GENERAL DIGITAL SPECIFICATIONS - 68A990130

INPUT

LOAD IS 4-20KC LOADS.

LEAD LENGTH - MAY BE LIMITED BY SPECIFICATION OF DRIVING CIRCUITRY. FOR LRDC ITSELF, LIMITED ONLY BY NOISE AND DROP REQUIREMENTS.

MAXIMUM "0" INPUT VOLTAGE - 1.2 VOLTS BETWEEN INPUT TERMINAL AND PERIPHERAL COMMON TERMINAL WILL PRODUCE OUTPUT OPEN PER OUTPUT SPECIFICATIONS.

MINIMUM 1 INPUT VOLTAGE - 4.5 VOLTS BETWEEN INPUT TERMINAL AND P COMMON TERMINAL WILL PRODUCE OUTPUT CLOSURE PER OUTPUT SPECIFICATIONS.

EXPANDER

MAY BE DRIVEN BY 20KC GATE EXPANDER. INPUTS TO GATE EXPANDER MUST CONFORM TO SPECIFICATIONS ABOVE FOR INPUT.

OUTPUT

OUTPUT IS AN OPEN OR CLOSED CIRCUIT BETWEEN PERIPHERAL COMMON AND OUTPUT TERMINAL. MAXIMUM OPEN CIRCUIT CURRENT - 0.6 MILLIAMPERES.

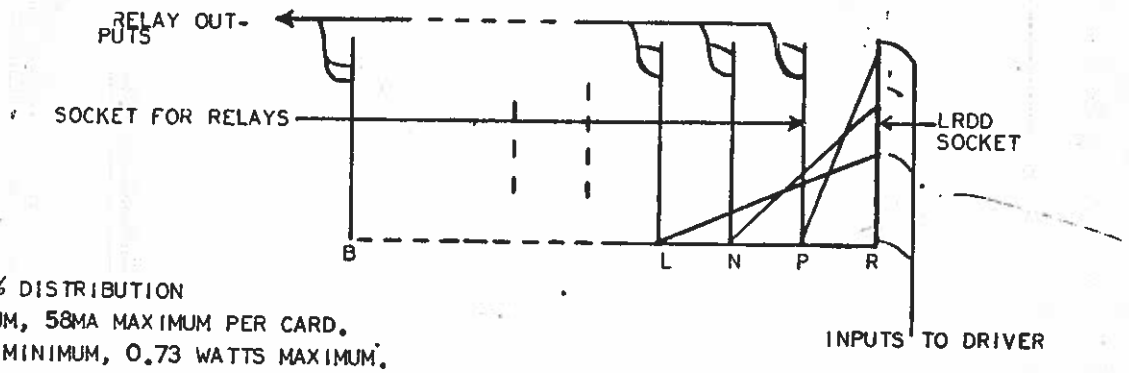
MAXIMUM CLOSED CIRCUIT DROP 2.0 VOLTS AT 350 MILLIAMPERES LOAD CURRENT. MAXIMUM PERMISSIBLE LOAD CURRENT 350 MILLIAMPERES.

OUTPUT LEAD LENGTH - DETERMINED BY NOISE AND DRIVING REQUIREMENTS. DROP OF NO. 18 WIRE IS 0.25 VOLT PER 100 FT. AT 350MA CURRENT AND 70° CENTIGRADE. SPIKES INDUCED ON OUTPUT WIRES SHOULD NOT EXCEED 5 VOLTS PEAK WHEN DRIVER IS DISCONNECTED.

APPLICATION WITH ON-PAGE RELAYS

WHEN RELAY DRIVER IS USED WITH ON-PAGE RELAYS, THE LOADS ON THESE RELAYS CAN REPRESENT A FORMIDABLE PROBLEM AS A SOURCE OF NOISE WHICH PRODUCES DISTURBANCES IN THE LOW-LEVEL CONTROL CIRCUITS ON THE PAGE. TO MINIMIZE THE PROBLEM, THE FOLLOWING STEPS ARE RECOMMENDED:

