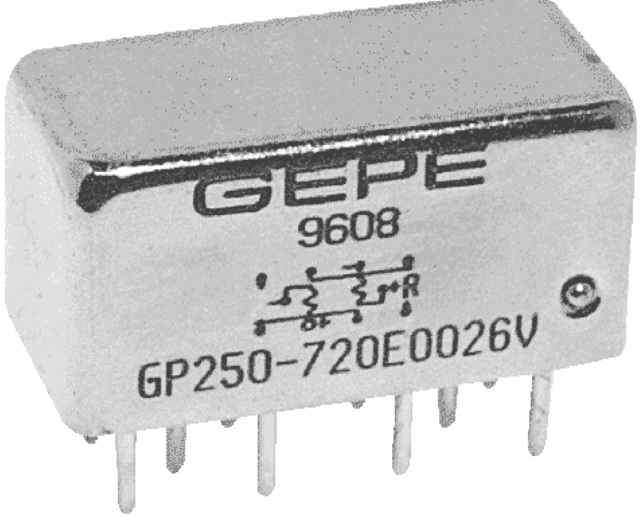


Polarized, latching hermetically sealed relay

Contact arrangement	**2 PDT**
Coil supply	**Direct current**
Qualified to	**SCC3602/010**

PRINCIPLE TECHNICAL CHARACTERISTIC

Contacts rated at	**2 Amp / 50 Vd**
Weight	**11 grams max**
Dimensions of case	**20.4mm x 10.4**

Hermetically sealed, corrosion protected metal ca

APPLICATION NOTES:
001
007

CONTACT ELECTRICAL CHARACTERISTICS

Minimum operating cycles	Contact rating per pole and load type	Load Curr
100,000 cycles 100,000 cycles	resistive load inductive load (L/R=5ms)	
100 cycles	resistive overload	

