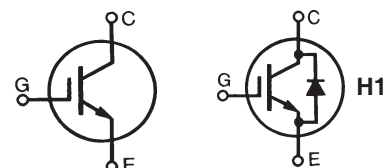


High Voltage IGBT w/ Sonic Diode

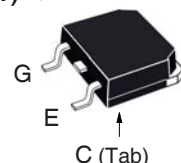
IXGT16N170A
IXGH16N170A
IXGT16N170AH1
IXGH16N170AH1

$V_{CES} = 1700V$
 $I_{C90} = 11A$
 $V_{CE(sat)} \leq 5.0V$
 $t_{fi(typ)} = 70ns$

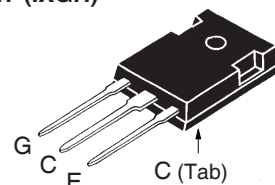


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^{\circ}C$ to $150^{\circ}C$	1700	V
V_{CGR}	$T_J = 25^{\circ}C$ to $150^{\circ}C$, $R_{GE} = 1M\Omega$	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^{\circ}C$	16	A
I_{C90}	$T_C = 90^{\circ}C$	11	A
I_{F90}	$T_C = 90^{\circ}C$	17	A
I_{CM}	$T_C = 25^{\circ}C$, 1ms	40	A
SSOA (RBSOA)	$V_{GE} = 15V$, $T_{VJ} = 125^{\circ}C$, $R_G = 10\Omega$ Clamped Inductive Load	$I_{CM} = 40$ $0.8 \cdot V_{CES}$	A
t_{sc} (SCSOA)	$V_{GE} = 15V$, $V_{CE} = 1200V$, $T_J = 125^{\circ}C$ $R_G = 22\Omega$, Non Repetitive	10	μs
P_C	$T_C = 25^{\circ}C$	190	W
T_J		-55 ... +150	$^{\circ}C$
T_{JM}		150	$^{\circ}C$
T_{stg}		-55 ... +150	$^{\circ}C$
T_L	Maximum Lead Temperature for Soldering	300	$^{\circ}C$
T_{SOLD}	Plastic Body for 10s	260	$^{\circ}C$
M_d	Mounting Torque (TO-247)	1.13/10	Nm/lb.in
Weight	TO-268	4	g
	TO-247	6	g

TO-268 (IXGT)



TO-247 (IXGH)



G = Gate C = Collector
E = Emitter Tab = Collector

Features

- High Blocking Voltage
- International Standard Packages
- Low Conduction Losses
- Anti-Parallel Sonic Diode
- High Blocking Voltage
- High Current Handling Capability

Advantages

- Low Gate Drive Requirement
- High Power Density

Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- AC Choppers
- Capacitor Discharge Circuits
- AC Motor Drives
- DC Servo & Robot Drives

Symbol	Test Conditions ($T_J = 25^{\circ}C$, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{CES}	$I_C = 250\mu A$, $V_{GE} = 0V$	1700		V
$V_{GE(th)}$	$I_C = 250\mu A$, $V_{CE} = V_{GE}$	3.0		5.0 V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$, $V_{GE} = 0V$ $T_J = 125^{\circ}C$	16N170A		50 μA
		16N170AH1		100 μA
		16N170A		750 μA
		16N170AH1		1.5 mA
I_{GES}	$V_{CE} = 0V$, $V_{GE} = \pm 20V$			± 100 nA
$V_{CE(sat)}$	$I_C = 11A$, $V_{GE} = 15V$, Note 1 $T_J = 125^{\circ}C$	4.2	5.0	V
		4.8		V

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
g_{fs}	$I_C = 16A, V_{CE} = 10V$, Note 1	6	10	S
C_{ies}	$V_{CE} = 25V, V_{GE} = 0V, f = 1MHz$	16N170A 16N170AH1	1700	pF
C_{oes}			83	pF
C_{res}			125	pF
C_{res}			30	pF
$Q_{g(on)}$	$I_C = 11A, V_{GE} = 15V, V_{CE} = 0.5 \cdot V_{CES}$		65	nC
Q_{ge}			13	nC
Q_{gc}			24	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ C$ $I_C = 16A, V_{GE} = 15V$ $V_{CE} = 0.5 \cdot V_{CES}, R_G = 10\Omega$ Note 2		36	ns
t_{ri}			57	ns
$t_{d(off)}$			160	ns
t_{fi}			70	ns
E_{off}			0.9	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ C$ $I_C = 16A, V_{GE} = 15V$ $V_{CE} = 0.5 \cdot V_{CES}, R_G = 10\Omega$ Note 2	16N170A 16N170AH1	38	ns
t_{ri}			59	ns
E_{on}			1.5	mJ
E_{on}			2.5	mJ
$t_{d(off)}$			200	ns
t_{fi}			55	ns
E_{off}			1.1	mJ
R_{thJC}			0.21	$0.65^\circ C/W$
R_{thCS}				$^\circ C/W$

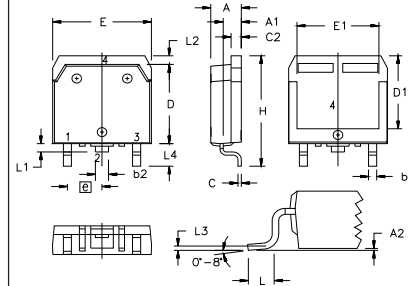
Reverse Sonic Diode (FRD)

Symbol	Test Conditions	Characteristic Values		
		Min.	Typ.	Max.
V_F	$I_F = 20A, V_{GE} = 0V$, Note 1	$T_J = 125^\circ C$	2.5	3.4 V
t_{rr}	$I_F = 20A, V_{GE} = 0V$			ns
I_{RM}	$-di_F/dt = 450A/\mu s, V_R = 1200V$	$T_J = 125^\circ C$	230	ns
			23	A
		$T_J = 125^\circ C$	27	A
R_{thJC}				$0.9^\circ C/W$

Notes:

1. Pulse test, $t \leq 300\mu s$, duty cycle, $d \leq 2\%$.
2. Switching times & energy losses may increase for higher V_{CE} (clamp), T_J or R_G .

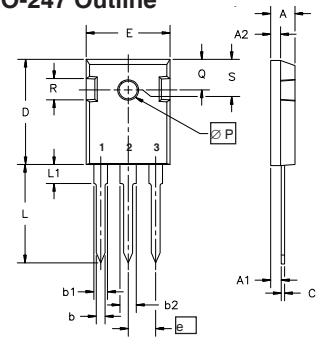
TO-268 Outline



Terminals: 1 - Gate 2,4 - Collector
3 - Emitter

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010	BSC	0.25 BSC	
L4	.150	.161	3.80	4.10

TO-247 Outline



Terminals: 1 - Gate 2 - Collector
3 - Emitter

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

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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
	4,860,072	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	