Tyco Electronics

Power Relay B

234_kop1

Features

– Limiting continuous
  current 35 A at 85°C
– Pin assignment according
  to ISO 7588 part 1
– Standardized dimensions
– Plug-in or PCB terminals

Customized Versions on Request

– 24 V versions with contact
  gap > 0.8 mm
– Integrated components
  (e.g. resistor, diode)
– Customized marking/color
– Special covers (e.g. notches,
  release features, brackets)
– Various contact arrangements
  and materials

– For latching (bistable) version
  refer to Mini Relay Latching
– For shrouded/weatherproof
  dust cover versions refer to
  Shrouded Power Relay F4 A
  and VF4 A

Typical Applications

Cross carline up to 35 A
for example:
– Rear window defogger
– Battery disconnection
– Power distribution (clamp 15)

Please contact Tyco Electronics
for relay application support.

Design

– ELV/RoHS/WEEE compliant
– Dustproof: protection class IP54 to
  IEC 529 (EN 60 529)

Weight

Approx. 35 g (1.2 oz.)

Nominal Voltage

12 V or 24 V; other nominal
voltages available on request

Terminals

Quick connect terminals similar to
ISO 8092-1, coil and load 6.3 x 0.8 mm;
surfaces tin plated or PCB terminals

Accessories

Connectors see page 229 ff

Conditions

All parametric, environmental and
endurance tests are performed
according to EIA Standard RS-407-A
at standard test conditions unless
otherwise noted:
23°C ambient temperature,
20 - 50% RH, 998.9 ±33.9 hPa.

For general storage and processing
recommendations please refer to our
Application Notes and especially to
Storage in the "Glossary" page 23 or
at http://relays.tycoelectronics.com/
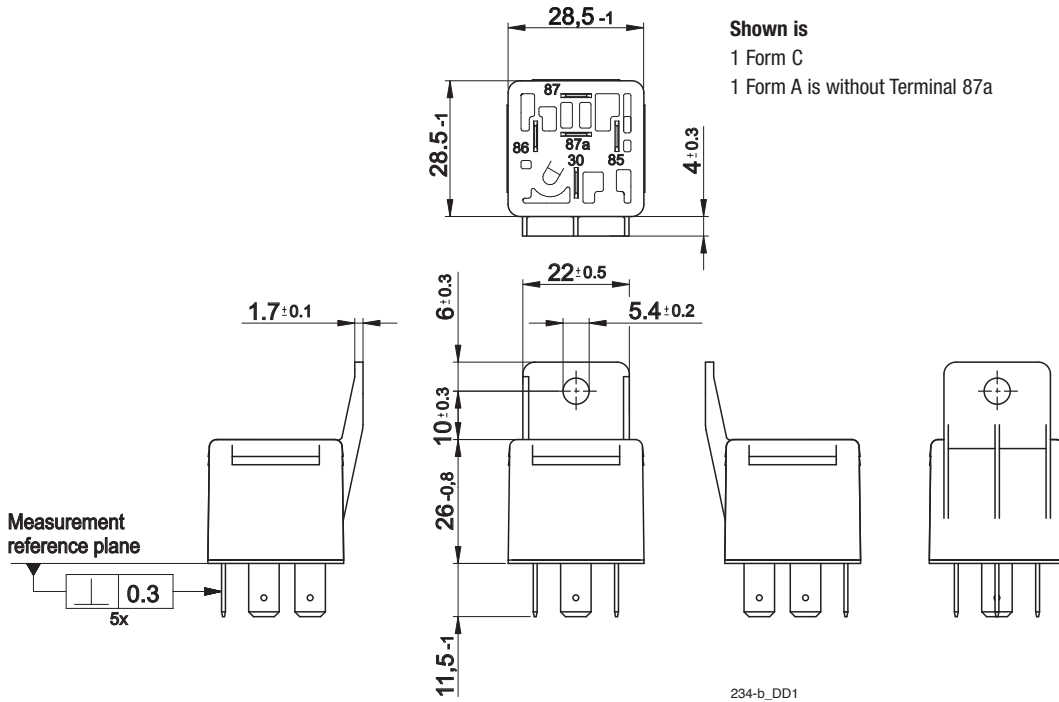appnotes/

