Phase out

Standard Rectifier Module

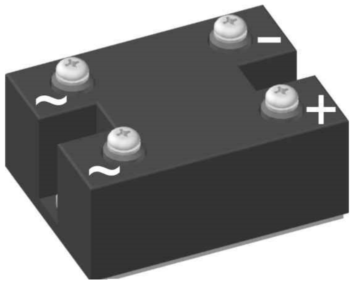
1~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	100 A
I_{FSM}	=	1500 A

PHASE OUT

1~ Rectifier Bridge

Part number

VBO105-12NO7



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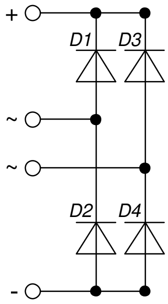

Features / Advantages:

- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current

Applications:

- Diode for main rectification
- For one phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: PWS-C

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Easy to mount with two screws
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Recommended replacement: VBO130-12NO7

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

Rectifier				**Ratings**			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current*	V_R = 1200 V	T_{VJ} = 25°C			100	µA
		V_R = 1200 V	T_{VJ} = 150°C			2	mA
V_F	*forward voltage drop*	I_F = 40 A	T_{VJ} = 25°C			1.09	V
		I_F = 80 A				1.24	V
		I_F = 40 A	T_{VJ} = 125°C			1.00	V
		I_F = 80 A				1.19	V
I_{DAV}	*bridge output current*	T_C = 100°C rectangular d = 0.5	T_{VJ} = 150°C			100	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 150°C			0.78	V
r_F	*slope resistance*					4.8	mΩ
R_{thJC}	*thermal resistance junction to case*					0.8	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			155	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			1.50	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.62	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.28	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.38	kA
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			11.3	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			10.9	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			8.13	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			7.87	kA²s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		58		pF

PHASE OUT

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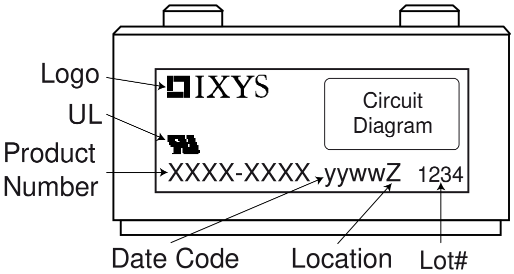
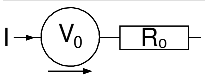
Package PWS-C			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			150	A
T_{VJ}	*virtual junction temperature*		-40		150	°C
T_{op}	*operation temperature*		-40		125	°C
T_{stg}	*storage temperature*		-40		125	°C
Weight				237		g
M_D	*mounting torque*		4.25		5.75	Nm
M_T	*terminal torque*		4.25		5.75	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*	*terminal to terminal*	26.0			mm
$d_{Spb/Apb}$		*terminal to backside*	14.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second; 50/60 Hz, RMS; $I_{ISOL} \le 1$ mA	3000			V
		t = 1 minute	2500			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBO105-12NO7	VBO105-12NO7	Box	10	470783

