

# HiPerFET™ Power MOSFETs

IXFK 73 N 30  
IXFN 73 N 30

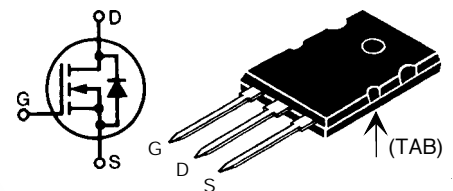
$V_{DSS}$	$I_{D25}$	$R_{DS(on)}$
300 V	73 A	45 mΩ
300 V	73 A	45 mΩ

$t_{rr} \leq 200$  ns

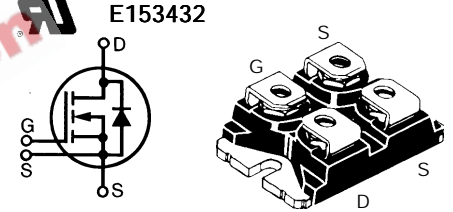
N-Channel Enhancement Mode  
Avalanche Rated, High dv/dt, Low  $t_{rr}$

Symbol	Test Conditions	Maximum Ratings		
		IXFK	IXFN	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	300	300	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1$ MΩ	300	300	V
$V_{GS}$	Continuous	±20	±20	V
$V_{GSM}$	Transient	±30	±30	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	73	73	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$	292	292	A
$I_{AR}$	$T_C = 25^\circ\text{C}$	40	40	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	30	30	mJ
dv/dt	$I_S \leq I_{DM}$ , $di/dt \leq 100$ A/μs, $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ\text{C}$ , $R_G = 2$ W	5	5	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	500	520	W
$T_J$		-55 ... +150		°C
$T_{JM}$			150	°C
$T_{stg}$		-55 ... +150		°C
$T_L$	1.6 mm (0.063 in) from case for 10 s	300	-	°C
$V_{ISOL}$	50/60 Hz, RMS $t = 1$ min	-	2500	V~
	$I_{ISOL} \leq 1$ mA $t = 1$ s	-	3000	V~
$M_d$	Mounting torque	0.9/6	1.5/13	Nm/lb.in.
	Terminal connection torque	-	1.5/13	Nm/lb.in.
Weight		10	30	g

TO-264 AA (IXFK)



miniBLOC, SOT-227 B (IXFN)



G = Gate  
S = Source

D = Drain  
TAB = Drain

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

### Features

- International standard packages
- JEDEC TO-264 AA, epoxy meet UL94 V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- Low  $R_{DS(on)}$  HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- Fast intrinsic Rectifier

### Applications

- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

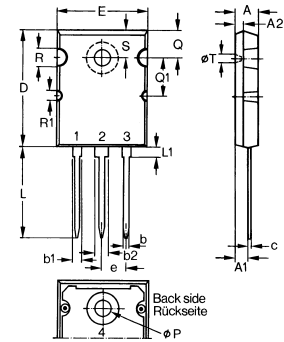
### Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0$ V, $I_D = 1$ mA	300		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8$ mA	2		4 V
$I_{GSS}$	$V_{GS} = \pm 20$ V, $V_{DS} = 0$			±200 nA
$I_{DSS}$	$V_{DS} = 0.8 V_{DSS}$ , $T_J = 25^\circ\text{C}$			400 μA
	$V_{GS} = 0$ V, $T_J = 125^\circ\text{C}$			2 mA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300$ μs, duty cycle $d \leq 2\%$			45 mΩ

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}$ , pulse test		50	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		9000	pF
$C_{oss}$			1500	pF
$C_{rss}$			580	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 1\ \Omega$ (External),		30	ns
$t_r$			80	ns
$t_{d(off)}$			100	ns
$t_f$			50	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$		360	nC
$Q_{gs}$			60	nC
$Q_{gd}$			180	nC
$R_{thJC}$	TO-264 AA		0.25	K/W
$R_{thCK}$	TO-264 AA		0.15	K/W
$R_{thJC}$	miniBLOC, SOT-227 B		0.24	K/W
$R_{thCK}$	miniBLOC, SOT-227 B		0.05	K/W

