Section 6604-000
Issue 2 April 1974
Printed in U.S.A.

SB6604

SOLID STATE INTERRUPTER

CONTENTS

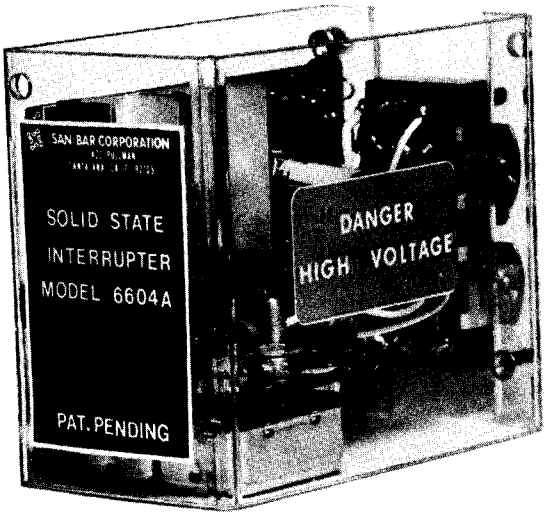

Figure 1
SB6604 Solid State Interrupter

1. GENERAL

1.1 The San/Bar Model 6604 Solid State Interrupter is designed to provide periodic ringing and lamp signals for application in a KEY TELE-PHONE SYSTEM as a replacement for mechanical interrupters.

1.2 Featuring the latest advances in solid state switching technology, the unit is capable of switching inductive loads up to 10 amps.

1.3 The San/Bar Model 6604 Solid State Interrupter is a direct replacement for most mechanical interrupters.

2. SPECIFICATIONS 6604 INTERRUPTER

2.1 Applicable Documents

2.1.1 FINAL Assembly ED–6604–000 (Ref. Figure 1)

2.1.2. P.C.B. Assembly ED–6604–100 (Figure 3)

2.1.3 Circuit Schematic SD–6604-000 (Figure 4)

2.1.4 Bill of Material BM–6604–000 (Ref.)

2.2 Electrical Characteristics

2.2.1 Input

(A) 10VAC Circuit supply and lamp voltage.

(B) 105VAC, 20 to 30 Hz ringing voltage.

(C) Circuit draws up to 400 ma intermittent during the on state.

(D) Maximum power dissipation of unit is 4 Watts intermittent.

2.2.2 Output (See Figure 2)

(A) Lamp Flash-on 1/2 sec. and off 1/2 sec.

(B) Lamp Wink-on .4 sec. and off .1 sec.

(C) Ring-on 2 sec. and off 4 sec.

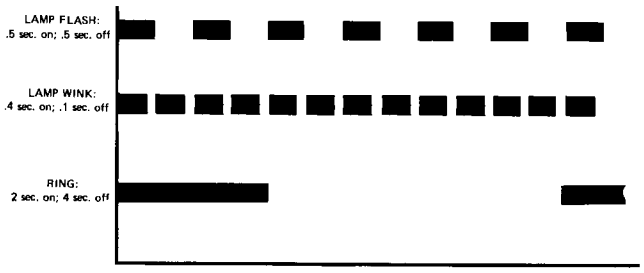

Figure 2.
Output Timing Relationships

2.2.3 Output Capacity

(A) Lamp voltage 10VAC at 10 amps.
NOTE: Most KTU panels fused 5 amps. If more than 5 amps required, panels must be refused.

(B) Ringing voltage
105VAC at 1 amp maximum.

2.2.4 Output Features

(A) Self resetting circuit breakers are included in the lamp circuits to provide protection against excessive current drain.

(B) Solid state switching to eliminate contact deterioration.

2.3 Environmental Conditions

2.3.1 Temperature

The unit will operate normally at ambient temperatures between 0^{o} and 50^{o}C.

2.3.2 Vibration

The circuit will withstand normal handling and commercial transportation when properly packaged for shipping.

3. APPLICATION

The San/Bar Solid State Interrupter is intended for application in KEY TELEPHONE SYSTEMS as direct replacement for mechanical type interrupters. When used with the San/Bar Model 320A cable, one interrupter may be used to multiple two card shelves, provided the maximum output capacity of the unit or capacity of lamp power supply and circuit fuses are not exceeded.

4. INSTALLATION

4.1 The unit is equipped with a (P321–AB) plug that has mounting and hold down hardware compatible with current mechanical units for direct replacement in the KTU.

4.2 When installing unit with 320A multiple cable, if separate power supplies are used for each shelf, or separate supplies are used for lamp and interrupter motor, the lamp grounds and motor grounds must be connected together.

