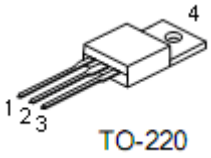
1. Applications

- DC-DC converters and Off-line UPS

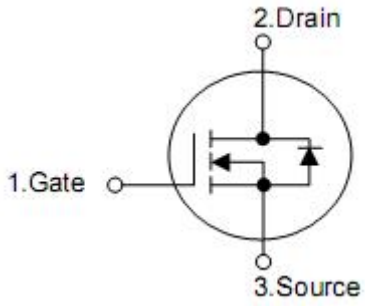
2. Features

- $R_{DS(on)}$= 3.0mΩ @V_{GS}= 10 V
- Super high dense cell design
- Ultra low On-Resistance
- Fast recovery body diode
- Lead Free and Green devices avallable (RoHS Compliant)

3. Pin configuration



TO-220



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

(T_C=25 ℃ , unless otherwise specified)

Parameter		Symbol	Ratings	Units
Drain-source voltage		V_{DSS}	40	V
Gate-source voltage		V_{GSS}	±20	V
Continuous drain currenet T_C=25 ℃[1]		I_D	150	A
Continuous drain currenet T_C=100 ℃			108	A
300us pulsed drain current tested T_C=25 ℃[2]		I_{DP}	600	A
Avalanche energy single pulse[3]		E_{AS}	400	mJ
Power dissipation	T_C=25 ℃	P_D	188	W
	T_C=100 ℃		94	W
Maximum junction temperature		T_J	175	℃
Storage temperature range		T_{STG}	-55~+175	℃
Diode continuous forward current T_C=25 ℃[1]		I_S	150	A

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance,Junction-to-case	θ_{JC}	0.8	℃/W

6. Electrical characteristics

(T_C=25°C,unless otherwise notes)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	40	-	-	V
Drain-to-source leakage current	I_{DSS}	V_{DS}=40V ,V_{GS}=0V	-	-	1	μA
		T_J=85 ºC	-	-	30	μA
Gate-to-source leakage current	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
		V_{GS}=-20V,V_{DS}=0V	-	-	-100	nA
On characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	3.0	4.0	V
Static drain-source on-resistance[4]	$R_{DS(on)}$	V_{GS}=10V,I_D=75A	-	3.0	4.0	mΩ
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V,f=1.0MHz	-	3870	-	pF
Output capacitance	C_{oss}		-	680	-	
Reverse transfer capacitance	C_{rss}		-	363	-	
Gate series resistance	R_G	V_{DS}=0V,V_{GS}=0V,f=1.0MHz	-	1.8	-	Ω
Total gate charge	Q_g	V_{DD}=32V,I_D=75A,V_{GS}=10V	-	95	-	nC
Gate-source charge	Q_{gs}		-	20	-	
Gate-drain (Miller)charge	Q_{gd}		-	30	-	
Resistive switching characteristics						
Turn-on delay time	$T_{d(ON)}$	V_{DD}=20V,I_D=75A,V_{GS}=10V, R_G=4.7Ω	-	35	-	nS
Rise time	t_{rise}		-	106	-	
Turn-off delay time	$T_{d(OFF)}$		-	84	-	
Fall time	t_{fall}		-	46	-	
Source-drain body diode characteristics	T_J=25°C,unless otherwise notes					
Diode forward voltage[4]	V_{SD}	V_{GS}=0V,I_S=75A	-	-	1.2	V
Reverse recovery time	t_{rr}	I_{SD}=75A,di_F/dt=100A/μs,	-	45	-	ns
Reverse recovery charge	Q_{rr}		-	90	-	nC

Note: 1. Caiculated continuous current based on maximum allowable junction temperature. Limited by bonding wire.

2. Pulse width limited by safe operating area.

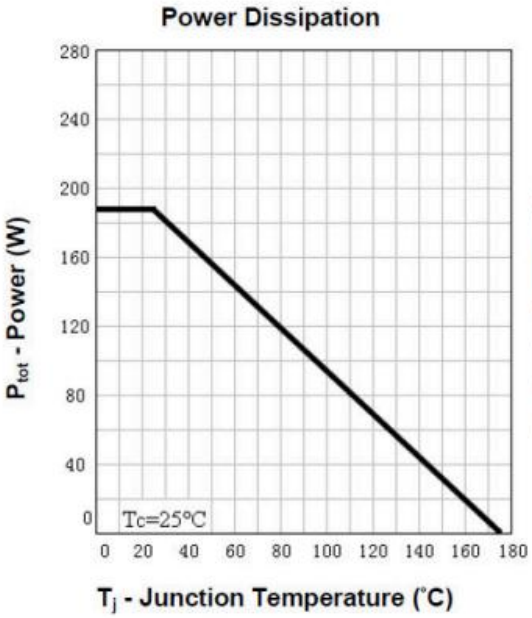
3. Limited by T_{Jmax}, I_{AS}=40A, V_{DD}=32V, R_G=47Ω, Starting T_J=25°C.

