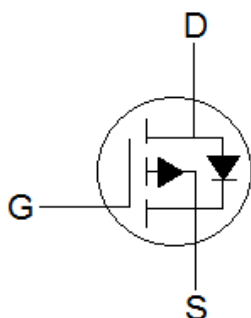


1. Features

- $R_{DS(ON)}=3.5m\Omega$ (typ.) @ $V_{GS}=-10V$
- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench

2. Pin configuration



Pin	Function
4	Gate
5,6,7,8	Drain
1,2,3	Source

3. Ordering Information

Part Number	Package	Brand
KPY3203D	DFN5*6	KIA

4. Absolute maximum ratings

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

Parameter		Symbol	Rating	Unit
Drain-Source Breakdown Voltage		V_D	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ^{1),6)}	$T_C=25^{\circ}\text{C}$	I_D	-100	A
	$T_C=100^{\circ}\text{C}$	I_D	-70	A
	$T_A=25^{\circ}\text{C}$	I_D	-20	A
	$T_A=100^{\circ}\text{C}$	I_D	-14	A
Pulse Drain Current Tested ²⁾		I_{DM}	-400	A
Single Pulse Avalanche Energy ³⁾		EAS	312	mJ
Avalanche Current		I_{AS}	-79	A
Maximum Power Dissipation ⁴⁾	$T_C=25^{\circ}\text{C}$	P_D	62.5	W
	$T_C=100^{\circ}\text{C}$	P_D	31	W
	$T_A=25^{\circ}\text{C}$	P_D	2.4	W
	$T_A=100^{\circ}\text{C}$	P_D	1.2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 175	$^{\circ}\text{C}$

5. Thermal characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ¹⁾	$R_{\theta JA}$	-	62	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case ¹⁾	$R_{\theta JC}$	-	2.4	$^{\circ}\text{C/W}$

6. Electrical characteristics

(T_A=25°C, unless otherwise notes)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-24V, V _{GS} =0V, T _J =55°C	-	-	-5	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±10	nA
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _D =-20A	-	25	-	S
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.1	-1.7	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-30A	-	2.6	3.5	mΩ
		V _{GS} =-4.5V, I _D =-20A	-	4.2	5.4	mΩ
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz	-	7550	-	pF
Output Capacitance	C _{oss}		-	1000	-	pF
Reverse Transfer Capacitance	C _{rss}		-	900	-	pF
Total Gate Charge	Q _g	V _{DS} =-15V I _D =-30A, V _{GS} =-10V	-	130	-	nC
Gate Source Charge	Q _{gs}		-	20	-	nC
Gate Drain Charge	Q _{gd}		-	30	-	nC
Turn-on Delay Time	t _{d(on)}	V _{DS} =-15V, I _D =-20A, R _G =3.3Ω, V _{GS} =-10V	-	22	-	nS
Turn-on Rise Time	t _r		-	30	-	nS
Turn-Off Delay Time	t _{d(off)}		-	110	-	nS
Turn-Off Fall Time	t _f		-	40	-	nS
Continuous Source Current ^{1),5)}	I _S	V _G =V _D =0V, Force Current	-	-	-100	A
Forward on voltage ²⁾	V _{SD}	I _{SD} =-8A, V _{GS} =0V, T _J =25°C	-	-	-1	V
Reverse Recovery Time	T _{rr}	I _F =-20A, di/dt=100A/us T _J =25°C	-	50	-	nS
Reverse Recovery Charge	Q _{rr}		-	54	-	nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-79A.
- 4) The power dissipation is limited by 175°C junction temperature.
- 5) The data is theoretically the same as I_D, in real applications, should be limited by total power dissipation.
- 6) The maximum current rating is package limited.

