J

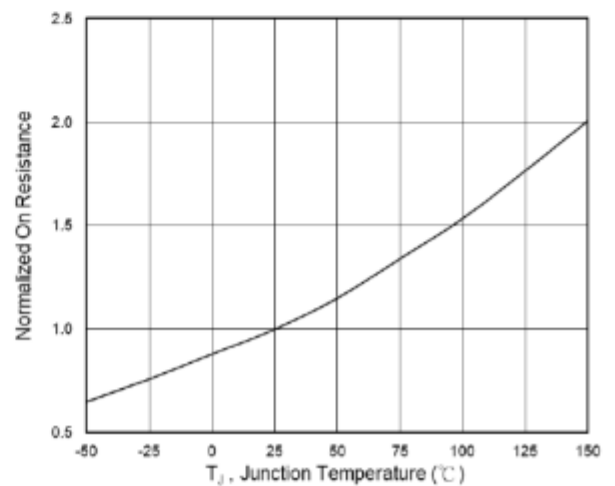


Fig.6 Normalized $R_{DS(on)}$ vs T_J

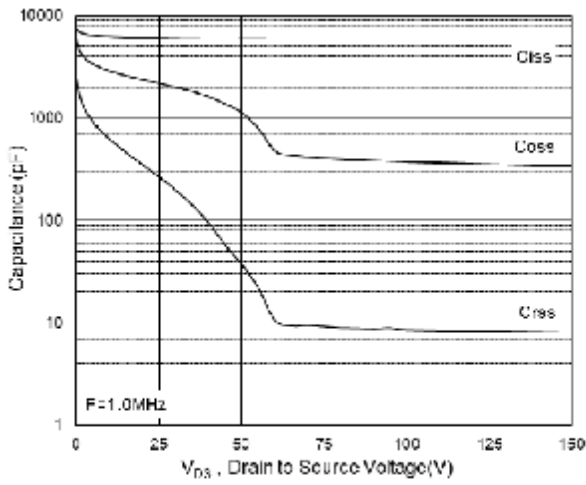


Fig.7 Capacitance

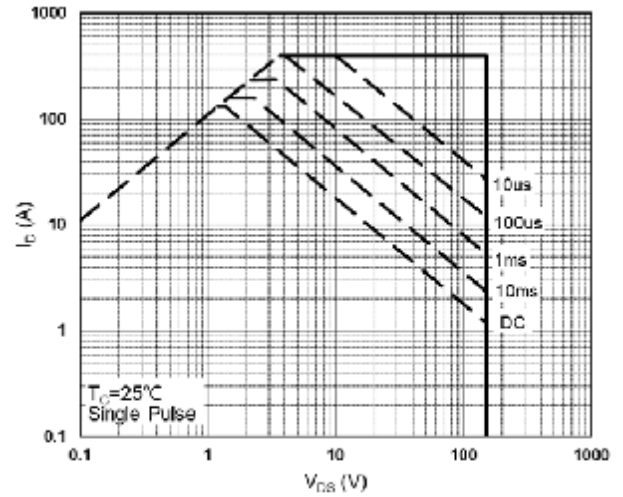


Fig.8 Safe Operating Area

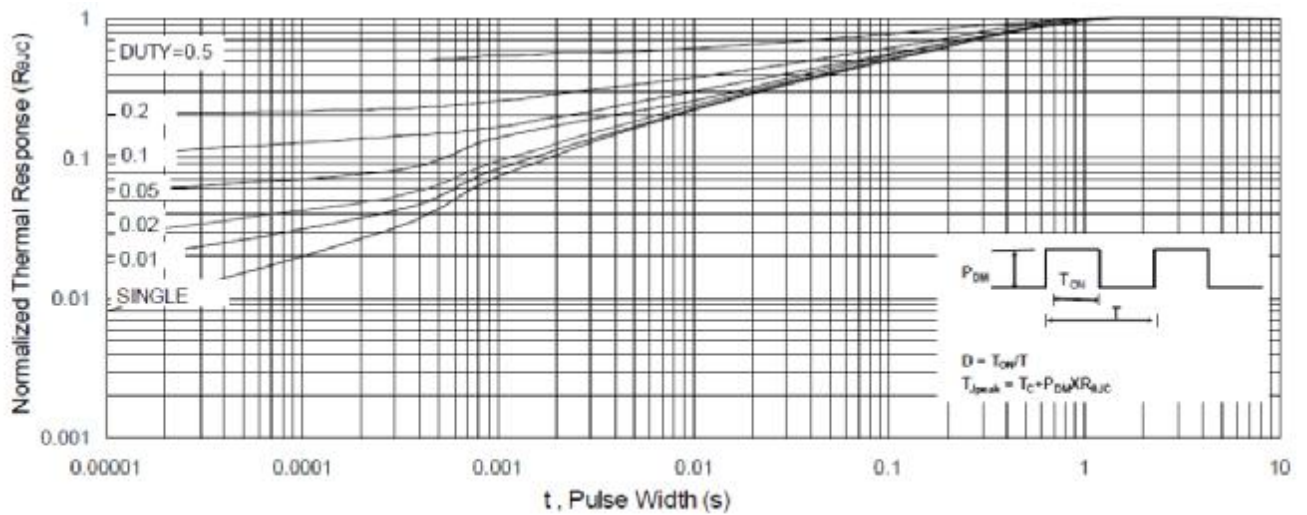


Fig.9 Normalized Maximum Transient Thermal Impedance

10. Test Circuits and Waveforms

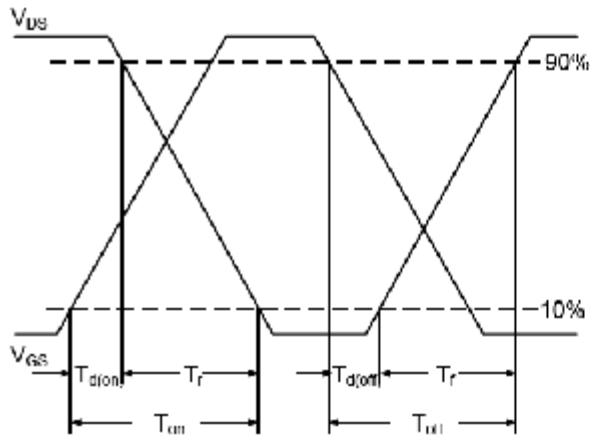


Fig.10 Switching Time Waveform

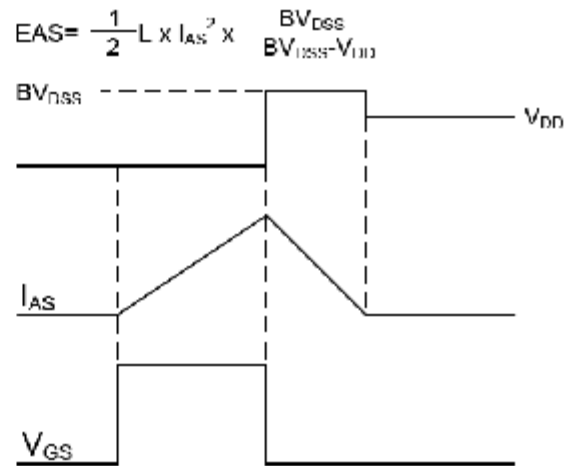


Fig.11 Unclamped Inductive Switching Waveform