

HiPerFRED Module

$$V_{RRM} = 1200\text{ V}$$

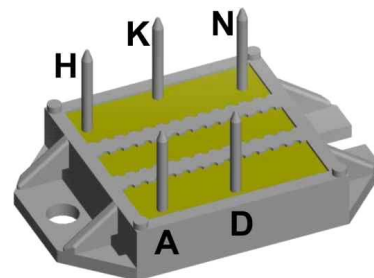
$$I_{DAV} = 74\text{ A}$$

$$t_{rr} = 60\text{ ns}$$

Fast Recovery Epitaxial Diode
 Low Loss and Soft Recovery
 3~ Rectifier Bridge

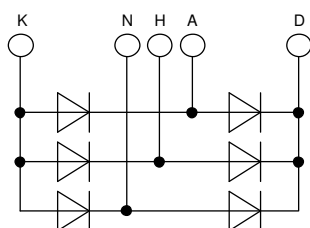
Part number

VUE75-12NO7



Backside: isolated

 E72873



Features / Advantages:

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

Applications:

- Supplies for DC power equipment
- Input and output rectifiers for high frequency
- Battery DC power supplies
- Field supply for DC motors

Package: ECO-PAC1

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

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Fast Diode				Ratings				
Symbol	Definition	Conditions		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			250	μA	
		V _R = 1200 V	T _{VJ} = 150°C			1	mA	
V _F	forward voltage drop	I _F = 30 A	T _{VJ} = 25°C			2.71	V	
		I _F = 90 A				3.65	V	
		I _F = 30 A	T _{VJ} = 150°C			1.75	V	
		I _F = 90 A				2.70	V	
I _{DAV}	bridge output current	T _C = 85°C rectangular d = ⅓	T _{VJ} = 150°C			74	A	
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 150°C		1.31	V	
r _F	slope resistance					15	mΩ	
R _{thJC}	thermal resistance junction to case					0.9	K/W	
R _{thCH}	thermal resistance case to heatsink				0.30		K/W	
P _{tot}	total power dissipation	T _C = 25°C				140	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		200	A	
C _J	junction capacitance	V _R = 600 V f = 1 MHz		T _{VJ} = 25°C	12		pF	
I _{RM}	max. reverse recovery current	} I _F = 30 A; V _R = 600 V -di _F /dt = 200 A/μs		T _{VJ} = 25 °C	8.5		A	
				T _{VJ} = 100 °C	13		A	
t _{rr}	reverse recovery time			T _{VJ} = 25 °C	60		ns	
				T _{VJ} = 100 °C	170		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	3600			V
		t = 1 minute	3000			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUE75-12NO7	VUE75-12NO7	Box	25	482315