Esterline
Leach International
www.leachintl.com

North America
6900 Orangethorpe Ave.
P.O. Box 5032
Buena Park, CA 90622 USA

Tel: (01) 714-736-7599
Fax: (01) 714-670-1145

Europe, SA
2 Rue Goethe
57430 Sarralbe
France

Tel: (33) 3 87 97 98 97
Fax: (33) 3 87 97 84 04

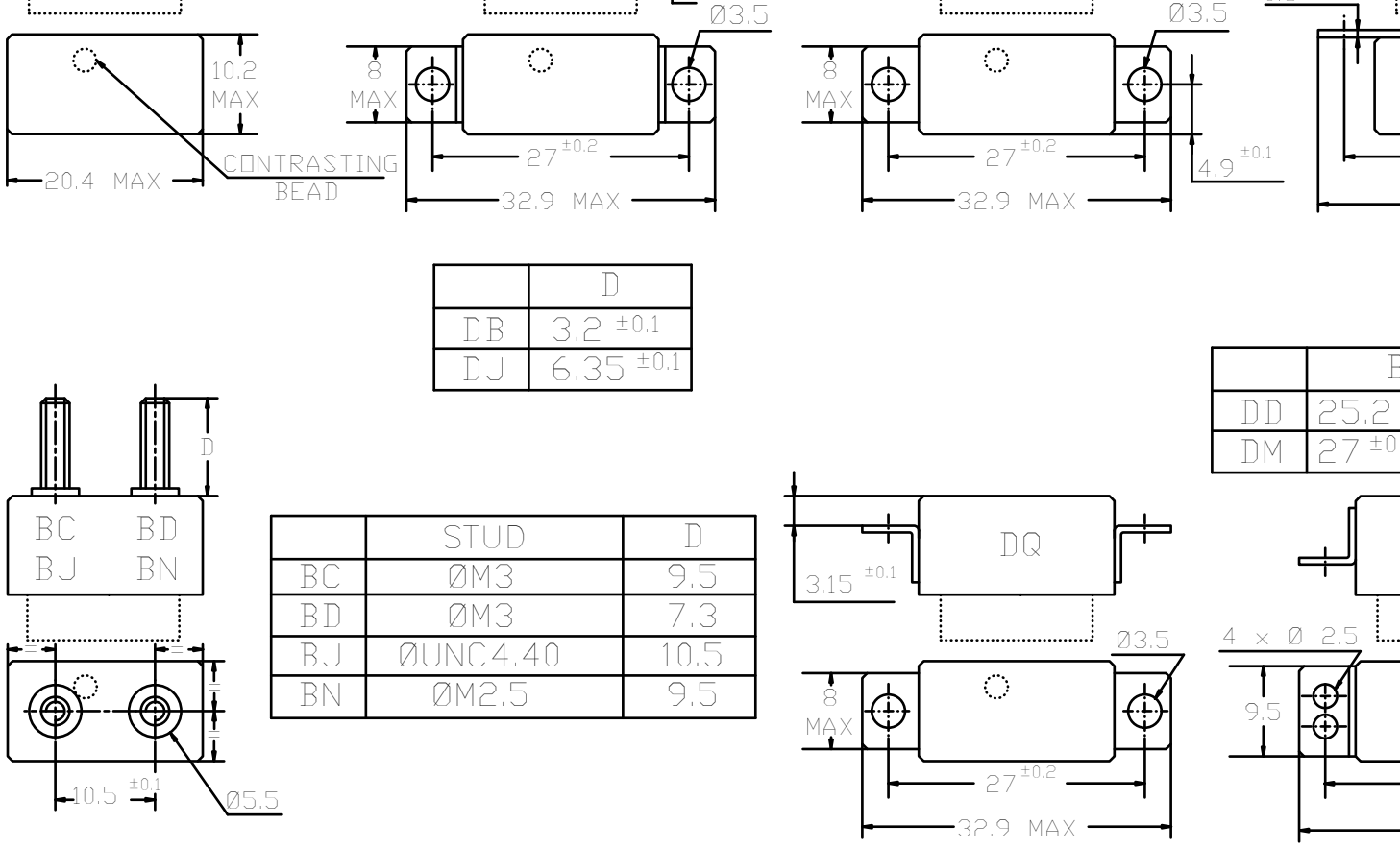
Asia-Pa
20/F Sh
21-27 W
Central

Tel: (85
Fax: (85

Maximum operating voltage	7.3
Maximum latch or reset voltage at +125° C	4.6
Coil resistance in Ω ±10% at +25° C	40

GENERAL CHARACTERISTICS

Temperature range	-65°C to +1
Dielectric strength at sea level	
- Contacts to ground, coils to ground	1000 Vrms
- Between coils, between open contacts	500 Vrms /
Dielectric strength at altitude 25,000 m, all terminals to ground	350 Vrms /
Initial insulation resistance at 100 Vdc	>1000 M Ω
Sinusoidal vibration	30 G / 75 to
Shock	100 G / 11
Maximum contact opening time under vibration and shock	10 µs
Operate time at nominal voltage (including bounce)	4 ms max
Release time	4 ms max
Bounce time	2.5 ms max
Contact resistance at rated current	
- initial value	50 mΩ max
- after life	100 mΩ ma



