MIL-M-38510/61B
15 JULY 1985
SUPERSEDING
MIL-M-38510/61A(USAF)
11 May 1977

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, ECL, FLIP-FLOPS, MONOLITHIC SILICON

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, ECL, logic gating microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided and are reflected in the complete part number.

1.2 Part number. The part number shall be in accordance with MIL-M-38510.

1.2.1 Device type. The device type shall be as follows:

Device type	Circuit
01	Dual D-type flip flop with preset and clear
02	Dual D-type flip flop with preset and clear
03	Hex D-type flip flop
04	Dual J-K flip flop with preset and clear

1.2.2 Device class. The device class shall be the product assurance level as defined in MIL-M-38510.

1.2.3 Case outlines. The case outlines shall be designated as follows:

Outline letter	Case outline (see MIL-M-38510, appendix C)
E	D-2 (16 pin, 1/4" x 7/8"), dual-in-line package
F	F-5 (16 pin, 1/4" x 3/8"), flat package
2	C-2 (20-terminal, .350" x .350"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range - - - - - - - - - -	0 V dc to -7.0 V dc
Input voltage range- - - - - - - - - - -	0 V dc to V_{EE} (most negative power supply voltage)
Storage temperature range- - - - - - -	-65°C to +150°C
Maximum power dissipation (P_D) per gate 1/	
Device type 01 - - - - - - - - - - - -	165 mW dc
Device type 02 - - - - - - - - - - - -	190 mW dc
Device type 03 - - - - - - - - - - - -	105 mW dc
Device type 04 - - - - - - - - - - - -	200 mW dc
Lead temperature (soldering 10 seconds)	+260°C
Junction temperature (T_J)- - - - - - -	165°C 2/

1/ Must withstand the added P_D due to short circuit test (e.g., I_{OS})

2/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions per method 5004 of MIL-STD-883.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Rome Air Development Center (RBE-2), Griffis AFB, NY 13441, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 5962

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Maximum output current	-50 mA
Thermal resistance, junction-to-case (θ_{JC}):	
Cases E and F	See MIL-M-38510, appendix C
Case 2	60°C/W 3/

1.4 Recommended operating conditions.

Supply voltage (V_{EE})	-5.46 V minimum to -4.94 V maximum
Minimum high level input voltage (at 500 linear feet per minute) (ft/min)	-1.105 V at T_C = 25°C -1.000 V at T_C = 125°C -1.255 V at T_C = -55°C
Maximum low level input voltage (at 500 linear ft/min)	-1.475 V at T_C = 25°C -1.400 V at T_C = 125°C -1.510 V at T_C = -55°C
Normalized fanout (each output)	10 4/
Case operating temperature range (at 500 linear ft/min)	-55°C to +125°C
Case operating temperature (at still air)	01, 02, 04: -55°C to 125°C (cases E and F) 03: -55°C to 100°C (case E) -55°C to 110°C (case F)
Input data setup time, t_{SETUP}	
Device type 01	2.5 ns minimum
Device type 02	1.0 ns minimum
Device type 03	2.5 ns minimum
Device type 04	2.5 ns minimum
Input data hold time, t_{HOLD}	
Device type 01	1.5 ns minimum
Device type 02	0.75 ns minimum
Device type 03	1.5 ns minimum
Device type 04	1.5 ns minimum

2. APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications and standards, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of specifications, standards, handbooks, drawings, and publications required by the manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3/ When a thermal resistance value is included in MIL-M-38510 appendix C, it shall supersede the value stated herein.

4/ Device will fanout in both high and low levels to the specified number of data inputs on the same device type as that being tested.

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510, and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Logic diagrams and terminal connections. The logic diagram and terminal connections shall be as specified on figure 1.

3.2.2 Truth tables and logic equations. The truth tables and logic equations shall be specified on figure 2.

3.2.3 Schematic circuits. Schematic circuits shall be submitted to the preparing activity prior to inclusion of a manufacturer's device in the specification and shall be submitted to the qualifying activity and agent activity (DESC-ECS) as a prerequisite for qualification. All qualified manufacturers' schematics shall be maintained by the agent activity and will be available upon request.

3.2.4 Case outlines. Case outlines shall be in accordance with 1.2.3.

3.3 Lead material and finish. Lead material and finish shall be in accordance with MIL-M-38510 (see 6.4).

3.4 Electrical performance characteristics. The electrical performance characteristics are as specified in table I and apply over the full recommended case operating temperature range, unless otherwise specified.

