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E 1229001

REVISIONS					
S/M	ZONE	DESCRIPTION	DR	CHK	DATE
D		REDRAWN AND REVISED PER TDRR 19259			
E		REVISED PER TDRR 20877	REP		8/17/65 WK

2. E. LEAD DIMENSIONS: THE PARTS SUPPLIED IN ANY SHIPMENT LOT MUST BE UNIFORM WITH RESPECT TO LEAD DIMENSIONS. THE LEAD THICKNESS SHALL BE WITHIN ± 0.0005 INCHES OF A NOMINAL VALUE TO BE SPECIFIED BY THE VENDOR. THE LEAD WIDTH SHALL BE WITHIN ± 0.001 INCHES OF A NOMINAL VALUE ALSO TO BE SUPPLIED. THE NOMINAL VALUES FOR EACH SHIPPING LOT WILL BE SUPPLIED WITH THE APPLICABLE SHIPMENT.

3. DESIGN:

A. ABSOLUTE MAXIMUM RATINGS AT 25°C AMBIENT:

- (1) VOLTAGE TO PIN 10: PLUS 10.0 VOLTS WITH RESPECT TO PIN 5.
- (2) VOLTAGE APPLIED TO ANY INPUT PIN PLUS OR MINUS 4 VOLTS WITH RESPECT TO PIN 5.
- (3) THERMAL RESISTANCE, JUNCTION-CASE. (θ_{JC}): 200°C/WATT.
- (4) THERMAL RESISTANCE, JUNCTION-AMBIENT. (θ_{JA}): 500°C/WATT.

B. TEMPERATURE:

- (1) TEMPERATURE RANGE, JUNCTION, OPERATING: -55°C TO +125°C.
- (2) TEMPERATURE RANGE, JUNCTION, STORAGE: -65°C TO +150°C.
- (3) TEMPERATURE, SOLDERING LEADS: +250°C (1 MINUTE MAX).

C. CONSTRUCTION:

- (1) SEMICONDUCTOR: SILICON, NPN.
- (2) ENCLOSURE: A HERMETICALLY SEALED PACKAGE ELECTRICALLY ISOLATED FROM POWER OR GROUND. THE DIMENSIONS OF WHICH MEET THE REQUIREMENTS OF FIGURE 1 AND PARAGRAPH 2.E.
- (3) LEADS:
LEAD MATERIAL SHALL BE IN ACCORDANCE WITH NASA DOCUMENT PS 1015402 WITH THE FOLLOWING EXCEPTIONS:
GOLD PLATE SHALL BE A MINIMUM OF 100 AND A MAXIMUM OF 200 MICRO INCHES. THE NICKEL STRIKE UNDER THE GOLD SHALL BE OPTIONAL BUT IF USED SHALL BE A MAXIMUM OF 100 MICRO INCHES, AND PARAGRAPH 3.4.2 SHALL NOT APPLY. CERTIFICATE OF COMPLIANCE FOR LEAD MATERIAL SHALL ACCOMPANY EACH LOT SHIPPED.

4. TEST METHODS: (REF. MIL-STD-750 WITH EXCEPTIONS NOTED BELOW).

- A. AVERAGE PROPAGATION DELAY (T_p): MEASUREMENTS SHALL BE PERFORMED ON EACH INPUT USING TEST CIRCUIT SPECIFIED IN FIGURE 2 MADE UP OF ACCEPTABLE UNITS WHERE $T_p = (T_1 + T_2)/2$. VOLTAGE 4V \pm 10% DURING TEST ALL UNUSED BASES SHALL BE GROUNDED.