1. APPLY ARC SUPRESSION CIRCUITRY TO RELAY CONTACTS LIMITING THE RATE OF SWITCHING AND PEAK VOLTAGE EXCURSION AS IS APPROPRIATE TO THE LOAD.
2. RUN LOAD CIRCUITS LEAVING PAGE ISOLATED FROM CONTROL CIRCUITS LEAVING PAGE. IT IS SUGGESTED THAT THESE LOAD CIRCUITS BE GROUPED AT TOP OF PAGE.
3. THE LRDD CARD, WITH THE 8 RELAYS IT WILL DRIVE, SHOULD BE GROUPED IN ONE ROW (TOP OF PAGE). THE LRDD CARD SHOULD BE MOUNTED IN THE SLOT FARTHEST FROM THE OFF-PAGE RUN (SLOT R). INPUT WIRING TO LRDD CARD SHOULD GO DIRECTLY TO RELAY (OUTPUT TERMINAL 5 TO CLOSEST RELAY). OUTPUT WIRES SHOULD BE TAKEN FROM RELAY CONTACT DIRECTLY TO TOP OF ROW THEN RUN ACROSS TO LEAVE PAGE. SEE SKETCH BELOW:

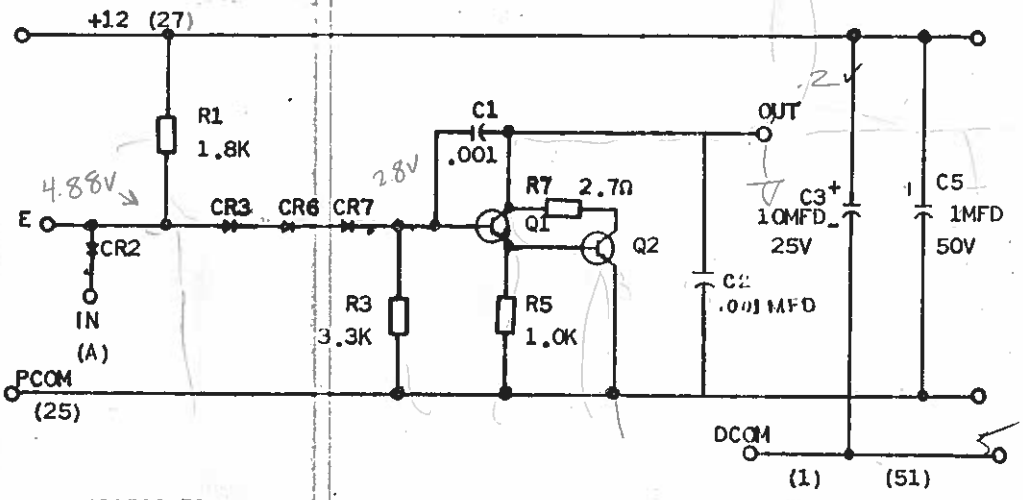


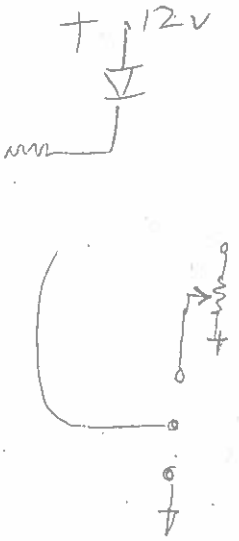
BUS 12V ±3% ±2% DISTRIBUTION
28MA MINIMUM, 58MA MAXIMUM PER CARD.
0.29 WATTS MINIMUM, 0.73 WATTS MAXIMUM.
DOES NOT INCLUDE SUPPLY CURRENT FOR RELAY WHICH WILL ADD A MAXIMUM 5.6 WATTS DISSIPATION TO CARD.

BOARD STATUS (1) 2 3 4

REV. 1	REV. 2	PRINTS TO 1338	APPROVALS ACC 2/10/67	GENERAL ELECTRIC INDUSTRY CONTROL DEPT. SALEM, VA. U.S.A.	ELEMENTARY DIAGRAM RELAY DRIVER 350 MILLIAMPERES
ISSUED February 20 1967		PRINTS TO K6A	FIRST MADE FOR REQ. STANDARD LINE		1C3600LRDD1 CONT. ON SH. FL. SH. NO. 3.1
MADE BY S. BEVERLY		PXW CW	I.C. NO.		

