

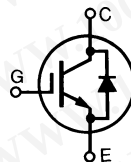
Low $V_{CE(sat)}$ IGBT with Diode High Speed IGBT with Diode

IXGH/IXGT 15N120BD1
IXGH/IXGT 15N120CD1

V_{DSS}	I_{C25}	$V_{CE(sat)}$
1200 V	30 A	3.2 V
1200 V	30 A	3.8 V

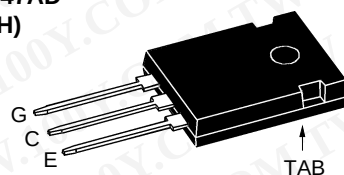
勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
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[Http://www.100y.com.tw](http://www.100y.com.tw)

Preliminary data

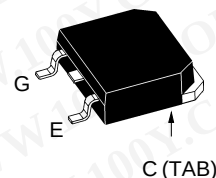


Symbol	Test Conditions	Maximum Ratings
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1200 V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1\text{ M}\Omega$	1200 V
V_{GES}	Continuous	± 20 V
V_{GEM}	Transient	± 30 V
I_{C25}	$T_C = 25^\circ\text{C}$	30 A
I_{C90}	$T_C = 90^\circ\text{C}$	15 A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	60 A
SSOA (RBSOA)	$V_{GE} = 15\text{ V}$, $T_J = 125^\circ\text{C}$, $R_G = 10\ \Omega$ Clamped inductive load	$I_{CM} = 40$ @ $0.8 V_{CES}$ A
P_C	$T_C = 25^\circ\text{C}$	150 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	1.13/10 Nm/lb.in.
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300 $^\circ\text{C}$
Maximum tab temperature soldering SMD devices for 10s		260 $^\circ\text{C}$
Weight	TO-247AD/TO-268	6/4 g

**TO-247AD
(IXGH)**



**TO-268
(IXGT)**



G = Gate
E = Emitter

C = Collector
TAB = Collector

Features

- International standard packages: JEDEC TO-247AD & TO-268
- IGBT and anti-parallel FRED in one package
- MOS Gate turn-on
 - drive simplicity
- Fast Recovery Exptial Diode (FRED)
 - soft recovery with low I_{RM}

Applications

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

Advantages

- Saves space (two devices in one package)
- Easy to mount with 1 screw (isolated mounting screw hole)
- Reduces assembly time and cost

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 1\text{ A}$, $V_{GE} = 0\text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250\ \mu\text{A}$, $V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = V_{CES}$ $V_{GE} = 0\text{ V}$		2	500 μA
I_{GES}	$V_{CE} = 0\text{ V}$, $V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$ Note 2	15N120BD1 15N120CD1		3.2 V 3.8 V

Symbol **Test Conditions** **Characteristic Values**
($T_J = 25^\circ\text{C}$, unless otherwise specified)

		min.	typ.	max.	
g_{fs}	$I_C = I_{C90}; V_{CE} = 10\text{ V}$, Note 2.	12	15		S
C_{ies}			1700		pF
C_{oes}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		155		pF
C_{res}			38		pF
Q_g			69		nC
Q_{ge}	$I_C = I_{C90}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5\text{ V}_{CES}$		13		nC
Q_{gc}			26		nC
$t_{d(on)}$			25		ns
t_{ri}	Inductive load, $T_J = 25^\circ\text{C}$		15		ns
$t_{d(off)}$	$I_C = I_{C90}$; $V_{GE} = 15\text{ V}$		150	280	ns
t_{fi}	$V_{CE} = 0.8\text{ V}_{CES}$; $R_G = R_{off} = 10\ \Omega$ Note 1.	15N120BD1	160	320	ns
		15N120CD1	115	190	ns
		15N120BD1	1.75	3.0	mJ
E_{off}		15N120CD1	1.05	1.6	mJ
$t_{d(on)}$			25		ns
t_{ri}	Inductive load, $T_J = 125^\circ\text{C}$		18		ns
E_{on}	$I_C = I_{C90}$; $V_{GE} = 15\text{ V}$		1.5		mJ
$t_{d(off)}$	$V_{CE} = 0.8\text{ V}_{CES}$; $R_G = R_{off} = 10\ \Omega$		270		ns
t_{fi}	Note 1	15N120BD1	360		ns
		15N120CD1	250		mJ
		15N120BD1	3.5		mJ
E_{off}		15N120CD1	2.1		mJ
R_{thJC}				0.83	K/W
R_{thCK}	TO-247		0.25		K/W

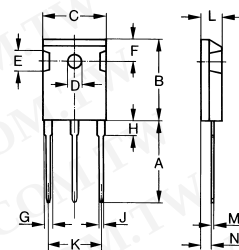
Reverse Diode (FRED)

Characteristic Values
($T_J = 25^\circ\text{C}$, unless otherwise specified)

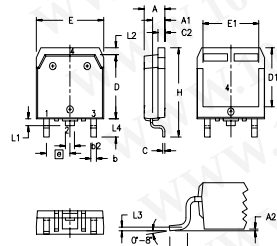
Symbol	Test Conditions	min.	typ.	max.	
V_F	$I_F = 20\text{ A}$, $V_{GE} = 0\text{ V}$ $I_F = 20\text{ A}$, $V_{GE} = 0\text{ V}$, $T_J = 125^\circ\text{C}$	2.6	2.8		V
I_F	$T_C = 25^\circ\text{C}$ $T_C = 90^\circ\text{C}$		33		V
I_{RM}	$I_F = 20\text{ A}$; $-di_F/dt = 400\text{ A}/\mu\text{s}$, $V_R = 600\text{ V}$	15			A
t_{rr}	$V_{GE} = 0\text{ V}$; $T_J = 125^\circ\text{C}$	200			ns
t_{rr}	$I_F = 1\text{ A}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$, $V_{GE} = 0\text{ V}$	40			ns
R_{thJC}			1.6		K/W

- Notes: 1. Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G .
2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$

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TO-247 AD (IXGH) Outline

Dim.	Millimeter Min. Max.	Inches Min. Max.
A	19.81 20.32	0.780 0.800
B	20.80 21.46	0.819 0.845
C	15.75 16.26	0.610 0.640
D	3.55 3.65	0.140 0.144
E	4.32 5.49	0.170 0.216
F	5.4 6.2	0.212 0.244
G	1.65 2.13	0.065 0.084
H	- 4.5	- 0.177
J	1.0 1.4	0.040 0.055
K	10.8 11.0	0.426 0.433
L	4.7 5.3	0.185 0.209
M	0.4 0.8	0.016 0.031
N	1.5 2.49	0.087 0.102

TO-268AA (D³ PAK)

Dim.	Millimeter Min. Max.	Inches 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
L ₁	1.20 1.40	.047 .055
L ₂	1.00 1.15	.039 .045
L ₃	0.25 BSC	.010 BSC
L ₄	3.80 4.10	.150 .161

Min.
Recommended
Footprint

