

Preliminary Data

HiPerFET™ Power MOSFET

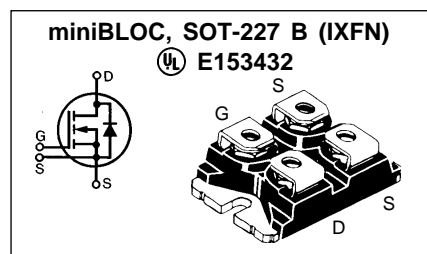
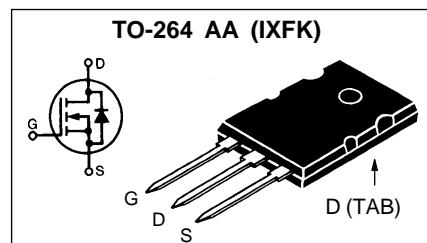
N-Channel Enhancement Mode

Avalanche Rated, High dv/dt, Low t_{rr}

	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

Symbol	Test Conditions	Maximum Ratings			
		IXFK	IXFN		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600	600		V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	600	600		V
V_{GS}	Continuous	± 20	± 20		V
V_{GSM}	Transient	± 30	± 30		V
I_{D25}	$T_C = 25^\circ\text{C}$, Chip capability	32N60	32	32	A
		36N60	36	36	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	32N60	128	128	A
		36N60	144	144	A
I_{AR}	$T_C = 25^\circ\text{C}$	20	20		A
E_{AR}	$T_C = 25^\circ\text{C}$	30	30		mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100\text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$, $R_G = 2\ \Omega$	5	5		V/ns
P_D	$T_C = 25^\circ\text{C}$	500	520		W
T_J		-55 ...	+150		$^\circ\text{C}$
T_{JM}			150		$^\circ\text{C}$
T_{stg}		-55 ...	+150		$^\circ\text{C}$
T_L	1.6 mm (0.063 in) from case for 10 s	300	-		$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMSt = 1 min $I_{ISOL} \leq 1\text{ mA}$ at 1 s	-	2500		V~
		-	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		
		$(T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$	600		V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, $I_D = 8\text{ mA}$	2		4.5 V
I_{GSS}	$V_{GS} = \pm 20\text{ V}_{DC}$, $V_{DS} = 0$			$\pm 200\text{ nA}$
I_{DSS}	$V_{DS} = 0.8\text{ V}_{DSS}$ $V_{GS} = 0\text{ V}$	$T_J = 25^\circ\text{C}$		400 μA
		$T_J = 125^\circ\text{C}$		2 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 0.5\text{ I}_{D25}$ Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$	36N60		0.18 Ω
		32N60		0.25 Ω



G = Gate D = Drain
S = Source 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 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

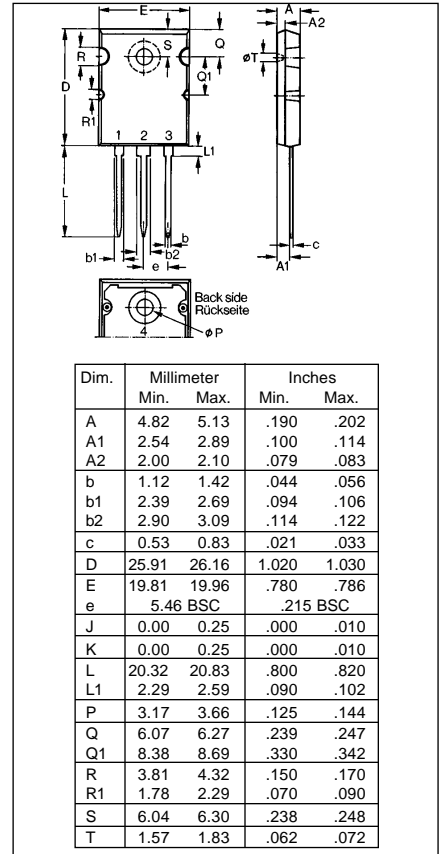
Advantages

- Easy to mount
- Space savings
- High power density

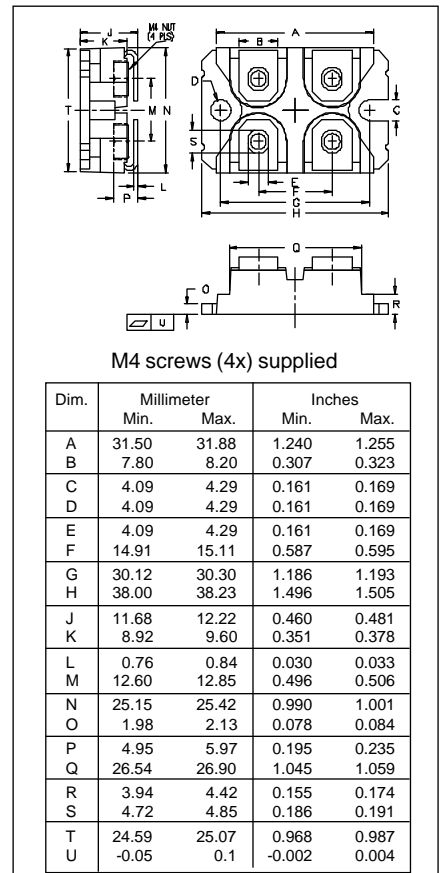
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}$, pulse test		36	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		9000	pF
C_{oss}			840	pF
C_{rss}			280	pF
$t_{d(on)}$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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, 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 32N60		144 A 128 A
V_{SD}	$I_F = I_S\text{ A}, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.5 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		20	250 ns
I_{RM}				A

TO-264 AA Outline



miniBLOC, SOT-227 B



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