

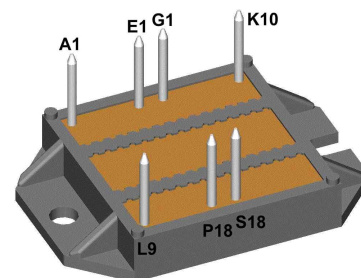
# HiPerFRED Module

$$\begin{aligned} V_{RRM} &= 600 \text{ V} \\ I_{DAV} &= 130 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$

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

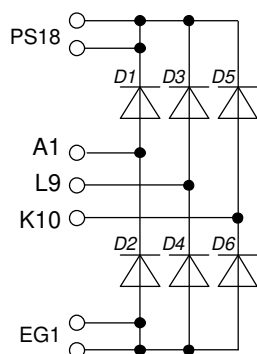
Part number

**VUE130-06NO7**



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-PAC2

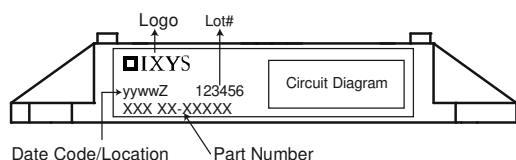
- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

## 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](http://www.littelfuse.com/disclaimer-electronics).

Fast Diode				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V <sub>RSM</sub>	max. non-repetitive reverse blocking voltage	T <sub>VJ</sub> = 25°C				600	V	
V <sub>RRM</sub>	max. repetitive reverse blocking voltage	T <sub>VJ</sub> = 25°C				600	V	
I <sub>R</sub>	reverse current, drain current	V <sub>R</sub> = 600 V	T <sub>VJ</sub> = 25°C			100	μA	
		V <sub>R</sub> = 600 V	T <sub>VJ</sub> = 150°C			2.5	mA	
V <sub>F</sub>	forward voltage drop	I <sub>F</sub> = 60 A	T <sub>VJ</sub> = 25°C			2.04	V	
		I <sub>F</sub> = 180 A				2.60	V	
		I <sub>F</sub> = 60 A	T <sub>VJ</sub> = °C			1.35	V	
		I <sub>F</sub> = 180 A				1.95	V	
I <sub>DAV</sub>	bridge output current	T <sub>C</sub> = 85°C rectangular      d = ⅓	T <sub>VJ</sub> = 150°C			130	A	
V <sub>F0</sub>	threshold voltage	} for power loss calculation only		T <sub>VJ</sub> = 150°C		1.09	V	
r <sub>F</sub>	slope resistance					4.3	mΩ	
R <sub>thJC</sub>	thermal resistance junction to case					0.8	K/W	
R <sub>thCH</sub>	thermal resistance case to heatsink				0.20		K/W	
P <sub>tot</sub>	total power dissipation	T <sub>C</sub> = 25°C				155	W	
I <sub>FSM</sub>	max. forward surge current	t = 10 ms; (50 Hz), sine; V <sub>R</sub> = 0 V		T <sub>VJ</sub> = 45°C		600	A	
C <sub>J</sub>	junction capacitance	V <sub>R</sub> = 400 V   f = 1 MHz		T <sub>VJ</sub> = 25°C		67	pF	
I <sub>RM</sub>	max. reverse recovery current	} I <sub>F</sub> = 60 A; V <sub>R</sub> = 300 V -di <sub>F</sub> /dt = 200 A/μs		T <sub>VJ</sub> = 25 °C		8	A	
				T <sub>VJ</sub> = 100 °C		13	A	
t <sub>rr</sub>	reverse recovery time			T <sub>VJ</sub> = 25 °C		35	ns	
				T <sub>VJ</sub> = 100 °C		110	ns	

Package ECO-PAC2			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
<b>Weight</b>				24		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

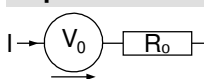


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUE130-06NO7	VUE130-06NO7	Box	25	494291

