

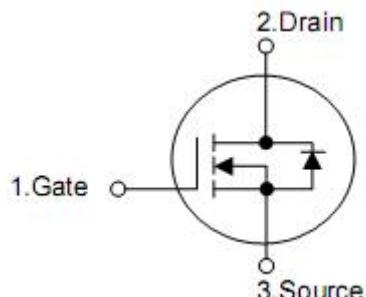
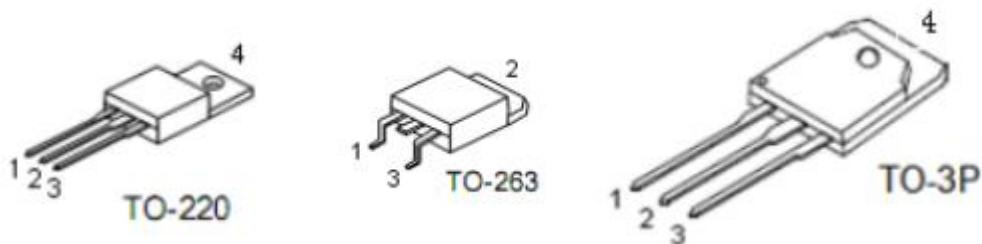
1. Applications

- High efficiency synchronous rectification in SMPS
- High speed power switching

2. Features

- $R_{DS(on)}=7.0\text{m}\Omega$ @ $V_{GS}= 10\text{ V}$
- Super high dense cell design
- Ultra low On-Resistance
- 100% avalanche tested
- Lead Free and Green devices available (RoHS Compliant)

3. Pin configuration



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

Parameter	Symbol	Ratings		Units
		TO-220/263	TO-3P	
Drain-source voltage	V _{DSS}	100		V
Gate-source voltage	V _{GSS}	±25		V
Continuous drain current at T _C =25 °C ²	I _D	130		A
Continuous drain current at T _C =100 °C ²		99		A
300us pulsed drain current tested T _C =25 °C ¹	I _{DP}	560		A
Avalanche energy single pulse ³	E _{AS}	552		mJ
Power dissipation	T _C =25 °C	P _D	300	375
	T _C =100 °C		150	187.5
Maximum junction temperature	T _J	175		°C
Storage temperature range	T _{STG}	-55~+175		°C
Diode continuous forward current T _C =25 °C	I _S	140		A

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-to-case	θ _{JC}	0.5	°C/W
Thermal resistance, Junction-to-ambient	θ _{JA}	62.5	°C/W

