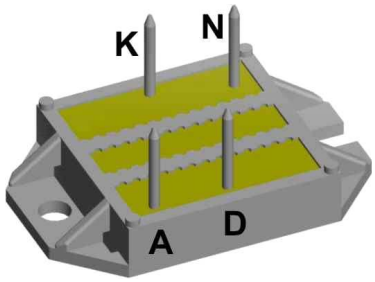
HiPerFRED Module

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

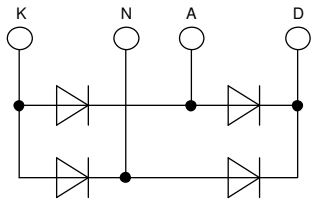
Part number

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)

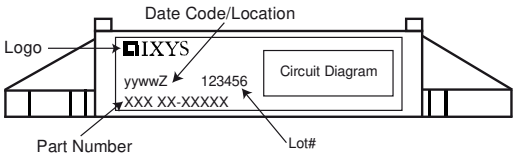
Package: ECO-PAC1

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

Fast Diode

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
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	T_{VJ} = 150°C			32	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			1.32	V
r_F	*slope resistance* }					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*		T_{VJ} = 25°C		6		A
		I_F = 15 A; V_R = 600 V	T_{VJ} = 100°C		9		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 200 A/µs	T_{VJ} = 25°C		40		ns
			T_{VJ} = 100°C		135		ns

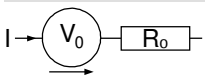
Package ECO-PAC1				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal				100	A
T_{VJ}	*virtual junction temperature*			-40		150	°C
T_{op}	*operation temperature*			-40		125	°C
T_{stg}	*storage temperature*			-40		125	°C
Weight					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