Disclaimer

All technical performance data apply to the relay as such, specific conditions of the individual application are not considered. Please always check the suitability of the
relay for your intended purpose. We do not assume any responsibility or liability for not complying herewith. We recommend to complete our questionnaire and to request
our technical service. Any responsibility for the application of the product remains with the customer only. All specifications are subject to change without notification.
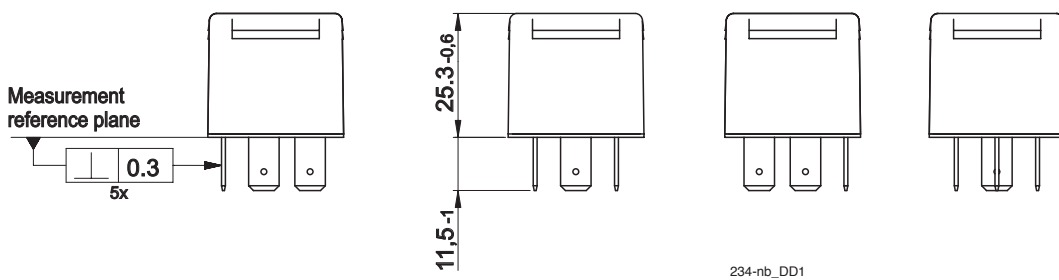All rights of Tyco Electronics are reserved.

All specifications subject to change. Consult Tyco Electronics for latest specifications.

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Dimensional Drawing

Power Relay B with Bracket

Shown is
1 Form C
1 Form A is without Terminal 87a

28,5 -1

28.5 -1

87
86   87a   85
30

4 ±0.3

1.7 ±0.1

6 ±0.3

22 ±0.5
5.4 ±0.2

10 ±0.3

26 -0.8

Measurement
reference plane

0.3
5x

11,5 -1

234-b_DD1

Power Relay B without Bracket

Measurement
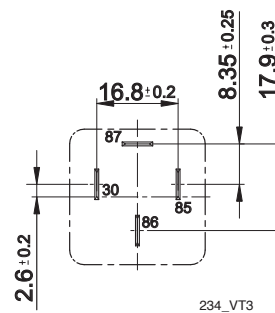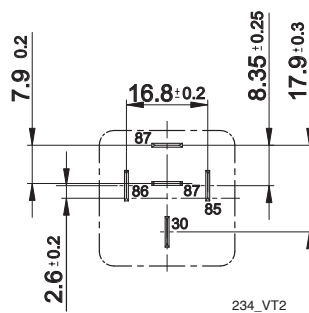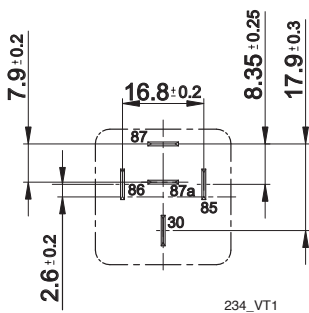reference plane

0.3
5x

25.3 -0,6

11,5 -1

234-nb_DD1

View of the Terminals (bottom view)

1 Form C
1 Form A is without 87a

1 Form A (2 x 87)

1 Form A non ISO
(Terminals 30 and 86 changed position)

7.9 ±0.2

16.8 ±0.2

8.35 ±0.25

17.9 ±0.3

87
86   87a   85
30

2,6 ±0.2

234_VT1

7.9 0.2

16.8 ±0.2

8.35 ±0.25

17.9 ±0.3

87
86   87
85
30

2,6 ±0.2

234_VT2

8.35 ±0.25

17.9 ±0.3

16.8 ±0.2

87
30   85
86

2,6 ±0.2

234_VT3

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Power Relay B

Contact Data

| Contact configuration	1 Make contact/ 1 Form A		1 Changeover contact/ 1 Form C	
Circuit symbol				
Rated voltage	12 V	24 V	12 V	24 V
Rated current	35 A	18 A	25/35 A	13/18 A
Limiting continuous current			NC/NO	
23°C	50 A		35/50 A	
85°C	35 A		25/35 A	
125°C	15 A		10/15 A	
Contact material	Silver based			
Max. switching voltage/power	See load limit curve			
Max. switching current [1]	NC/NO	NC/NO	NC/NO	NC/NO
On [2]	120 A	120 A	45/120 A	45/120 A
Off	30 A	20 A	20/30 A	10/20 A
Min. recommended load [3]	1 A at 12 V/0.5 at 24 V			
Voltage drop at 10 A (initial)				
NO contact	Typ. 15 mV, 300 mV max.		Typ. 15 mV, 300 mV max.	
NC contact			Typ. 20 mV, 300 mV max.	
Mechanical endurance (without load)	Typ. 10^6 operations			
Electrical endurance (example of resistive load, further information on request)	> 2.5 x 10^5 operations 30 A, 13.5 V (NO contact)	> 2,5 x 10^5 operations 20 A, 27 V (NO contact)	> 2,5 x 10^5 operations 30 A, 13.5 V (NO contact) > 1 x 10^5 operations 20 A, 13.5 V (NC contact)	> 2,5 x 10^5 operations 20 A, 27 V (NO contact) > 2,5 x 10^5 operations 10 A, 27 V (NC contact)
Max. switching rate at nominal load	6 operations per minute (0.1 Hz)			

[1] The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.