NOTED

Ⓓ REPLACES REV(C) WITH CHANGES

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ f RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE NOTE
NEXT ASSY	USED ON	
APPLICATION		

CITY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>Al. Wang</i>	27 MAR 65	DUAL NOR GATE (FLAT PACK) SPECIFICATION CONTROL DRAWING		
CHECKED <i>A. M. art</i>	6-2-65			
APPROVED <i>Ed. Hendley</i>	1 JUN 65			
APPROVED <i>Eden C. Hall</i>	2 JAN 65			
APPROVED MIT <i>W. R. Taylor</i>	2 Feb 65	CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC <i>W. J. R. R.</i>	6-2-65	80230	C	1006321
	DATE	SCALE NONE	SHEET 2 OF 5	

MARKINGS SHALL BE LEGIBLE. THE CASE FINISH SHALL HAVE NO FLAKING, SPATTERING, CHIPPING OR HOLES. THE GLASS OR CERAMIC SHALL HAVE NO SEAL IMPAIRING CRACKS. RE-ENTRANCE AT THE GLASS, CERAMIC OR SOLDER SEAL SHALL NOT EXTEND TO OVER 50% OF THE SEAL WIDTH. NO FOREIGN MATTER SHALL BE IN OR ON THE SEAL INTERFACE. LEADS SHALL BE FREE FROM KINKS AND NICKS AND SHALL MAINTAIN A UNIFORM THICKNESS WITHIN LEAD SPECIFICATIONS. THE UNITS SHALL COMPLY WITH THE SPECIFIED LEAD MATERIAL REQUIREMENT. LEAD SECTION (A) MAY BE CUT FROM THE LEAD PREFORM AND SHALL NOT BE SUBJECTED TO PHYSICAL EXAMINATION. NO BODY PAINT SHALL BE ON THE LEADS OR PACKAGE SEAL AREA.

C. PRESEAL VISUAL INSPECTION: THE PRESEAL VISUAL INSPECTION SHALL BE PERFORMED USING THE REJECTION CRITERIA OF ND 1002257 THE DIFFUSION SUBLOT SHALL BE UTILIZED FOR SAMPLING SPECIFIED IN TABLE I. DATA SHALL ACCOMPANY EACH SHIPMENT COVERING THE NUMBER OF SUB-LOTS TESTED, THE NUMBER OF UNITS THAT FAILED FROM EACH SUB-LOT, THE CAUSE OF FAILURE, AND THE NUMBER OF TIMES EACH SUB-LOT WAS RESUBMITTED TO TABLE I TEST.

TABLE I

PRE SEAL VISUAL INSPECTION		
TEST	TEST CONDITIONS	DIFFUSION SUB-LOT
VISUAL INTERNAL INSPECTION	SEE NOTE 2.C.(4) AND 4.C.	LTPD* = 7 MAX ACC NO. = 1