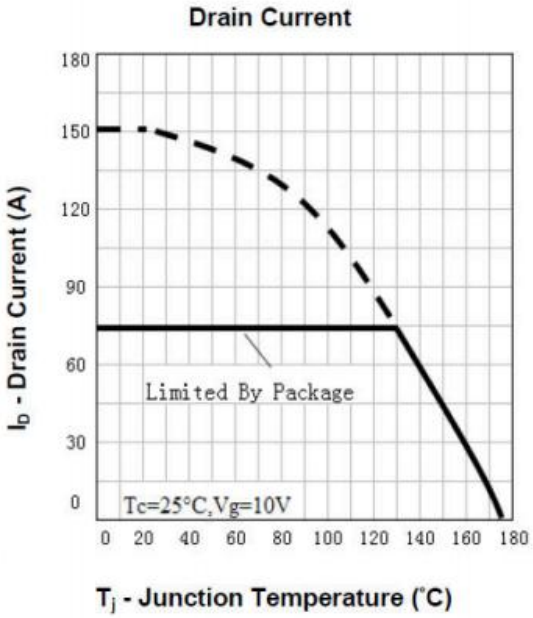
4. Pulse test; Pulse width ≤300μs; duty cycle ≤2%.

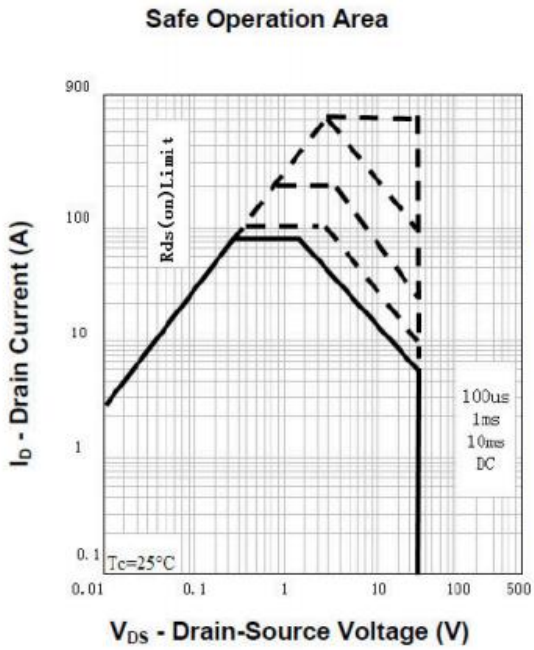
5. Guaranteed by design, not subject to production testing.

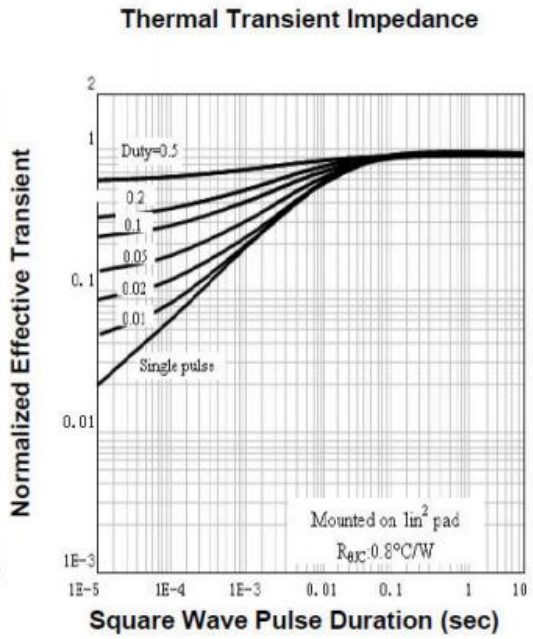
6.KIA finished product specifications please customer before placing order, should obtain the latest version of the finished product specifications.