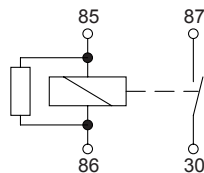[2] For a load current duration of maximum 3 s for a make/break ratio of 1:10.

[3] See chapter Diagnostics of Relays in our Application Notes page 31 or consult the internet at http://relays.tycoelectronics.com/appnotes/
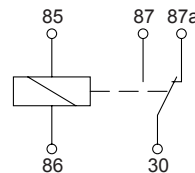
Circuit Diagram
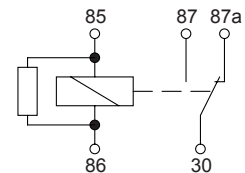
A0
1 Make contact/1 Form A
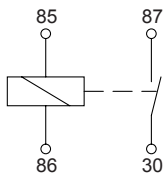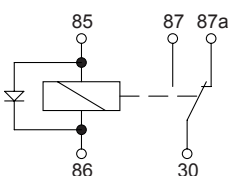
AR
1 Make contact/1 Form A
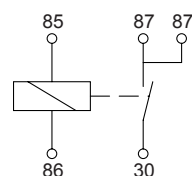with Resistor

C0
1 Changeover contact/1 Form C

CR
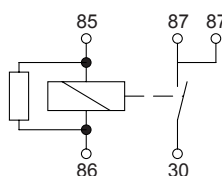1 Changeover contact/1 Form C
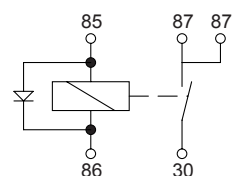with Resistor

CD
1 Changeover contact/1 Form C
with Diode

D0
1 Make contact/1 Form A (2 x 87)

DR
1 Make contact/1 Form A (2 x 87)
with Resistor

DD
1 Make contact/1 Form A (2 x 87)
with Diode

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Power Relay B

Coil Data

Available for nominal voltages	12 V / 24 V
Nominal power consumption of the unsuppressed coil at nominal voltage	1.6 W / 2.3 W
Nominal power consumption at nominal voltage with suppression resistor	2.2 W / 2.7 W
Test voltage winding/contact	500 VAC$_{rms}$
Ambient temperature range	−40 to +125°C
Operate time at nominal voltage	< 10 ms
Release time at nominal voltage	< 10 ms
Release time at nominal voltage with suppression diode	< 15 ms

Note:
A low resistive suppression device in parallel to the relay coil increases the release time and reduces
the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Mechanical Data

Cover retention	
Axial force	150 N
Pull force	200 N
Push force	200 N
Terminals	
Pull force	100 N
Push force	100 N
Resistance to bending, force applied to front	10 N [1]
Resistance to bending, force applied to side	10 N [1]
Torsion	0.3 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures.

[1] Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

Environmental Conditions

Test	Relevant standard	Testing as per	Dimension	Comments
Temperature range, storage	Refer to *Storage* in the "Glossary" catalog page 23 or http://relays.tycoelectronics.com/appnotes/			
Climatic cycling with condensation	EN ISO 6988		6 cycles	Storage 8/16 h
Temperature cycling	IEC 68-2-14	Nb	10 cycles	−40/+85°C (5°C per min)
Damp heat				
cyclic	IEC 68-2-30	Db, Variant 1	6 cycles	Upper air temperature 55°C
constant	IEC 68-2-3	Ca	56 days	
Corrosive gas	IEC 68-2-42	10 ±2 cm^3/m^3 SO$_2$	10 days	
	IEC 68-2-43	1 ±0.3 cm^3/m^3 H$_2$S	10 days	
Vibration resistance	IEC 68-2-6 (sine sweep)		10 - 500 Hz	No change in the
			min. 5 g	switching state > 10 μs
Shock resistance	IEC 68-2-27 (half sine form single pulses)		min. 20 g	Valid for NC contacts,
			11 ms	NO contact values significantly higher
Load dump	ISO 7637-1 (12 V)	Test pulse 5	Vs = +86.5 V	
	ISO 7637-2 (24 V)	Test pulse 5	Vs = +200 V	
Jump start	24 V for 5 minutes conducting nominal current at 23°C			
Drop test	Capable of meeting specifications after 1.0 m (3.28 ft) drop onto concrete			
Flammability	UL94-HB or better (meets FMVSS 302) [1]			
Overload current for relays with rated currents as shown in contact data table [2]	1.35 x Rated current 1800 s			
	2.00 x Rated current 5 s			
	3.50 x Rated current 0.5 s			
	6.00 x Rated current 0.1 s			

[1] FMVSS: Federal Motor Vehicle Safety Standard.

[2] Current and time are compatible with circuit protection by a typical automotive fuse. Relay will make, carry and break the specified current.

All specifications subject to change. Consult Tyco Electronics for latest specifications.