	D
DB	3,2 ±0,1
DJ	6,35 ±0,1

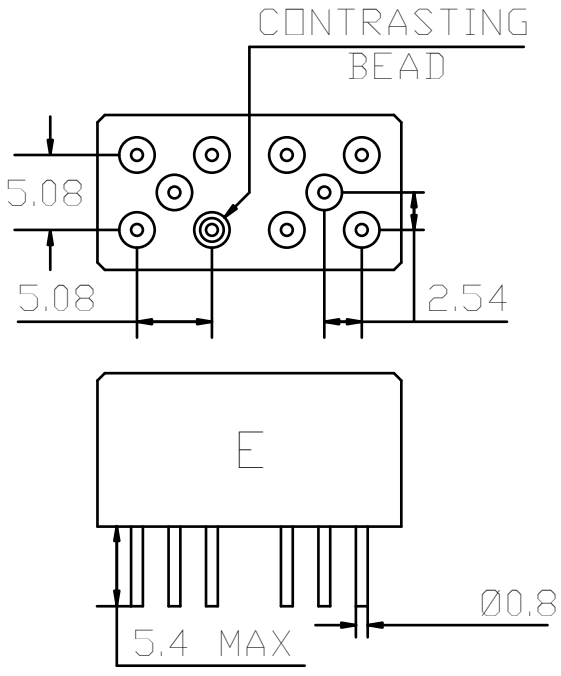
	D
DD	25,2
DM	27 ±0

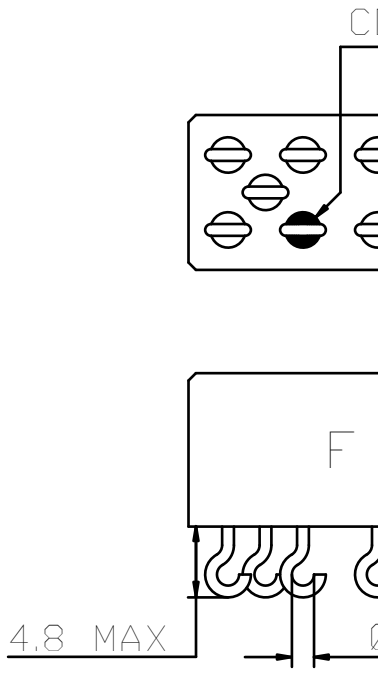
	STUD	D
BC	ØM3	9,5
BD	ØM3	7,3
BJ	ØUNC4.40	10,5
BN	ØM2,5	9,5

