

HiPerFET™ Power MOSFET

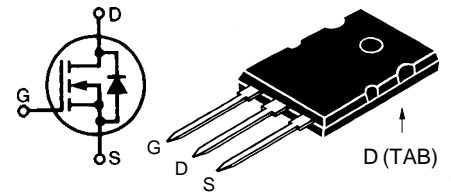
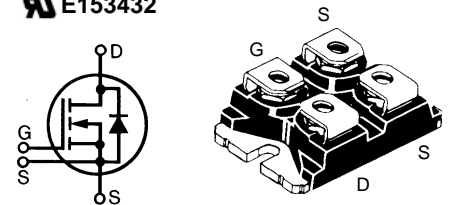
Single MOSFET Die

IXFN 43N60
IXFN 40N60
IXFK 43N60
IXFK 40N60

V_{DSS}	I_{D25}	$R_{DS(on)}$	t_{rr}
600V	43A	0.13Ω	200ns
600V	40A	0.15Ω	200ns
600V	43A	0.13Ω	200ns
600V	40A	0.15Ω	200ns

Symbol	Test Conditions	Maximum Ratings				
		IXFK 43N60	IXFK 40N60	IXFN 43N60	IXFN 40N60	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600		600		V
V_{DGR} ①	$T_J = 25^\circ\text{C}$ to 150°C	600		600		V
V_{GS}	Continuous	±20		±20		V
V_{GSM}	Transient	±30		±30		V
I_{D25}	$T_C = 25^\circ\text{C}$	43	40	43	40	A
I_{DM} ②	$T_C = 25^\circ\text{C}$	172	160	172	160	A
I_{AR}	$T_C = 25^\circ\text{C}$	43	40	43	40	A
E_{AR}	$T_C = 25^\circ\text{C}$	60		60		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	$T_C = 25^\circ\text{C}$	560		600		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		N/A		°C
V_{ISOL}	50/60 Hz, RMS $t = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	N/A		2500		V~
		N/A		3000		V~
M_d	Mounting torque	0.9/6		1.5/13		Nm/lb.in.
	Terminal connection torque	N/A		1.5/13		Nm/lb.in.
Weight		10		30		g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values	
		Min.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ mA}$	600	V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	2	4 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{GE} = 0$		±200 nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ V $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	400 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \text{ ms}$, duty cycle $d \leq 2 \%$	43N60 40N60	0.13 Ω 0.15 Ω

TO-264 AA (IXFK)

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
- Encapsulating epoxy meets 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

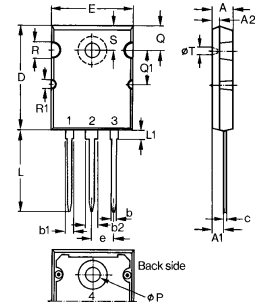
- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$				
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test		TBD	S
C_{iss}			TBD	pF
C_{oss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		TBD	pF
C_{rss}			TBD	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External),		TBD	ns
t_r			TBD	ns
$t_{d(off)}$			TBD	ns
t_f			TBD	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		TBD	nC
Q_{gs}			TBD	nC
Q_{gd}			TBD	nC
R_{thJC}	TO-264 AA		0.22	K/W
R_{thCK}	TO-264 AA		0.15	K/W
R_{thJC}	miniBLOC, SOT-227 B		0.21	K/W
R_{thCK}	miniBLOC, SOT-227 B		0.05	K/W

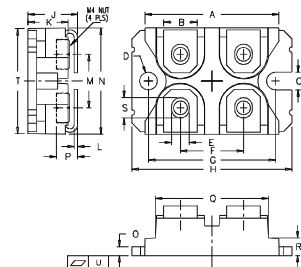
Source-Drain Diode
 $(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$

Symbol	Test Conditions	Characteristic Values			
		Min.	Typ.	Max.	
I_S	$V_{GS} = 0$	43N60 40N60		43 40	A A
I_{SM}	Repetitive; pulse width limited by T_{JM}	43N60 40N60		172 160	A 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}	$I_F = 50\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		TBD		ns
Q_{RM}			TBD		μC
I_{RM}			TBD		A

- Notes: 1. $R_{GS} = 1\ \text{M}\Omega$
 2. Pulse width limited by T_{JM} .

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

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