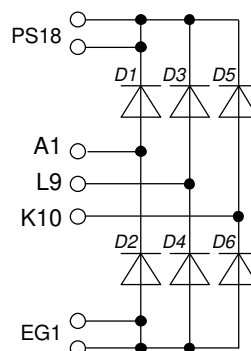
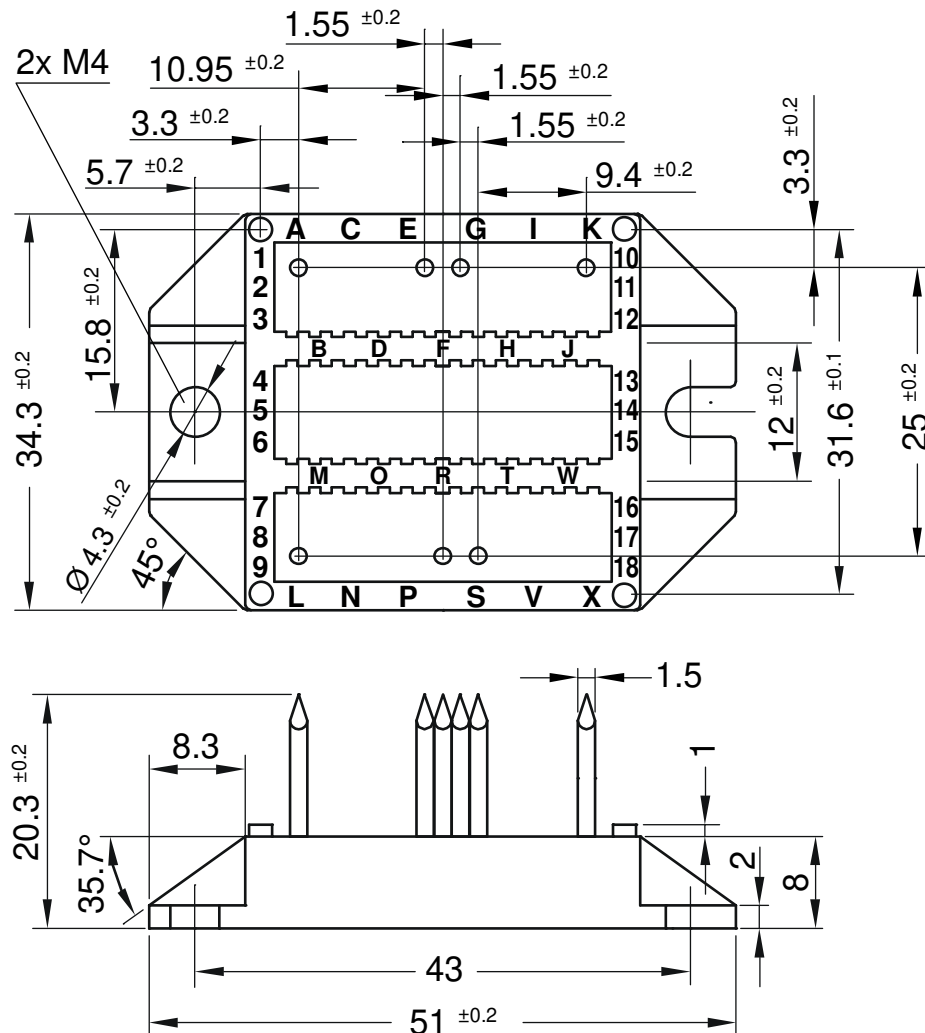
### Equivalent Circuits for Simulation

\* on die level

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

			<b>Fast Diode</b>	
$V_{0\max}$	threshold voltage	1.09		V
$R_{0\max}$	slope resistance *	2.3		mΩ

