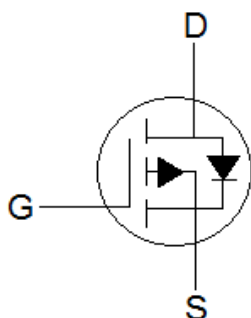


1. Features

- $R_{DS(ON)}=5m\Omega$ (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
KPY3404A	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	-40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current $V_{GS}@-10\text{V}$ ¹⁾	$T_C=25^{\circ}\text{C}$	I_D	-85	A
	$T_C=100^{\circ}\text{C}$	I_D	-53	A
Pulse Drain Current Tested ²⁾		I_{DM}	-200	A
Single Pulse Avalanche Energy ³⁾		EAS	72	mJ
Avalanche Current		I_{AS}	-38	A
Maximum Power Dissipation ⁴⁾	$T_C=25^{\circ}\text{C}$	P_D	58	W
	$T_C=100^{\circ}\text{C}$	P_D	31	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_C=25°C, unless otherwise notes)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
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	-	5	6	mΩ
		V _{GS} =-4.5V, I _D =-20A	-	6.7	8	mΩ
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f=1MHz	-	6620	-	pF
Output Capacitance	C _{oss}		-	540	-	pF
Reverse Transfer Capacitance	C _{rss}		-	340	-	pF
Total Gate Charge	Q _g	V _{DS} =-20V I _D =-8A, V _{GS} =-10V	-	115	-	nC
Gate Source Charge	Q _{gs}		-	12	-	nC
Gate Drain Charge	Q _{gd}		-	20	-	nC
Turn-on Delay Time	t _{d(on)}	V _{DS} =-20V, I _D =-1A, R _L =1.6Ω, V _{GS} =-10V	-	15	-	nS
Turn-on Rise Time	t _r		-	16	-	nS
Turn-Off Delay Time	t _{d(off)}		-	65	-	nS
Turn-Off Fall Time	t _f		-	30	-	nS
Source-Drain Current(Body Diode)	I _{SD}	--	-	-76	-	A
Forward on voltage ²⁾	V _{SD}	I _{SD} =-8A, V _{GS} =0V,	-	-1.2	-	V
Forward Turn-on Time	t _{on}	ntrinsic turn-on time is negligible(turn-on is dominated				

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}=-20V, V_{GS}=-10V, L=0.1mH, I_{AS}=-38A.
- 4) The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation

