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IXYS

IXFK 32N60 IXFN 32N60
IXFK 36N60 IXFN 36N60

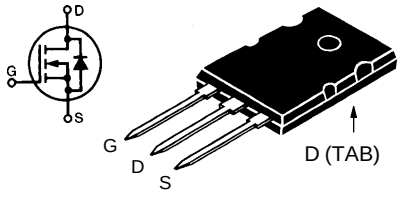
Preliminary Data

	V_{DSS}	I_{D25}	$R_{DS(on)}$	t_{rr}
IXFK/FN 36N60	600V	36A	0.18Ω	250ns
IXFK/FN 32N60	600V	32A	0.25Ω	250ns

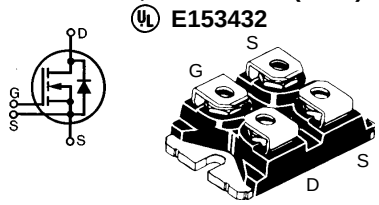
HiPerFET™ Power MOSFET

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

TO-264 AA (IXFK)



miniBLOC, SOT-227 B (IXFN)
UL E153432



G = Gate D = Drain
S = Source TAB = Drain
Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Symbol	Test Conditions		Maximum Ratings IXFK	IXFN	
V_{DSS}	T_J = 25°C to 150°C		600	600	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		600	600	V
V_{GS}	Continuous		±20	±20	V
V_{GSM}	Transient		±30	±30	V
I_{D25}	T_C = 25°C, Chip capability	32N60	32	32	A
		36N60	36	36	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	32N60	128	128	A
		36N60	144	144	A
I_{AR}	T_C = 25°C		20	20	A
E_{AR}	T_C = 25°C		30	30	mJ
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$ $T_J \le 150°C$, R_G = 2 Ω		5	5	V/ns
P_D	T_C = 25°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, RMSt = 1 min		-	2500	V~
	$I_{ISOL} \le$ 1 mAt = 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

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 1 mA		600			V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA		2		4.5	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS} = 0.8 V_{DSS}	T_J = 25°C			400	µA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}	36N60			0.18	Ω
	Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	32N60			0.25	Ω

Features

- International standard packages
- JEDEC TO-264 AA, epoxy meet UL 94 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

92807G (01/96)

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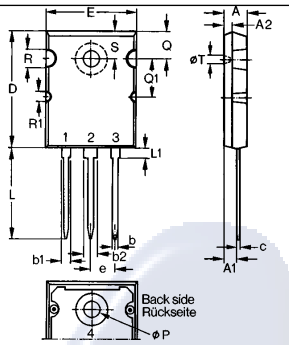
IXFK 36N60 IXFN 36N60

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test		36		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		9000		pF
C_{oss}			840		pF
C_{rss}			280		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25} R_G = 1 Ω (External),		30		ns
t_r			45		ns
$t_{d(off)}$			100		ns
t_f			60		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		325		nC
Q_{gs}			60		nC
Q_{gd}			120		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

Source-Drain Diode

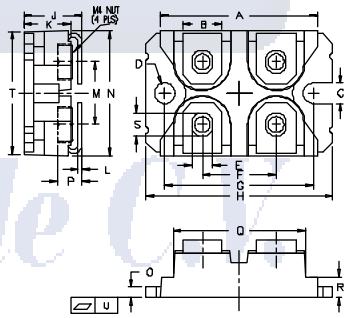
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)	Min.	Typ.	Max.	
I_S	V_{GS} = 0	36N60			36	A
I_S	V_{GS} = 0	32N60			32	A
I_{SM}	Repetitive; pulse width limited by T_{JM}	36N60			144	A
		32N60			128	A
V_{SD}	I_F = I_S A, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100 V				250	ns
I_{RM}				20		A

TO-264 AA Outline



Dim.	Millimeter Min.	Max.	Inches 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

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches 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

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Fig.1. Output Characteristics