**Outlines ECO-PAC2**



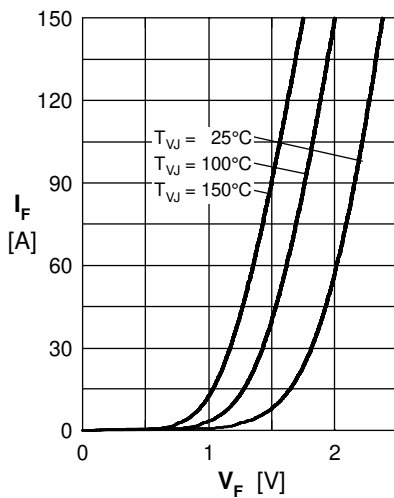
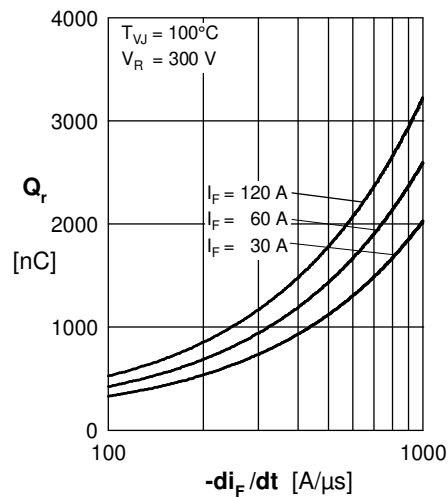
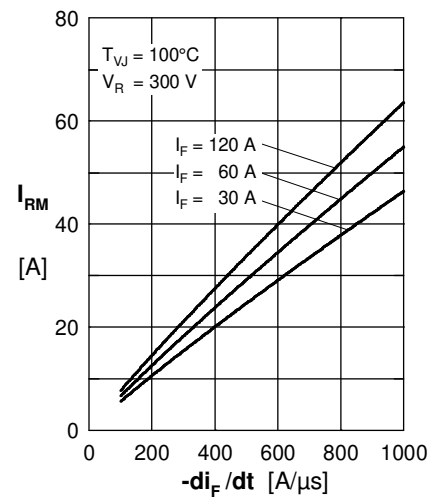
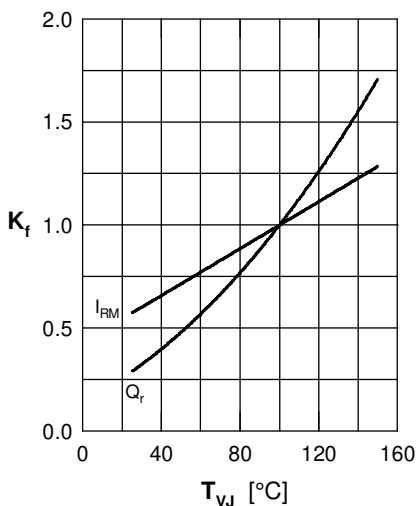
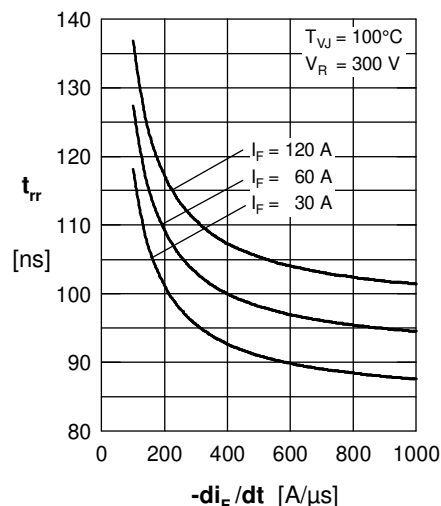
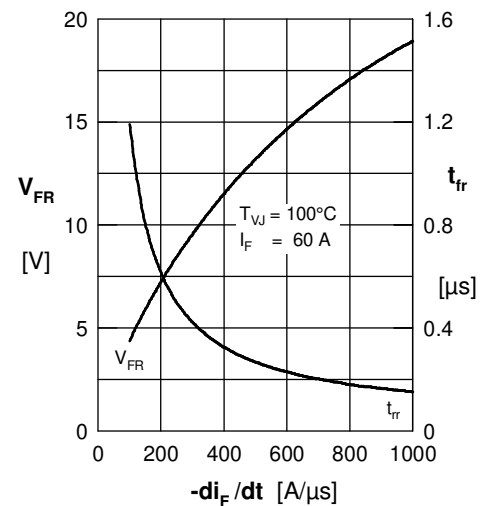
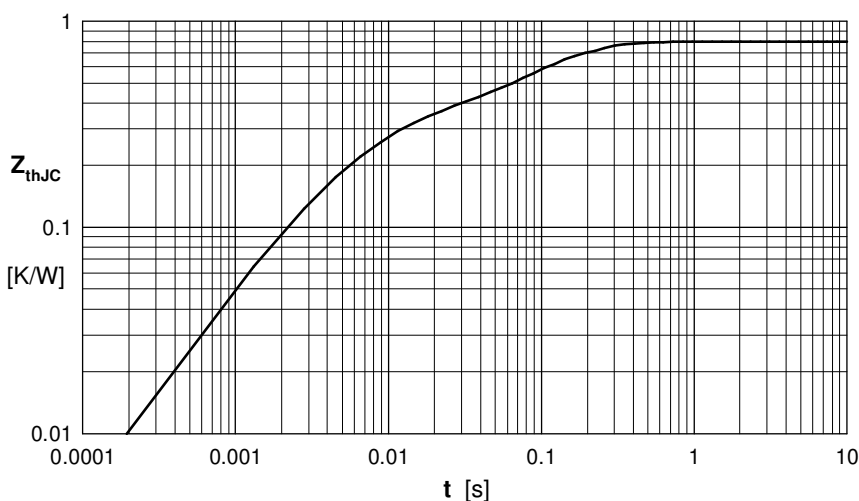
**Fast Diode**

 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	0.0010	0.0010
2	0.0790	0.0300
3	0.2500	0.0050
4	0.4700	0.1200