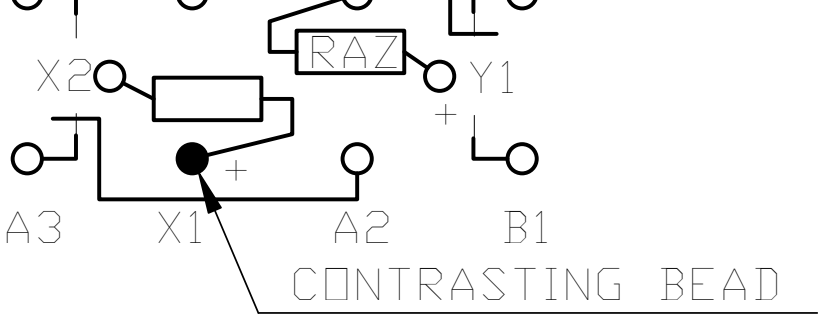
Dimensions in mm

Tolerances unless otherwise specified ±0.25 mm

TERMINAL TYPES







TERMINAL DESIGNATIONS ARE FOR REFERENCE
AND DO NOT APPEAR ON STANDARD UNITS

NUMBERING SYSTEM

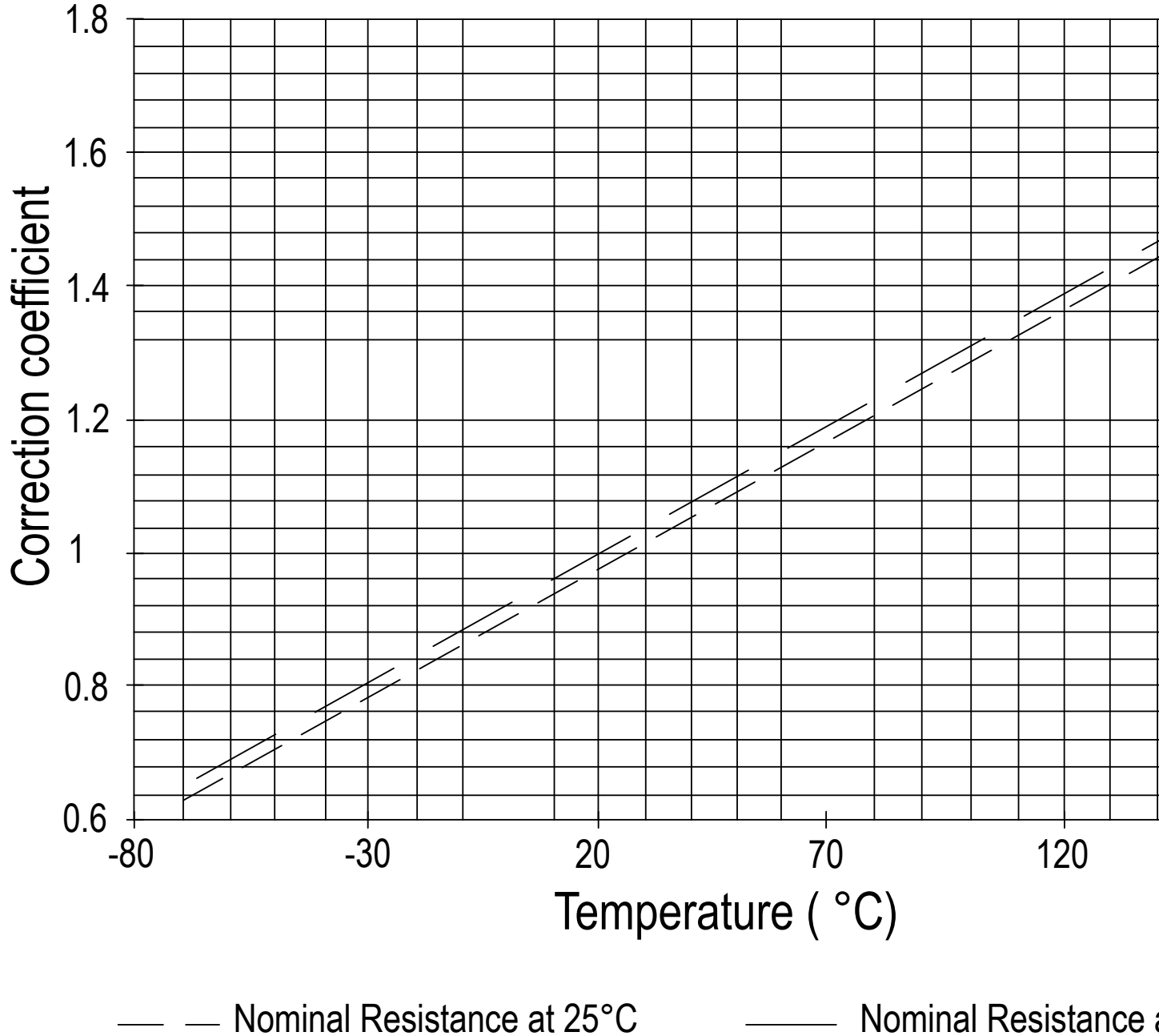
```
                                                GP250  720  E  00
Basic series designation_____________________________|    |  |  |
1-Coil Resistance____________________________________________|  |  |
2-Terminal Types (E,F)_______________________________________|  |
3-Mounting Style (00,DB,DJ,DE,DQ,DD,DM,HA,BC,BD,BJ,BN)_________|
4-Nominal Voltage (06,12,26)_____________________________________
```

NOTES

1. Isolation spacer pads for PCB mounting available on request.
2. For other mounting styles or terminal types, please contact the factory.

TYPICAL CHARACTERISTICS

* Coil resistance/temperature change: See application note no. 001



Example: Coil resistance at 25°C: 935 ohms. What is it at 125°C?
Correction coefficient on diagram is: 1.39 at 125°C. R becomes: 935x1.39=1299 Ohms

Correction also applies to operating voltages

mechanical work. Upon deenergizing the coil, the collapasing magnetic field induces a reverse voltage (al
EMF) which tends to maintain current flow in the coil. The induced voltage level mainly depends on the du
deenergization. The faster the switch-off, the higher the induced voltage.

All coil suppression networks are based on a reduction of speed of current decay. This reduction may also
opening of contacts, adversly effecting contact life and reliability. Therefore, it is very important to have a c
of these phenomena when designing a coil suppression circuitry.