3.5 Electrical test requirements. The electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.6 Marking. Marking shall be in accordance with MIL-M-38510.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 31 (see MIL-M-38510, appendix E).

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-M-38510 and method 5005 and 5007 of MIL-STD-883, as applicable, except as modified herein.

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.3 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

a. Burn-in test (method 1015 of MIL-STD-883).

  (1) Test condition D or E using the circuit shown on figure 3, or equivalent.

  (2) T_A = 125°C minimum.

b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.

c. The percent defective allowable (PDA) for class S devices shall be as specified in MIL-M-38510.

TABLE I. Electrical performance characteristics.
(Limits are valid provided circuit is in a test socket and transverse air flow of 500 linear ft/min is maintained.)

Test	Symbol	Conditions $-55^{\circ}C \le T_C \le 125^{\circ}C$				Device type	Limits		Units
							Min	Max	
			T_C	V_{IH1}	V_{IL1}				
High-level output voltage	V_{OH}	V_{EE} = -5.2 V	25°C	-0.780 V	-1.850 V	All	-0.930	-0.780	V
		V_{CC} = 0 V	125°C	-0.630 V	-1.820 V		-0.825	-0.630	
		Load = 100Ω to -2 V	-55°C	-0.880 V	-1.920 V		-1.080	-0.880	
			T_C	V_{IH1}	V_{IL1}				
Low-level output voltage	V_{OL}	V_{EE} = -5.2 V	25°C	-0.780 V	-1.850 V	All	-1.850	-1.620	V
		V_{CC} = 0 V	125°C	-0.630 V	-1.820 V		-1.820	-1.545	
		Load = 100Ω to -2 V	-55°C	-0.880 V	-1.920 V		-1.920	-1.655	
			T_C	V_{ITH}	V_{ITL}				
High-level threshold output voltage	V_{OTH}	V_{EE} = -5.2 V	25°C	-1.105 V	-1.475 V	All	-0.950	---	V
		V_{CC} = 0 V	125°C	-1.000 V	-1.400 V		-0.845	---	
		Load = 100Ω to -2 V	-55°C	-1.255 V	-1.510 V		-1.100	---	
			T_C	V_{ITH}	V_{ITL}				
Low-level threshold output voltage	V_{OTL}	V_{EE} = -5.2 V	25°C	-1.105 V	-1.475 V	All	---	-1.600	V
		V_{CC} = 0 V	125°C	-1.000 V	-1.400 V		---	-1.525	
		Load = 100Ω to -2 V	-55°C	-1.255 V	-1.510 V		---	-1.635	
Power supply drain current	I_{EE}	V_{EE} = -5.2 V V_{CC} = 0 V				01	-62	---	mA
						02	-72	---	
						03	-121	---	
						04	-75	---	
High-level input current	I_{IH1}	V_{EE} = -5.2 V, V_{CC} = 0 V V_{IH1} = -0.780 V at 25°C, -0.630 V at 125°C, -0.880 V at -55°C				01,02,03	---	375	µA
						04	---	450	
High-level input current	I_{IH2}	V_{EE} = -5.2 V, V_{CC} = 0 V V_{IH1} = -0.780 V at 25°C, -0.630 V at 125°C, -0.880 V at -55°C				01	---	565	µA
						02	---	700	
						03	---	527	
						04	---	665	
	I_{IH3}					01	---	420	µA
						02	---	375	
	I_{IH4}					01	---	450	
						02	---	495	
Low-level input current	I_{IL}	V_{EE} = -5.2 V, V_{CC} = 0 V V_{IL1} = -1.850 V at 25°C, -1.820 V at 125°C, -1.920 V at -55°C				All	0.3	---	µA

TABLE I. Electrical performance characteristics - Continued.
(Limits are valid provided circuit is in a test socket and transverse air flow of 500 linear ft/min is maintained.)