7. Typical characteristics

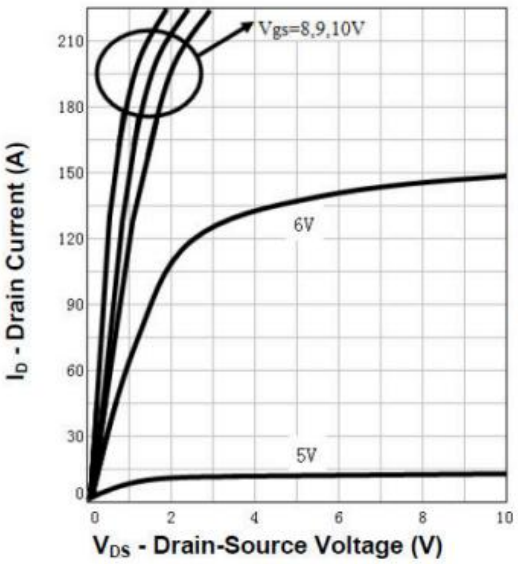




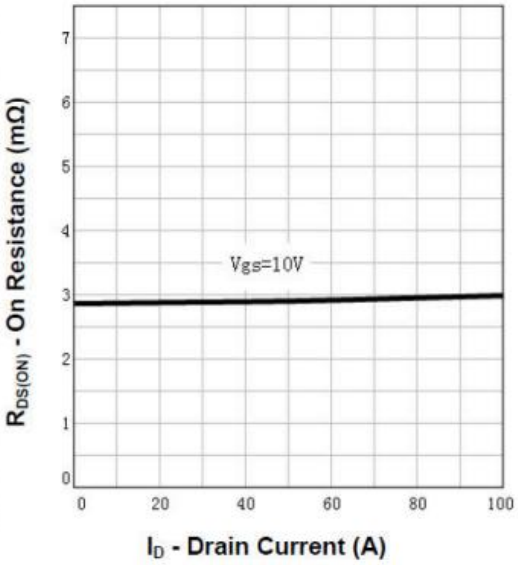




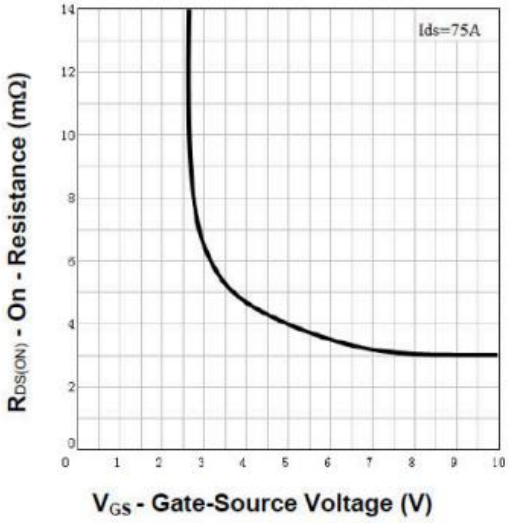
Output Characteristics



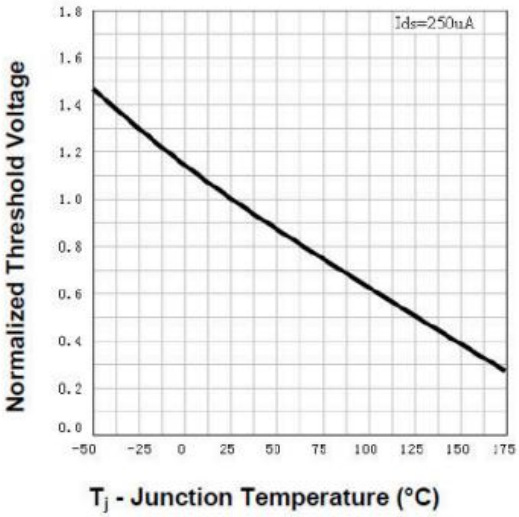
Drain-Source On Resistance



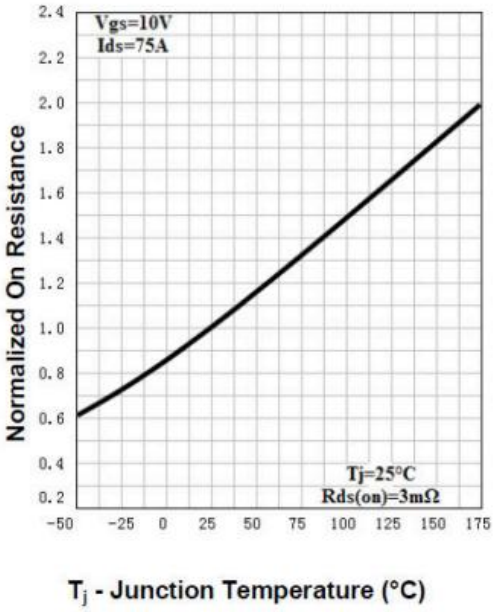
Drain-Source On Resistance



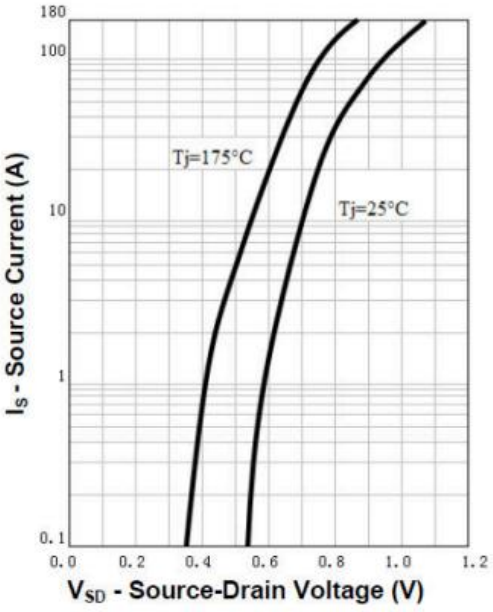
