

HiPerFET™ **Power MOSFETs**

IXFK 90 N 20 IXFN 100 N 20 IXFN 106 N 20

\mathbf{V}_{DSS}	I _{D25}	R _{DS(on)}
200 V	90 A	23 m Ω
200 V	100 A	23 m Ω
200 V	106 A	20 m Ω

 $t_{rr} \leq 200 \text{ ns}$

TO-264 AA

N-Channel Enhancement Mode Avalanche Rated, High dv/dt, Low t,,

Symbol	Test Conditions	Maximum Ratings			
		IXFK	IXFN	IXFN	
V _{DSS}	T ₁ = 25°C to 150°C	90N20 200	100N20 200	106N20 200 V	
V _{DGR}	$T_J = 25^{\circ}\text{C to } 150^{\circ}\text{C}; R_{GS} = 1 \text{ M}\Omega$	200	200	200 V	
V _{GS}	Continuous	±20	±20	20 V	
V _{GSM}	Transient	±30	±30	20 V	
I _{D25}	T _C = 25°C, Chip capability	90 ①	100	106 A	
I _{D80}	$T_{\rm C} = 80^{\circ}$ C, limited by external leads	76	-	Α	
I _{DM}	$T_{C} = 25^{\circ}C$, pulse width limited by T_{JM}	360	400	424 A	
I _{AR}	T _C = 25°C	50	50	А	
E _{AR}	T _C = 25°C	30	30	30 mJ	
dv/dt	$\begin{split} &I_{_{S}} &\leq I_{_{DM}}, di/dt \leq 100 A/\mu s, V_{_{DD}} \leq V_{_{DSS}}, \\ &T_{_{J}} \leq 150^{\circ}C, R_{_{G}} = 2 \Omega \end{split}$	5	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, RMS $t = 1 \text{ min}$ $I_{ISOL} \le 1 \text{ mA}$ $t = 1 \text{ s}$		2500 3000	V~ V~	
M _d	Mounting torque Terminal connection torque	0.9/6	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.	
Weight		10	30	g	

Symbol	Test Conditions	Characteristic Values $(T_J = 25^{\circ}C, \text{ unless otherwise specified})$ min. typ. max.			
V _{DSS}	$V_{GS} = 0 \text{ V}, I_{D} = 1 \text{ mA}$	200			V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, $I_{D} = 8 \text{ mA}$	2		4	V
I _{GSS}	$V_{GS} = \pm 20 V_{DC}, V_{DS} = 0$			±200	nA
I _{DSS}	$V_{DS} = 0.8 \bullet V_{DSS}$ $V_{GS} = 0 V$	$T_{J} = 25^{\circ}C$ $T_{J} = 125^{\circ}C$		400 2	μA mA
R _{DS(on)}	$V_{GS} = 10 \text{ V}, I_{D} = 0.5 \bullet I_{D25}$ Pulse test, t \leq 300 μ s, duty cycle d \leq 2 %	IXFK90N20 IXFN100N20 IXFN106N20		0.023 0.023 0.020	Ω Ω Ω

(IXFK)

(TAB)

miniBLOC, SOT-227 B (IXFN) E153432





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
- JEDECTO-264 AA, epoxy meet UL94V-0, flammability classification
- miniBLOC with Aluminium nitride isolation
- Low R_{DS (on)} HDMOS[™] process Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS)
- · 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

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

92804H (7/97)



Symbol	Test Conditions Character $(T_J = 25^{\circ}C, \text{ unless of } $	aracter otherwis typ.		
g_{fs}	$V_{DS} = 10 \text{ V}; I_{D} = 0.5 \bullet I_{D25}, \text{ pulse test}$	60		S
C _{iss})	9000		pF
C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	1600		pF
\mathbf{C}_{rss}		590		pF
t _{d(on)})	30		ns
t _r	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 0.5 \cdot I_{D25}$	80		ns
$\mathbf{t}_{d(off)}$	$R_{\rm G} = 1 \Omega$ (External),	75		ns
$\mathbf{t}_{_{\mathrm{f}}}$	J	30		ns
Q _{g(on)})	380		nC
\mathbf{Q}_{gs}	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 0.5 \cdot I_{D25}$	70		nC
\mathbf{Q}_{gd}		190		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
$\mathbf{R}_{\mathrm{thCK}}$	miniBLOC, SOT-227 B	0.05		K/W

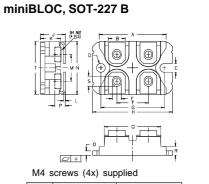
Source-Drain Diode

Characteristic Values (T₁ = 25°C, unless otherwise specified)

