

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	D	REPLACES REV C WITH CHANGE PER TORR 32570	FEB 67	JWC RCB
	E	REVISED PER TDRR 32869	FEB 67	JWC RCB

D REQUIREMENTS: (CONTINUED)

- D. VENDOR SUPPLIER DATA: EACH SHIPMENT OF PARTS SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTATION.
- (1) CERTIFICATE OF COMPLIANCE WITH LEAD MATERIAL REQUIREMENT.
  - (2) CERTIFICATE OF COMPLIANCE WITH ND 1015404, CLASS 2.

3. DESIGN:

- A. STORAGE LIFE: INDEFINITE WHEN STORED AT TEMPERATURES BETWEEN -65°C AND +150°C.
- B. ABSOLUTE MAXIMUM RATINGS AT 25°C AMBIENT.
- (1) COLLECTOR-EMITTER VOLTAGE ( $V_{CE0}$ ): 35 VDC.
  - (2) COLLECTOR-BASE VOLTAGE ( $V_{CB0}$ ): 60 VDC.
  - (3) EMITTER-BASE VOLTAGE ( $V_{EB0}$ ): 5 VDC.
  - (4) COLLECTOR CURRENT ( $I_C$ ): 600 MILLIAMPERES.
  - (5) THERMAL RESISTANCE, JUNCTION-CASE ( $\theta_{JC}$ ): 50°C/WATT.
  - (6) THERMAL RESISTANCE, JUNCTION-AMBIENT ( $\theta_{JA}$ ): 350°C/WATT.
  - (7) TEMP. RANGE, JUNCTION, OPERATING: -65°C TO +150°C.
  - (8) TEMP. RANGE, STORAGE: -65°C TP +150°C.

C. CONSTRUCTION:

- (1) SEMICONDUCTOR: SILICON PLANAR EPITAXIAL NPN.
- (2) CASE: METAL CASE AND METAL HEADER HERMETICALLY SEALED (JEDEC TO -18).
- (3) COLLECTOR SHALL BE ELECTRICALLY CONNECTED TO THE CASE INTERNALLY.
- (4) LEAD MATERIAL: WELDABLE, GOLD PLATED, ANNEALED IRON-NICKEL-COBALT (KOVAR) ALLOY IN ACCORDANCE WITH ND1015402.

D. QUALITY ASSURANCE REQUIREMENTS:

- (1) LOT DEFINITION: A GROUP OF PARTS IN A SINGLE PROCUREMENT SELECTED FROM A SINGLE CONTINUOUS PRODUCTION RUN USING LIKE MATERIALS WHICH ARE CONTROLLED USING A PROCESS WHICH IS THE SAME FROM THE BEGINNING TO THE END OF THE RUN.
- (2) INSPECTION CONDITIONS: UNLESS OTHERWISE SPECIFIED, ALL INSPECTIONS SHALL BE MADE AT AN AMBIENT TEMPERATURE OF +25°C ± 3°C.