7. Typical Characteristics

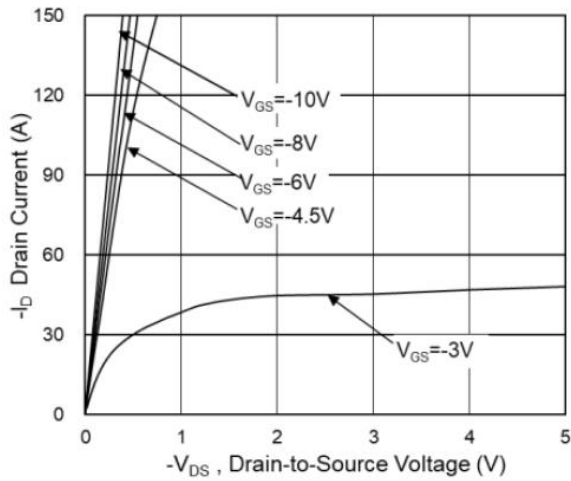


Fig.1 Typical Output Characteristics

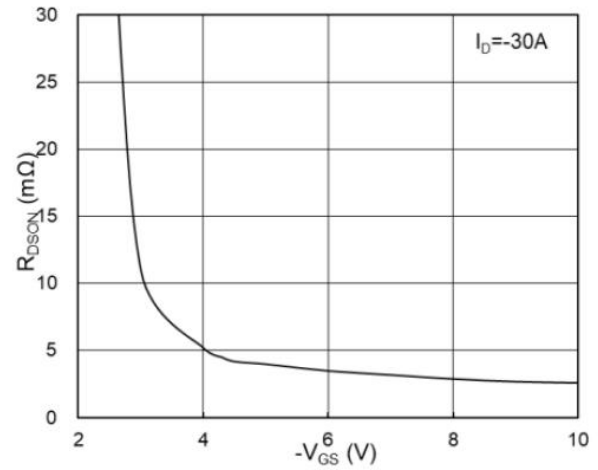


Fig.2 On-Resistance vs G-S Voltage

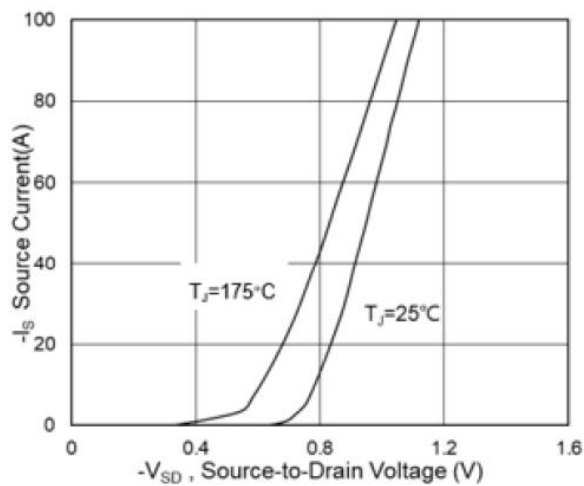


Fig.3 Source Drain Forward Characteristics

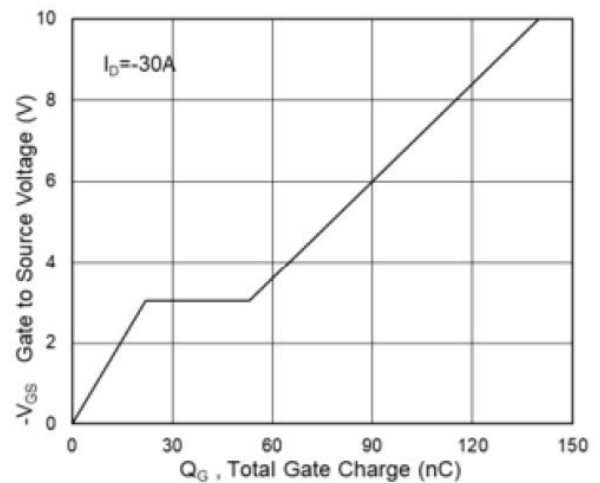


