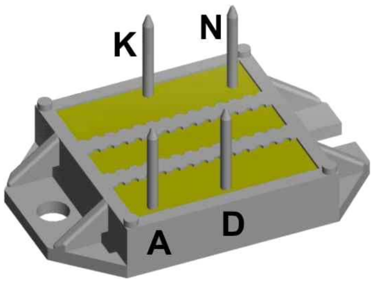
HiPerFRED Module

V_{RRM} = 1200 V
I_{DAV} = 32 A
t_{rr} = 40 ns

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
1~ Rectifier Bridge

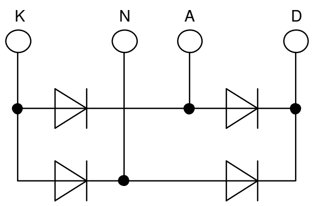
Part number

VBE26-12NO7



Backside: isolated

E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: ECO-PAC1

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper internally DCB isolated
- Advanced power cycling

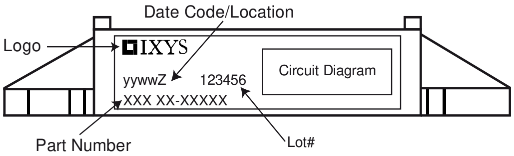
Disclaimer Notice

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.

Fast Diode

Symbol	Definition	Conditions		min.	typ.	max.	Unit
				Ratings			
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current, drain current*	V_R = 1200 V	T_{VJ} = 25°C			100	µA
		V_R = 1200 V	T_{VJ} = 150°C			0.5	mA
V_F	*forward voltage drop*	I_F = 15 A	T_{VJ} = 25°C			2.73	V
		I_F = 30 A				3.20	V
		I_F = 15 A	T_{VJ} = 150°C			1.75	V
		I_F = 30 A				2.20	V
I_{DAV}	*bridge output current*	T_C = 85°C rectangular d = 0.5	T_{VJ} = 150°C			32	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 150°C			1.32	V
r_F	*slope resistance*	*for power loss calculation only*				30	mΩ
R_{thJC}	*thermal resistance junction to case*					1.6	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.30		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			80	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			90	A
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		7		pF
I_{RM}	*max. reverse recovery current*	I_F = 15 A; V_R = 600 V; $-di_F/dt$ = 200 A/µs	T_{VJ} = 25 °C		6		A
			T_{VJ} = 100 °C		9		A
t_{rr}	*reverse recovery time*		T_{VJ} = 25 °C		40		ns
			T_{VJ} = 100 °C		135		ns

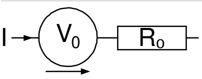
Package ECO-PAC1				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal				100	A
T_{VJ}	*virtual junction temperature*			-40		150	°C
T_{op}	*operation temperature*			-40		125	°C
T_{stg}	*storage temperature*			-40		125	°C
Weight					19		g
M_D	*mounting torque*			1.4		2	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	6.0			mm
$d_{Spb/Apb}$			*terminal to backside*	10.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VBE26-12NO7	VBE26-12NO7	Box	25	482366