FIGURE 1 T<sub>ON</sub>

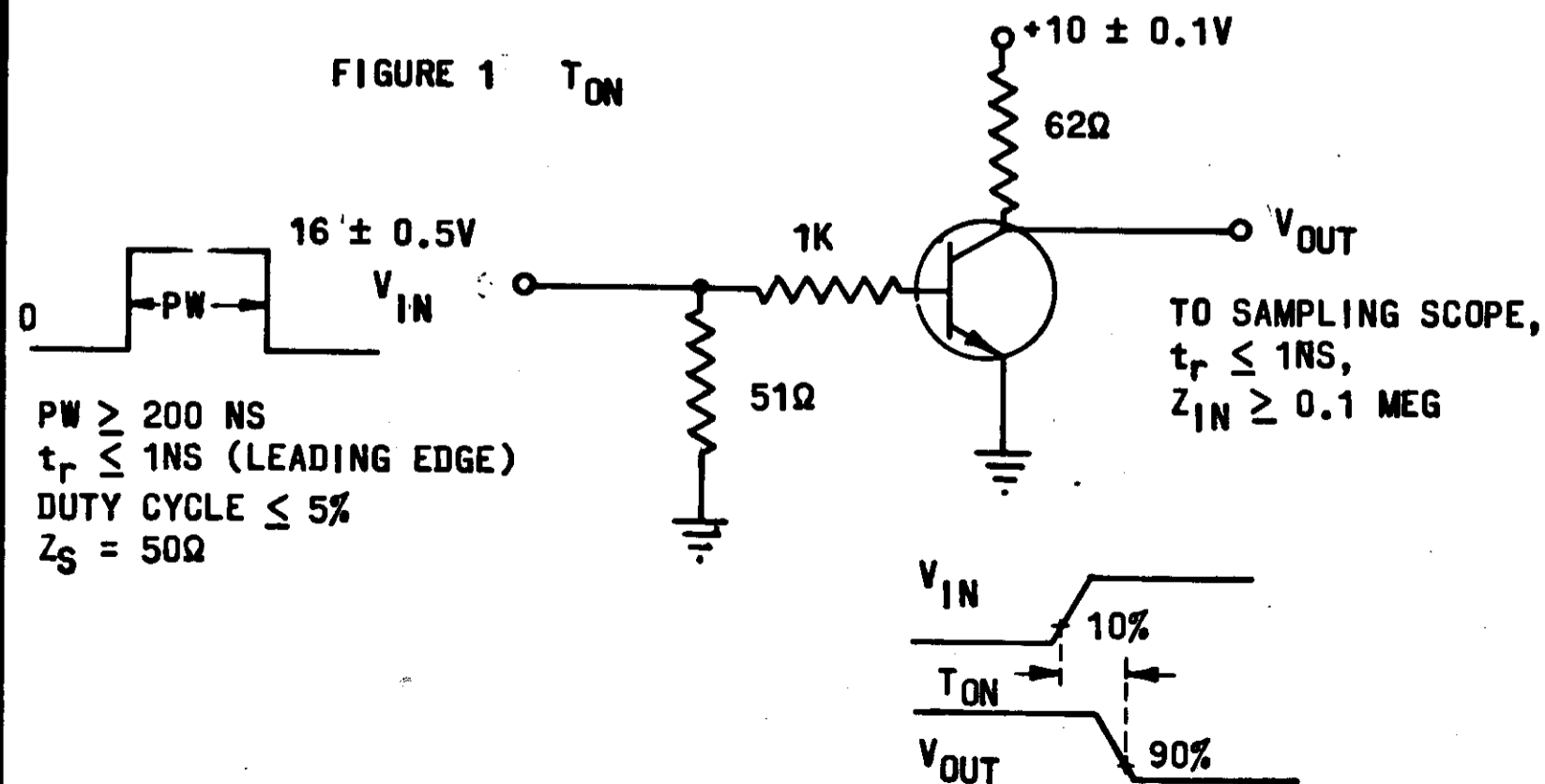