5. MECHANICAL DESCRIPTION

The interrupter is a one piece pluggable package with dimensions of 5 X 2.25 X 3.31 inches.

6. CIRCUIT DESCRIPTION

6.1 General Description

The SB6604 Solid State Interrupter provides periodic signals to operate audible ringers and teleset lamps in a KEY TELEPHONE SYSTEM. When a line card activates the interrupter by closing the motor start (ST) to lamp ground (LG), voltage is applied to the unit consisting of an oscillator, timing and gating circuitry. The unit generates the lamp wink, lamp flash and ring signals as shown in Figure 2.

6.2 Detailed Description

The interrupter derives power for operation from the 10VAC input. The AC input is rectified and regulated to provide the desired 5V DC for logic operation over a nominal range of input voltage variation.

The basic timing source for generating the lamp flash, lamp wink, and ringing periodic functions is an integrated circuit oscillator (IC1). The lamp wink period is generated from the combination (IC4) of the basic timing frequency with the output of IC2 which is 1/2 the frequency of the basic timing frequency. The output of IC2 is divided by two by the first section of IC3 to generate the lamp flash frequency at 1/4 the basic timing source frequency. The remaining sections of IC3 perform a divide by six of the lamp flash frequency

to generate the ringing frequency at 1/24 the basic timing frequency gated by IC4 to provide a 33% on period. The opto-isolator (IC5) provides isolation between the circuit card logic and external ringing voltages. The transistor switching circuits provide drive current to gate the TRIAC solid state switches at the specified rates for lamp flash and lamp wink control. The lamp wink and lamp flash output circuits are protected with self resetting circuit breakers rated at 10AMPS each.

7. TESTING

7.1 Inspection

Inspect the unit thoroughly as soon as possible after delivery. If any part of the unit has been damaged in transit, report the extent of damage to the transportation company immediately. If the unit is to be stored for some time before installation, it is recommended that an operational check be made prior to storage. The purpose of this check is to make sure that the unit is in proper working order as received from the factory. If the check indicates satisfactory performance, the unit may then be stored for future installation.

7.2 Operational Test

Each unit is tested for proper operation prior to shipment from factory. Operation may be verified at installation by the following procedure:

1. Plug the interrupter into the desired KTS card shelf.

2. At a telephone set serviced by that particular shelf, observe that ring and lamp flash occur when dial-in is directed to that teleset.