Symbol	Test Conditions	, J ,	min.	typ.	max.	
I _s	$V_{GS} = 0 V$	IXFK90N20 IXFN100N20 IXFN106N20			90 100 106	A A A
I _{SM}	Repetitive; pulse width limited by T _{JM}	IXFK90N20 IXFN100N20 IXFN106N20			360 424	A A
V _{SD}	$I_F = 100 \text{ A}, V_{GS} = 0 \text{ V},$ Pulse test, $t \le 300 \mu s$, duty	cycle d≤2%			1.5	V
t _{rr} Q _{RM} I _{RM}	$I_F = 50 \text{ A}, -di/dt = 100 \text{ A}$	/μs, V _R = 100 V		3 38	200	ns μC Α

TO-264 AA Outline

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
Α	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
С	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
Е	19.81	19.96	.780	.786
е	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
Р	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
Т	1.57	1.83	.062	.072



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
Α	31.50	31.88	1.240	1.255
В	7.80	8.20	0.307	0.323
С	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
Ε	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
Н	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
0	1.98	2.13	0.078	0.084
Р	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
Т	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

Fig. 1 Output Characteristics

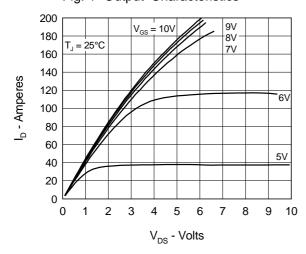


Fig. 3 $R_{DS(on)}$ vs. Drain Current

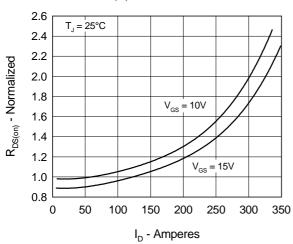


Fig. 5 Drain Current vs.

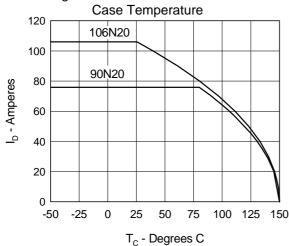


Fig. 2 Input Admittance

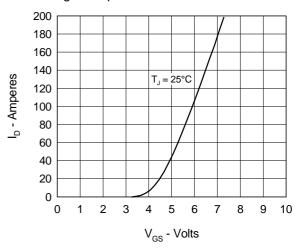


Fig. 4 Temperature Dependence

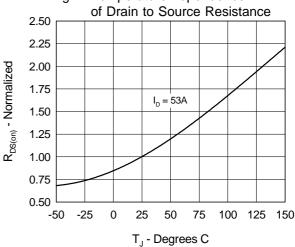


Fig. 6 Temperature Dependence of

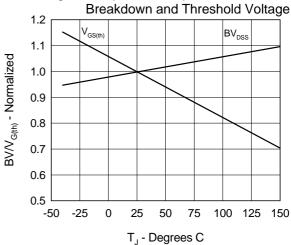


Fig.7 Gate Charge Characteristic Curve

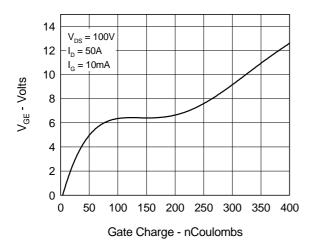
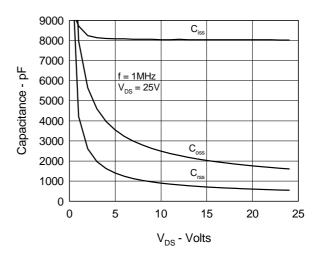


Fig.8 Capacitance Curves



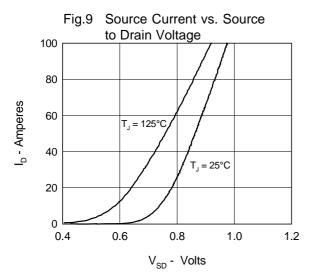
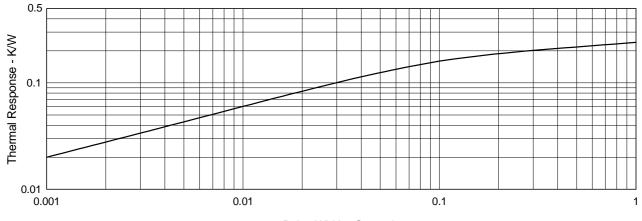


Fig.10 Transient Thermal Impedance



Pulse Width - Seconds