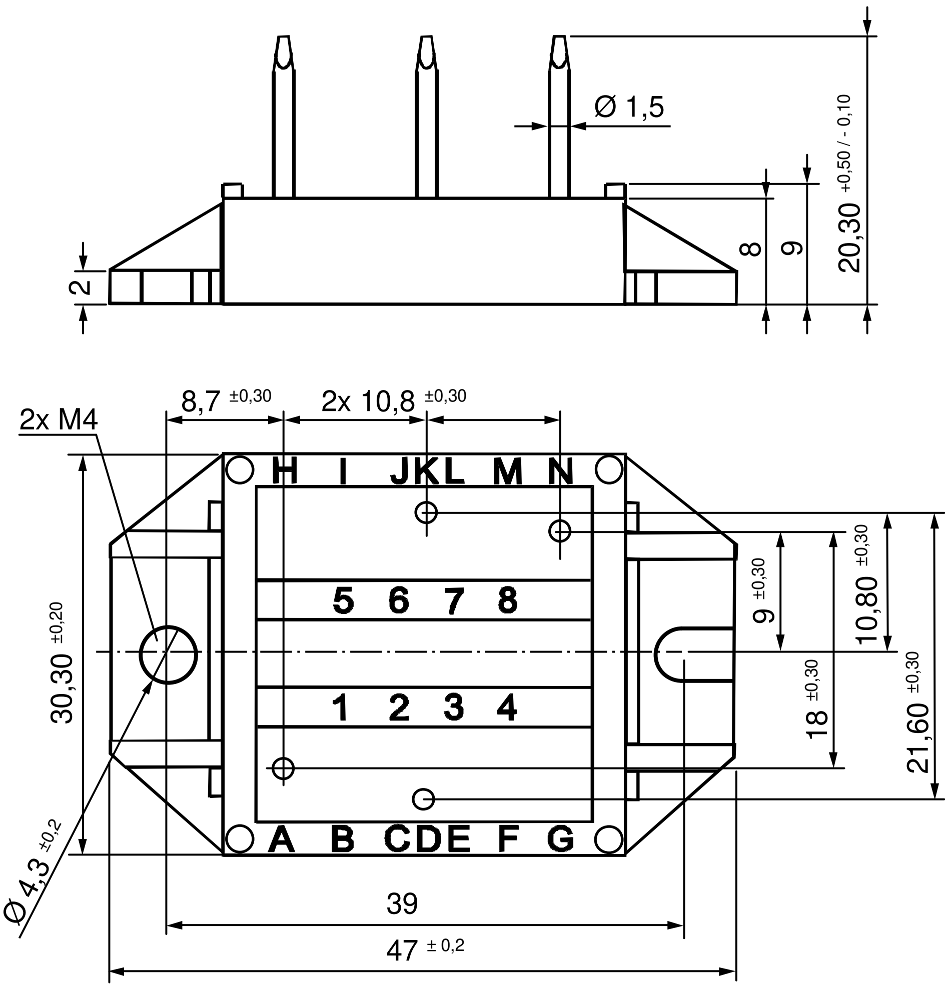
Equivalent Circuits for Simulation

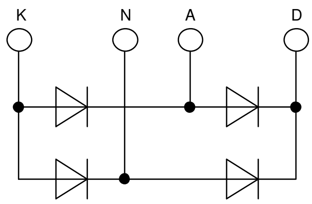
* on die level $T_{VJ} = 150°C$



		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.32	V
$R_{0\,max}$	*slope resistance **	28	mΩ