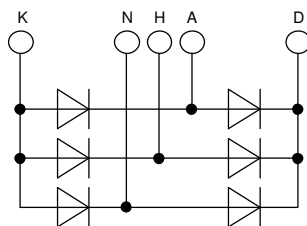
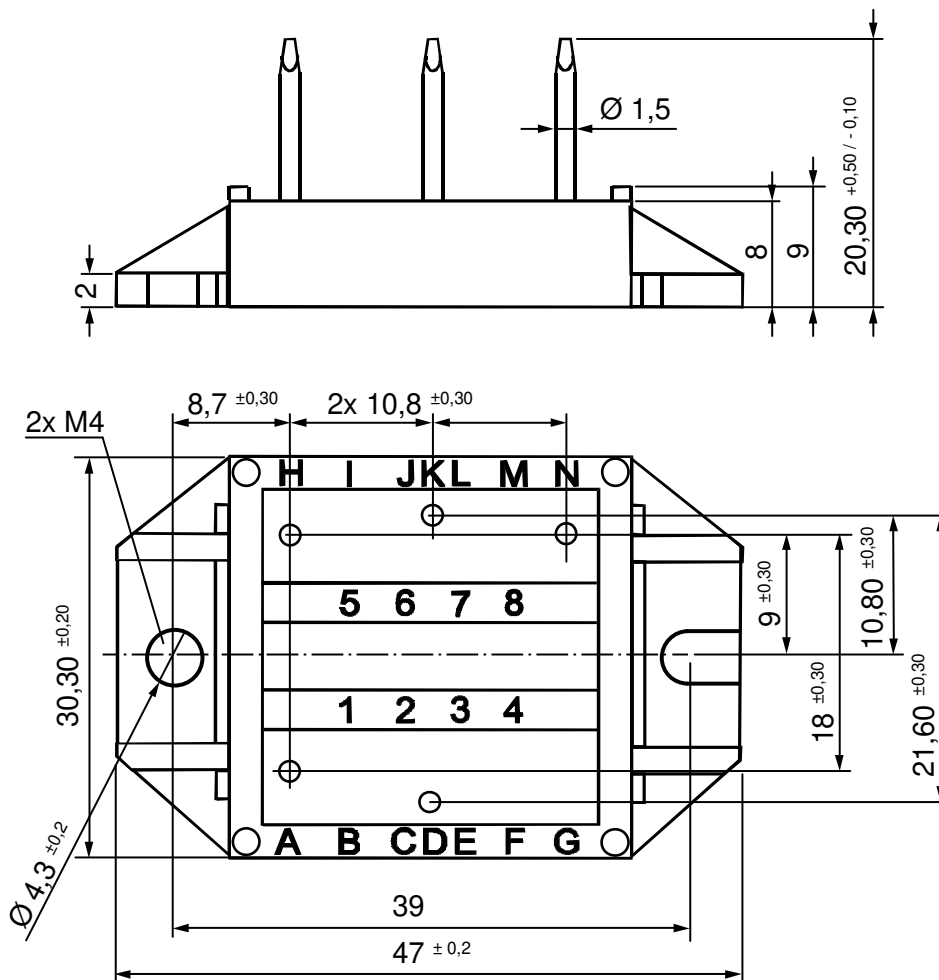
Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150^{\circ}\text{C}$

		Fast Diode	
$V_{0\max}$	threshold voltage	1.31	V
$R_{0\max}$	slope resistance *	13	mΩ