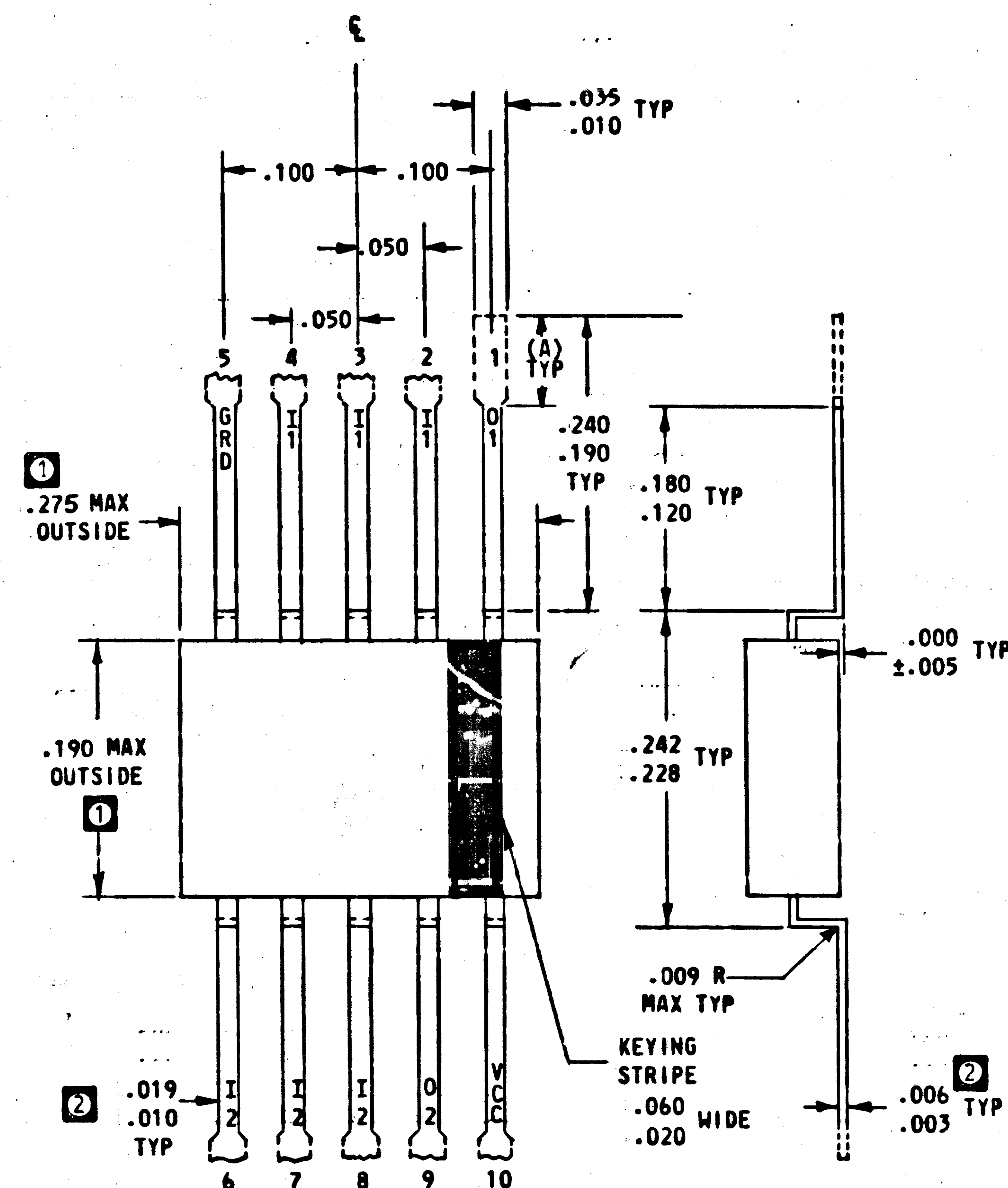


FIGURE 1

UNLESS OTHERWISE SPECIFIED		
DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
DECIMALS	DECIMALS	ANGLES
.xx	.xxx	±
±	±	
DO NOT SCALE DRAWING		
MATERIAL		