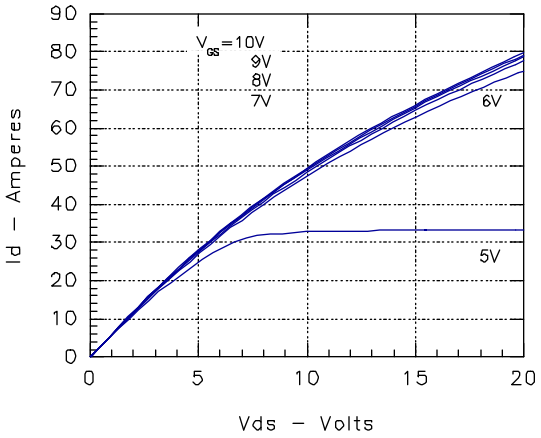

Fig. 2. Input Admittance

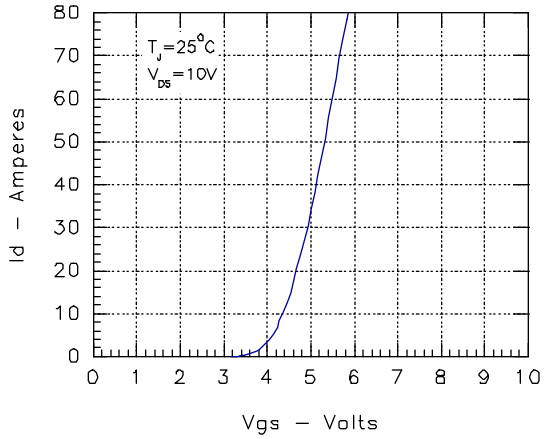

Fig. 3. Rds(on) vs. Drain Currente

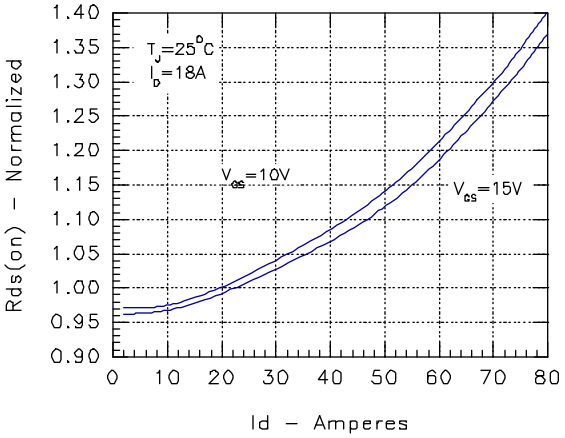

Fig. 4. Temperature Dependence of Drain to Source Resistance

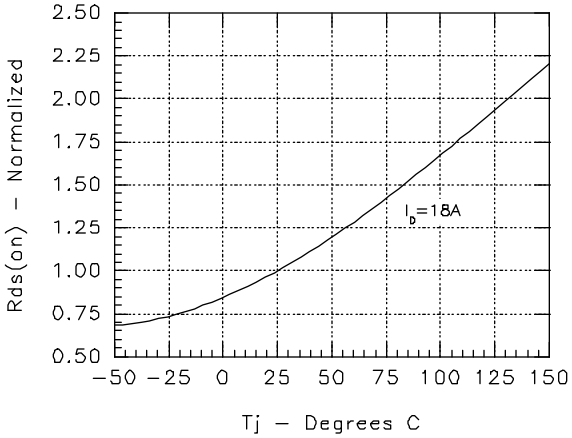

Fig. 5. Drain Current vs. Case Temperature

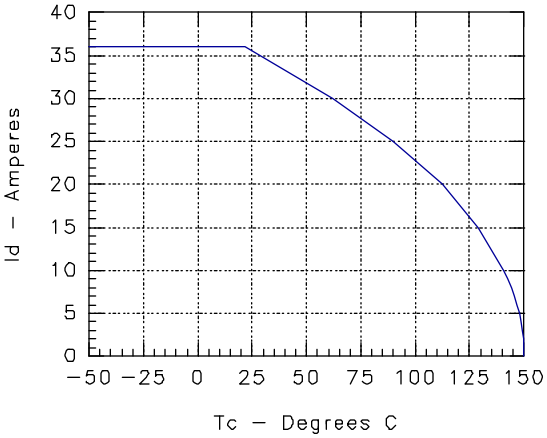

Fig. 6. Temperature Dependence of Breakdown Voltage and Threshold Voltage

