

HiPerFRED Module

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

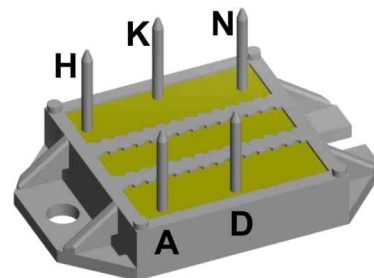
$$I_{DAV} = 24 \text{ A}$$

$$t_{rr} = 40 \text{ ns}$$

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

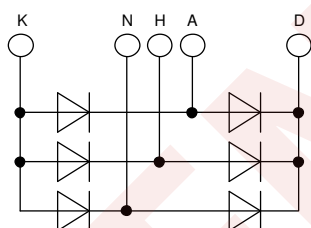
Part number

VUE22-12NO7



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

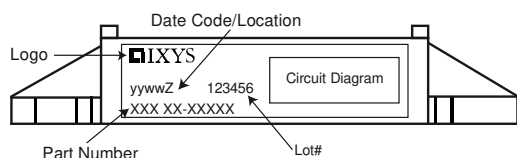
- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

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				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			60	μA	
		V _R = 1200 V	T _{VJ} = 150°C			0.25	mA	
V _F	forward voltage drop	I _F = 10 A	T _{VJ} = 25°C			2.92	V	
		I _F = 30 A				4.05	V	
		I _F = 10 A	T _{VJ} = 150°C			1.95	V	
		I _F = 30 A				3.02	V	
I _{DAV}	bridge output current	T _C = 85°C rectangular d = ⅓	T _{VJ} = 150°C			24	A	
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 150°C		1.39	V	
r _F	slope resistance					55	mΩ	
R _{thJC}	thermal resistance junction to case					2.5	K/W	
R _{thCH}	thermal resistance case to heatsink				0.30		K/W	
P _{tot}	total power dissipation	T _C = 25°C				50	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		40	A	
C _J	junction capacitance	V _R = 600 V f = 1 MHz		T _{VJ} = 25°C		3	pF	
I _{RM}	max. reverse recovery current	} I _F = 10 A; V _R = 600 V -di _F /dt = 200 A/μs		T _{VJ} = 25 °C		5	A	
				T _{VJ} = 100 °C		8	A	
t _{rr}	reverse recovery time			T _{VJ} = 25 °C		40	ns	
				T _{VJ} = 100 °C		115	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
$d_{Spb/Appb}$		terminal to backside	10.0			mm
V_{ISOL}	isolation voltage	t = 1 second	3600			V
		t = 1 minute	3000			V

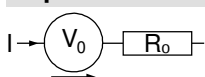


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUE22-12NO7	VUE22-12NO7	Box	25	482838

