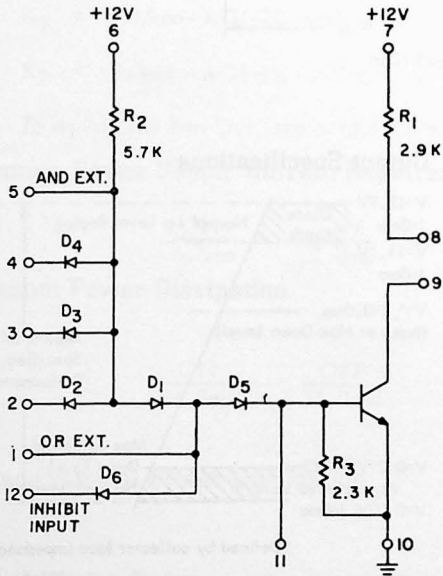


Functional Description

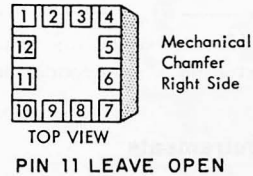
The AND OR Inverter, AOI-1C module, consists of a three diode positive AND circuit, followed by a diode OR and a saturating transistor inverter. The AOI-1C is capable of higher fan-out than the AOI-2C module. The OR function can be accomplished by:

1. OR extending Pin 1 using an AOX-2C module.
2. dotting collectors (parallel connected collectors) with other modules -- only one collector resistor is required.

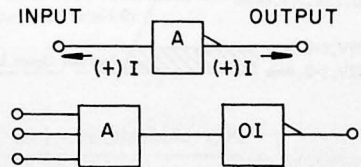
Schematic



Terminal Configuration



Block Diagram



Maximum Ratings

Input Voltage = 13V

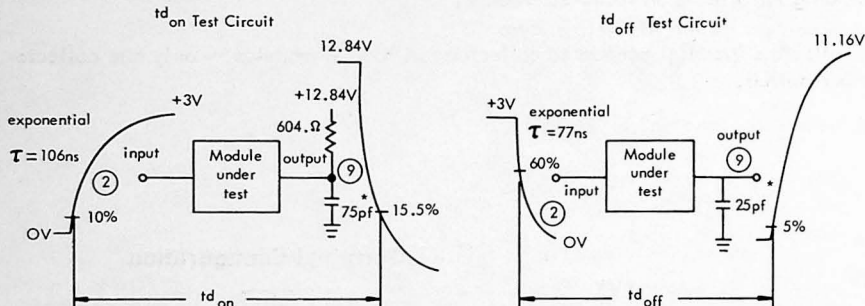
Output Voltage = 13V

$I_E = 27$ Milliamps

AOI-1C Module Functional Tests

TESTS	TERMINAL CONDITIONS												° C	ADDITIONAL LOAD REQUIREMENTS	VARIABLE	UNITS		UNITS
	1	2	3	4	5	6	7	8	9	10	11	12				MIN	MAX	
DC ON	-	2.20V	2.20V	2.20V	-	11.16V	12.84V	V_O	V_O	GND	-	-	25	21.0 ma CURRENT INTO TERMINAL 9	V_O	2.0	0.29	V
DC NOISE	-	0.95V	12.84V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC NOISE	-	12.84V	0.95V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC NOISE	-	12.84V	12.84V	0.95V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC OFF	-	12.84V	12.84V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	GND	25		V_O	11.14		V
DC NOISE	-	-	-	-	1.47V	-	11.16V	V_O	V_O	GND	-	-	75		V_O	2.0		V
$t_{d_{on}}$	INPUT	-	-	-	11.16V	12.84V	V_O	V_O	GND	-	-	25	SEE $t_{d_{on}}$ TEST	$t_{d_{on}}$	65	235	ns	
$t_{d_{off}}$	INPUT	-	-	-	12.84V	11.16V	V_O	V_O	GND	-	-	25	1.4K BETWEEN PINS 5 & 6 SEE $t_{d_{off}}$ TEST	$t_{d_{off}}$	160	710	860	

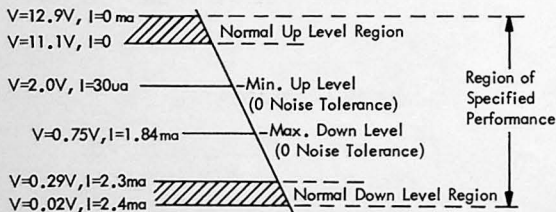
Test Waveforms



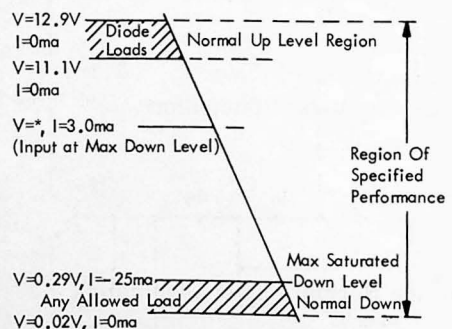
NOTE: 604Ω external resistor to simulate full load condition

* Including probe capacitance

Input Requirements



Output Specifications

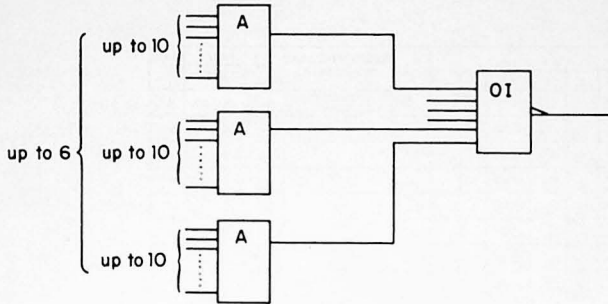


*Defined by collector load impedance.

Fan In

AND = Total of 10 inputs

OR = Total of 6 way OR's



Fan Out

Total collector current for the AOI-1C is 25ma

$$25\text{ma} \geq I_{RC} + N_1 K_1 + N_2 K_2 + \dots$$

I_{RC} = Total collector load resistor current

N_1 = Number of AOI-2C loads

N_2 = Number of AOI-1C loads

K_1 = 1.15ma - AOI-2C loading constant

K_2 = 2.3ma - AOI-1C loading constant

To double the Fan Out, the output collectors and inputs must be paralleled.

Maximum Power Supply Current Requirements

+12V	$\frac{\text{ON}}{6.6\text{ma}}$	$\frac{\text{OFF}}{2.3\text{ma}}$
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Maximum Power Dissipation

$\frac{\text{ON}}{94.0\text{mw}}$	$\frac{\text{OFF}}{31.0\text{mw}}$
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Average Normal Power Dissipation

$$= \frac{\text{NOMINAL ON} + \text{NOMINAL OFF}}{2} = 47.0\text{mw}$$

General Wiring Rules (For Printed Circuit Wire - 10 Mil Width Lines)

Total net length for AND extensions must not exceed 18 inches. Total OR extensions must be less than 6 inches. Maximum net length at either input or output should be less than 60 inches, unless longer delays can be tolerated.