NEXT ASSY	USED ON
APPLICATION	

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

④ REPLACES REV(C) WITH CHANGES

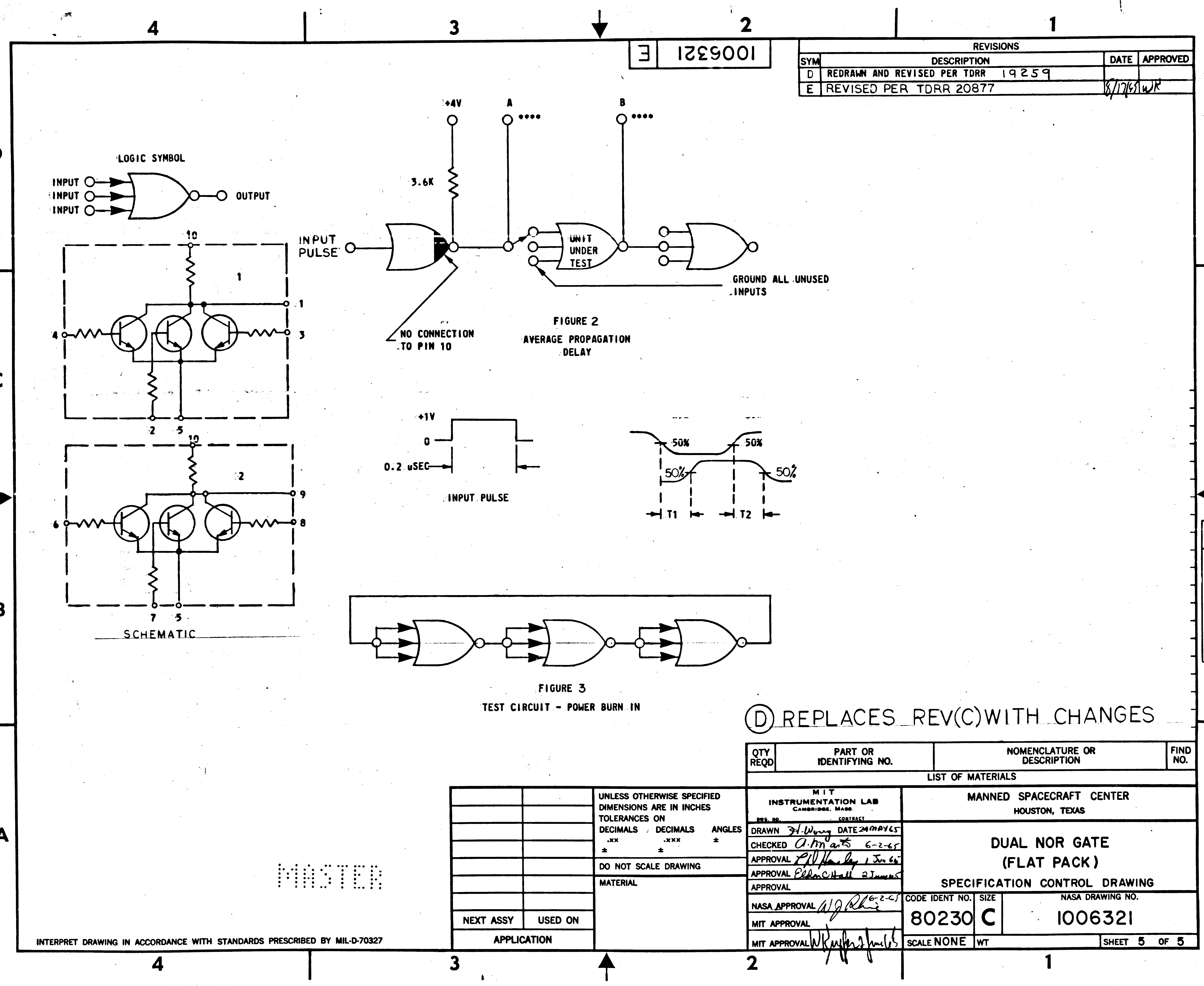
QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
LIST OF MATERIALS							
MTY INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS					
DWE NO		CONTRACT					
DRAWN <i>W. Wong</i> DATE <i>24 MAY 65</i> CHECKED <i>A. Marts</i> <i>6-2-65</i> APPROVAL <i>P. D. Hanley</i> <i>1 June 65</i> APPROVAL <i>Edison C. Hall</i> <i>2 June 65</i> APPROVAL		DUAL NOR GATE (FLAT PACK) SPECIFICATION CONTROL DRAWING					
NASA APPROVAL <i>W. J. Rhine</i> <i>6-2-65</i> MIT APPROVAL		CODE IDENT NO.		SIZE		NASA DRAWING NO.	
		80230		C		1006321	
MIT APPROVAL <i>W. J. Rhine</i> <i>2 June 65</i>		SCALE NONE		WT		SHEET 3 OF 5	

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
D		REDRAWN AND REVISED PER TDRR 19259				
E		REVISED PER TDRR 20877	<i>luf</i>		<i>8/16/68 WR</i>	

