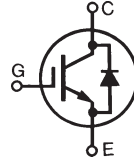


**BIMOSFET™ Monolithic  
Bipolar MOS Transistor**
**IXBN 42N170A**

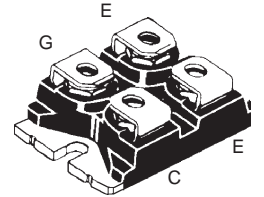
$$\begin{aligned} V_{CES} &= 1700 \text{ V} \\ I_{C25} &= 42 \text{ A} \\ V_{CE(sat)} &= 6.0 \text{ V} \\ t_{fi} &= 50 \text{ ns} \end{aligned}$$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1700	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1 \text{ M}\Omega$	1700	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	42	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	21	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	120	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 10 \Omega$ Clamped inductive load	$I_{CM} = 90$ $V_{CES} = 1350$	A V
<b><math>T_{SC}</math> (SCSOA)</b>	$V_{GE} = 15 \text{ V}$ , $V_{CES} = 1200 \text{ V}$ , $T_J = 125^\circ\text{C}$ $R_G = 10 \Omega$ non repetitive	10	$\mu\text{s}$
$P_C$	$T_C = 25^\circ\text{C}$	312	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$M_d$	Mounting torque Terminal connection torque (M4)	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
<b>Weight</b>		30	g

**miniBLOC, SOT-227 B (IXBN)**

E153432



G = Gate  
E = Emitter

C = Collector

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

**Features**

- High Blocking Voltage
- Fast switching
- High current handling capability
- MOS Gate turn-on - drive simplicity
- Isolation voltage 2500V

**Applications**

- AC motor speed control
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- Substitutes for high voltage MOSFETs

**Advantages**

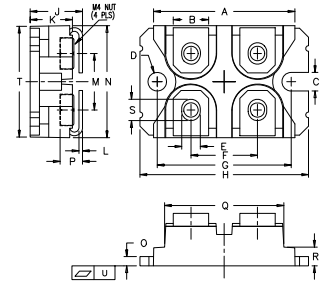
- Lower conduction losses than MOSFETs
- High power density
- Easy to mount with 2 screws
- Space saving

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 250 \mu\text{A}$ , $V_{GE} = 0 \text{ V}$	1700		V
$V_{GE(th)}$	$I_C = 750 \mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = 0.8 V_{CES}$ , $T_J = 25^\circ\text{C}$ $V_{GE} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			50 $\mu\text{A}$ 1.5 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15 \text{ V}$ $T_J = 125^\circ\text{C}$	4.5 5.0		6.0 V

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	15	24	S
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		3700	pF
$C_{oes}$			170	pF
$C_{res}$			45	pF
$Q_g$	$I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		155	nC
$Q_{ge}$			30	nC
$Q_{gc}$			55	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ ; $R_G = R_{off} = 1.0\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns
$t_{ri}$			35	ns
$t_{d(off)}$			230	ns
$t_{fi}$			50	ns
$E_{off}$			2.8	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ ; $R_G = R_{off} = 1.0\ \Omega$ Remarks: Switching times may increase for $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns
$t_{ri}$			38	ns
$E_{on}$			5.0	mJ
$t_{d(off)}$			300	ns
$t_{fi}$			120	ns
$E_{off}$		6	mJ	
$R_{thJC}$			0.4	K/W
$R_{thCK}$		0.05		K/W

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_F$	$I_F = I_{C90}$ ; $V_{GE} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$			5.0 V
$I_{RM}$	$I_F = 25\text{ A}$ , $V_{GE} = 0\text{ V}$ , $-di_F/dt = 50\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}$		15	A
$t_{rr}$			330	ns

### 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	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	