Equivalent Circuits for Simulation

* on die level

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



Fast Diode

$V_{0\max}$ threshold voltage

1.39

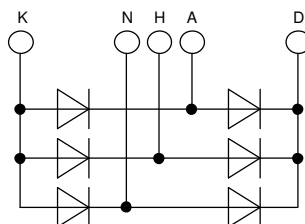
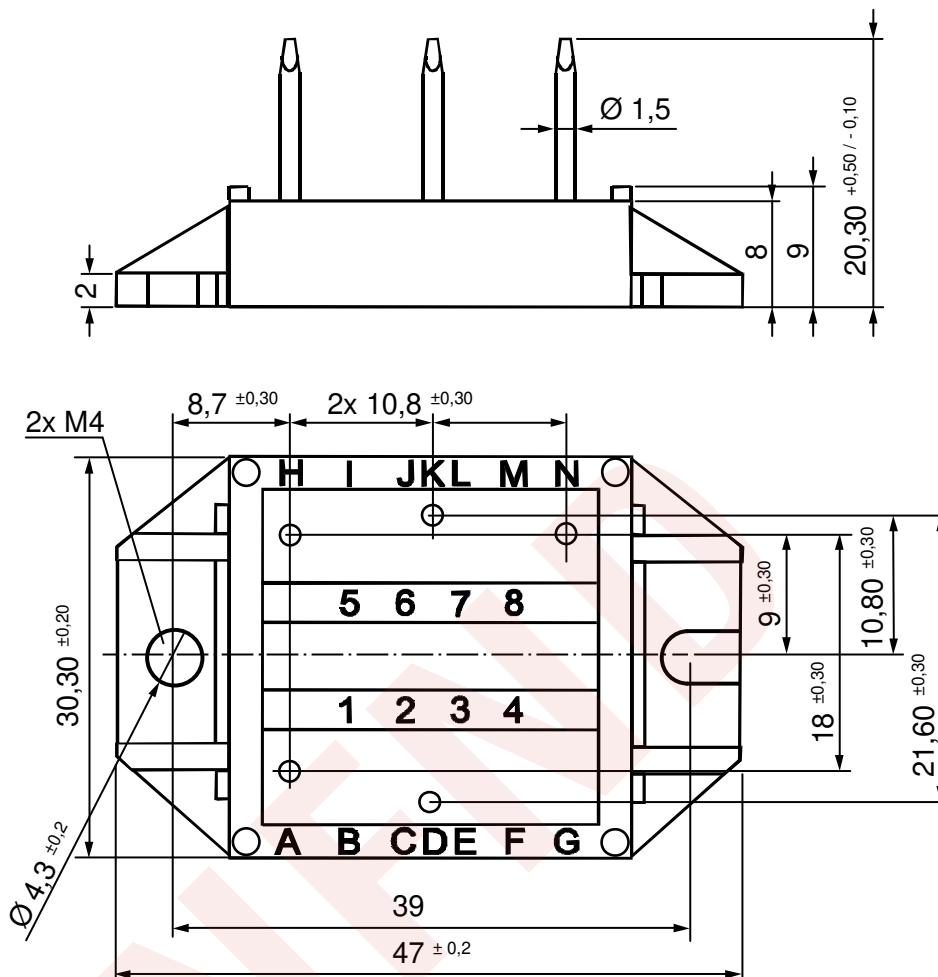
V