2520



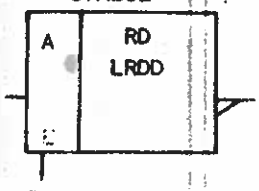


Q1	68A8305P1
Q2	68A7380P1
CR2,CR3	68A8200P1
CR6,CR7	68A7261P1

CIRCUIT	1	2	3	4	5	6	7	8
A	2	7	12	17	31	36	41	46
E	4	9	14	19	33	38	43	48
OUT	5	10	15	20	35	40	45	50

PINS AVAILABLE FOR TIE POINTS - 3, 6, 8, 11, 13, 16, 18, 21, 22, 24, 32, 34, 37, 39, 42, 44, 47, 49

SYMBOL



THIS CIRCUIT PROVIDES A CLOSURE TO PERIPHERAL COMMON (VIA Q2 COLLECTOR TO EMITTER PATH) IN RESPONSE TO A "1" INPUT CAN OPEN CIRCUIT IN RESPONSE TO A ZERO INPUT. THE INPUT IS A SINGLE INPUT AND CIRCUIT WITH PROVISION FOR ADDITIONAL AND INPUT (GATE EXPANDERS) TIED TO THE EXPANDER INPUT. WHEN THE EXPANDER IS USED, THE AND LOGIC AT THE INPUT (BOTH INPUT AND EXPANDERS) MUST BE 1 IN ORDER TO PRODUCE CIRCUIT CLOSURE.

IN OPERATION A ZERO INPUT HOLDS THE BASE OF Q1 NEGATIVE WITH RESPECT TO ITS TURN-ON VOLTAGE, THEREBY CUTTING OFF THE EMITTER TO COLLECTOR CURRENT FLOW OF Q1. WITH NO CURRENT FROM Q1 EMITTER TO Q2 BASE. Q2 EMITTER TO COLLECTOR CURRENT IS ALSO OFF, MAKING A VIRTUAL OPEN CIRCUIT BETWEEN PERIPHERAL COMMON AND THE OUTPUT. ON THE OTHER HAND, WHEN THE INPUT LOGIC IS 1, RESISTOR R1 PROVIDES CURRENT TO Q1 BASE, WHICH CAUSES CURRENT TO FLOW IN Q2 BASE - Q2 EMITTER CIRCUIT MAKING THE Q2 EMITTER COLLECTOR CIRCUIT CONDUCTIVE. IN ADDITION TO THE CIRCUIT CLOSURE VIA Q2, Q2 COLLECTOR CURRENT IS ALSO SUPPLIED TO THE OUTPUT; HOWEVER, THIS IS ONLY AT MOST 11% OF THE FULL LOAD OUTPUT CURRENT. CAPACITOR C1 CONTROLS THE RATE OF CHANGE OF VOLTAGE AT THE OUTPUT, SUCH THAT THE MINIMUM TURN-ON TIME WILL BE 2 MICROSECONDS, THE MINIMUM TURN-OFF TIME 20 MICROSECONDS FOR A MAXIMUM LOAD INDUCTANCE OF 5 HENRIES.

THE CIRCUIT IS INTENDED TO DRIVE A LOAD SUCH AS A RELAY CONNECTED BETWEEN CIRCUIT OUTPUT AND POSITIVE RETURN OF A SUPPLY VOLTAGE NOT GREATER THAN THE 28 VILT STANDARD DIGITAL SUPPLY. NEGATIVE RETURN OF THIS SUPPLY IS TO PERIPHERAL COMMON (P COM - PIN 25) ON THE CARD. THE CIRCUIT TO THIS PIN MUST CONNECT TO DIGITAL COMMON AT SOME POINT IN THE SYSTEM SUCH THAT VOLTAGE DIFFERENTIAL BETWEEN COMMON OF THE RELAY DRIVER AND COMMON OF THE CIRCUIT DRIVING THE INPUT DOES NOT EXCEED 0.5 VOLT. INDUCTIVE LOADS (SUCH AS THE RELAY COILS WHICH THE CIRCUIT NORMALLY DRIVES) MUST BE CLAMPED AGAINST LARGE POSITIVE BACK DISCHARGE PEAKS BY A DIODE SHUNTING THE RELAY COIL OR RETURNING FROM DRIVER INPUT TO A DISCHARGE CLAMP SUPPLY NOT GREATER THAN THE STANDARD 28 VOLT SUPPLY (CATHODE OF DIODE TO POSITIVE SIDE OF THE SUPPLY).

REV: A Nov. 8 1965 JMS	REV. 2 BU11604FE mac 10/31/84	APPROVALS	GENERAL ELECTRIC	ELEMENTARY DIAGRAM RELAY DRIVER - 350 MILLIAMPERES
ISSUED Nov. 8 1965	PRINTS TO 1338	FIRST MADE FOR SEQ. STANDARD LINE	INDUSTRY CONTROL DEPT. SALEM, VA. U.S.A.	IC3600LRDD1
MADE BY	PGM	I.C. NO.		CONT. ON SH. 3,1 SH. NO. 3.0

Re

2520, DLI