7. Typical Characteristics

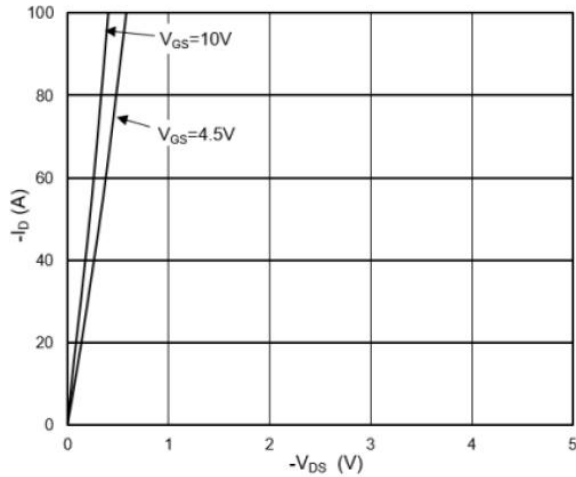


Figure 1. Output Characteristics

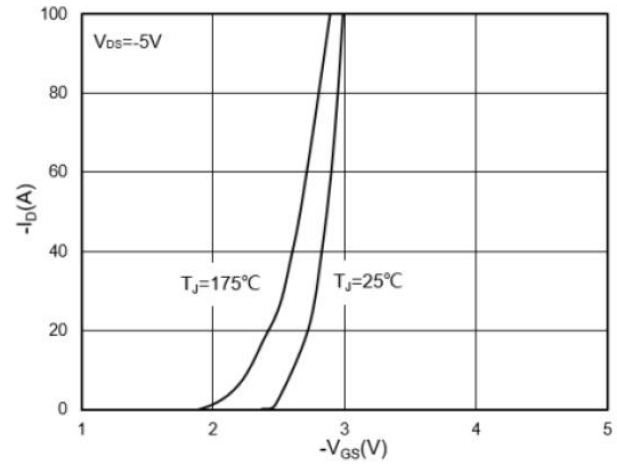


Figure 2. Transfer Characteristics

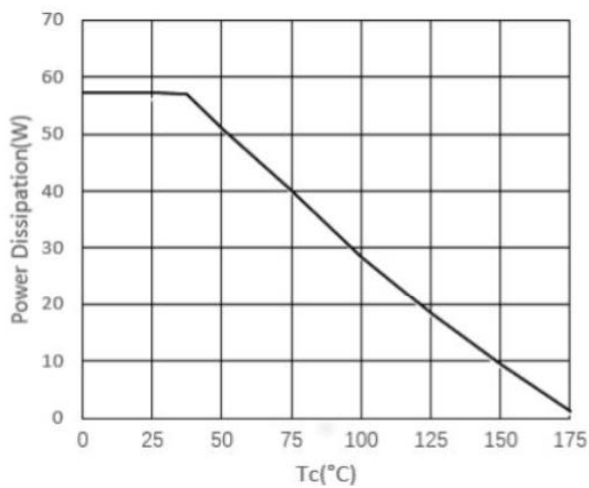


Figure 3. Power Dissipation

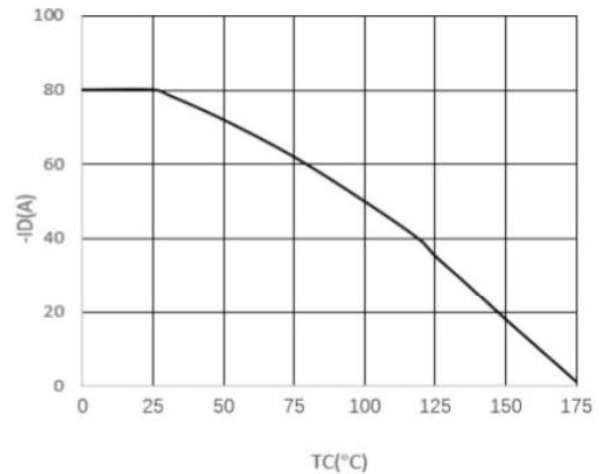


Figure 4. Drain Current

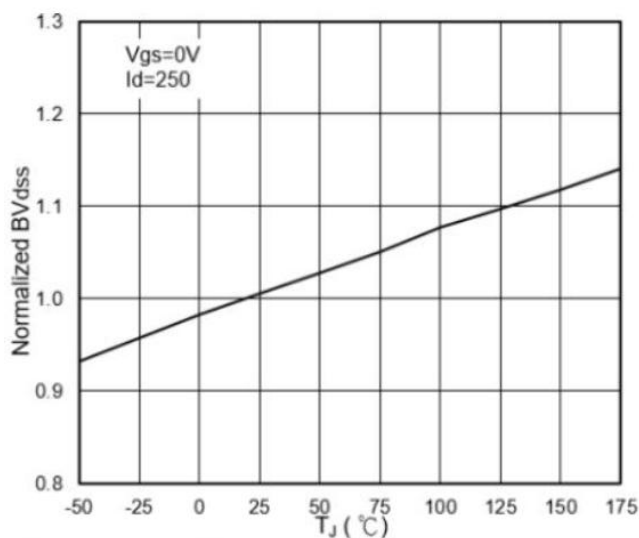


Figure 5. BV_DS VS Junction Temperature