Test	Symbol	Conditions $-55^{\circ}C \leq T_C \leq 125^{\circ}C$	Device type	Limits		Units
				Min	Max	
Maximum clock frequency	F_{MAX}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V CL ≤ 5 pF (output under test) Load = 100Ω to GND	01	105	---	MHz
			02	200	---	
			03	115	---	
			04	105	---	
Transition time, low-to-high-level	t_{TLH}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.0	4.9	ns
			02	1.0	3.6	
			03	1.0	4.7	
			04	1.0	5.3	
Transition time, high-to-low-level	t_{THL}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.0	4.9	ns
			02	1.0	3.6	
			03	1.0	4.7	
			04	1.0	5.3	
Propagation delay time, low-to-high-level (clear or preset to output	t_{PLH1}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.1	4.9	ns
			02	1.0	3.9	
			04	1.0	5.9	
Propagation delay time, high-to-low-level (clear or preset to output)	t_{PHL1}	V_{EE} = -3.2 V, V_{CC} = +2.0 V $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.1	4.9	ns
			02	1.0	3.9	
			04	1.0	5.9	
Propagation delay time, low-to-high-level (clock to output)	t_{PLH2}		01	1.4	5.0	ns
			02	1.2	3.9	
			03	1.3	5.3	
			04	1.0	5.3	
Propagation delay time, high-to-low-level (clock to output)	t_{PHL2}		01	1.4	5.0	ns
			02	1.2	3.9	
			03	1.3	5.3	
			04	1.0	5.3	

TABLE II. Electrical test requirements.

MIL-STD-883 test requirement	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters (pre burn-in) (method 5004)	1	1
Final electrical test parameters (method 5004)	1*, 2, 3, 9	1*, 2, 3, 9
Group A test requirements (method 5005)	1, 2, 3, 9, 10, 11	1, 2, 3, 9
Group C and D end point electrical parameters (method 5005)	1, 2, 3	1, 2, 3
Additional electrical subgroups for group C periodic inspections	None	10, 11

*PDA applies to subgroup 1 (see 4.3c).

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table I of method 5005 of MIL-STD-883 and as follows:

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, 6, 7, and 8 of table I of method 5005 of MIL-STD-883 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883. Electrical parameters shall be as specified in table II herein.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table III of method 5005 of MIL-STD-883 and as follows:

a. End-point electrical parameters shall be as specified in table II herein.

b. Steady-state life test (method 1005 of MIL-STD-883) conditions, or equivalent.

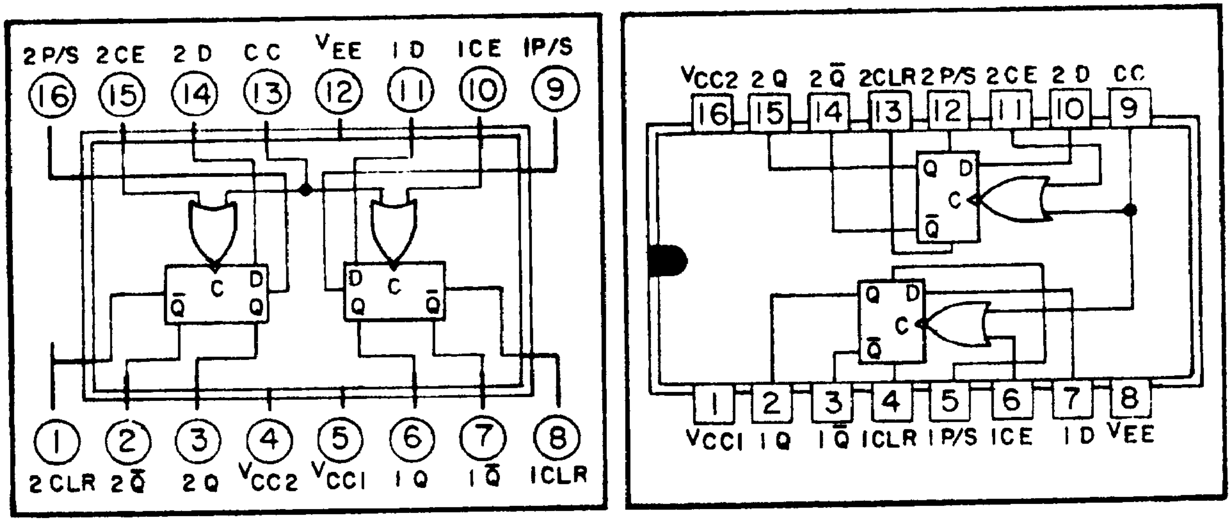
1. Test condition D or E using the circuit shown on figure 3, or equivalent.

2. T_A = 125°C minimum.

3. Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

c. Subgroups 3 and 4 shall be added to the group C inspection requirements class B devices and shall consist of the tests, conditions, and limits specified for subgroups 10 and 11 of group A.