3. Engage the line button and pick up the handset and observe that ring ceases and the lamp is lit steady.

4. Place line on hold and observe that lamp wink occurs.

5. Replace handset on cradle and observe lamp is extinguished.

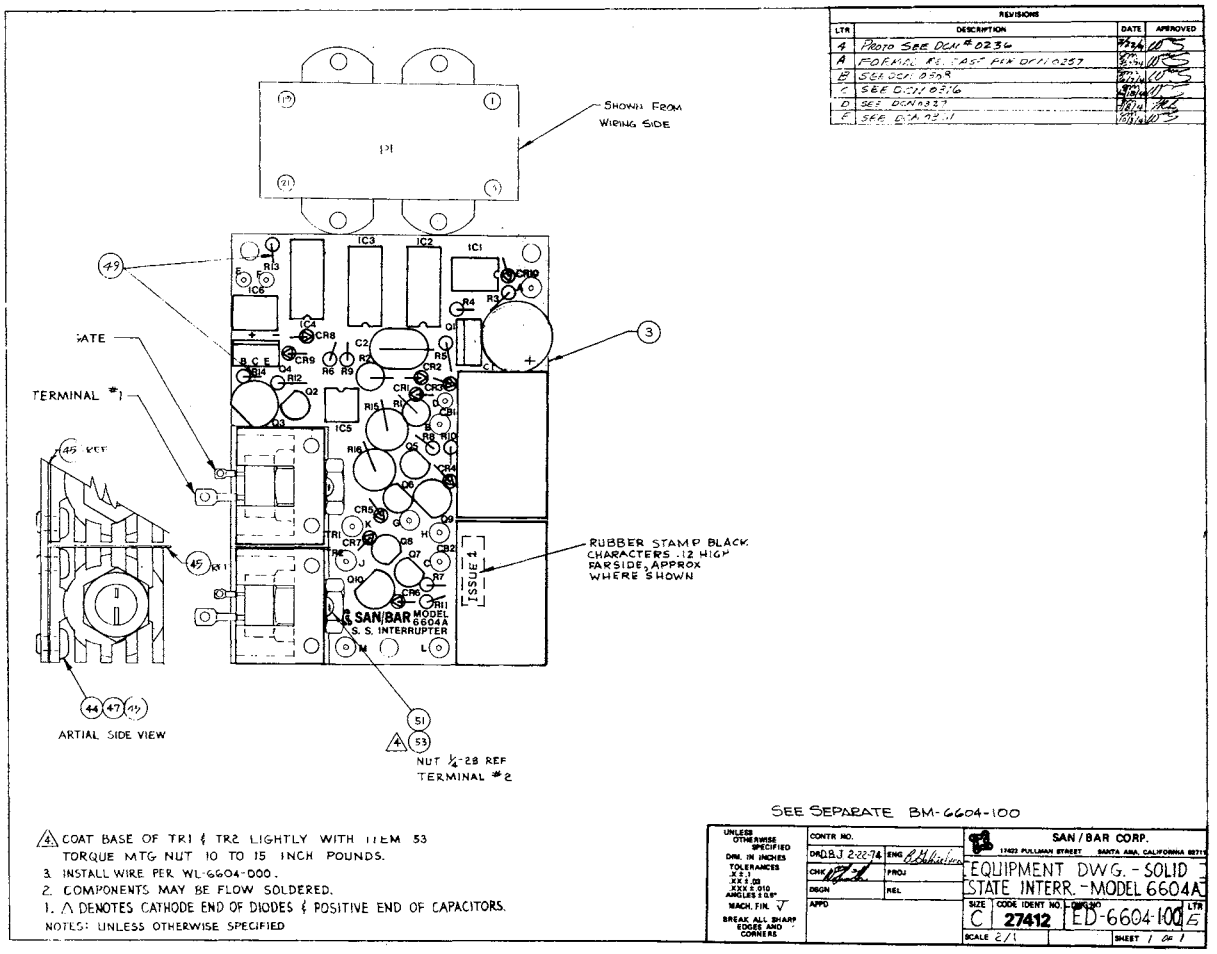

Figure 3

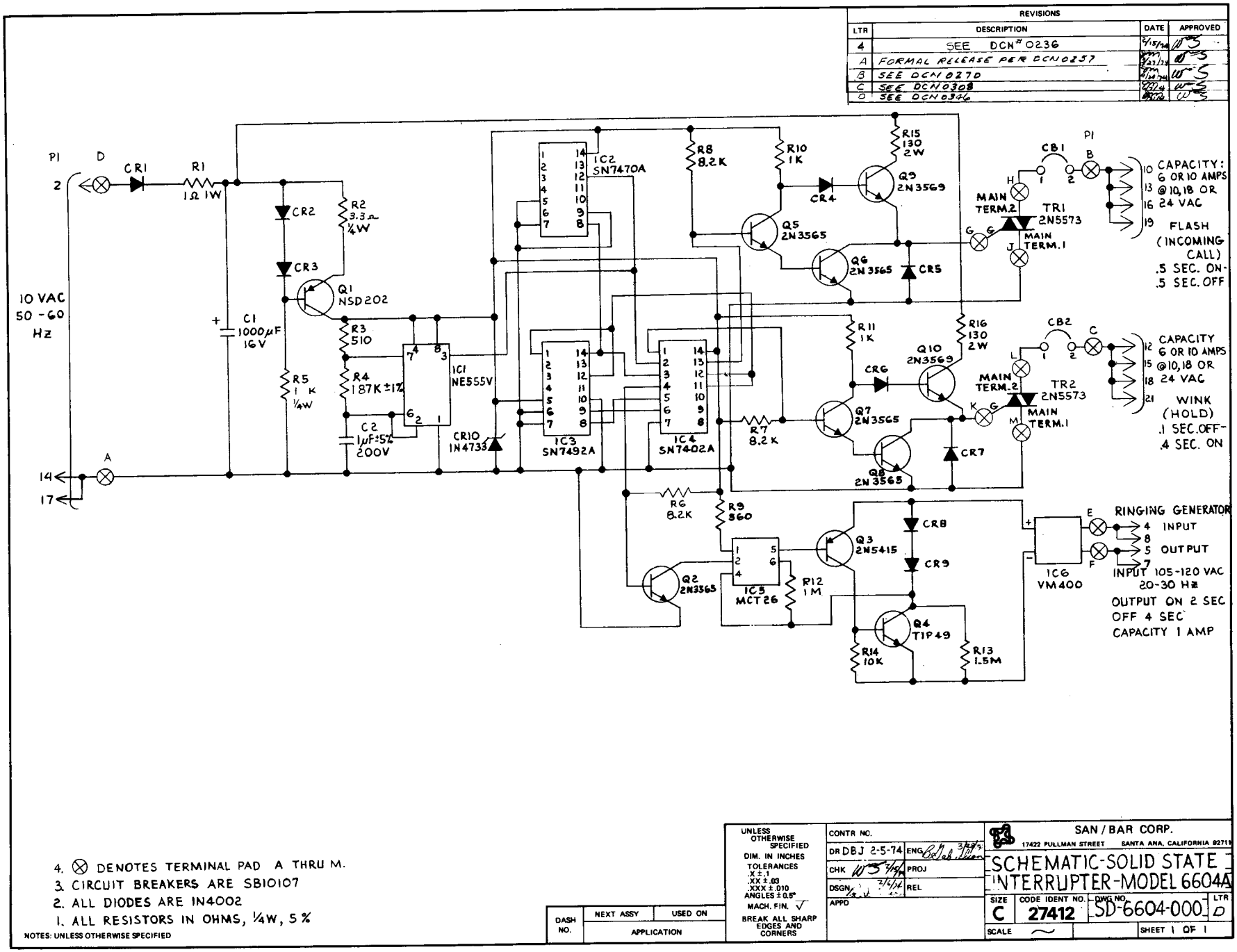
REVISIONS
LTR | DESCRIPTION | DATE | APPROVED
4 | SEE DCN# 0236
A | FORMAL RELEASE PER DCN 0257
B | SEE DCN 0270
C | SEE DCN 0308
D | SEE DCN 0346
P1
2
14
17
D
A
CR1
R1
1Ω 1W
CR2
CR3
R2
3.3Ω
¼W
Q1
NSD202
10 VAC
50 - 60
Hz
C1
1000μF
16V
R3
510
R4
187K ±1%
R5
1 K
¼W
C2
1μF ±5%
200V
IC1
NE555V
CR10
1N4733
IC2
SN7470A
IC3
SN7492A
IC4
SN7402A
R8
8.2K
R10
1K
R15
130
2W
CR4
Q5
2N3565
Q9
2N3569
Q6
2N3565
CR5
CB1
MAIN
TERM.2
TR1
2N5573
MAIN
TERM.1
10 CAPACITY:
13 6 OR 10 AMPS
16 @10,18 OR
19 24 VAC
FLASH
(INCOMING
CALL)
.5 SEC. ON-
.5 SEC. OFF
R11
1K
R16
130
2W
Q10
2N3569
CR6
Q7
2N3565
Q8
2N3565
CR7
