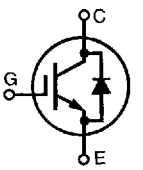
IXYS

IGBT with Diode IXLK 35N120AU1

V_{CES} = 1200 V
I_{C25} = 58 A
$V_{CE(sat)}$ = 3.6 V

High Short Circuit SOA Capability

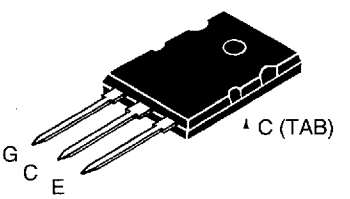
Preliminary data



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C, limited by leads	58	A
I_{C90}	T_C = 90°C	35	A
I_{CM}	T_C = 25°C, 1 ms	70	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 2,7 Ω Clamped inductive load, L = 30 µH @ 0.8 V_{CES}	I_{CM} = 70	A
t_{SC} **(SCSOA)**	V_{GE} = 15 V, V_{CE} = 0.6 • V_{CES}, T_J = 125°C R_G = 22 Ω, non repetitive	10	µs
P_C	IGBT, T_C = 25°C	350	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_{smax}		110	°C
M_d		1.13/10	Nm/lb.in.
Weight		10	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 2 mA, V_{GE} = 0 V		1200			V
$V_{GE(th)}$	I_C = 1 mA, V_{CE} = V_{GE}		5	8	9	V
I_{CES}	V_{CE} = 0.8 • V_{CES}	T_J = 25°C			750	µA
	V_{GE} = 0 V	T_J = 125°C			15	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±200	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V			3.6	3.9	V

TO-264 AA



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

Features

- International standard package JEDEC TO-264 AA
- 3rd generation HDMOS™ process
  - for high short circuit SOA
  - for reduced switching losses
- MOS Gate turn-on
  - drive simplicity
- Fast Recovery Epitaxial Diode (FRED)
  - short t_{rr} and 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

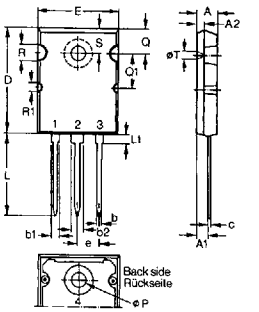
Advantages

- Space savings
- Easy to mount with 1 screw
- Insulated mounting screw hole
- High power density

IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
$I_{C(on)}$	V_{GE} = 15 V, V_{CE} = 10 V		TBD		A
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		3.3		nF
C_{oes}			0.22		nF
C_{res}			0.03		nF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		TBD		nC
Q_{ge}			TBD		nC
Q_{gc}			TBD		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		90		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 100 µH		100		ns
$t_{d(off)}$	V_{CE} = 960 V, R_G = 2.7 Ω		200	300	ns
t_{fi}	Remarks: Switching times may increase		200	600	ns
E_{off}	for V_{CE} (Clamp) > 960 V, higher T_J or increased R_G		9		mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		90		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 100 µH		100		ns
E_{on}	V_{CE} = 960 V, R_G = 2.7 Ω		TBD		mJ
$t_{d(off)}$	Remarks: Switching times may increase		200		ns
t_{fi}	for V_{CE} (Clamp) > 960 V, higher T_J or increased R_G		300		ns
E_{off}			12	16	mJ
R_{thJC}				0.35	K/W
R_{thCK}			0.25		K/W

TO-264 AA Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

Reverse Diode (FRED)

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
V_F	I_F = 35 A, V_{GE} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			2.8	V
I_{RM}	I_F = 35 A, V_{GE} = 0 V, -di_F/dt = 240 A/µs		16	18	A
t_{rr}	T_J = 100°C, V_R = 540 V		150		ns
t_{rr}	T_J = 25°C, I_F = 1 A, V_R = 30 V, -di_F/dt = 200 A/µs		40	60	ns
R_{thJC}				0.9	K/W
R_{thCK}			0.25		K/W