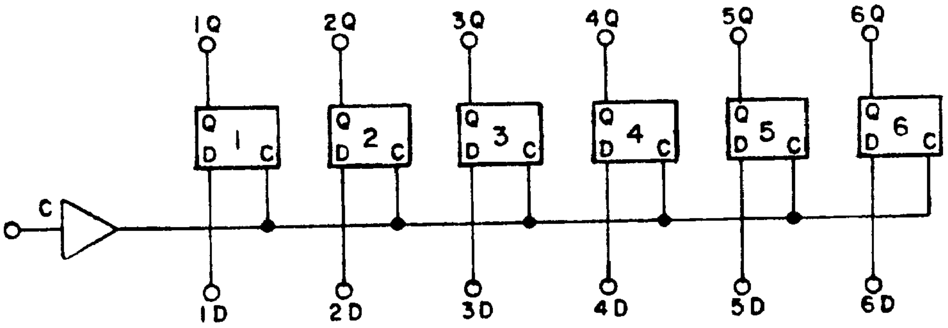
Device types 01 and 02

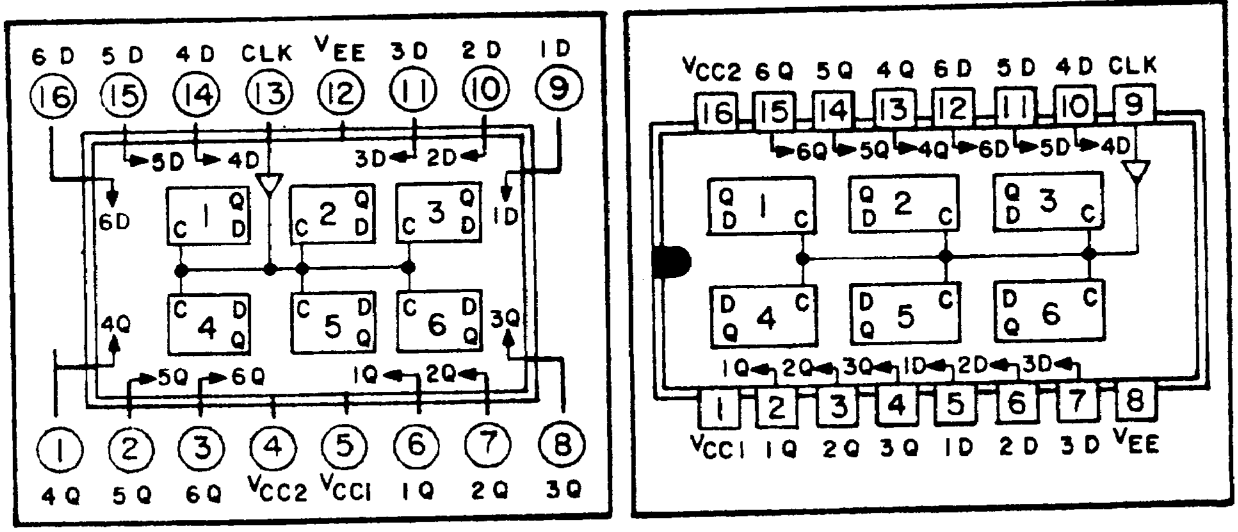


Case F

Case E

Device type 03



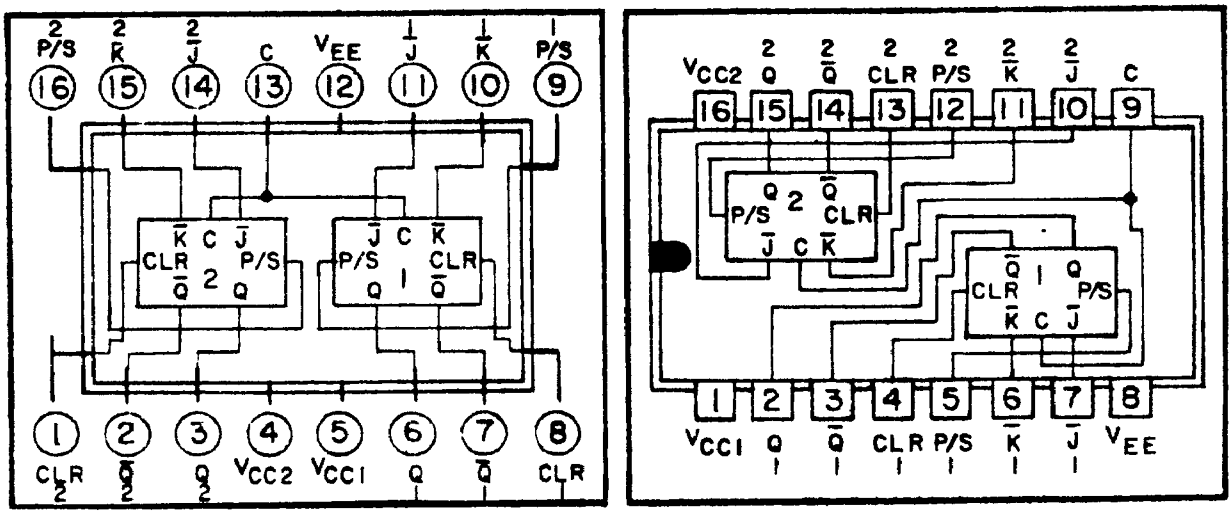


Case F

Case E

FIGURE 1. Logic diagrams and terminal connections.

