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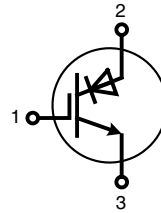
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IGBT with Reverse Blocking capability

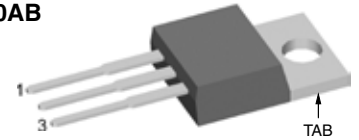
$$V_{CES} = \pm 1200 \text{ V}$$

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

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



TO-220AB



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

IGBT			
Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	± 1200	V
V_{GES}	Continuous	± 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
SCSOA	600 V	10	μs
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 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.		
$V_{CE(sat)}$	$I_C = 10 \text{ A}; V_{GE} = 15 \text{ V}$			2.5	2.95	V
				$T_{VJ} = 25^{\circ}\text{C}$	3.3	
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{CE}$	3		6	V	
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}$			50		μA
				$T_{VJ} = 125^{\circ}\text{C}$	1.0	
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		Characteristic Values		
Symbol	Conditions	(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

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

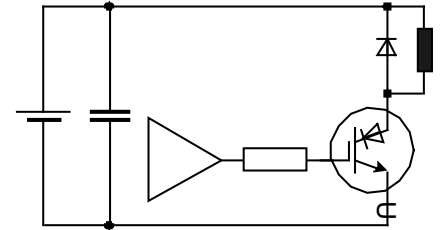
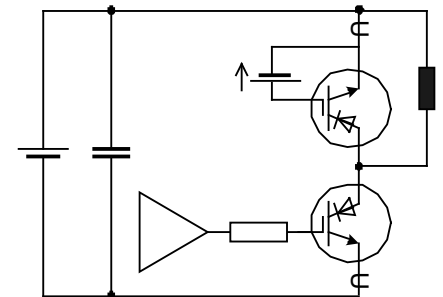


Fig. 2 turn-on/off with internal diode



Component		Maximum Ratings	
Symbol	Conditions		
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		Characteristic Values		
		min.	typ.	max.
R _{thCH}	with heatsink compound		0.25	K/W
Weight			2	g