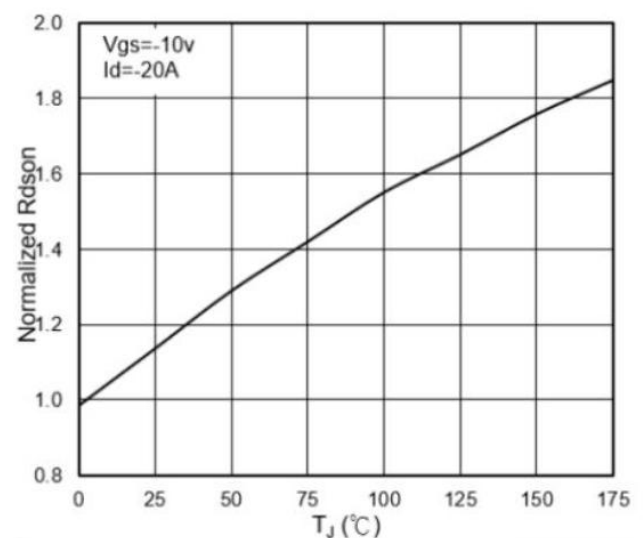


Figure 6. R_DS(on) VS Junction Temperature

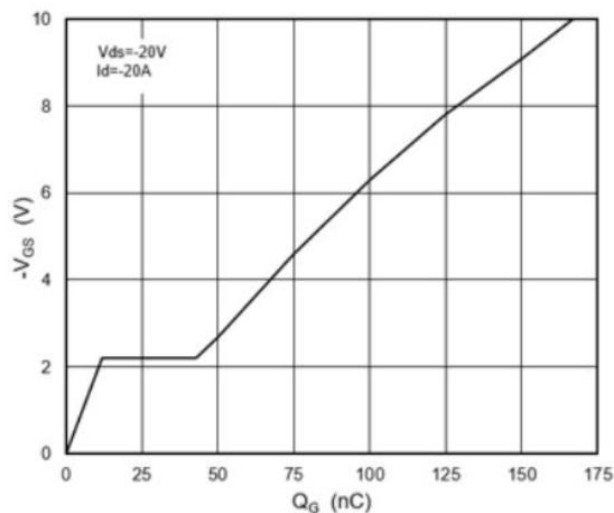


Figure 7. Gate Charge Waveforms

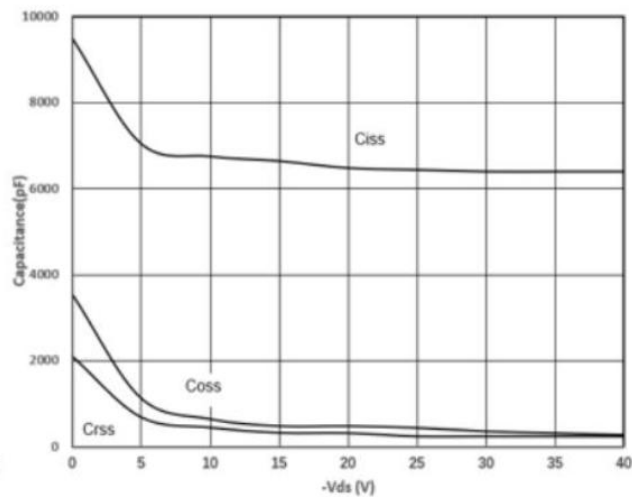


Figure 8. Capacitance

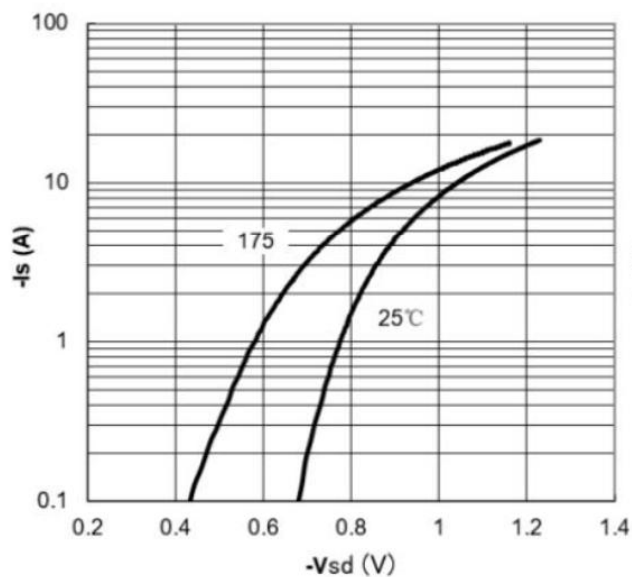


Figure 9. Body-Diode Characteristics

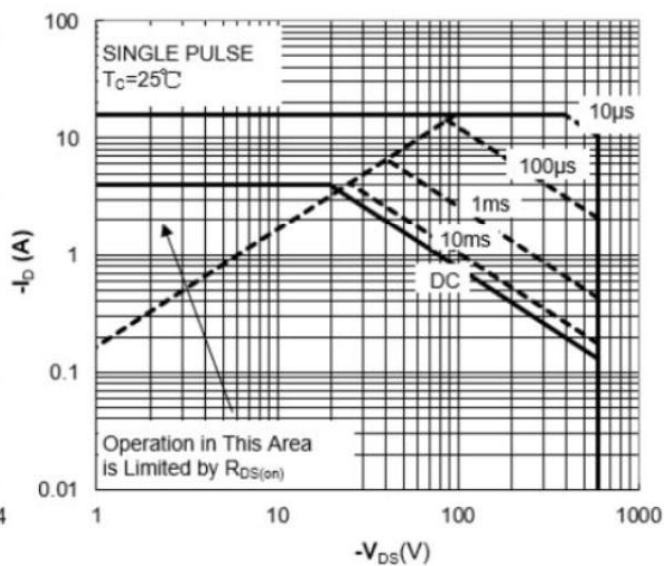


Figure 10. Maximum Safe Operating