

# Fast Recovery Epitaxial Diode (FRED)

preliminary data

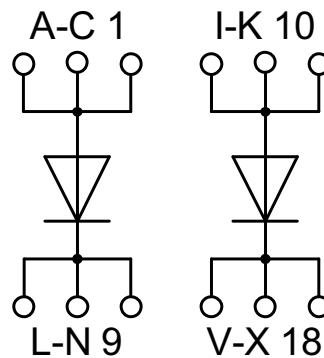
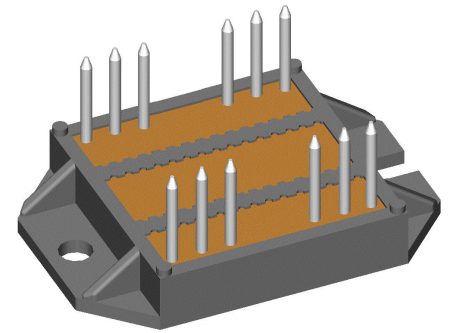
$$I_{FAVM} = 2 \times 165 \text{ A}$$

$$V_{RRM} = 200 \text{ V}$$

$$t_{rr} = 35 \text{ ns}$$

## Part number

DSEI2x161-02P



### Features / Advantages:

- 2 independent FRED in 1 package
- Planar passivated chips
- Very short recovery time
- Leads suitable for PC board soldering
- Very short recovery time
- Soft recovery behaviour
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Low noise switching
- Small and light weight

### Applications:

- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

### Package: ECO-PAC2

- Isolation voltage: 3000 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

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Diode				Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	
$I_{FRMS}$	RMS forward current				270	A
$I_{FAVM}$ ①	max. average forward current	rectangular, d = 0.5			165	A
$I_{FSM}$	max. surge forward current	t = 10 ms (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$		1200	A
		t = 8.3 ms (60 Hz), sine			1300	A
		t = 10 ms (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$		1080	A
		t = 8.3 ms (60 Hz), sine			1170	A
$I^2t$	$I^2t$ value for fusing	t = 10 ms (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$		7200	A <sup>2</sup> s
		t = 8.3 ms (60 Hz), sine			7100	A <sup>2</sup> s
		t = 10 ms (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$		5800	A <sup>2</sup> s
		t = 8.3 ms (60 Hz), sine			5700	A <sup>2</sup> s
$I_R$	reverse current	$V_R = V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C}$		3	mA
		$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C}$		2	mA
		$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 125^{\circ}\text{C}$		80	mA
$V_F$	forward voltage	$I_F = 200\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$		1.2	V
$V_{TO}$	threshold voltage	for power-loss calculations only	$T_{VJ} = T_{VJM}$		0.53	V
$r_T$	slope resistance				2.6	mΩ
$R_{thJC}$	thermal resistance junction to case			0.20	0.29	K/W
$R_{thCH}$	thermal resistance junction to heatsink					K/W
$I_{RM}$	max. reverse recovery current	$I_F = 100\text{ A}$ ; $-di_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 100\text{ V}$ ; $L \leq 0.05\ \mu\text{H}$	$T_{VJ} = 100^{\circ}\text{C}$	20		A
$t_{rr}$	reverse recovery time	$I_F = 1\text{ A}$ ; $-di/dt = 400\text{ A}/\mu\text{s}$ ; $V_R = 30\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$	35		ns

 ①  $I_{FAVM}$  rating includes reverse blocking losses at  $T_{VJM}$ ,  $V_R = 0.8 V_{RRM}$ , duty cycle d = 0.5



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Package ECO-PAC2			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
$I_{RMS}$	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		2.0	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		
$V_{ISOL}$	isolation voltage	$t = 1$ second $t = 1$ minute	3000 2500			V V
		50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA				