Fig.4 Gate-Charge Characteristics

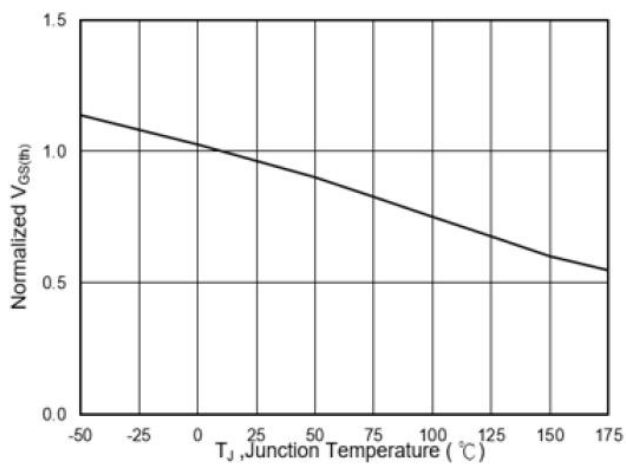


Fig.5 Normalized $V_{GS(th)}$ vs T_J

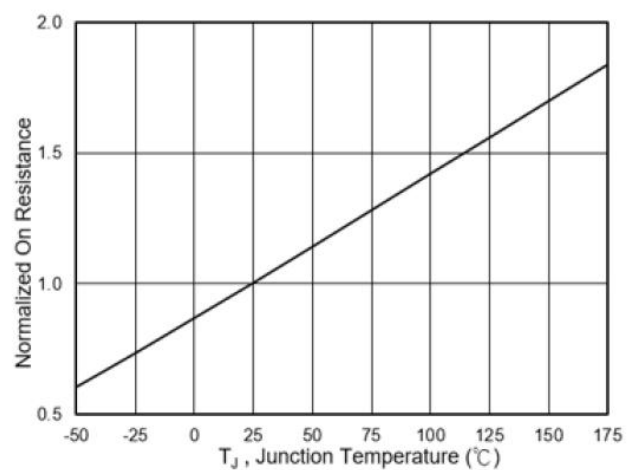


Fig.6 Normalized R_{psn} Vs T_J

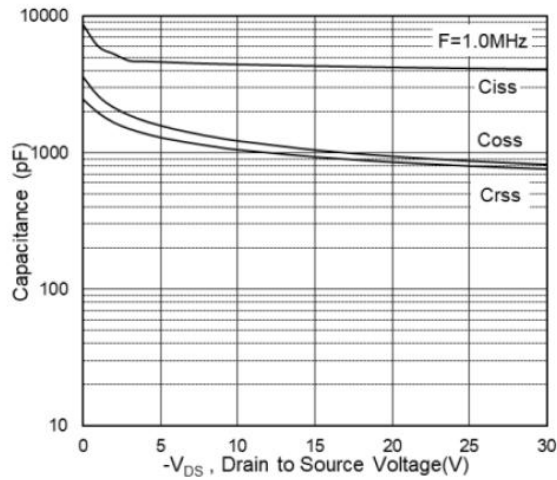


Fig.7 Capacitance

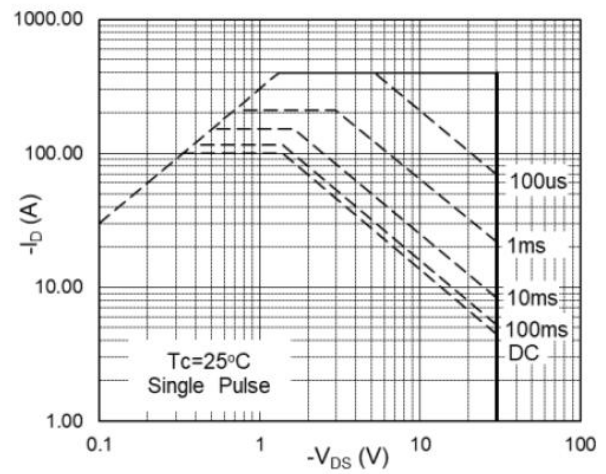


