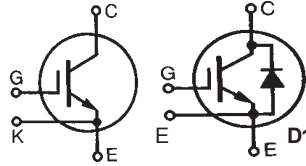


# IGBT

Optimized for Switching  
up to 5 kHz

**IXGN 80N60A2**  
**IXGN 80N60A2D1**

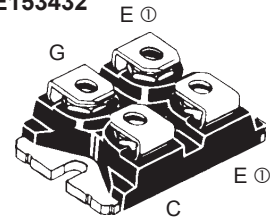
$$\begin{aligned} V_{CES} &= 600 \text{ V} \\ I_{C25} &= 160 \text{ A} \\ V_{CE(sat)} &= 1.35 \text{ V} \end{aligned}$$



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	160	A
$I_{C110}$	$T_C = 110^\circ\text{C}$	80	A
$I_{F110}$	$T_C = 110^\circ\text{C}$	60	A
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	320	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 2.0 \Omega$ Clamped inductive load	$I_{CM} = 160$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	625	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz	$t = 1 \text{ min}$	2500 V~
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3000 V~
$M_d$	Mounting torque	1.5/13 Nm/lb.in.	
	Terminal connection torque (M4)	1.5/13 Nm/lb.in.	
<b>Weight</b>		30	g

SOT-227B, miniBLOC

E153432



G = Gate, C = Collector, E = Emitter  
⊕ either emitter terminal can be used as Main or Kelvin Emitter

### Features

- International standard package miniBLOC
- UL recognized
- Aluminium nitride isolation - high power dissipation
- Isolation voltage 3000 V~
- Very high current IGBT
- Low  $V_{CE(sat)}$  for minimum on-state conduction losses
- MOS Gate turn-on - drive simplicity
- Low collector-to-case capacitance (< 50 pF)
- Low package inductance (< 5 nH) - easy to drive and to protect

### Applications

- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

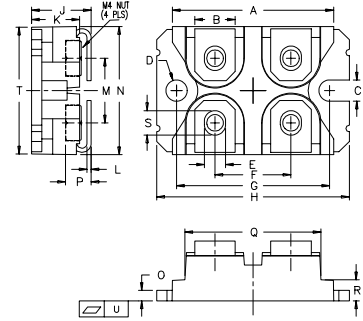
### Advantages

- Easy to mount with 2 screws
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{GE(th)}$	$I_C = 1 \text{ mA}, V_{CE} = V_{GE}$	2.5		5.5 V
$I_{CES}$	$V_{CE} = V_{CES}, V_{GE} = 0 \text{ V}$ Note 3	80N60A2		25 $\mu\text{A}$
		80N60A2D1		650 $\mu\text{A}$
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 400 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C110}, V_{GE} = 15 \text{ V}, \text{ Note 1}$	1.2	1.35	V

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$I_C = 60\text{ A}; V_{CE} = 10\text{ V}$ , Note 1		TBD	S
$C_{ies}$ $C_{oes}$ $C_{res}$	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	TBD		pF
$Q_g$ $Q_{ge}$ $Q_{gc}$	$I_C = I_{C110}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$	TBD		nC
$t_{d(on)}$ $t_{ri}$ $t_{d(off)}$ $t_{fi}$ $E_{off}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 2.0\ \Omega$	TBD	250	ns
$t_{d(on)}$ $t_{ri}$ $E_{on}$ $t_{d(off)}$ $t_{fi}$ $E_{off}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 2.4\ \Omega$	TBD	10	ns
$R_{thJC}$ $R_{thCK}$			0.05	0.2 K/W K/W

### SOT-227B miniBLOC



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

### Reverse Diode (FRED) Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

Symbol	Test Conditions	typ.	max.
$V_F$	$I_F = 60\text{ A}$ , Note 1 $T_J = 150^\circ\text{C}$		2.05 V 1.4 V
$I_{RM}$	$I_F = I_{C90}, V_{GE} = 0\text{ V}, -di_F/dt = 100\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}, T_J = 100^\circ\text{C}$		8.0 A
$t_{rr}$	$I_F = 1\text{ A}, -di/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}$	35	ns
$R_{thJC}$			1.65 K/W

- Note: 1. Pulse test,  $t \leq 300\ \mu\text{s}$ , duty cycle  $d \leq 2\%$   
 2. Remarks: Switching times may increase for  $V_{CE}(\text{Clamp}) > 0.8 \cdot V_{CES}$ , higher  $T_J$  or increased  $R_G$   
 3. Parts must be heatsunk for high temperature  $I_{CES}$  measurements

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