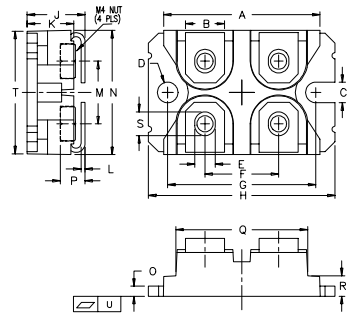
### TO-264 AA Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_s$	$V_{GS} = 0\text{ V}$			73 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			292 A
$V_{SD}$	$I_F = 100\text{ A}, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			1.5 V
$t_{rr}$	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		2	200 ns
$Q_{RM}$			40	$\mu\text{C}$
$I_{RM}$				A

### miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

Fig. 1 Output Characteristics

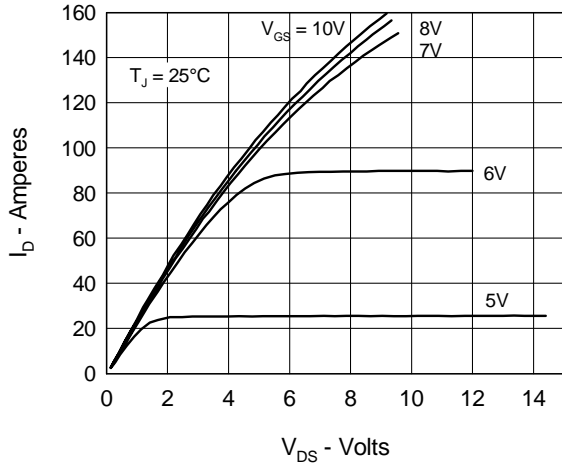


Fig. 2 Input Admittance

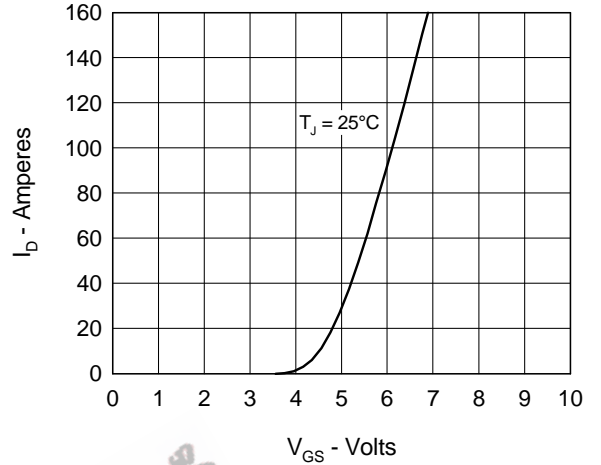


Fig. 3  $R_{DS(on)}$  vs. Drain Current

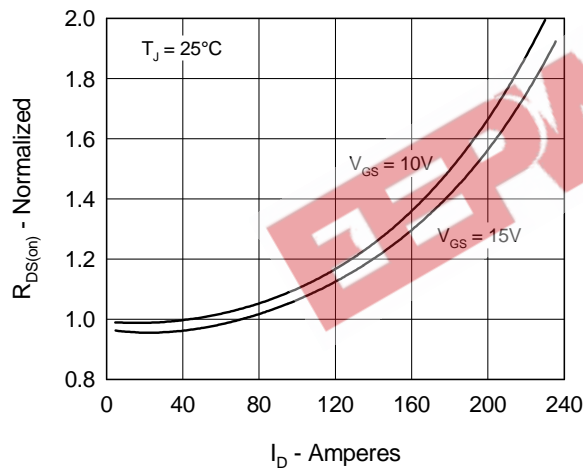


Fig. 4 Temperature Dependence of Drain to Source Resistance

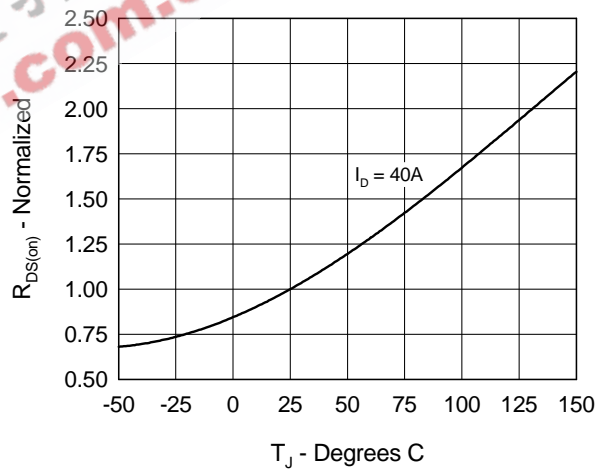


Fig. 5 Drain Current vs. Case Temperature

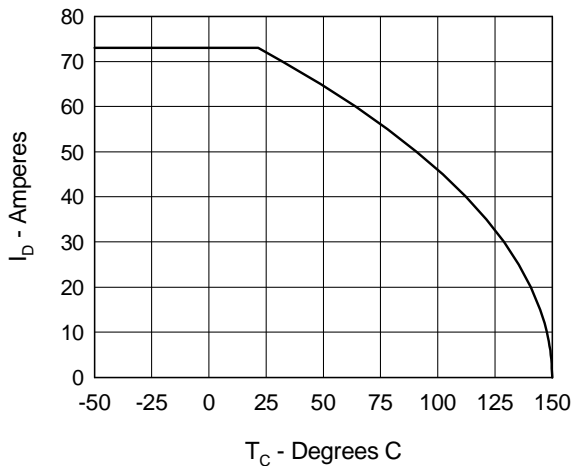


