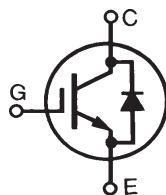


PolarHV™ IGBT

IXGH28N60B3D1

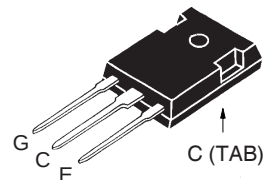


$$\begin{aligned} V_{CES} &= 600V \\ I_{C110} &= 28A \\ V_{CE(sat)} &\leq 1.8V \end{aligned}$$

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 , $R_{GE} = 1M\Omega$	600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	66	A
I_{C110}	$T_C = 110^\circ\text{C}$	28	A
I_{F110}	$T_C = 110^\circ\text{C}$	10	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1ms	150	A
SSOA (RBSOA)	$V_{GE} = 15V$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10\Omega$ Clamped inductive load @ $\leq 600V$	$I_{CM} = 60$	A
P_C	$T_C = 25^\circ\text{C}$	190	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6mm (0.062 in.) from case for 10 seconds	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10 seconds	260	$^\circ\text{C}$
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight		6	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu\text{A}$, $V_{GE} = 0V$	600		V
$V_{GE(th)}$	$I_C = 250\mu\text{A}$, $V_{CE} = V_{GE}$	3.0		5.0 V
I_{CES}	$V_{CE} = V_{CES}$, $V_{GE} = 0V$ $T_J = 125^\circ\text{C}$			50 μA 1.0 mA
I_{GES}	$V_{CE} = 0V$, $V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = 24A$, $V_{GE} = 15V$, Note 1	1.5	1.8	V

TO-247 (IXGH)



G = Gate C = Collector
E = Emitter TAB = Collector

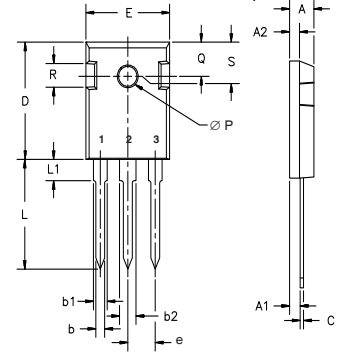
Features

- Square RBSOA
- High current handling capability
- MOS Gate turn-on
- drive simplicity

Applications

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

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = I_{C110}, V_{CE} = 10\text{V}$, Note 1	18	30	S
C_{ies}	$V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$		2320	pF
C_{oes}			176	pF
C_{res}			24	pF
Q_g	$I_C = I_{C110}, V_{GE} = 15\text{V}$, $V_{CE} = 0.5 \cdot V_{CES}$		62	nC
Q_{ge}			11	nC
Q_{gc}			23	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = 24\text{A}$, $V_{GE} = 15\text{V}$ $V_{CE} = 400\text{V}$, $R_G = 10\Omega$		19	ns
t_{ri}			24	ns
E_{on}			0.34	mJ
$t_{d(off)}$			125	ns
t_{fi}			100	ns
E_{off}			0.65	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 24\text{A}$, $V_{GE} = 15\text{V}$ $V_{CE} = 400\text{V}$, $R_G = 10\Omega$		19	ns
t_{ri}			26	ns
E_{on}			0.6	mJ
$t_{d(off)}$			180	ns
t_{fi}			170	ns
E_{off}			1.0	mJ
R_{thJC}				0.66 $^\circ\text{C/W}$
R_{thCS}			0.21	$^\circ\text{C/W}$

TO-247 (IXGH) Outline


Terminals: 1 - Gate
3 - Source
2 - Drain
Tab - Drain

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		.242 BSC	

Reverse Diode (FRED)

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_F	$I_F = 24\text{A}$, $V_{GE} = 0\text{V}$, Note 1 $T_J = 150^\circ\text{C}$			2.5 V 1.7 V
I_{RM}	$I_F = 24\text{A}$, $V_{GE} = 0\text{V}$, $-di_F/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$		5	A
t_{rr}	$I_F = 1\text{A}$, $-di_F/dt = 100\text{A}/\mu\text{s}$, $V_R = 30\text{V}$ $T_J = 100^\circ\text{C}$		25 100	ns ns
R_{thJC}				1.0 K/W

Note 1: Pulse test, $t \leq 300\mu\text{s}$; duty cycle, $d \leq 2\%$.

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338 B2
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	