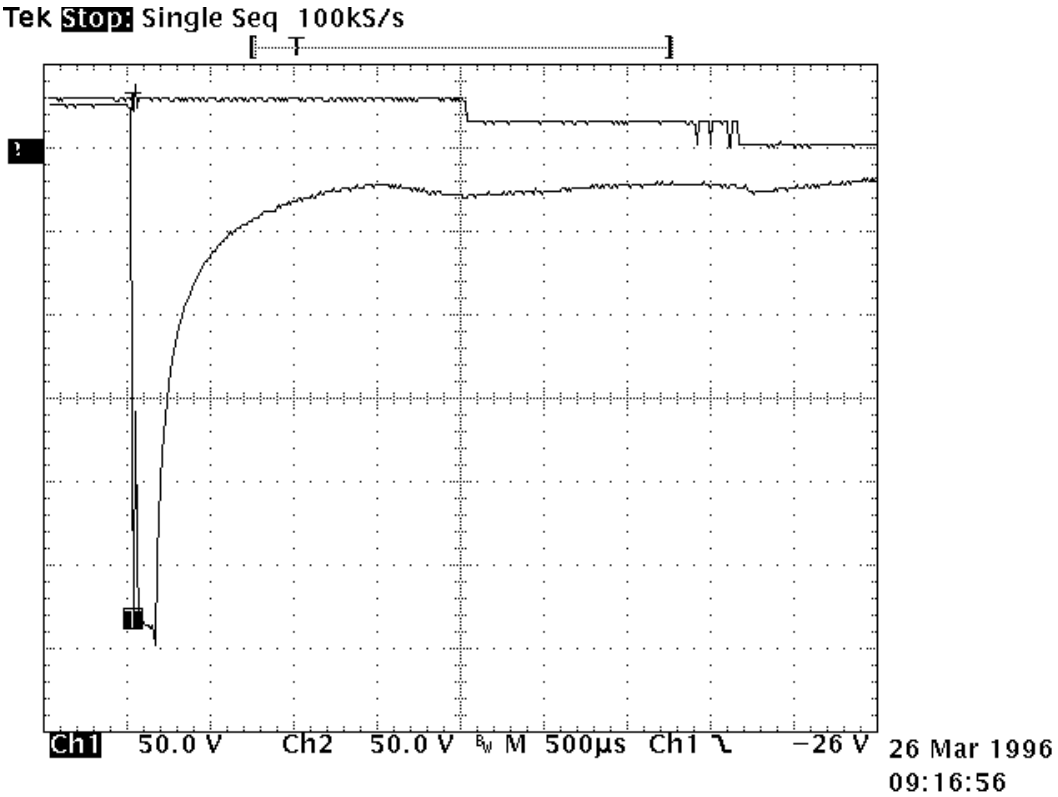
Typical coil characteristics

On the graph below, the upper record shows the contacts state. (High level NO contacts closed, low level
intermediate state contact transfer). The lower record shows the voltage across the coil when the current i
another relay contact.

The surge voltage is limited to -300V by the arc generated across contact poles. Discharge duration is abo
mircoseconds after which the current change does not generate sufficient voltage. The voltage decreases
the contacts start to move, at this time, the voltage increases due to the energy contained in the NO conta
voltage decreases again during transfer, and increases once more when the magnetic circuit is closed on

Operating times are as follows:
Time to start the movement 1.5ms
Total motion time 2.3ms
Transfer time 1.4ms

