

HiPerFAST™ IGBT

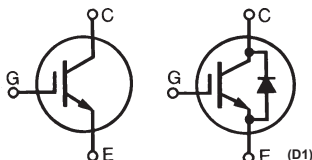
ISOPLUS247™

(Electrically Isolated Backside)

IXGR 39N60B
IXGR 39N60BD1

$$\begin{aligned} V_{CES} &= 600 \text{ V} \\ I_{C25} &= 66 \text{ A} \\ V_{CE(sat)} &= 1.8 \text{ V} \\ t_{fi(typ)} &= 200 \text{ ns} \end{aligned}$$

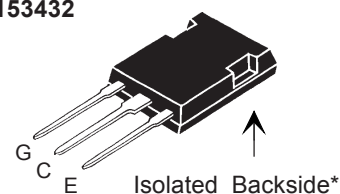
Preliminary data sheet



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	66	A
I_{C110}	$T_C = 110^\circ\text{C}$	35	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	152	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$	$I_{CM} = 76$ @ $0.8 V_{CES}$	A
P_c	$T_C = 25^\circ\text{C}$	140	W
V_{ISOL}	50/60 Hz RMS $t = 1$ minute	2500	V
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
Weight		5	g

ISOPLUS 247

 E153432



G = Gate, C = Collector
E = Emitter

* Patent pending

Features

- DCB Isolated mounting tab
- Meets TO-247AD package Outline
- High current handling capability
- Latest generation HDMOS™ process
- MOS Gate turn-on - drive simplicity

Applications

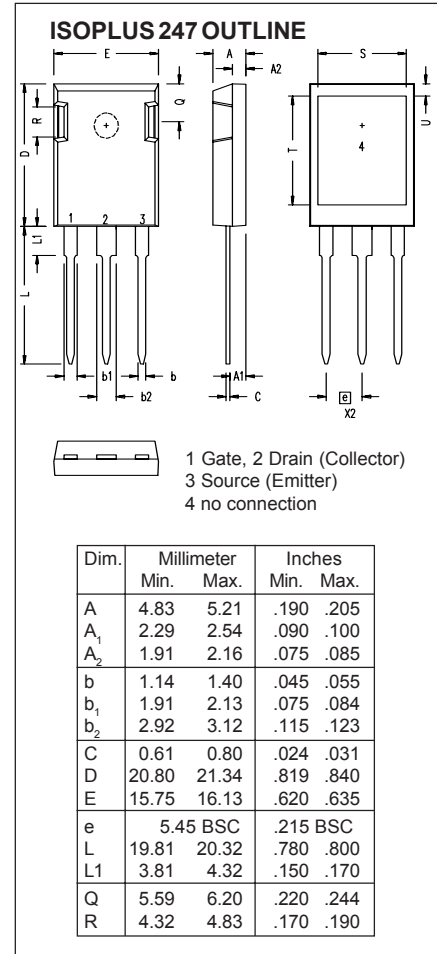
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- AC motor speed control
- DC servo and robot drives
- DC choppers

Advantages

- Easy assembly
- High power density
- Very fast switching speeds for high frequency applications

Symbol	Test Conditions		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
			Min.	Typ.	Max.
BV_{CES}	$I_C = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$ $I_C = 750 \mu\text{A}$	39N60B 39N60BD1	600 600		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$, $V_{CE} = V_{GE}$ $I_C = 500 \mu\text{A}$	39N60B 39N60BD1	2.5 2.5		5.0 V 5.0 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$, $T_J = 25^\circ\text{C}$ $V_{GE} = 0 \text{ V}$; note 1 $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ $T_J = 125^\circ\text{C}$	39N60B 39N60BD1 39N60B 39N60BD1			200 μA 650 μA 1 mA 3 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$				$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_T$, $V_{GE} = 15 \text{ V}$				1.8 V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$I_C = I_T; V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$	19		S
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	2750		pF
C_{oes}		200		pF
C_{res}		250		pF
		50		pF
Q_g	$I_C = I_T, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$	125		nC
Q_{ge}		25		nC
Q_{gc}		40		nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_T, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 \cdot V_{CES}, R_G = R_{off} = 4.7\text{ }\Omega$ 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}		30		ns
$t_{d(off)}$		250	500	ns
t_{fi}		200	360	ns
E_{off}		4.0	6.0	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_T, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 \cdot V_{CES}, R_G = R_{off} = 4.7\text{ }\Omega$ 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}		30		ns
E_{on}		0.3		mJ
$t_{d(off)}$		1.0		mJ
t_{fi}		360		ns
E_{off}		350		ns
R_{thJC}				0.9 K/W
R_{thCK}				0.15 K/W



Please see IXGH 39N60B data sheet for characteristic curves.

Reverse Diode (FRED) (IXGR39N60BD1 only)		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_F	$I_F = 30\text{ A}, V_{GE} = 0\text{ V}$, Note 1			1.6 V 2.5 V
I_{RM}	$I_F = 50\text{ A}, V_{GE} = 0\text{ V}, V_R = 100\text{ V}$ $T_J = 100^\circ\text{C}$ $-di_F/dt = 100\text{ A}/\mu\text{s}$	2.5		A ns
t_{rr}	$I_F = 1\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s}; V_R = 30\text{ V}$	25		ns
R_{thJC}				1.1 K/W

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