Fig.8 Safe Operating Area

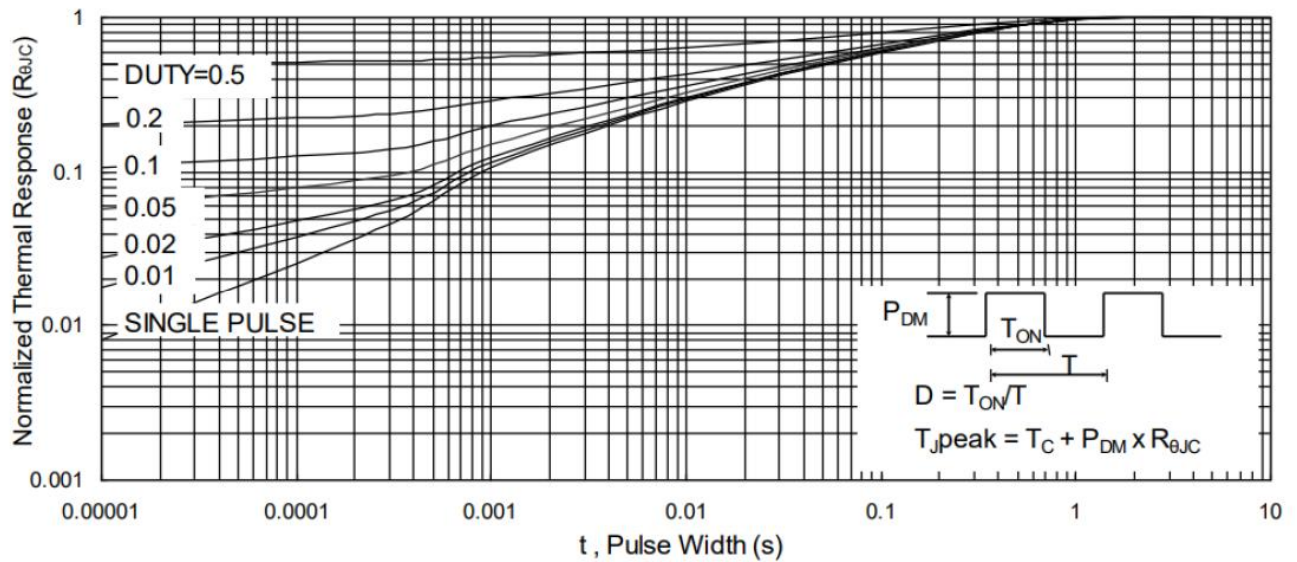


Fig.9 Normalized Maximum Transient Thermal Impedance

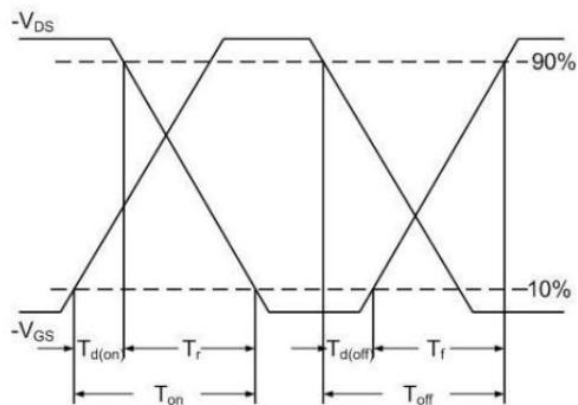


Fig.10 Switching Time Waveform

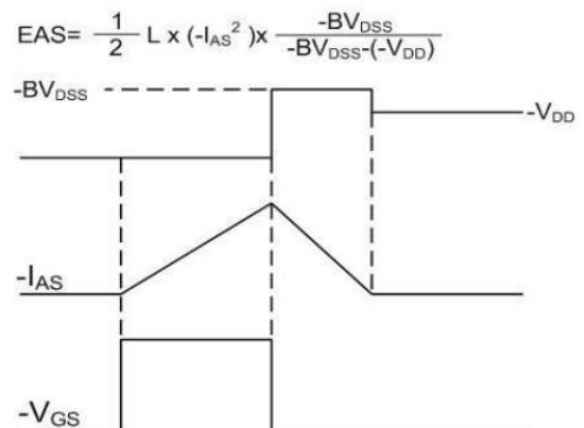


Fig.11 Unclamped Inductive Switching Waveform