Contact State

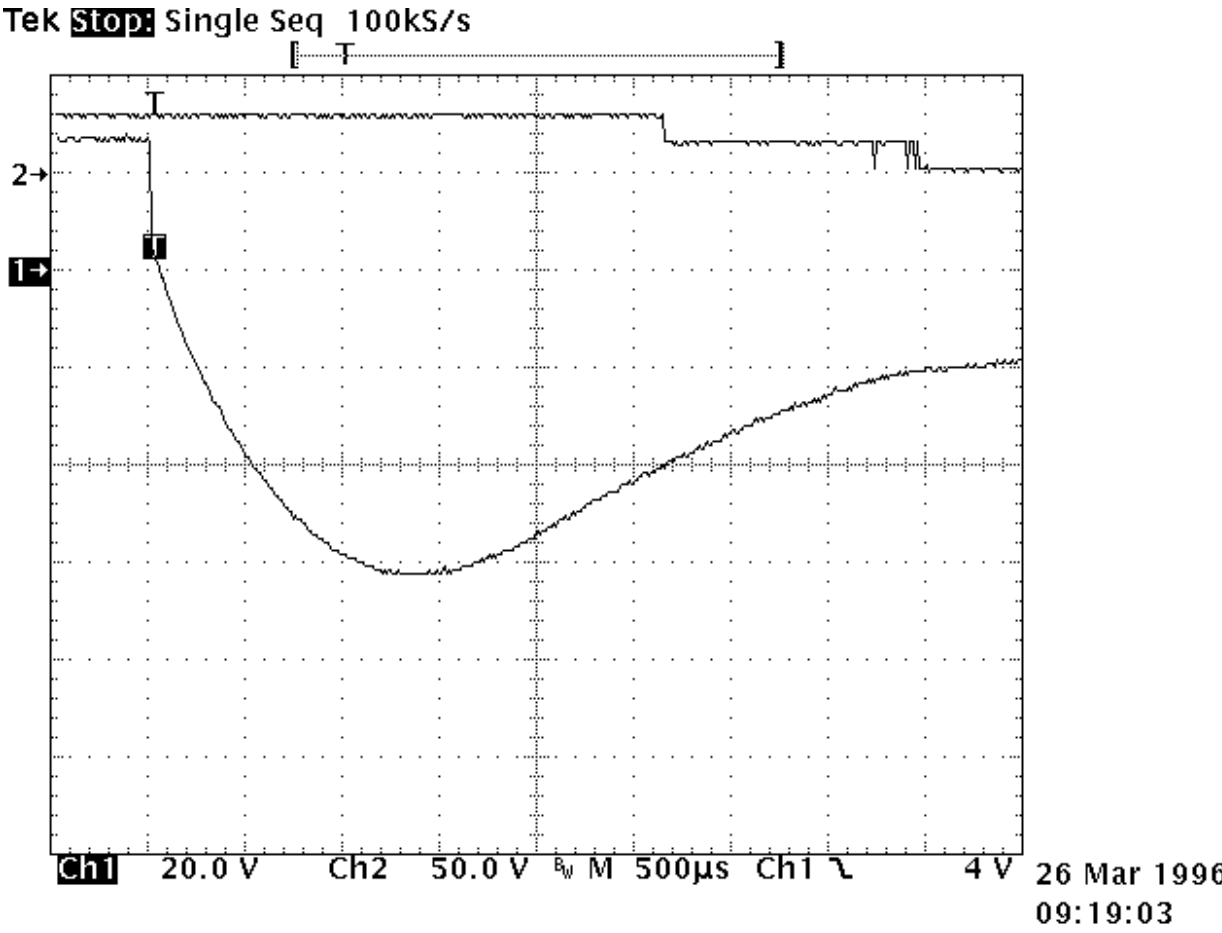


C = 0.02xT/R, where

T = operating time in milliseconds
R = coil resistance in kiloOhms
C = capacitance in microFarads

The series resistor must be between 0.5 and 1 times the coil resistance. Special consideration must be ta
capacitor inrush current in the case of a low resistance coil.

The record shown opposite is performed on the same relay as above. The operation time becomes:
- time to start the movement 2.3ms
- transfer time 1.2ms
The major difficulty comes from the capacitor volume. In our example of a relay with a 290 Ω coil and time
capacitance value of C=0.5 uF is found. This non polarized capacitor, with a voltage of 63V minimum, has
1cm^3. For 150V, this volume becomes 1.5 cm^3.



The resistor (parallel with the coil)
For efficient action, the resistor must be of the same order of magnitude as the coil resistance. A resistor 1
resistance will limit the surge to 1.5 times the supply voltage. Release time and opening speed are moder
major problem is the extra power dissipated.

