

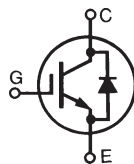
# High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

## IXBA16N170AHV IXBT16N170AHV

$$V_{CES} = 1700V$$

$$I_{C25} = 16A$$

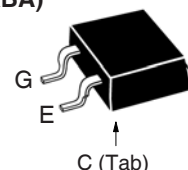
$$V_{CE(sat)} \leq 6.0V$$



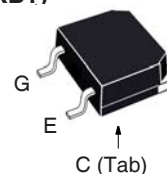
Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_C = 25^\circ C$ to $150^\circ C$	1700	V
$V_{CGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	1700	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$	16	A
$I_{C90}$	$T_C = 90^\circ C$	10	A
$I_{CM}$	$T_C = 25^\circ C$ , 1ms	40	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 33\Omega$ Clamped Inductive Load	$I_{CM} = 40$ 1350	A V
<b><math>t_{sc}</math> (SCSOA)</b>	$V_{GE} = 15V$ , $V_{CE} = 1200V$ , $T_J = 125^\circ C$ $R_G = 33\Omega$ , Non Repetitive	10	$\mu s$
$P_C$	$T_C = 25^\circ C$	150	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	$^\circ C$
$F_C$	Mounting Force (TO-263)	10..65 / 22..14.6	N/lb
<b>Weight</b>	TO-263	2.5	g
	TO-268	4.0	g

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
$V_{GE(th)}$	$I_C = 250\mu A$ , $V_{CE} = V_{GE}$	2.5		5.5 V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ , $V_{GE} = 0V$ $T_J = 125^\circ C$			50 $\mu A$ 1.5 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = 10A$ , $V_{GE} = 15V$ , Note 1 $T_J = 125^\circ C$		5.0	6.0 V V

TO-263HV (IXBA)



TO-268HV (IXBT)



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

### Features

- High Voltage Package
- High Blocking Voltage
- Anti-Parallel Diode
- Low Conduction Losses

### Advantages

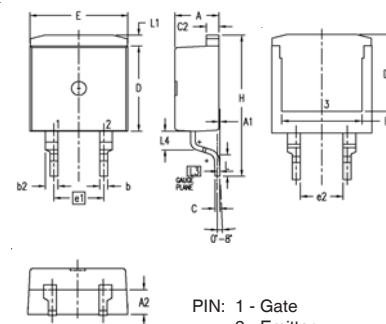
- Low Gate Drive Requirement
- High Power Density

### Applications:

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generators
- Capacitor Discharge Circuits
- AC Switches

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
$g_{fs}$	$I_C = 10\text{A}, V_{CE} = 10\text{V}$ , Note 1	8.0	12.5	S	
$C_{ies}$	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		1400	pF	
$C_{oes}$			90	pF	
$C_{res}$			31	pF	
$Q_{g(on)}$	$I_C = 10\text{A}, V_{GE} = 15\text{V}, V_{CE} = 0.5 \cdot V_{CES}$		65	nC	
$Q_{ge}$			13	nC	
$Q_{gc}$			22	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = 10\text{A}, V_{GE} = 15\text{V}$		15	ns	
$t_{ri}$			25	ns	
$t_{d(off)}$	$V_{CE} = 0.8 \cdot V_{CES}, R_G = 10\Omega$ Note 2		160	250	ns
$t_{fi}$			50	100	ns
$E_{off}$			1.2	2.5	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = 10\text{A}, V_{GE} = 15\text{V}$		15	ns	
$t_{ri}$			28	ns	
$E_{on}$	$V_{CE} = 0.8 \cdot V_{CES}, R_G = 10\Omega$ Note 2		2.0		mJ
$t_{d(off)}$			220		ns
$t_{fi}$			150		ns
$E_{off}$			2.6		mJ
$R_{thJC}$					0.83 $^\circ\text{C/W}$

### TO-263HV Outline



PIN: 1 - Gate  
2 - Emitter  
3 - Collector

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.170	.185	4.30	4.70
A1	.000	.008	0.00	0.20
A2	.091	.098	2.30	2.50
b	.028	.035	0.70	0.90
b2	.046	.054	1.18	1.38
C	.018	.024	0.45	0.60
C2	.049	.055	1.25	1.40
D	.354	.370	9.00	9.40
D1	.311	.327	7.90	8.30
E	.386	.402	9.80	10.20
E1	.307	.323	7.80	8.20
e1	.200 BSC		5.08 BSC	
(e2)	.163	.174	4.13	4.43
H	.591	.614	15.00	15.60
L	.079	.102	2.00	2.60
L1	.039	.055	1.00	1.40
L3	.010 BSC		0.254 BSC	
(L4)	.071	.087	1.80	2.20

### Reverse Diode

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ Unless Otherwise Specified)	Characteristic Values			
		Min.	Typ.	Max.	
$V_F$	$I_F = 10\text{A}, V_{GE} = 0\text{V}$			5.0	V
$t_{rr}$	$I_F = 10\text{A}, V_{GE} = 0\text{V}, -di_F/dt = 50\text{A}/\mu\text{s}$		360		ns
$I_{RM}$		$V_R = 100\text{V}, V_{GE} = 0\text{V}$		10	

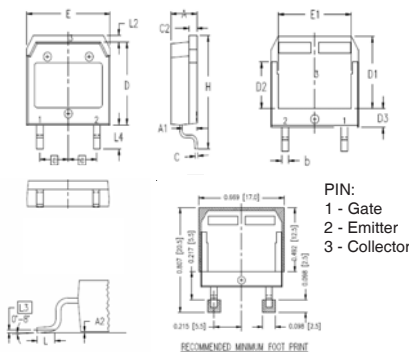
### Notes:

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

### 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.

### TO-268HV Outline



PIN:  
1 - Gate  
2 - Emitter  
3 - Collector

SYM	INCHES		MILLIMETER	
	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
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.465	.476	11.80	12.10
D2	.295	.307	7.50	7.80
D3	.114	.126	2.90	3.20
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	.067	.079	1.70	2.00
L2	.039	.045	1.00	1.15
(L3)	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

### 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	



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