6. Electrical characteristics

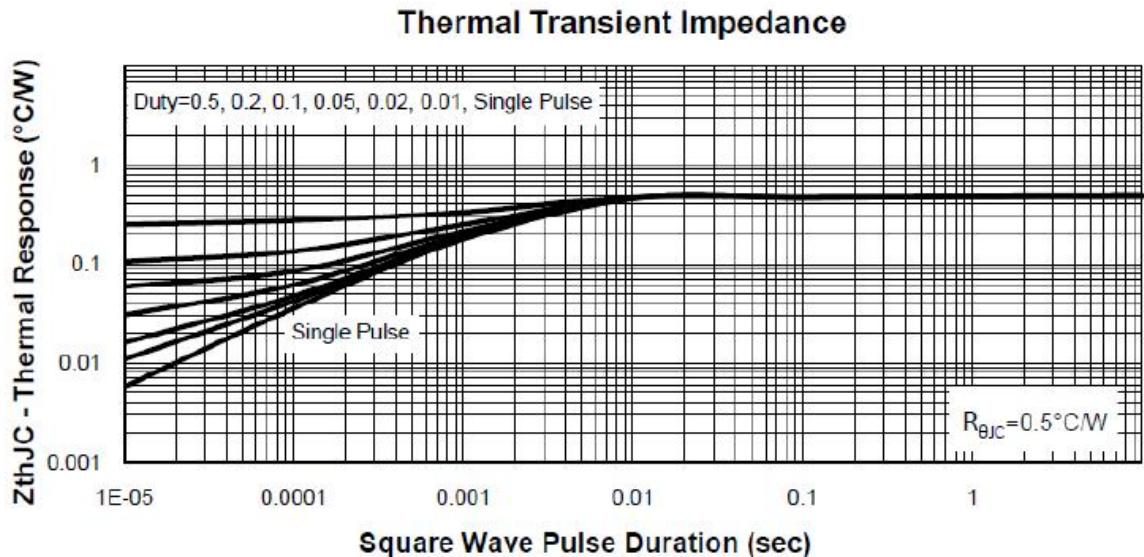
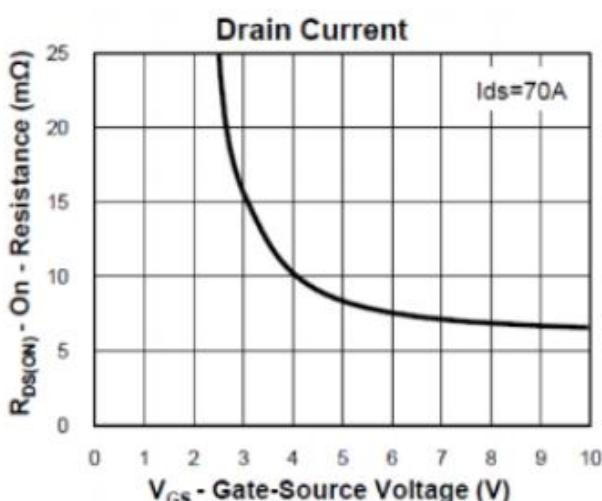
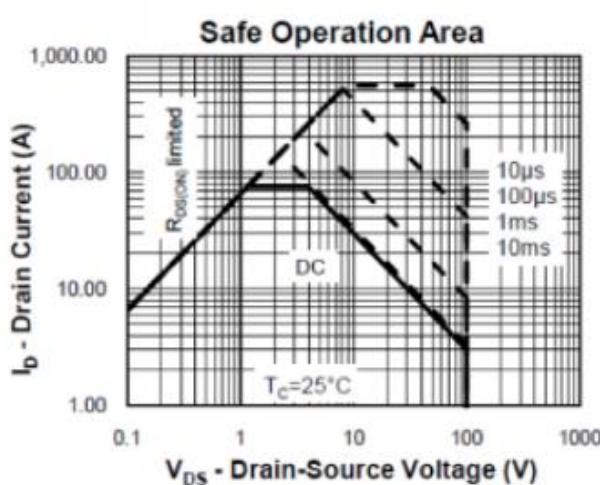
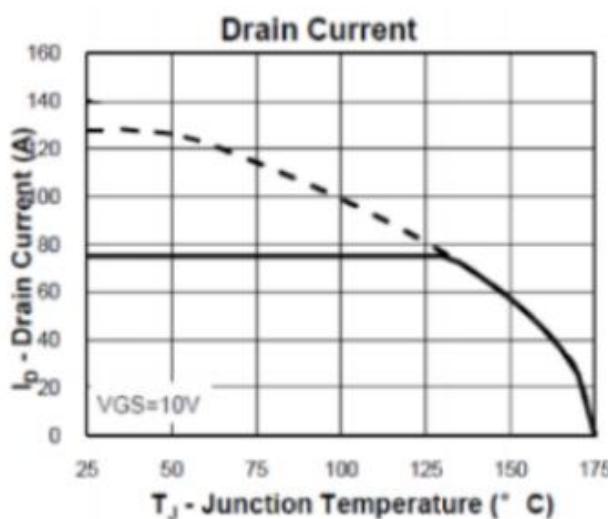
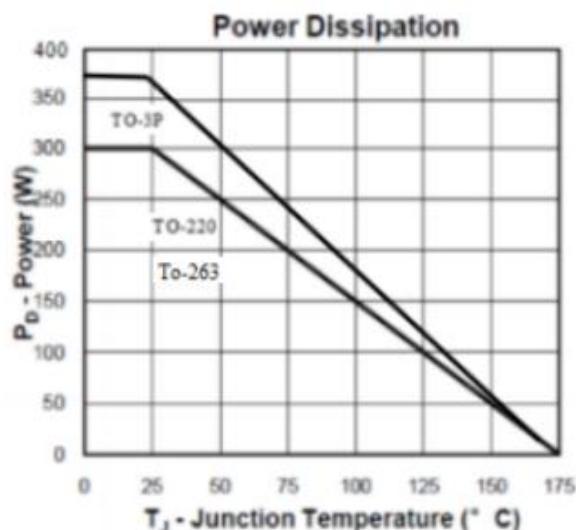
($T_c=25^\circ\text{C}$,unless otherwise notes)