Outlines ECO-PAC1





Fast Diode

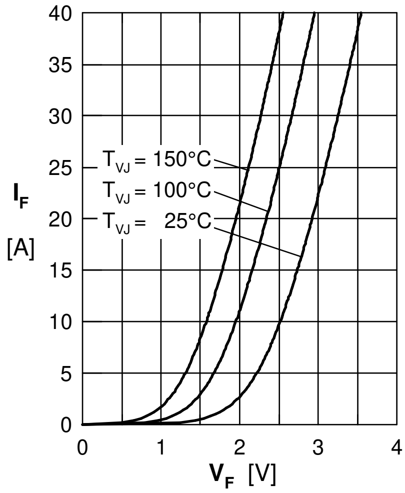


Fig. 1 Forward current I_F vs. V_F

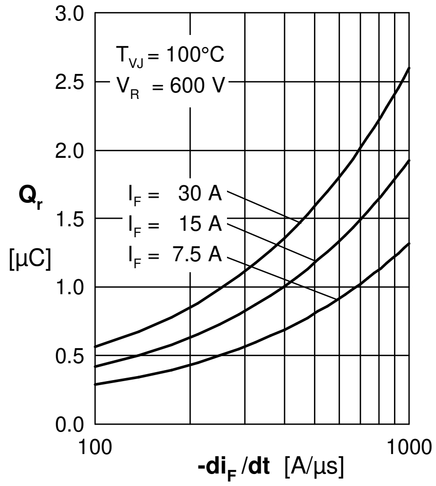


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

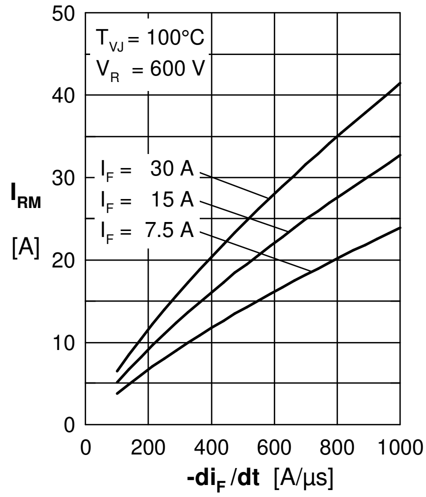


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

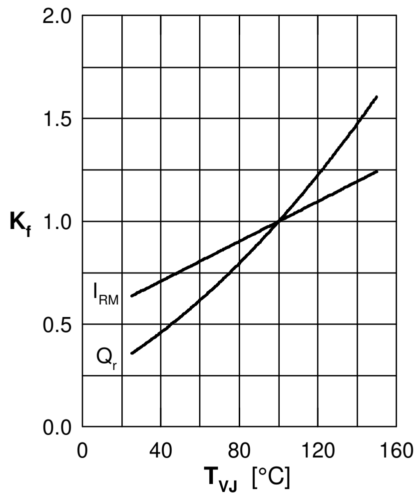


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

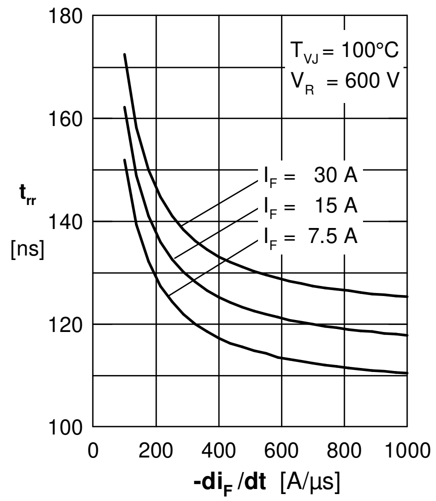


Fig. 5 Recovery time t_{rr} vs. $-di_F/dt$

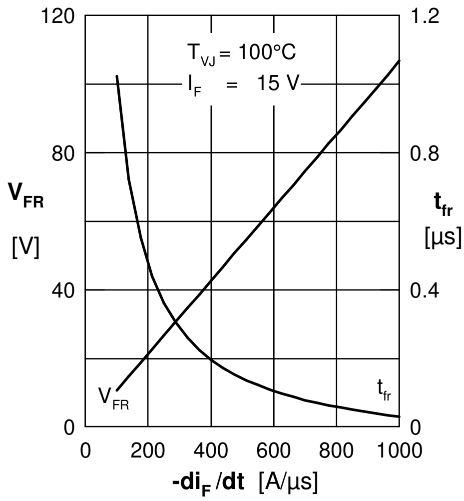


Fig. 6 Peak forward voltage V_{FR} and t_{fr} vs. $-di_F/dt$

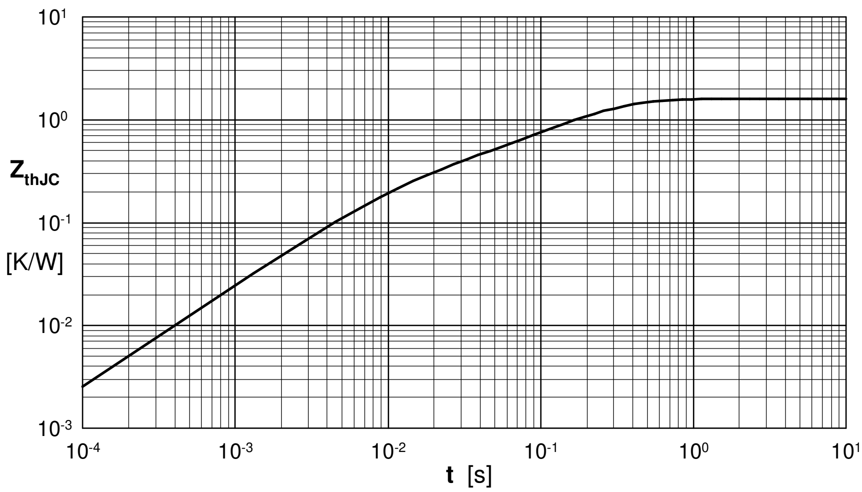


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.5464	0.0052
2	0.2104	0.0003
3	0.0432	0.0004
4	0.8000	0.0092