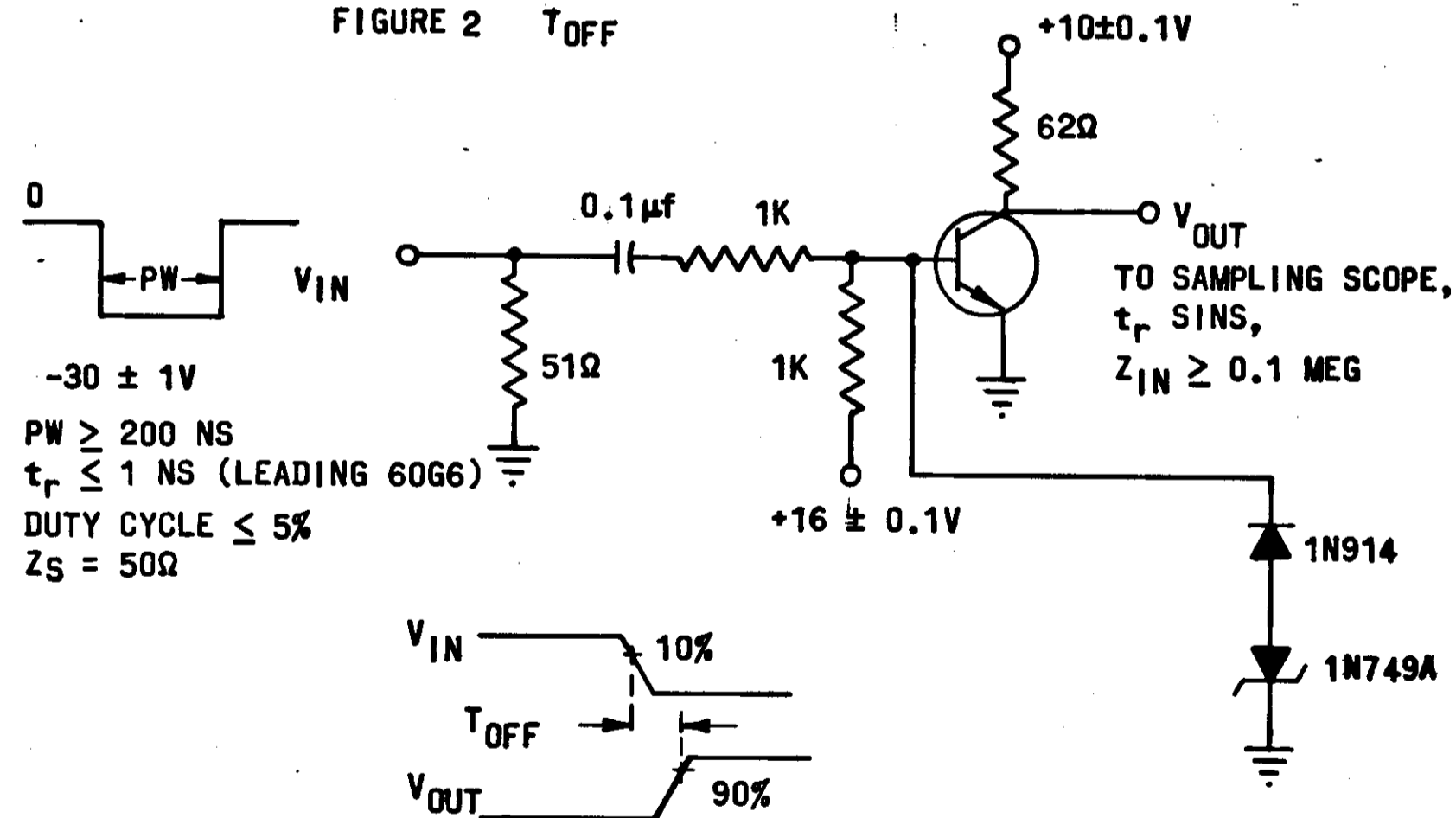