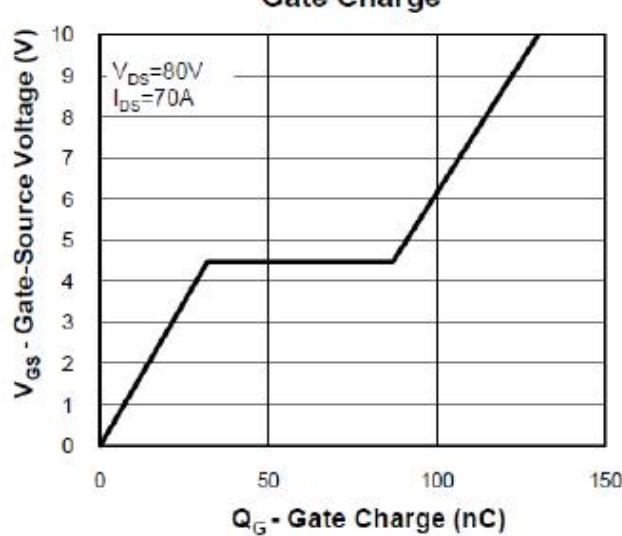
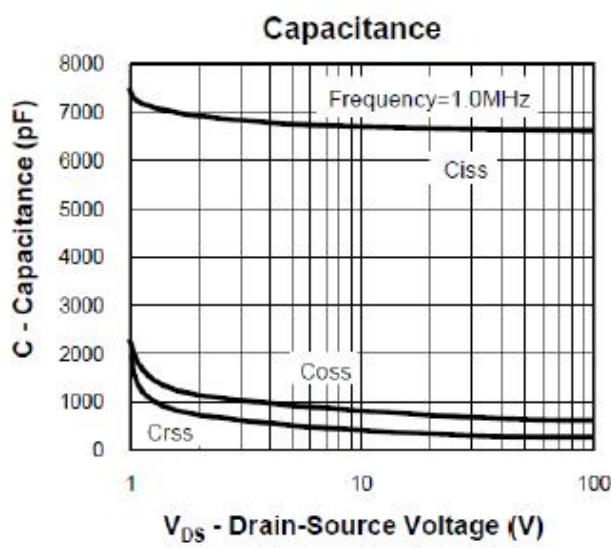
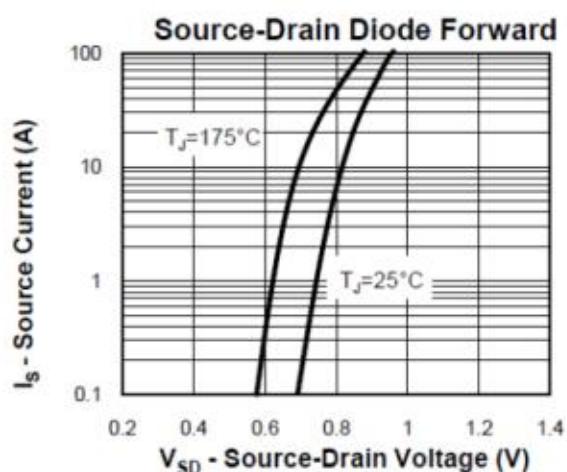
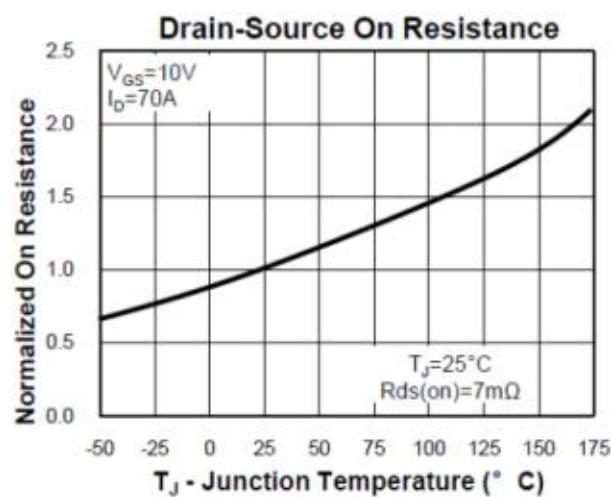
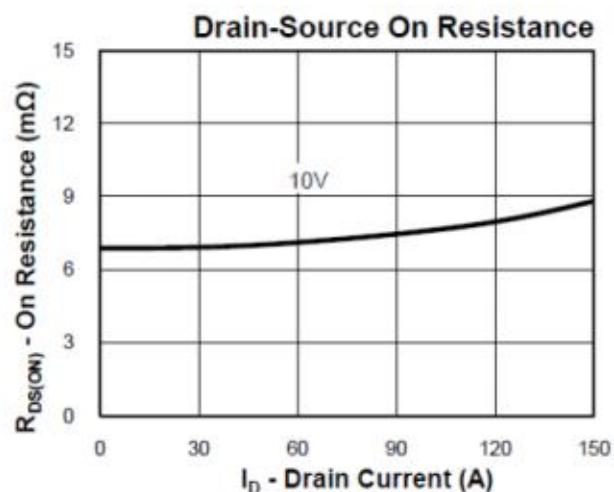
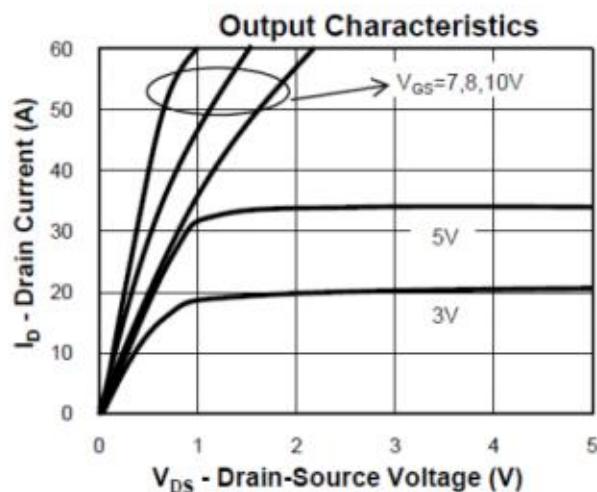
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	100	-	-	V
Drain-to-source leakage current	$I_{\text{DS}(\text{off})}$	$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
		$T_J=125^\circ\text{C}$	-	-	30	μA
Gate-to-source leakage current	I_{GSS}	$V_{\text{GS}}=25\text{V}, V_{\text{DS}}=0\text{V}$	-	-	100	nA
		$V_{\text{GS}}=-25\text{V}, V_{\text{DS}}=0\text{V}$	-	-	-100	nA
On characteristics						
Gate threshold voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	2.0	-	4.0	V
Static drain-source on-resistance ⁴	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=70\text{A}$	-	7.0	9.0	$\text{m}\Omega$
Gate charge characteristics⁵						
Total gate charge	Q_g	$V_{\text{DS}}=80\text{V}, I_{\text{D}}=70\text{A}, V_{\text{GS}}=10\text{V}$	-	130	-	nC
Gate-source charge	Q_{gs}		-	32	-	
Gate-drain (Miller)charge	Q_{gd}		-	55	-	
Dynamic characteristics⁵						
Gate series resistance	R_g	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=0\text{V}, f=1.0\text{MHz}$	-	1	-	Ω
Turn-on delay time	$T_{\text{d(ON)}}$	$V_{\text{DD}}=50\text{V}, I_{\text{D}}=70\text{A}, V_{\text{GEN}}=10\text{V}, R_g=5\Omega$	-	24	-	nS
Rise time	t_{rise}		-	91	-	
Turn-off delay time	$T_{\text{d(OFF)}}$		-	75	-	
Fall time	t_{fall}		-	65	-	
Input capacitance	C_{iss}	$V_{\text{DS}}=50\text{V}, V_{\text{GS}}=0\text{V}, f=1.0\text{MHz}$	-	6800	-	pF
Output capacitance	C_{oss}		-	630	-	
Reverse transfer capacitance	C_{rss}		-	350	-	
Source-drain body diode characteristics $T_J=25^\circ\text{C}$,unless otherwise notes						
Diode forward voltage ⁴	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=70\text{A}$	-	-	1.2	V
Reverse recovery time	t_{rr}	$I_{\text{SD}}=70\text{A}, \text{di}_I/\text{dt}=100\text{A}/\mu\text{s},$	-	43	-	ns
Reverse recovery charge	Q_{rr}		-	67	-	nC