Gate Threshold Voltage



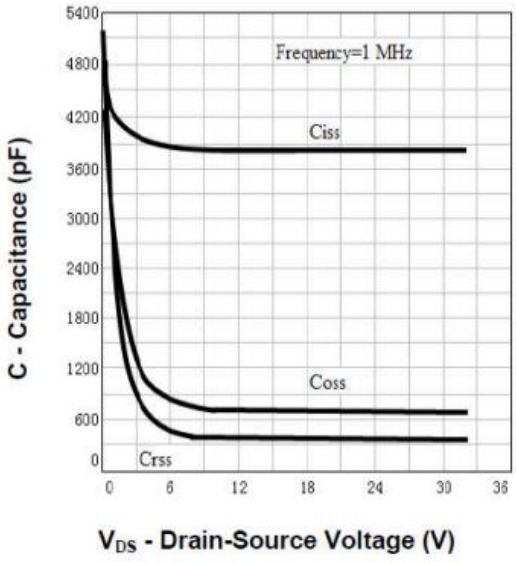
Drain-Source On Resistance



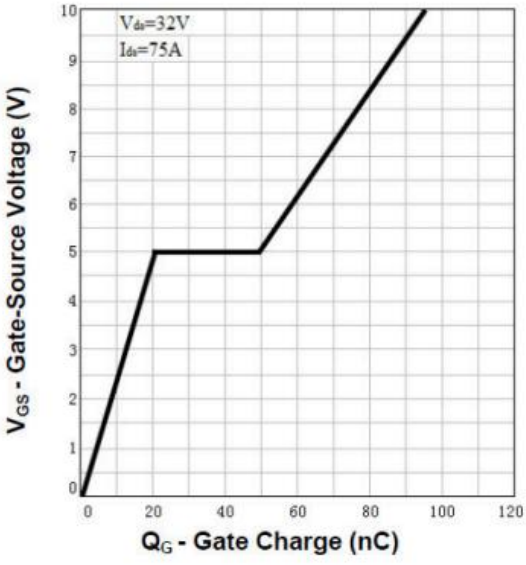
Source-Drain Diode Forward



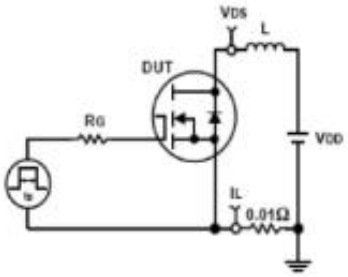
Capacitance

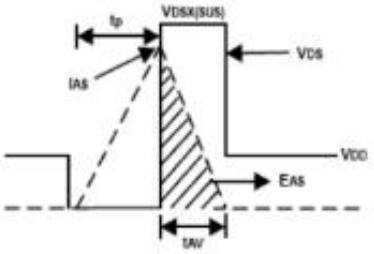


Gate Charge



8. Test circuits and waveforms





Switching Time Test Circuit and Waveforms