TEST ***	SYMBOL	TEST CONDITIONS ****						LIMITS		UNITS	LOT	
								MIN	MAX			
SUBGROUP 1 VISUAL AND MECHANICAL EXAMINATION		METHOD 2071 SEE PARAGRAPH (4.B)						-	-		*LTPD = 10 MAX. ACC. NO. = 3	
SUBGROUP 2 BASE CURRENT BASE CURRENT BASE CURRENT	I _B I _B I _B	PIN 2.6 +870±2mV +1800±10mV +1800±10mV	PIN 3.7 +1800±10mV +870±2mV +1800±10mV	PIN 5 OV OV OV	PIN 4.8 +1800±10mV +1800±10mV +870±2mV	PIN 1.9 	PIN 10 +4±.01V +4±.01V +4±.01V		152 152 152	uA uA uA	100% TESTING REQUIRED ↓	
OUTPUT VOLT PIN 1.9 OUTPUT VOLT PIN 1.9 OUTPUT VOLT PIN 1.9	V _O V _O V _O	+770±2mV OPEN OPEN	OPEN +770±2mV OPEN	OV OV OV	OPEN OPEN +770±2mV	 	+4±.01V +4±.01V +4±.01V		300 300 300	mV mV mV		
SAT. VOLT PIN 1.9 SAT VOLT PIN 1.9 SAT VOLT PIN 1.9	V _S V _S V _S	+870±2mV OPEN OPEN	OPEN +870±2mV OPEN	OV OV OV	OPEN OPEN +870±2mV	 	+4±.01V +4±.01V +4±.01V		220 220 220	mV mV mV		
OUTPUT CURRENT PIN 1.9 COLLECTOR-EMITTER THRESHOLD CURRENT	I _O I _{CEX}	+500±2mV +500±2mV	+500±2mV +500±2mV	OV OV	+500±2mV +500±2mV	+870±2mV +1.00±.01V	+4±.01V OPEN	760 15	uA uA			
SUBGROUP 3 COLLECT. CUTOFF CURRENT EMITTER CUTOFF CURRENT COLLECT. CUTOFF CURRENT	I _{CEO} I _{EB0} I _{CB0}	OPEN OV OV	OPEN OV OV	OV +4±.1V OPEN	OPEN OV OV	+5±.1V OPEN +8±.1V	OPEN OPEN OPEN	100 100 100	uA uA uA	*LTPD = 5 (COMBINED) MAX. ACC. NO. = 3 ↓		
INTERFACE TEST	B ₁	870±2mV	OPEN	OV	OPEN	5KΩ TO +10V	OPEN		400			mV
INTERFACE TEST	B ₂	OPEN	870±2mV	OV	OPEN	5KΩ TO +10V	OPEN		400			mV
INTERFACE TEST	B ₃	OPEN	OPEN	OV	870±2mV	5KΩ TO +10V	OPEN		400			mV
COLLECTOR-EMITTER SUSTAINING VOLTAGE	V _{CEO} SUST	I _C = 5 mA (PULSED) PINS 1.9 AND 5						5				VOLTS
AVERAGE PROPAGATION DELAY	T _p	SEE PARAGRAPH (4.A) AND FIGURE 2							24			nsec
COLLECTOR RESISTANCE	R _L	BETWEEN PINS 10 AND 1.9 MEASUREMENT CURRENT = 1 mA						2.7	4.15	Kohms	*LTPD = 10 MAX. ACC. NO. = 3	
D.C. CURRENT GAIN	h _{FE}	I _C = 1 mA, V _{CE} = 0.5V ALL TRANSISTORS						30	200		*LTPD = 7 MAX. ACC. NO. = 1	

- (D) REPLACES REV(C) WITH CHANGES

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION		FIND NO.
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.			LIST OF MATERIALS MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>St. Wong</i>	<i>27 MAY 65</i>	DUAL NOR GATE (FLAT PACK) SPECIFICATION CONTROL DRAWING			
CHECKED <i>A. M. ...</i>	<i>6-2-65</i>				
APPROVED <i>Ed ...</i>	<i>1 June 65</i>				
APPROVED <i>Ed ...</i>	<i>2 June 65</i>				
APPROVED MIT <i>W. Ryker</i>	<i>2 June 65</i>	CODE IDENT NO.	SIZE	DRAWING NO.	
APPROVED MSC <i>W. Ryker</i>	<i>6-2-65</i>	80230	C	1006321	
	DATE	SCALE NONE			SHEET 4 OF 5



Ⓓ REPLACES REV(C) WITH CHANGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		
DECIMALS	DECIMALS	ANGLES
.XX	.XXX	±
±	±	±
DO NOT SCALE DRAWING		
MATERIAL		
NEXT ASSY		
USED ON		
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>H. Wong</i> DATE 24 MAY 65		DUAL NOR GATE (FLAT PACK)	
CHECKED <i>A. H. M. S.</i> 6-2-65			
APPROVAL <i>P. W. H. S.</i> 1 Jun 66			
APPROVAL <i>E. H. S.</i> 2 Jun 66		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. R. S.</i> 16-2-65		CODE IDENT NO.	SIZE
MIT APPROVAL		80230	C
MIT APPROVAL <i>W. J. R. S.</i> 16-2-65		SCALE NONE	WT
		SHEET 5 OF 5	