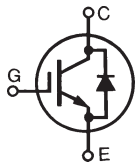
IXYS

Advance Technical Information

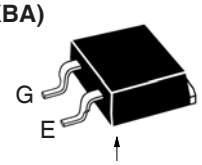
High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

IXBA16N170AHV
IXBT16N170AHV

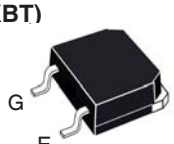
V_{CES} = 1700V
I_{C25} = 16A
$V_{CE(sat)}$ ≤ 6.0V



TO-263HV (IXBA)



TO-268HV (IXBT)



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

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_C = 25°C to 150°C	1700	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	1700	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	T_C = 25°C	16	A
I_{C90}	T_C = 90°C	10	A
I_{CM}	T_C = 25°C, 1ms	40	A
SSOA (RBSOA)	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 33Ω Clamped Inductive Load	I_{CM} = 40 1350	A V
t_{sc} (SCSOA)	V_{GE} = 15V, V_{CE} = 1200V, T_J = 125°C R_G = 33Ω, Non Repetitive	10	µs
P_C	T_C = 25°C	150	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	Plastic Body for 10s	260	°C
F_C	Mounting Force (TO-263)	10..65 / 22..14.6	N/lb
Weight	TO-263	2.5	g
	TO-268	4.0	g

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250µA, V_{GE} = 0V	1700			V
$V_{GE(th)}$	I_C = 250µA, V_{CE} = V_{GE}	2.5		5.5	V
I_{CES}	V_{CE} = 0.8 • V_{CES}, V_{GE} = 0V			50	µA
	T_J = 125°C			1.5	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ± 20V			±100	nA
$V_{CE(sat)}$	I_C = 10A, V_{GE} = 15V, Note 1			6.0	V
	T_J = 125°C		5.0		V

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

Reverse Diode

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

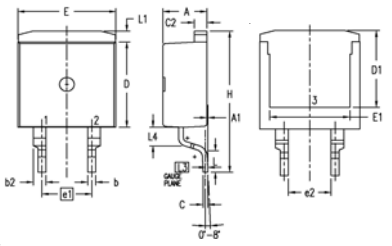
Notes:

1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
2. Switching times & energy losses may increase for higher V_{CE}(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.

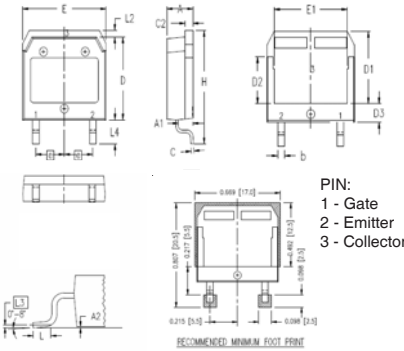
TO-263HV Outline



PIN: 1 - Gate
2 - Emitter
3 - Collector

SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER 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

TO-268HV Outline



PIN:
1 - Gate
2 - Emitter
3 - Collector

SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER 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.

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