Outlines ECO-PAC1



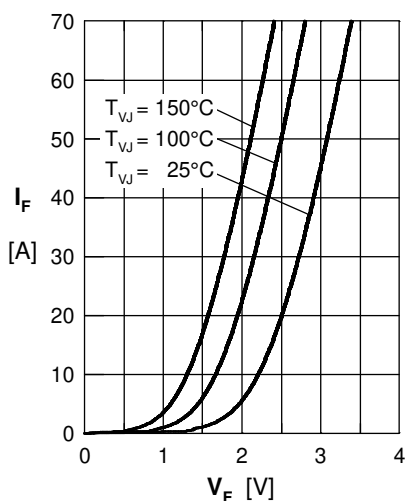
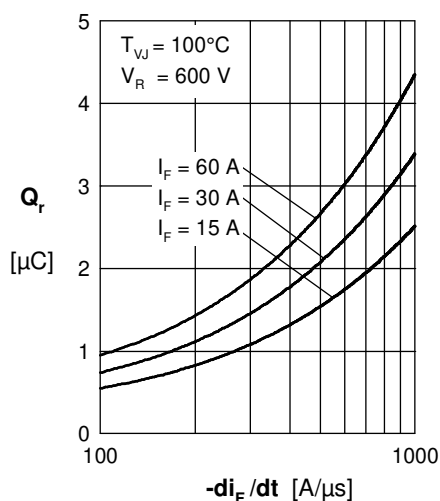
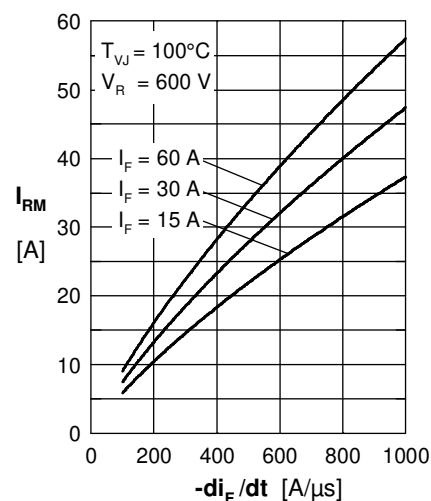
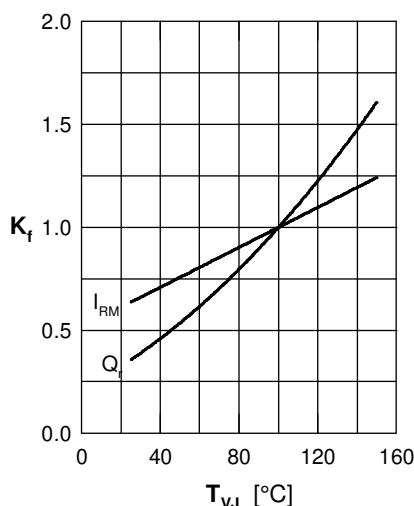
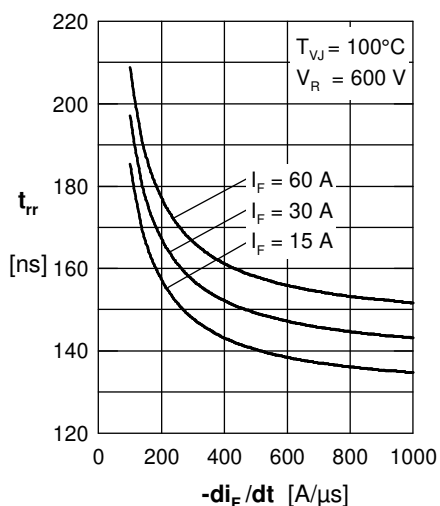
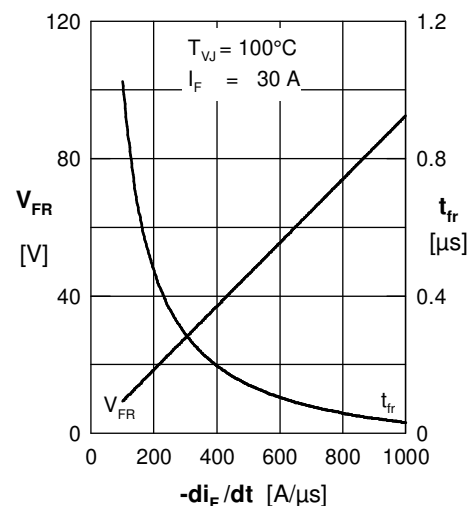
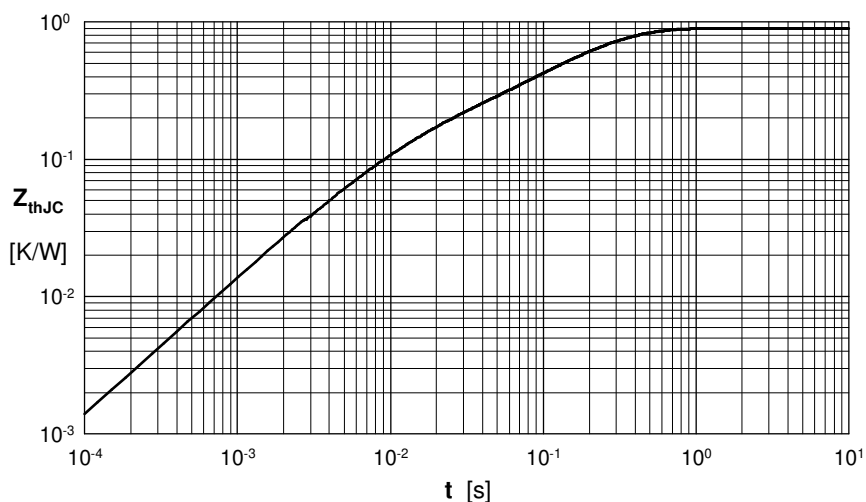
Fast Diode

 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} versus $-di_F/dt$

 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	0.3012	0.0052
2	0.1160	0.0003
3	0.0241	0.0004
4	0.4586	0.0092