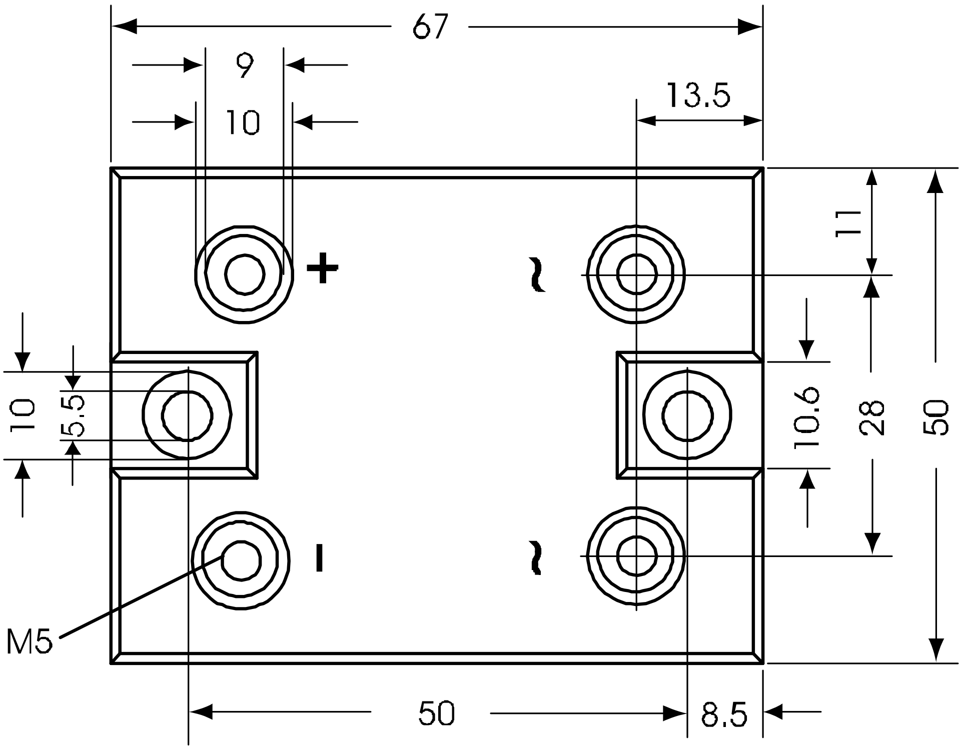
Equivalent Circuits for Simulation

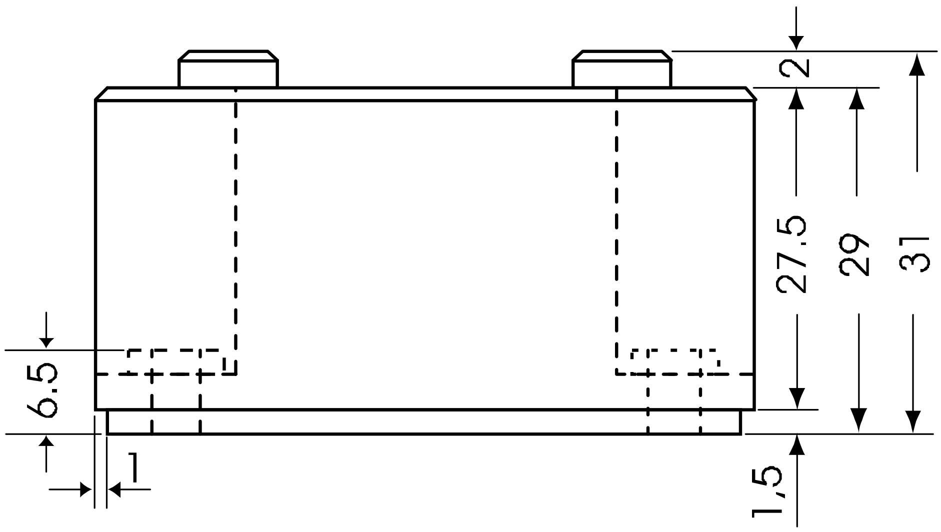
** on die level* $T_{VJ} = 150°C$

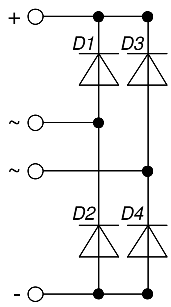


		Rectifier	
$V_{0\ max}$	*threshold voltage*	0.78	V
$R_{0\ max}$	*slope resistance **	3.6	mΩ