R7
8.2K
CB2
MAIN
TERM.2
TR2
2N5573
MAIN
TERM.1
12 CAPACITY
15 6 OR 10 AMPS
18 @10,18 OR
21 24 VAC
WINK
(HOLD)
.1 SEC.OFF-
.4 SEC. ON
R6
8.2K
R9
560
Q2
2N3565
IC5
MCT26
R12
1M
Q3
2N5415
CR8
CR9
Q4
TIP49
R14
10K
R13
1.5M
IC6
VM400
RINGING GENERATOR
4 INPUT
8
5 OUTPUT
7
INPUT 105-120 VAC
20-30 Hz
OUTPUT ON 2 SEC
OFF 4 SEC
CAPACITY 1 AMP
4. ⊗ DENOTES TERMINAL PAD A THRU M.
3. CIRCUIT BREAKERS ARE SB10107
2. ALL DIODES ARE IN4002
1. ALL RESISTORS IN OHMS, ¼W, 5%
NOTES: UNLESS OTHERWISE SPECIFIED
DASH NO.
NEXT ASSY
USED ON
APPLICATION
UNLESS OTHERWISE SPECIFIED
DIM. IN INCHES
TOLERANCES
.X ±.1
.XX ±.03
.XXX ±.010
ANGLES ±0.5°
MACH. FIN. √
BREAK ALL SHARP EDGES AND CORNERS
CONTR NO.
DR DBJ 2-5-74
ENG
CHK
PROJ
DSGN
REL
APPD
SAN / BAR CORP.
17422 PULLMAN STREET SANTA ANA, CALIFORNIA 92711
SCHEMATIC-SOLID STATE INTERRUPTER-MODEL 6604A
SIZE C
CODE IDENT NO. 27412
DWG NO. SD-6604-000
LTR D
SCALE
SHEET 1 OF 1

Figure 4