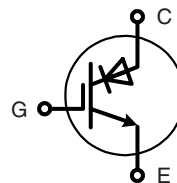


IGBT with Reverse Blocking capability

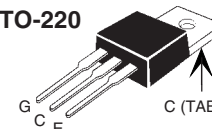
$$V_{CES} = \pm 1200 \text{ V}$$

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

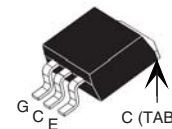
$$V_{CE(sat)} = 2.5 \text{ V typ.}$$



IXRP 15N120

TO-220


IXRA 15N120


TO-263

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

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 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 ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 10 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.5 3.3	2.95 V V
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{CE}$	3		6 V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1.0	50 μA 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	
		(T _{VJ} = 25°C, unless otherwise specified)	
		typ.	
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 V _{CE} = -600 V; V _{GE} = 15 V	25	A
t _{rr}		300	ns
R _{thJC}		0.65	K/W

Component

Symbol	Conditions	Maximum Ratings	
T _{VJ}		-55...+150	°C
T _{stg}		-55...+125	°C
M _d	mounting torque	0.8 - 1.2	Nm
F _C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values	
		typ.	
R _{thCH}	with heatsink compound	0.25	K/W
Weight		6	g

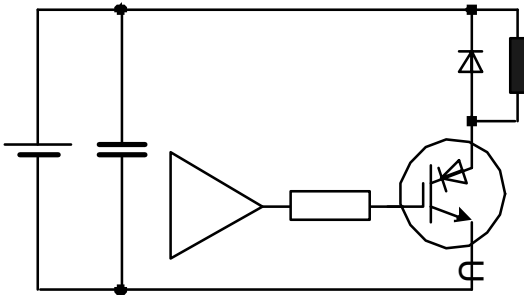


Fig. 1 turn-on/turn-off with external diode (DSEP 30-12)

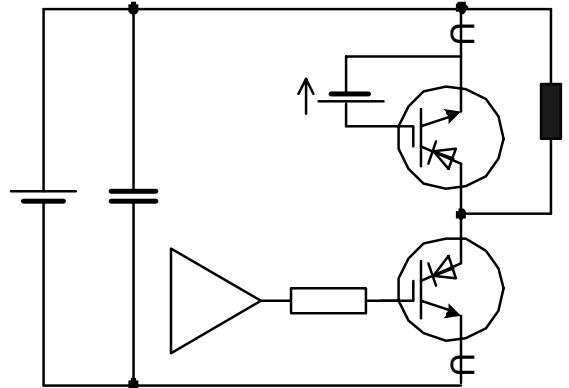
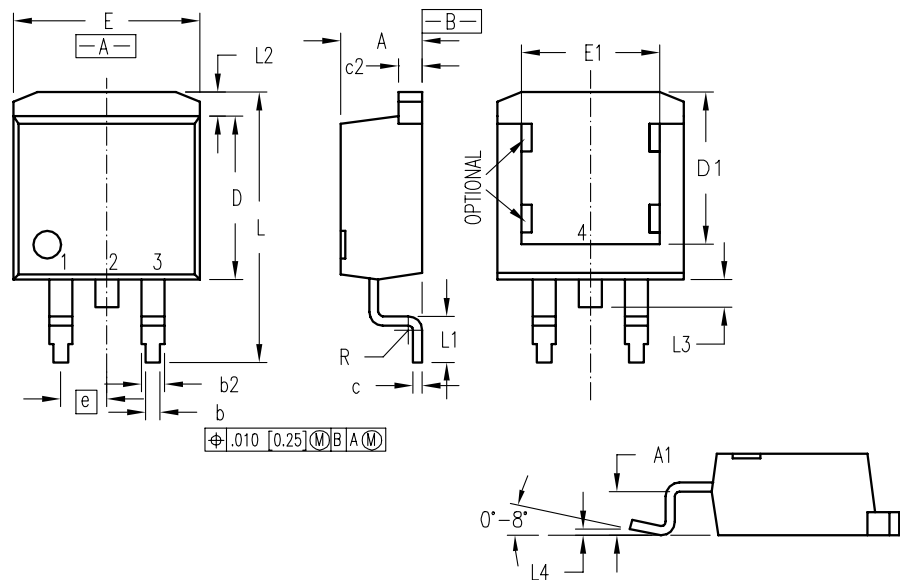


Fig. 2 turn-on/turn-off with internal diode

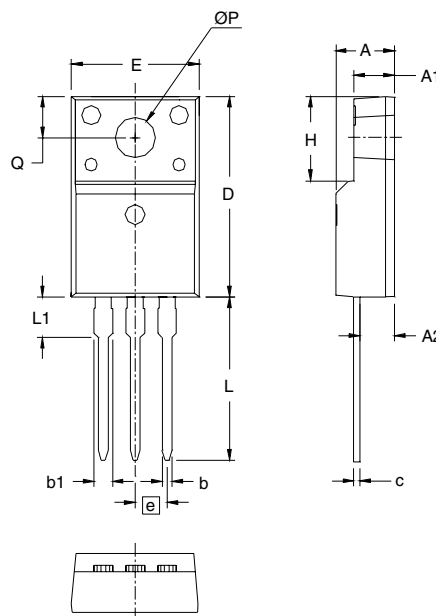
TO-263 AA (D² PAK) incl. middle lead

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.68	.040	.066
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029



TO-220 AB Outline

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40



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

© 2005 IXYS All rights reserved

0539