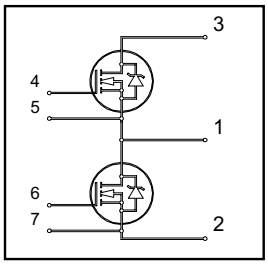
XI'AN IR-PERI Company

PRELIMINARY # FP150TA10U

"HALF-BRODGE " HEXFET Power MOSFET A - A - PAK

Features

- Advanced Process Technology
- Ultra Low On-Resistance
- Dynamic dv/dt Rating
- 175 °C Operating Temperature
- Fast Switching
- Fully Avalanche Rated



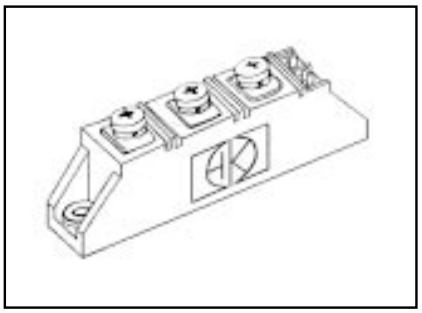
V_{DSS}=100V

$R_{DS(on)}$ =0.009Ω

I_D=170A

Benefits

- Increased operating efficiency
- Direct mounting to heatsink
- Performance optimized for power conversion: UPS, SMPS, Welding,Mortor Control
- Lower EMI, requries less snubbing



Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ Tc=25°C	Continuous Drain Current,V_{GS}@10V	170	A
I_D @ Tc=100°C	Continuous Drain Current,V_{GS}@10V	120	
I_{DM}	Pulsed Drain Current	670	
P_D @ Tc=25°C	Power Dissipation	580	W
	Linear Derating Factor	3.8	W/°C
V_{GS}	Gate- to- Source Voltage	±30	V
E_{AS}	Single Pulse Avalanche Energy	1350	mJ
I_{AR}	Avalanche Current	100	A
E_{AR}	Repetitive Avalanche Energy	58	mJ
dv/dt	Peak Diode Recovery dv/dt	2.3	V/ns
T_J	Operating Junction Temperature Range	-55 to +175	°C
T_{STG}	Storage Temperature Range	-55 to +175	

Termal / Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- IBGT	-	0.26	°C/W
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- Diode	-	0.36	
$R_{\theta CS}$	Termal Resistance, Csar-to- Sink- Module	0.1	-	
	Mouting Torque, Case-to-Heatsink	-	4.0	N.m
	Mouting Torque, Case-to-Terminal 1,2 & 3	-	3.0	
	Weight of Module	100	-	g

Electrical Characteristics @ T_J=25°C(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	100	—	—	V	V_{GS}=0V, I_D=250μA
$DV_{(BR)DSS}/DT_J$	Breakdown Voltage Temp. Coefficient	—	0.11	—	V/°C	Reference to 25°C, I_D=250μA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.009	Ω	V_{GS}=10V, I_D=100A
$V_{GS(th)}$	Gate Threshold Voltage	3.0	—	5.0	V	V_{DS}=10V, I_D=250μA
g_{fe}	Forward Transconductance	52	—	—	S	V_{DS}=50V, I_D=100A
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	V_{DS}=100V,V_{GS}=0V
		—	—	250		V_{DS}=80V,V_{GS}=0V,T_J=125°C
I_{GSS}	Drain-to-Source Forward Current	—	—	100	nA	V_{GS}=30V
	Drain-to-Source Reverse Current	—	—	-100		V_{GS}=-30V
Q_g	Total Gate Charge	—	260	390		I_D=100A
Q_{gs}	Gate-to-Source Charge	—	49	74	nC	V_{DS}=80V
Q_{gd}	Gate-to-Drain (Miller) Charge	—	160	250		V_{GS}=10V
$t_{d(on)}$	Turn - On Delay Time	—	24	—		V_{DD} = 50V
t_r	Rise Time	—	270	—	nS	I_D = 100A
$t_{d(off)}$	Turn - Off Delay Time	—	45	—		R_G =1.03Ω
t_f	Fall Time	—	140	—		V_{GS}= 10V
L_D	Intemal Drain Inductance	—	5.0	—	nH	Between lead,6mm from
L_S	Intemal Source Inductance	—	13	—		package and center of die
C_{iss}	Input Capacitance	—	6790	—		V_{GS} = 0V
C_{oss}	Output Capacitance	—	2470	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	990	—	pF	*f* =1.0MHz
C_{oss}	Output Capacitance	—	10740	—		V_{GS}=0V,V_{DS}=1.0V,*f*=1.0MHz
C_{oss}	Output Capacitance	—	1180	—		V_{GS}=0V,V_{DS}=80V,*f*=1.0MHz
$C_{oss\ eff.}$	Effective Output Capacitance	—	2210	—		V_{GS}=0V,V_{DS}=0V to 80V

Dynamic Characteristics - T_J=125°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	174	A	MOSFET symbol showing the
I_{SM}	Pulsed Source Current (Body Diode)	—	—	670		integral reverse p-n junction diode
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J=25°C,I_S=100A,V_{GS}=0V
t_{rr}	Diode Reverse Recovery Time	—	220	330	nS	T_J=25°C,I_F=100A
Q_{rr}	Diode Reverse Recovery Charge	—	1640	2460	nC	di/dt=100A/μs
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by Ls+Ld)				