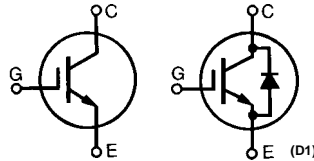


HiPerFAST™ IGBT ISOPLUS247™ (Electrically Isolated Backside)

IXGR 40N60B
IXGR 40N60BD1

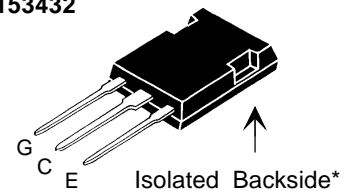
$V_{CES} = 600\text{ V}$
 $I_{C25} = 70\text{ A}$
 $V_{CE(sat)} = 2.1\text{ V}$
 $t_{fi}(typ) = 180\text{ ns}$



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	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	70	A
I_{C90}	$T_C = 90^\circ\text{C}$	35	A
I_{CM}	$T_C = 25^\circ\text{C}, 1\text{ ms}$	150	A
SSOA (RBSOA)	$V_{GE} = 15\text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10\ \Omega$ Clamped inductive load, $L = 100\ \mu\text{H}$	$I_{CM} = 80$ @ $0.8\ V_{CES}$	A
P_c	$T_C = 25^\circ\text{C}$	200	W
T_J		-40 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-40 ... +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
- Low collector-to-drain capacitance (<35pF)

Applications

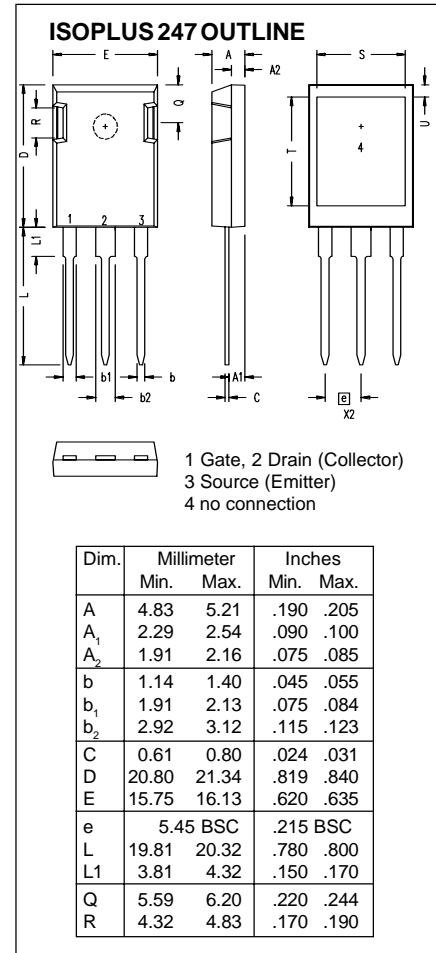
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- AC motor speed control
- DC servo and robot drives
- DC choppers

Advantages

- Easy assembly
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\ \mu\text{A}, V_{GE} = 0\text{ V}$	40N60B	600	V
	$I_C = 750\ \mu\text{A}$	40N60BD1	600	
$V_{GE(th)}$	$I_C = 250\ \mu\text{A}, V_{CE} = V_{GE}$	40N60B	2.5	5.0 V
	$I_C = 500\ \mu\text{A}$	40N60BD1	2.5	5.0 V
I_{CES}	$V_{CE} = 0.8\ V_{CES}, T_J = 25^\circ\text{C}$	40N60B		200 μA
	$V_{GE} = 0\text{ V}; \text{note 1 } T_J = 25^\circ\text{C}$	40N60BD1		650 μA
	$T_J = 125^\circ\text{C}$	40N60B		1 mA
	$T_J = 125^\circ\text{C}$	40N60BD1		3 mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = I_T, V_{GE} = 15\text{ V}$		1.6	2.1 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, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$	30	42	S	
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		3300	pF	
C_{oes}		40N60B	310	pF	
C_{res}		40N60BD1	370	pF	
Q_g	$I_C = I_T, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		116	nC	
Q_{ge}			23	nC	
Q_{gc}			55	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_T, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 4.7\ \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}			30	ns	
$t_{d(off)}$			180	300	ns
t_{fi}			180	270	ns
E_{off}			2.7	4.0	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_T, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 4.7\ \Omega$ 40N60B 40N60BD1 Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}			30	ns	
E_{on}			0.4		mJ
$t_{d(off)}$			1.2		mJ
t_{fi}			300		ns
E_{off}			270		ns
R_{thJC}			0.6	K/W	
R_{thCK}		0.15		K/W	



Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = I_T, V_{GE} = 0\text{ V}$, Note 1			$T_J = 150^\circ\text{C}$ 1.3 V 1.8 V
I_{RM}	$I_F = I_T, V_{GE} = 0\text{ V}, V_R = 100\text{ V}, T_J = 100^\circ\text{C}, -di/dt = 100\text{ A}/\mu\text{s}$		7.5	A
t_{rr}	$I_F = 1\text{ A}; -di/dt = 100\text{ A}/\mu\text{s}; V_R = 30\text{ V}$		35	ns
R_{thJC}			0.90	K/W

Note: 1. Pulse test, $t_p \leq 300\text{ ms}$, duty cycle: $d \leq 2\%$
2. $I_T = 40\text{ A}$

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

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