Outlines PWS-C







Rectifier

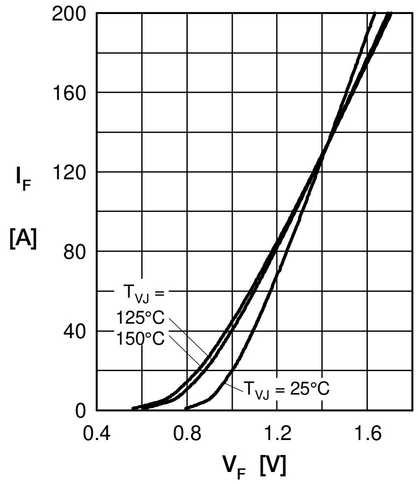


Fig. 1 Forward current versus voltage drop per diode

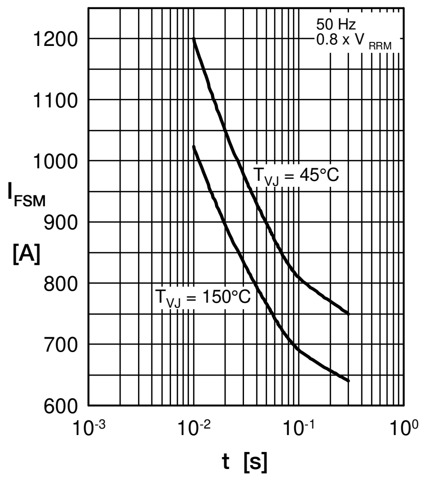


Fig. 2 Surge overload current vs. time per diode

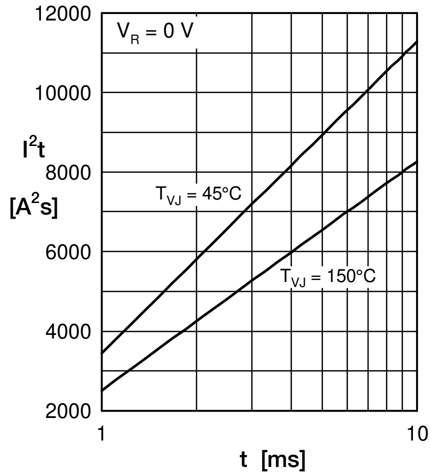


Fig. 3 I^2t versus time per diode

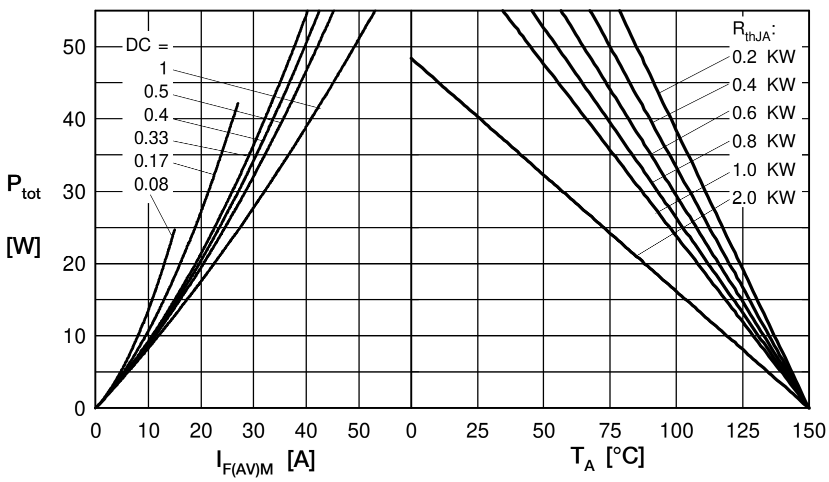


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

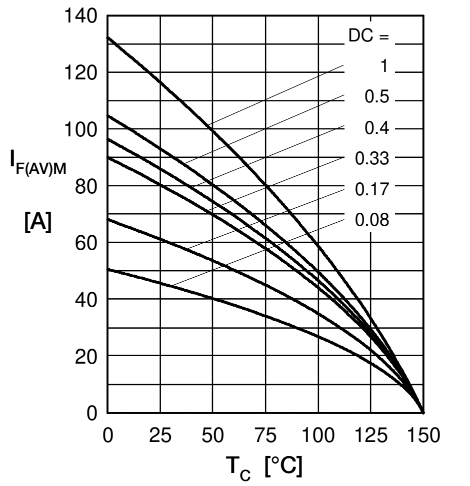


Fig. 5 Max. forward current vs. case temperature per diode

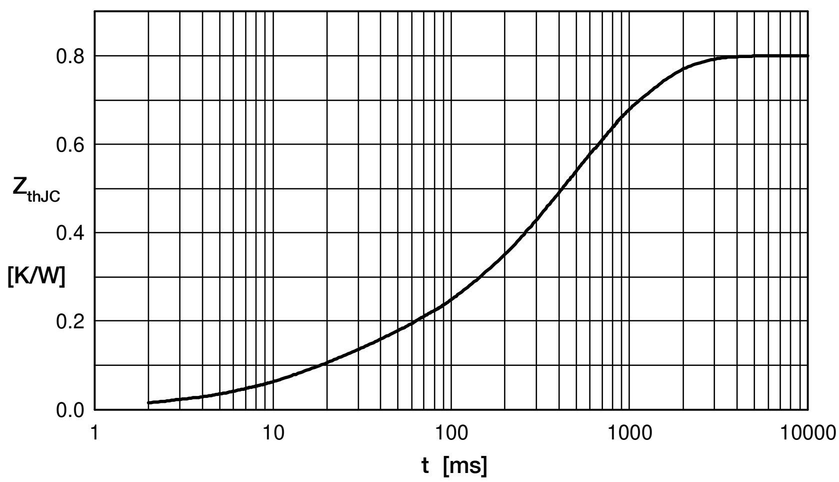


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.100	0.020
2	0.014	0.010
3	0.192	0.225
4	0.281	0.800
5	0.213	0.580