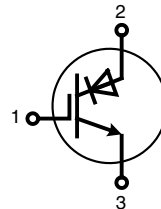
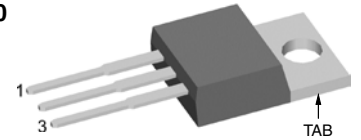


## IGBT with Reverse Blocking capability

$$V_{CES} = \pm 1200 \text{ V}$$

$$I_{C25} = 25 \text{ A}$$

$$V_{CE(sat) \text{ typ.}} = 2.5 \text{ V}$$


**TO-220**


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

IGBT			
Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	$\pm 1200$	V
$V_{GES}$	Continuous	$\pm 20$	V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$	25	A
$I_{C90}$	$T_C = 90^{\circ}\text{C}$	15	A
$I_{CM}$	$V_{GE} = 0/15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^{\circ}\text{C}$	30	A
$V_{CEK}$	RBSOA; Clamped inductive load; $L = 100 \mu\text{H}$	600	V
<b>SCSOA</b>	600 V	10	$\mu\text{s}$
$P_{tot}$	$T_C = 25^{\circ}\text{C}$	300	W

### 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 TO-247 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

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

### IGBT

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
(T <sub>VJ</sub> = 25°C, unless otherwise specified)				
<b>External diode DSEP 30-12 - diagramm see Fig. 1</b>				
t <sub>d(on)</sub>	Inductive load, T <sub>VJ</sub> = 125°C V <sub>CE</sub> = 600 V; I <sub>C</sub> = 10 A V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 47 Ω		22	ns
t <sub>r</sub>			18	ns
t <sub>d(off)</sub>			210	ns
t <sub>f</sub>			32	ns
E <sub>on</sub>			1.1	mJ
E <sub>off</sub>			0.13	mJ

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
<b>Internal diode - diagramm see Fig. 2</b>				
t <sub>d(on)</sub>	Inductive load, T <sub>VJ</sub> = 125°C V <sub>CE</sub> = 600 V; I <sub>C</sub> = 10 A V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 47 Ω		17.5	ns
t <sub>r</sub>			16	ns
t <sub>d(off)</sub>			212	ns
t <sub>f</sub>			41	ns
E <sub>on</sub>			3.0	mJ
E <sub>off</sub>			0.1	mJ
E <sub>rec int</sub>		0.65	mJ	
I <sub>RM</sub>	I <sub>F</sub> = 10 A; di <sub>C</sub> /dt = -800 A/μs; T <sub>VJ</sub> = 125°C		25	A
t <sub>rr</sub>	V <sub>CE</sub> = -600 V; V <sub>GE</sub> = 15 V		300	ns
R <sub>thJC</sub>			0.65	K/W

### Component

Symbol	Conditions	Maximum Ratings	
T <sub>VJ</sub>	operating	-55...+150	°C
T <sub>stg</sub>	storage	-55...+125	°C
M <sub>d</sub>	mounting torque	0.8 - 1.2	Nm
F <sub>C</sub>	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R <sub>thCH</sub>	with heatsink compound		0.25	K/W
Weight			6	g

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

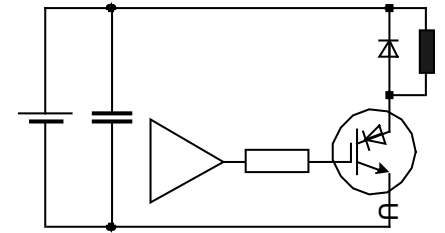
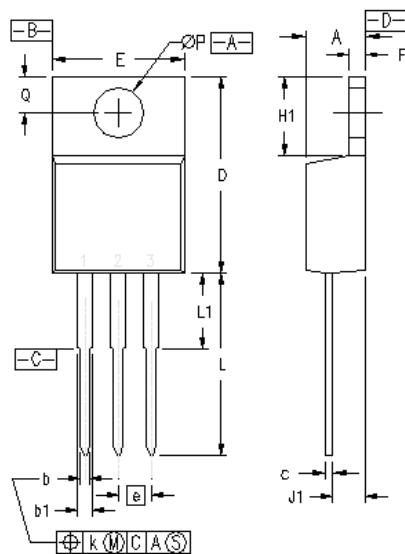
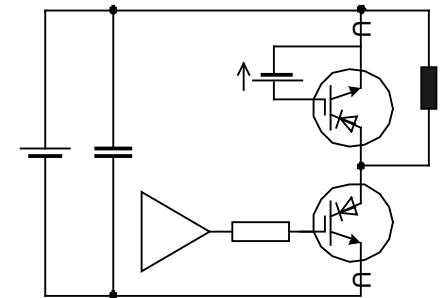


Fig. 2 turn-on/turn-off with internal diode



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
∅P	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-220 AB.