FIGURE 2 T<sub>OFF</sub>



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES	
+	+	+	DRAWN H. JONES DATE 10 FEB 65	
-	-	-	CHECKED A. CAGGIANO 10 FEB 65	
DO NOT SCALE THIS DRAWING			APPROVAL ELDON C. HALL 10 FEB 65	
MATERIAL SEE REQUIREMENTS			CONTRACT NAS 9-497	
APPROVAL			NASA APPROVAL J. MICHAELS 18 MAR 65	
			MIT APPROVAL W. KUPFER 18 MAR 65	
			SIZE C	CODE IDENT NO. 80230
			SPECIFICATION CONTROL DRAWING 1006323	
			SCALE NONE	SHEET 2 OF

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	D	REPLACES REV C WITH CHANGE PER TDRR 32570	1 FEB 67	RCJ
	E	REVISED PER TDRR 32869	10 FEB 67	RCJ

TABLE I  
ACCEPTANCE INSPECTION

TEST	SYMBOL	MIL-STD-750 TEST CONDITIONS T <sub>A</sub> = 25° ± 3°C UNLESS SPECIFIED	LIMIT		UNITS	TESTING REQUIRED
			MIN	MAX		
SUBGROUP 1						
VISUAL AND MECHANICAL EXAMINATION		METHOD 2071				LTPD = 10 (NOTE 1) MAX ACC NO. = 3
SUBGROUP 2						
COLLECTOR CUTOFF CURRENT	I <sub>CBO</sub>	V <sub>CB</sub> =30 V; I <sub>E</sub> =0		100	NA	100%
COLLECTOR CUTOFF CURRENT 150°C	I <sub>CBO</sub>	V <sub>CB</sub> =30 V; I <sub>E</sub> =0, T <sub>A</sub> =+150°C		200	μA	
COLLECTOR-BASE BREAKDOWN VOLTAGE	BV <sub>CB0</sub>	I <sub>C</sub> =100μA; I <sub>E</sub> =0	60		V	
EMITTER-BASE REVERSE CURRENT	I <sub>EBO</sub>	V <sub>EB</sub> =3 V; I <sub>C</sub> =0		100	NA	
EMITTER-BASE BREAKDOWN VOLTAGE	BV <sub>EB0</sub>	I <sub>E</sub> =100μA; I <sub>C</sub> =0	5		V	
COLLECTOR-EMITTER SUSTAINING VOLTAGE (NOTE 2)	V <sub>CEO SUST</sub>	I <sub>C</sub> =30 mA PULSED; I <sub>B</sub> =0	35		V	
COLLECTOR-EMITTER CURRENT RES. RETURN	I <sub>CER</sub>	V <sub>CE</sub> =30 V; R <sub>BE</sub> =100 K		10	μA	
COLLECTOR-EMITTER THRESHOLD CURRENT	I <sub>CEx</sub>	V <sub>BE</sub> =+0.4V; V <sub>CE</sub> =40V		10	μA	
DC CURRENT GAIN (NOTE 2)	h <sub>FE</sub>	I <sub>C</sub> =+500 mA; V <sub>CE</sub> =+10V	25			
DC CURRENT GAIN (NOTE 2)	h <sub>FE</sub>	I <sub>C</sub> =+150 mA; V <sub>CE</sub> =+10V	40	120		
DC CURRENT GAIN (NOTE 2)	h <sub>FE</sub>	I <sub>C</sub> =+10 mA; V <sub>CE</sub> =+10V	30			
BASE-EMITTER SATURATION VOLTAGE (NOTE 2)	V <sub>BE(SAT)</sub>	I <sub>C</sub> =500 mA; I <sub>B</sub> =50 mA	1.00	1.30	V	
COLLECTOR-EMITTER SATURATION VOLTAGE (NOTE 2)	V <sub>CE(sat)</sub>	I <sub>C</sub> =150 mA; I <sub>B</sub> =15 mA		0.40	V	
COLLECTOR-EMITTER SATURATION VOLTAGE (NOTE 2)	V <sub>CE(sat)</sub>	I <sub>C</sub> =500 mA; I <sub>B</sub> =50 mA		1.0	V	
COLLECTOR CAPACITANCE	C <sub>ob</sub>	V <sub>CB</sub> =-10V; I <sub>E</sub> =0; F=0.14 mc		8	PF	LTPD = 5 (NOTE 3) MAX ACC NO. = 0
TURN ON TIME TEST IN CIRCUIT OF FIGURE 1	t <sub>on</sub>	I <sub>B1</sub> ≈ 15 mA (NOTE 4); I <sub>C</sub> ≈ 150 mA (NOTE 4) t <sub>w</sub> > 400 nsec		25	NSEC	
TURN OFF TIME TEST IN CIRCUIT OF FIGURE 2	t <sub>off</sub>	2% DUTY CYCLE I <sub>B1</sub> = I <sub>B2</sub> ≈ 15mA (NOTE 4); I <sub>C</sub> ≈ 150mA (NOTE 4) t <sub>w</sub> > 400 nsec 2% DUTY CYCLE		40	NSEC	

- NOTES:
- LTPD = 5, MAXIMUM ACCEPT NO. = 1, REJECT = 2.
  - PULSE ≤ 300 μSECS. AT ≤ 2% DUTY CYCLE.
  - LTPD OR λ PER MIL-S-19500 D, TABLE CI OR CII.
  - CURRENTS TO WITHIN ±10%.

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	2 PLACE DECIMALS	3 PLACE DECIMALS	ANGLES +	
DO NOT SCALE THIS DRAWING	DRAWN H. JONES DATE 10 FEB 67		TRANSISTOR, SILICON, TYPE NPN, SWITCHING	
MATERIAL	CHECKED A. CAGGIANO DATE 10 FEB 67		SPECIFICATION CONTROL DRAWING	
SEE REQUIREMENTS	APPROVAL ELDON C. HALL 18 MAR 67		SIZE C CODE IDENT NO. 80230	
APPROVAL	CONTRACT NAS 9-497		1006323	
	NASA APPROVAL J. MICHAELS 18 MAR 65		SCALE NONE	
	MIT APPROVAL W. KUPFER 18 MAR 65		SHEET 3 of	

1006323

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