

Electronics

### Kilovac EV250-2A & 2B - 400 Amps ("Czonka II EVX")

#### Make & Break Load Switching





Note: Dimensions in inches. Multiply values by 25.4 for dimensions in mm.



\* For circuit conditions and actual data refer to the EV250 hot switch study. Since each application is unique, user is encouraged to verify rating in actual application.

PRODUCT SPECIFICATIONS					
Part Number	UNIT	EV250-2A	EV250-2B		
Contact Arrangement		SPST-NO	SPST-NO		
Contact Form		Х	Х		
Continuous Current Carry, Max	A	400	400		
6.5 Minutes	A	500	500		
Break Current @ 320 Vdc	A	2,500	2,500		
Contact Resistance, Max	ohms	0.0003	0.0003		
Contact Resistance, Typ	ohms	0.0001 - 0.0002	0.0001 - 0.0002		
Dielectric at Sea Level (leakage < 1mA)	Vrms	2,200	2,200		
Shock, 11 ms 1/2 Sine (peak), operating	G's peak	30	30		
Vibration, Sinusoidal (80-2000 Hz, peak)	G's	20	20		
Operating Ambient Temperature Range	°C	-40 to +85	-40 to +85		
Load Life, @ 320 Vdc. 95% Weibull*	cycles	See Page 19	See Page 19		
Operate Time, 25° C					
Close (includes bounce) Typ	ms	18	18		
Bounce (after close only), Max	ms	5	5		
Release Time (includes arcing), Max. @ 2500A	ms	15	15		
Insulation Resistance @ 500 Vdc, Min	Mohm	100	100		
Weight, Nominal	pound (kg)	1.76 (0.8)	1.76 (0.8)		

\* Refer to sales drawing, qualification test plan for actual mix of precharge and break currents used on each cycle.

# 28-1800 Vdc

#### Features:

- Hydrogen dielectric for power switching high current loads
- 400 A carry, 2,500 A interrupt @ 320 Vdc
- Ideal for circuit protection, control, battery
- switching, and main power safety disconnect • Versatile power, voltage, and current
- operating range: 28-1800Vdc tested • Internal coil economizer provides:
  - 4W typical hold power independent of temperature & voltage range
     EMI spectrum tested and approved
  - Built-in coil suppression
  - Built-in coll suppression
    Betented "bermer effect" mechanism
- Patented "hammer effect" mechanism breaks light contact welds
- Patented hermetically "Super-sealed" environment chamber uniquely protects ALL moving parts
- · Can operate in harsh environments
- Moving contact rotates to provide fresh contact surface for low contact resistance and low power comsumption
- Sealed control connector. Mating connector with flying leads P/N 2005 available, see page 59
- Special versions available:
  - Economical (-8A/B) for light duty power switching (without arc blowout magnets
  - 10 inch flying leads model (-7A)



COIL DATA**						
Parameter	EV250-2A	EV250-2B	Units			
Voltage* (nominal )	12	24	Vdc			
Pickup (close), max.	9	18				
Hold, Min.	7	14				
Dropout (open), min.	5	10				
Current (@VsNom/ 25°C)			А			
Inrush	2.8	1.8				
Holding, standby,	0.34	0.11	А			
Inrush Time, max.	200	200	ms			
* Other special coil voltages available upon request.						

\* Do not use a free wheeling diode or capacitor across the coil. Built in suppression limits back EME to zero volte

#### PART NUMBER SELECTION

Sample Part No. EV250-2 A Model 2 = with blowout magnets

- 8 = without blowout magnets
- 7 = 10" flying leads
  - (12 V, with magnets only)
- Coil Voltage ------

A = 12 Vdc, Nominal

B = 24 Vdc, Nominal

For detailed specifications and recommendations, refer to the EV250-2A & B or 7A sales drawings.



## **EV250 Contact Ratings**

#### CURRENT VS TIME CONTACTS CLOSED INTO 70% AND 90% CAPACITOR PRE CHARGE

750 700 650 600 550 500 450 400 350 300 250 200 150 100 50 0 1 2 3 4 5 6 7 0

#### LIFE RATINGS AND QUALIFICATION TEST PLAN Normal Operations Abnormal Operations Test# 1 3 4 2 Current reference graph and -250 A 2500 A Voltage test circuit diagram (sht. 8) 320 V 320 V Capacitive Capacitive Load Type Resistive Resistive <u>% Pre Charge</u> 90% 70% N/A N/A Switch Mode make/ break make make break only only only Sequence 10K cycles 2 2 10 cycles 10K 10 2 2 <u>10K</u> 10 2 3 2 10K 10 2 4 5 10K 10 2 Continue Cycling to Relay Failure Etc

The testing objective is to verify proper relay function for a given number of consecutive and cumulative cycles under both normal and abnormal conditions in a variety of load switching applications. The life rating of 40K cycles minimum was calculated with 95% Weibull reliability.

Electrical Data (Over Temperature Range - Max. Terminal Temp. = 2	200°C)
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Make/Break Life for Capacitive & Resistive Loads at 320 V	dc (1) (2)	
@ 90% capacitive pre-charge	Cycles	50,000
@ 70% capacitive pre-charge	Cycles	50
@ -250 A (2 consecutive, reverse polarity) (1)	Cycles	10
@ 3300 A (break only, 2 consecutive) (1)	Cycles	4
Mechanical Life	Cycles	100,000

(1) Resistive load includes inductance L = 25 uH. Load @ 2500 A tested @ 200 uH.

(2) Conductor: 2 each of Copper 54 mm2 (AWG 0) required for > 250 A carry.

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<sup>1</sup> Copper (AWG 0) conductor recommneded for  $\leq$  250 A

<sup>(3)</sup> Life based on projected Weibull Life with 95% Reliability