Semi-conductor devices

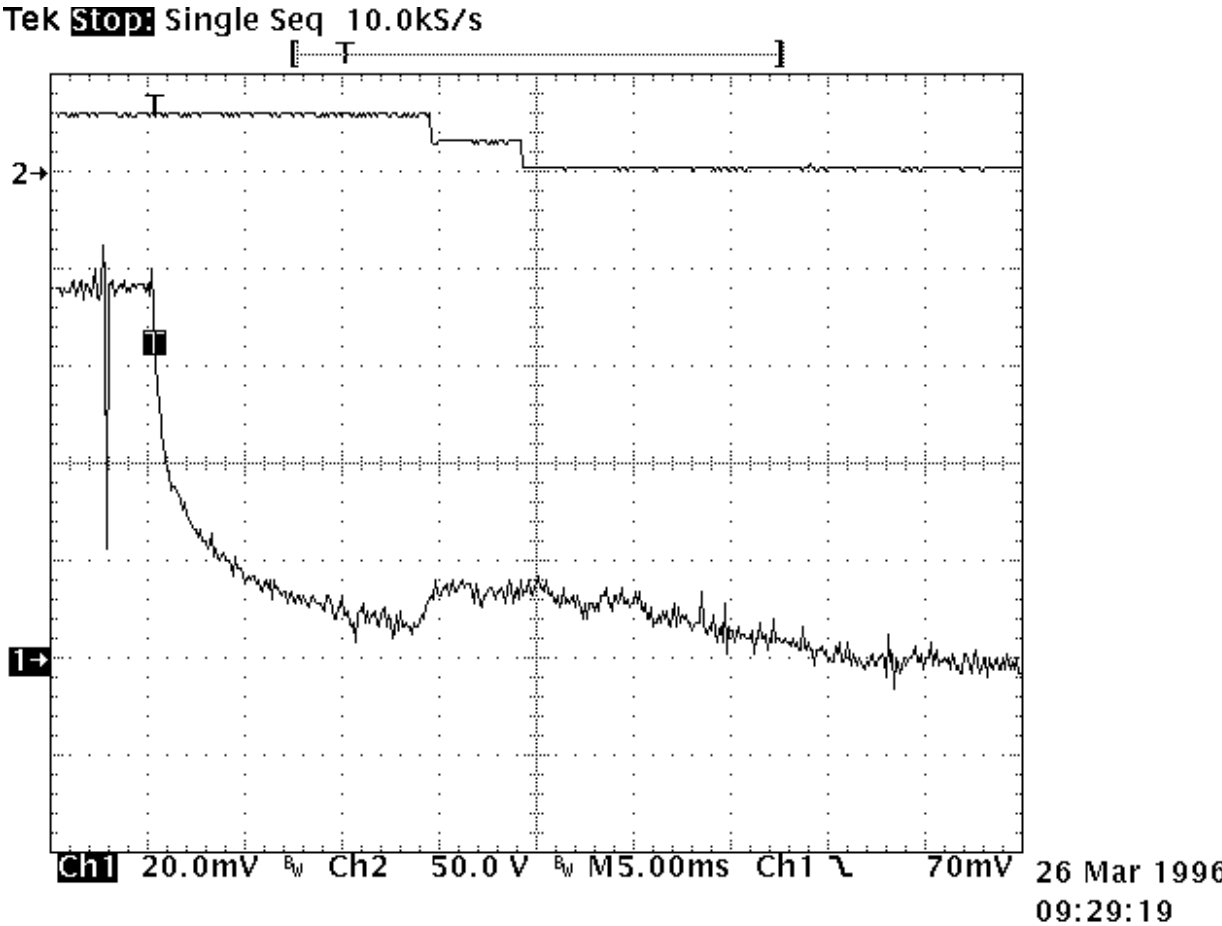
The diode

It is the most simple method to totally suppress the surge voltage. It has the major disadvantage of the hig
contact opening speed. This is due to the total recycling, through the diode, of the energy contained in the
following measurement is performed once again on the same relay. Operation times are given by the upp

- time to start the movement 14ms
- transfer time 5ms

These times are multiplied by a coefficient from 4 to 8.
The lower curve shows the coil current. The increase prior to NO contact opening indicates that the conta
its energy. At the opening time the current becomes constant as a result of practically zero opening speed

Due to this kind of behavior, this type of suppression must be avoided for power relays. For small relays w
low currents of less than 0.2 A, degradation of life is not that significant and the method may be acceptabl



The lower curve on the opposite record demonstrates those characteristics. Voltage limitation occurs at 42
spikes generated by internal movement are at lower levels than zener conduction. As a result, no current
coil.

The opening time phases are as follows:
- time to start the movement 2.6ms
- total motion time 2.4ms
- transfer time 1.4ms

The release time is slightly increased. The contacts' opening speed remains unchanged.