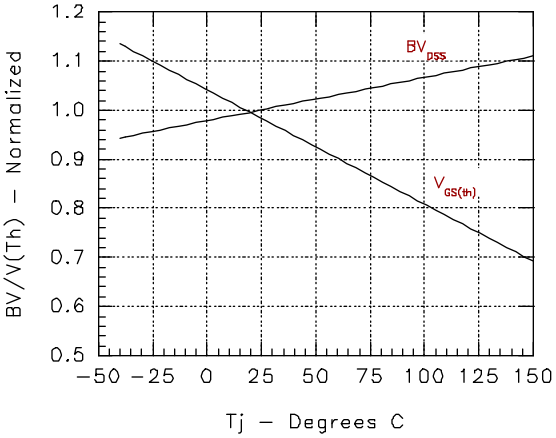

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Fig. 7. Gate Charge

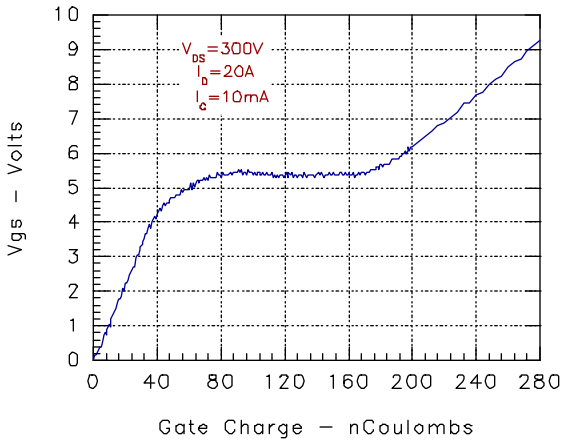


Fig. 8. Capacitance Curves

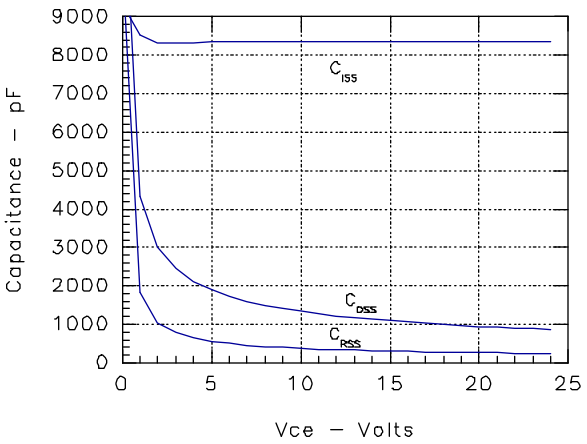


Fig. 9. Source Current vs. Source to Drain Voltage

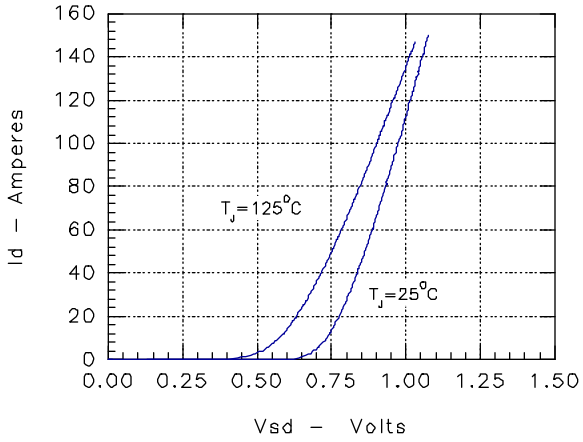
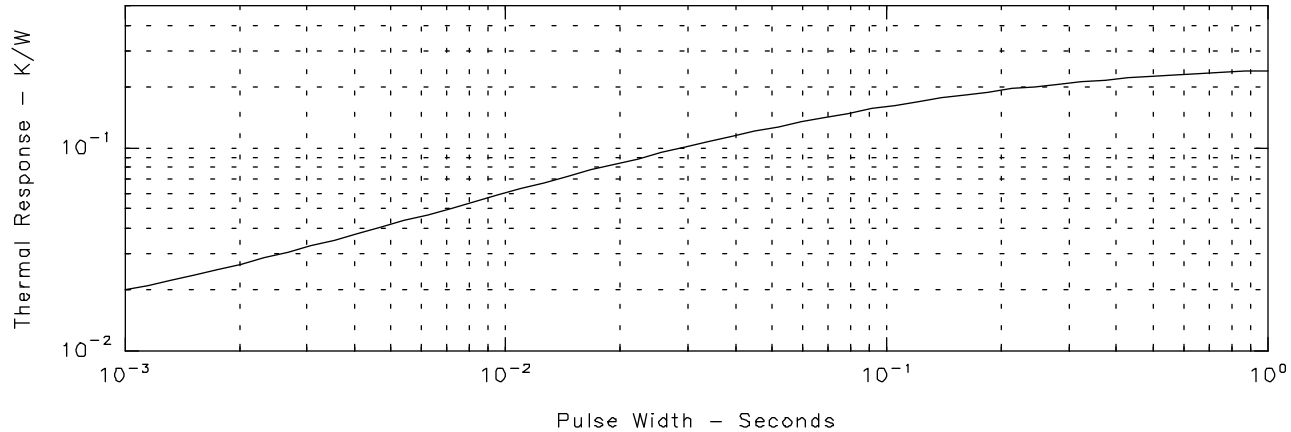


Fig. 10. Transient Thermal Impedance



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