

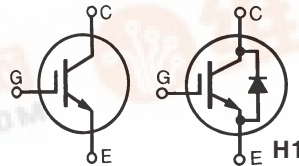


Advance Technical Data

High Voltage
IGBT

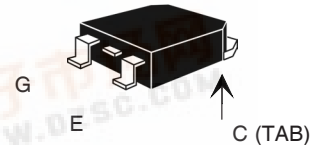
IXGH/IXGT 16N170A
IXGH/IXGT 16N170AH1

$V_{CES} = 1700 \text{ V}$
 $I_{C25} = 16 \text{ A}$
 $V_{CE(sat)} = 5.0 \text{ V}$
 $t_{fi(typ)} = 40 \text{ ns}$

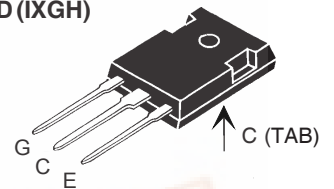


Symbol	Test Conditions	Maximum Ratings
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1700 V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1700 V
V_{GES}	Continuous	$\pm 20 \text{ V}$
V_{GEM}	Transient	$\pm 30 \text{ V}$
I_{C25}	$T_C = 25^\circ\text{C}$	16 A
I_{C90}	$T_C = 90^\circ\text{C}$	8 A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	40 A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10\Omega$ Clamped inductive load	$I_{CM} = 40 \text{ A}$ @ $0.8 V_{CES}$
t_{sc}	$T_J = 125^\circ\text{C}, V_{CE} = 1200 \text{ V}; V_{GE} = 15 \text{ V}, R_G = 22\Omega$	10 μs
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 $^\circ\text{C}$
M_d	Mounting torque (M3)	TO-247 1.13/10Nm/lb.in.
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300 $^\circ\text{C}$
Plastic body for 10s		250 $^\circ\text{C}$
Weight	TO-247	6 g
	TO-268	4 g

TO-268 (IXGT)



TO-247 AD (IXGH)



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

Features

- International standard packages JEDEC TO-268 and JEDEC TO-247 AD
- High current handling capability
- MOS Gate turn-on - drive simplicity
- Rugged NPT structure
- Molding epoxies meet UL 94 V-0 flammability classification
- SONIC™ fast recovery copack diode

Applications

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

Advantages

- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw, (isolated mounting screw hole)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	1700		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	3.0		V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}, \text{ Note 1}$ $T_J = 125^\circ\text{C}$	16N170A		50 μA
		16N170AH1		100 μA
		16N170A		750 μA
		16N170AH1		1.5 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$ $T_J = 125^\circ\text{C}$		4.0	V
			4.8	V

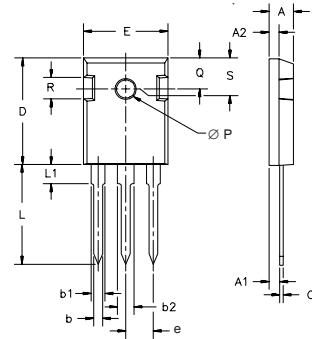


Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g _{fs}	I _C = I _{C25} ; V _{CE} = 10 V Note 2	6	10	S	
C _{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz	16N170A 16N170AH1	1700	pF	
C _{oes}			83	pF	
			125	pF	
C _{res}	I _C = I _{C90} ; V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		30	pF	
Q _g			65	nC	
Q _{ge}			13	nC	
Q _{gc}			24	nC	
t _{d(on)}	Inductive load, T _J = 25°C I _C = I _{C25} , V _{GE} = 15 V R _G = 10 Ω, V _{CE} = 0.5 V _{CES} Note 3		36	ns	
t _{ri}			57	ns	
t _{d(off)}			200	350	ns
t _{fi}			40	150	ns
E _{off}			0.9	1.5	mJ
t _{d(on)}	Inductive load, T _J = 125°C I _C = I _{C25} , V _{GE} = 15 V R _G = 10 Ω, V _{CE} = 0.5 V _{CES} Note 3	16N170A 16N170AH1	38	ns	
t _{ri}			59	ns	
E _{on}			1.5	mJ	
			2.5	mJ	
t _{d(off)}			200	ns	
t _{fi}			55	ns	
E _{off}	1.1	mJ			
R _{thJC}	(TO-247)			0.65	K/W
R _{thCK}			0.25	K/W	

Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
V _F	I _F = 20 A, V _{GE} = 0 V T _J = 125°C	2.5	2.95	V	
I _{RM}	I _F = 20 A; -di _F /dt = 150 A/μs V _{GE} = 0 V; V _R = 1200 V T _J = 125°C	15		A	
t _{rr}		80		ns	
I _{RM}		20		A	
t _{rr}		200		ns	
R _{thJC}				0.9	K/W

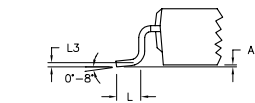
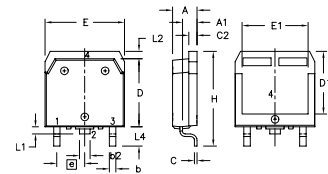
- Notes: 1. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.
 2. Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %
 3. Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G.

TO-247 AD Outline



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
∅P	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

TO-268 Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45	BSC	.215	BSC
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25	BSC	.010	BSC
L4	3.80	4.10	.150	.161