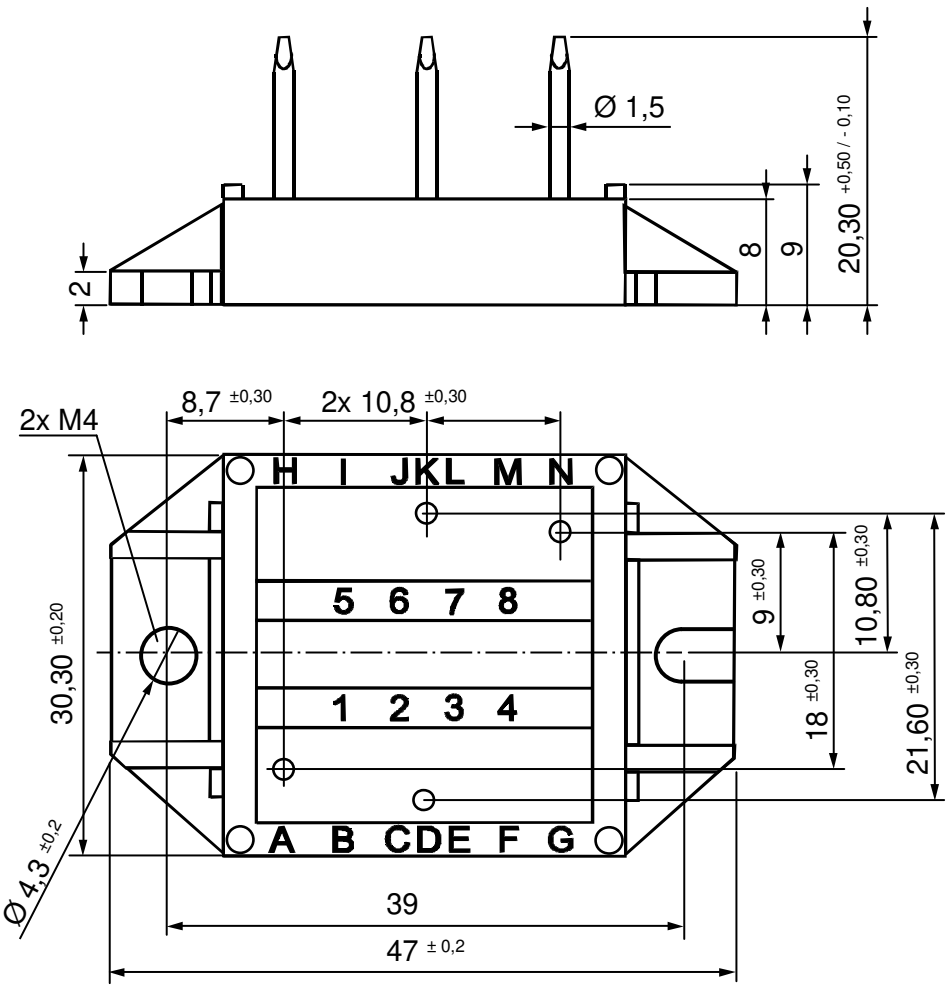
Equivalent Circuits for Simulation

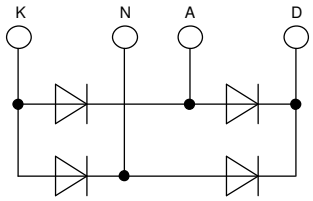
** on die level* T_{VJ} = 150°C



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

Outlines ECO-PAC1





Fast Diode

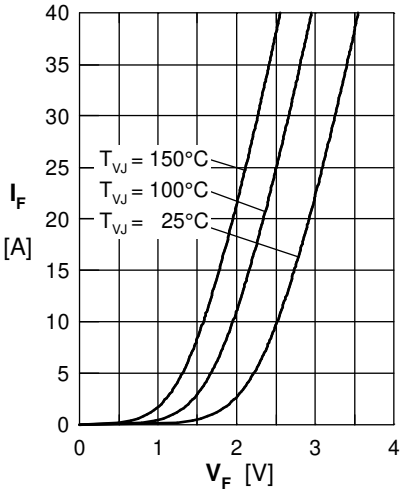


Fig. 1 Forward current I_F vs. V_F

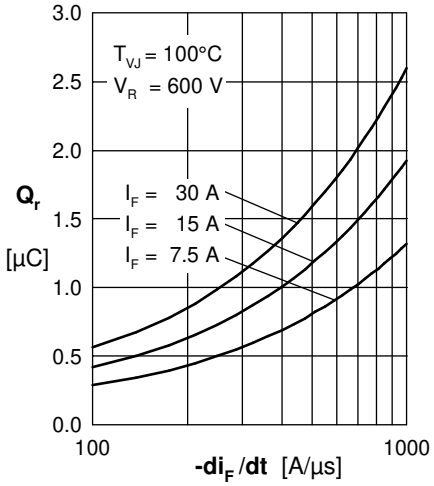


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

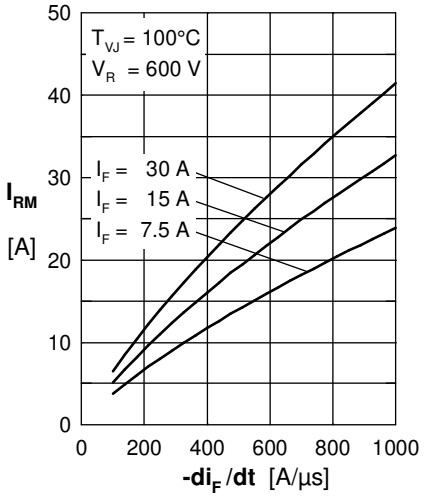


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

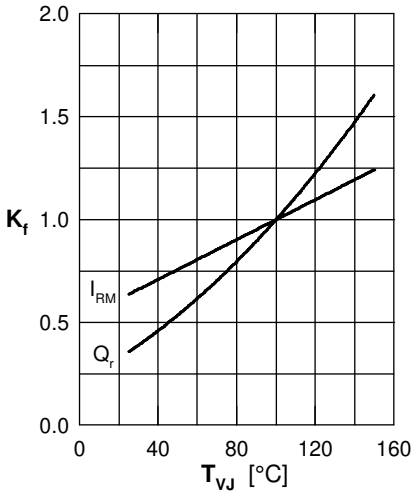


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

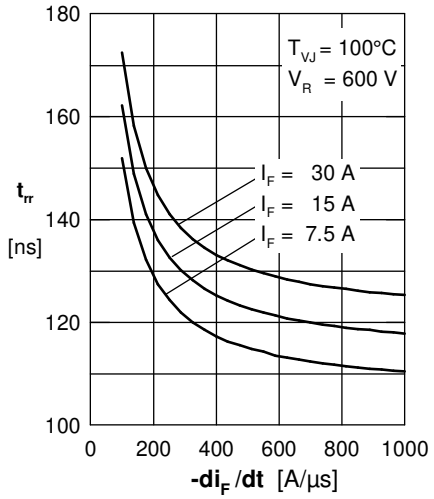


Fig. 5 Recovery time t_{rr} vs. $-di_F/dt$

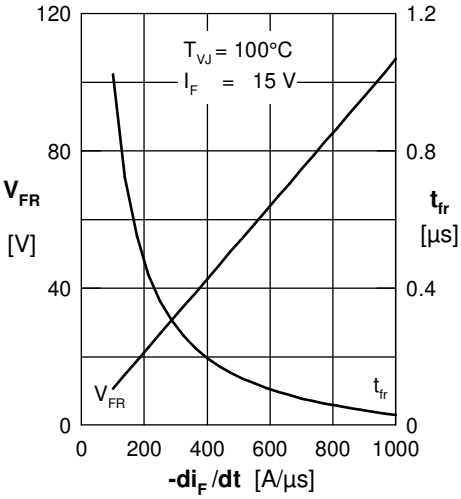


Fig. 6 Peak forward voltage V_{FR} and t_{fr} vs. $-di_F/dt$

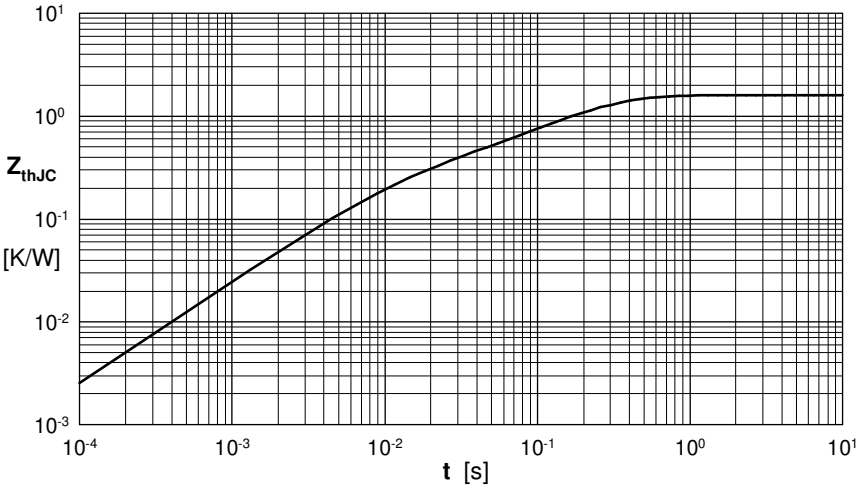


Fig. 7 Transient thermal resistance junction to case

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