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

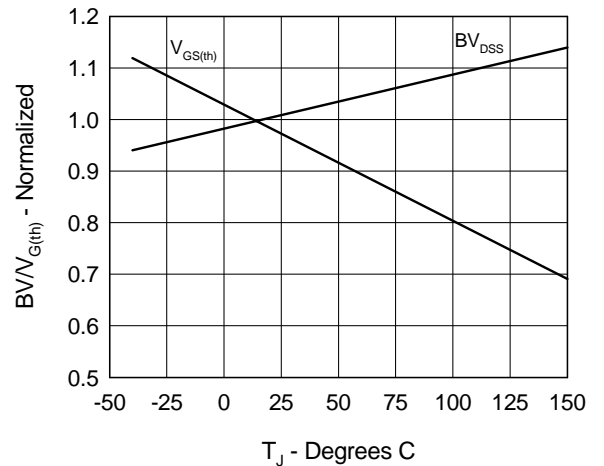


Fig.7 Gate Charge Characteristic Curve

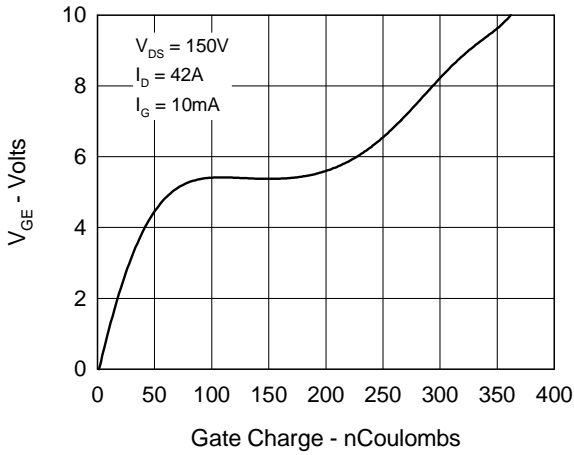


Fig.8 Capacitance Curves

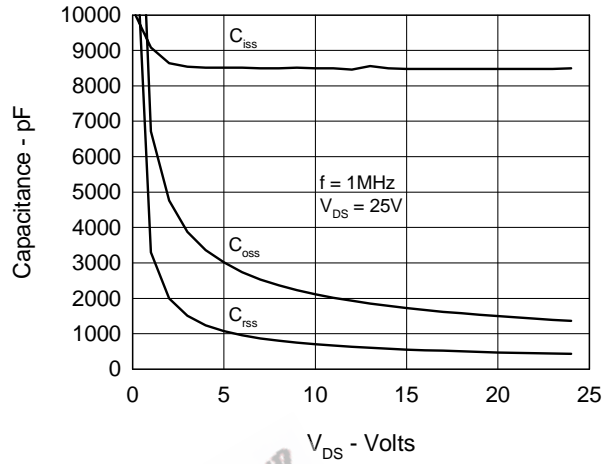


Fig.9 Source Current vs. Source to Drain Voltage

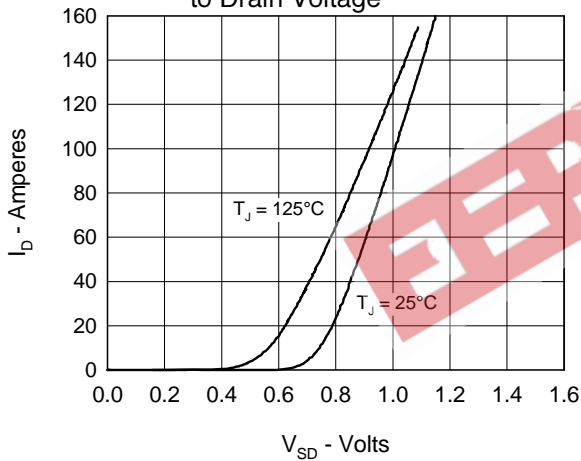
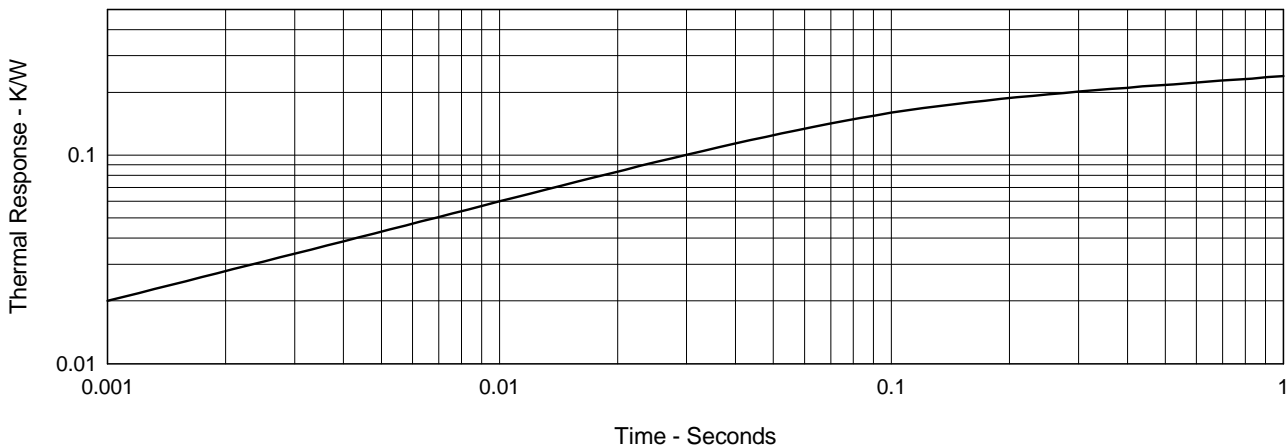


Fig.10 Transient Thermal Impedance



IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025