Note: 1. Pulse width limited by safe operating area.

2. Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 75A
3. Limited by $T_{J\max}$, $I_{AS}=47\text{A}$, $V_{DD}=48\text{V}$, $R_g=50\Omega$, Starting $T_J=25^\circ\text{C}$.
4. Pulse test; Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.
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.

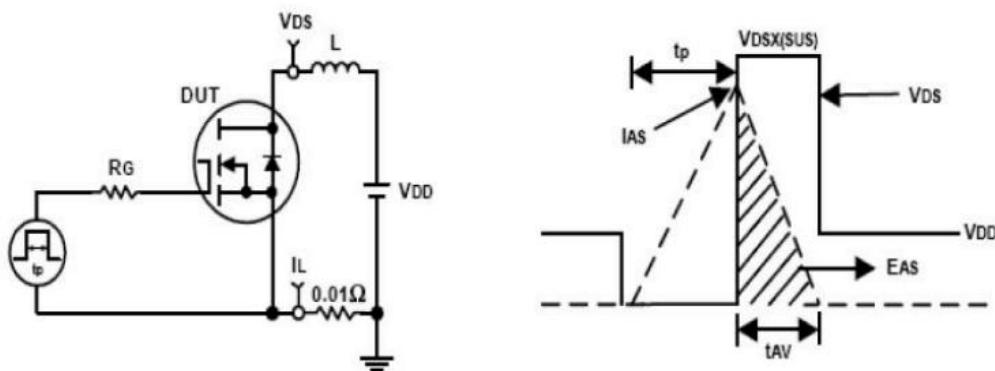
7. Typical characteristics





8. Test circuits and waveforms

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

