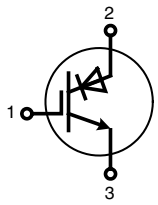
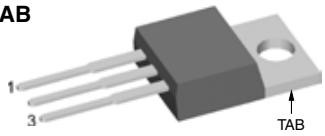
IGBT with Reverse Blocking capability

V_{CES} = ±1200 V
I_{C25} = 25 A
$V_{CE(sat)\ typ.}$ = 2.5 V



TO-220AB



1 = Gate; 2, TAB = Collector; 3 = Emitter

IGBT		
Symbol	**Conditions**	**Maximum Ratings**
V_{CES}	T_{VJ} = 25°C to 150°C	± 1200 V
V_{GES}	Continuous	± 20 V
I_{C25}	T_C = 25°C	25 A
I_{C90}	T_C = 90°C	15 A
I_{CM}	V_{GE} = 0/15 V; R_G = 47 Ω; T_{VJ} = 125°C	30 A
V_{CEK}	RBSOA; Clamped inductive load; L = 100 µH	600 V
SCSOA	600 V	10 µs
P_{tot}	T_C = 25°C	300 W

Symbol	Conditions		Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{CE(sat)}$	I_C = 10 A; V_{GE} = 15 V	T_{VJ} = 25°C		2.5	2.95	V
		T_{VJ} = 125°C		3.3		V
$V_{GE(th)}$	I_C = 1 mA; V_{GE} = V_{CE}		3		6	V
I_{CES}	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			50	µA
		T_{VJ} = 125°C		1.0		mA
I_{GES}	V_{CE} = 0 V; V_{GE} = ± 20 V				500	nA
Q_{Gon}	V_{CE} = 120 V; V_{GE} = 15 V; I_C = 10 A			36		nC

Features

- IGBT with NPT (non punch through) structure
- reverse blocking capability
  - function of series diode monolithically integrated, no external series diode required
  - soft reverse recovery
- positive temperature coefficient of saturation voltage
- Epoxy of package meets UL 94V-0

Applications

Converters requiring reverse blocking capability:
- current source inverters
- matrix converters
- bi-directional switches
- resonant converters
- induction heating
- auxiliary switches for soft switching in the main current path

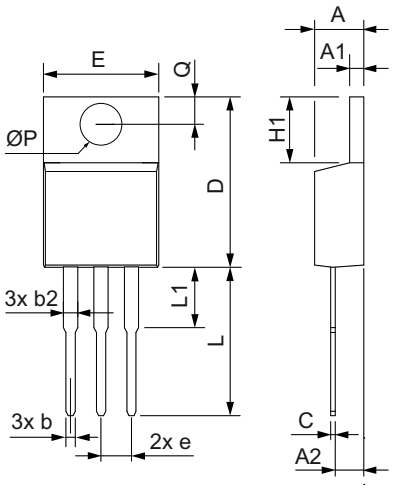
IGBT

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
External diode DSEP 30-12 - diagramm see Fig. 1					
$t_{d(on)}$	Inductive load, T_{VJ} = 125°C V_{CE} = 600 V; I_C = 10 A V_{GE} = ±15 V; R_G = 47 Ω		22		ns
t_r			18		ns
$t_{d(off)}$			210		ns
t_f			32		ns
E_{on}			1.1		mJ
E_{off}			0.13		mJ
Internal diode - diagramm see Fig. 2					
$t_{d(on)}$	Inductive load, T_{VJ} = 125°C V_{CE} = 600 V; I_C = 10 A V_{GE} = ±15 V; R_G = 47 Ω		17.5		ns
t_r			16		ns
$t_{d(off)}$			212		ns
t_f			41		ns
E_{on}			3.0		mJ
E_{off}			0.1		mJ
$E_{rec\ int}$			0.65		mJ
I_{RM}	I_F = 10 A; di_C/dt = -800 A/µs; T_{VJ} = 125°C		25		A
t_{rr}	V_{CE} = -600 V: V_{GE} = 15 V		300		ns
R_{thJC}			0.65		K/W

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	°C
T_{stg}	storage	-55...+125	°C
M_d	mounting torque	0.4 - 0.6	Nm
F_C	mounting force with clip	20...60	N

Symbol	Conditions	Characteristic Values min.	typ.	max.	
R_{thCH}	with heatsink compound		0.25		K/W
Weight			2		g



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

Fig. 1 turn-on/turn-off with external diode (DSEP 30-12)

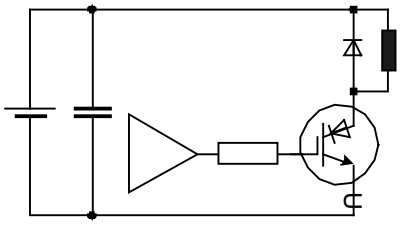
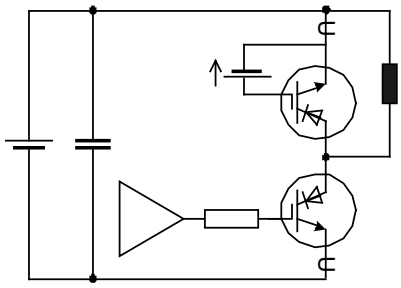


Fig. 2 turn-on/-off with internal diode



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

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