$R_{0\max}$ slope resistance *

53

mΩ

Outlines ECO-PAC1



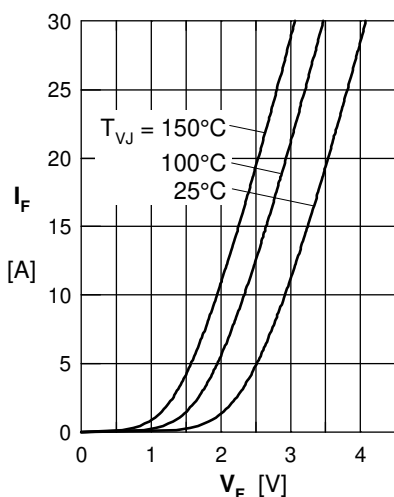
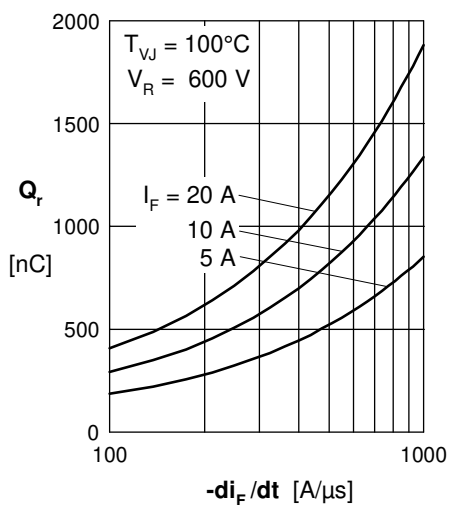
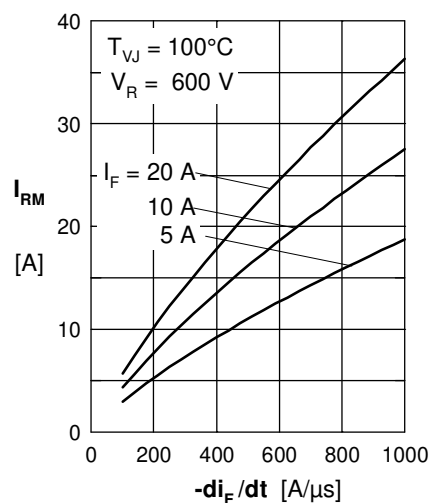
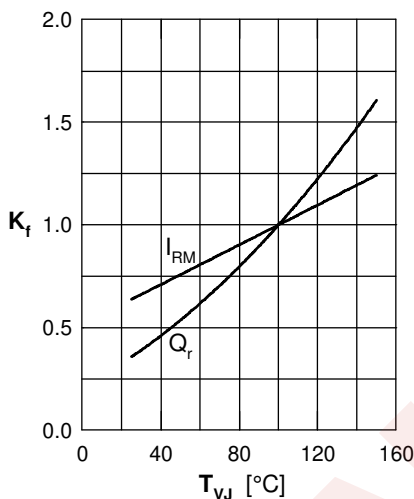
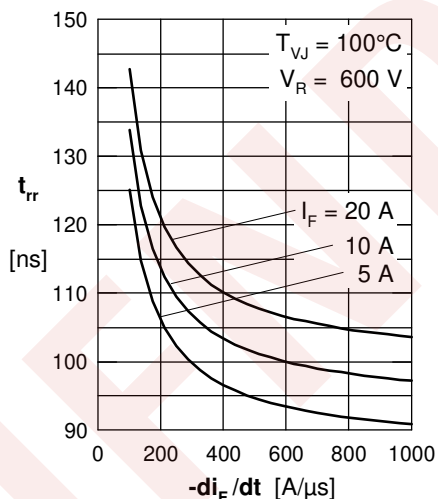
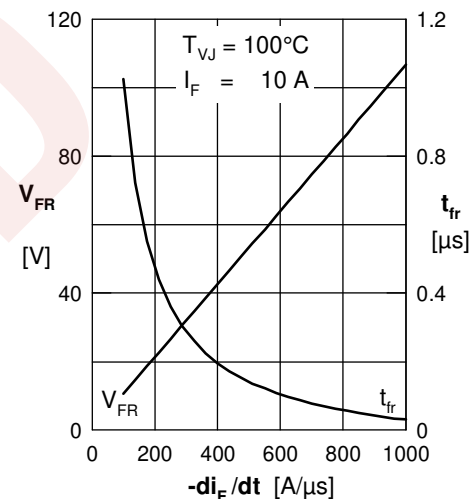
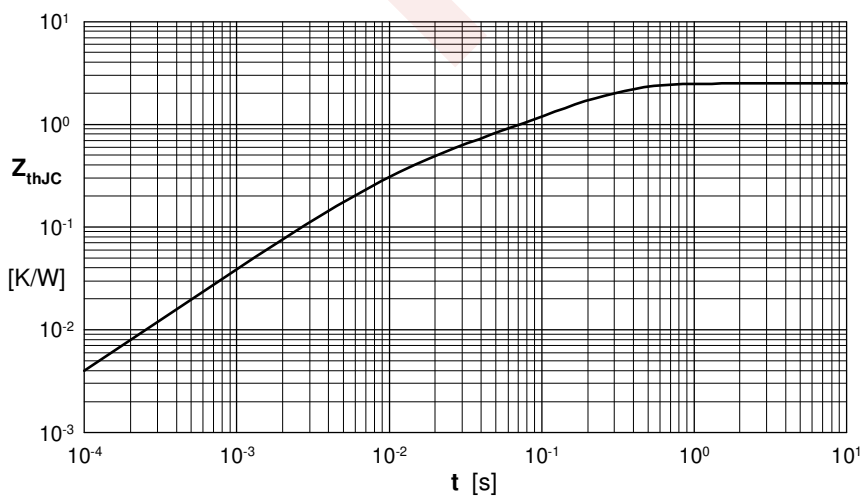
Fast Diode

 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

i	R_{thi} (K/W)	t_i (s)
1	0.8776	0.0052
2	0.3378	0.0003
3	0.0678	0.0004
4	1.2168	0.0092