Device type 04

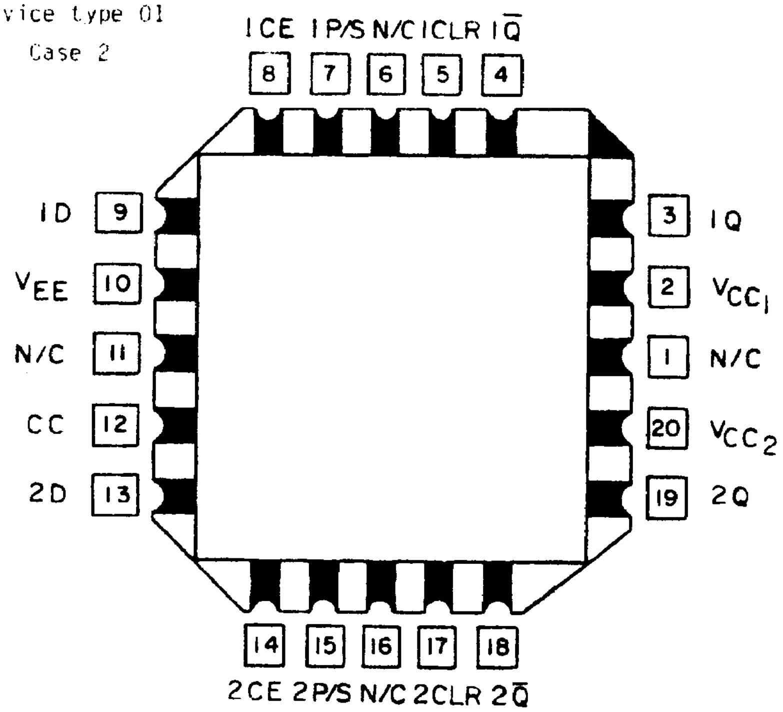


Case F

Case E

FIGURE 1. Logic diagrams and terminal connections - Continued.

Device type 01
Case 2



Device type 02
Case 2

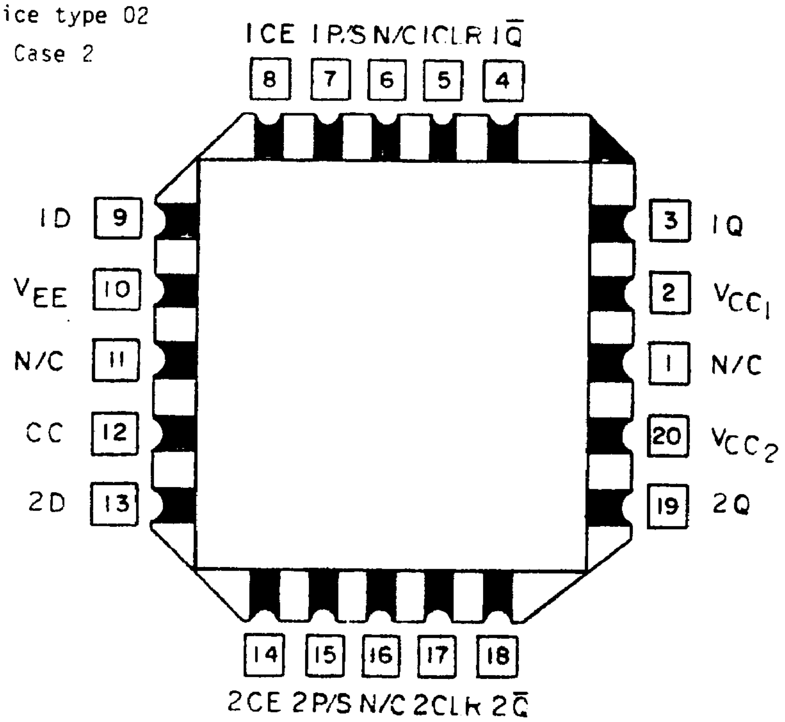
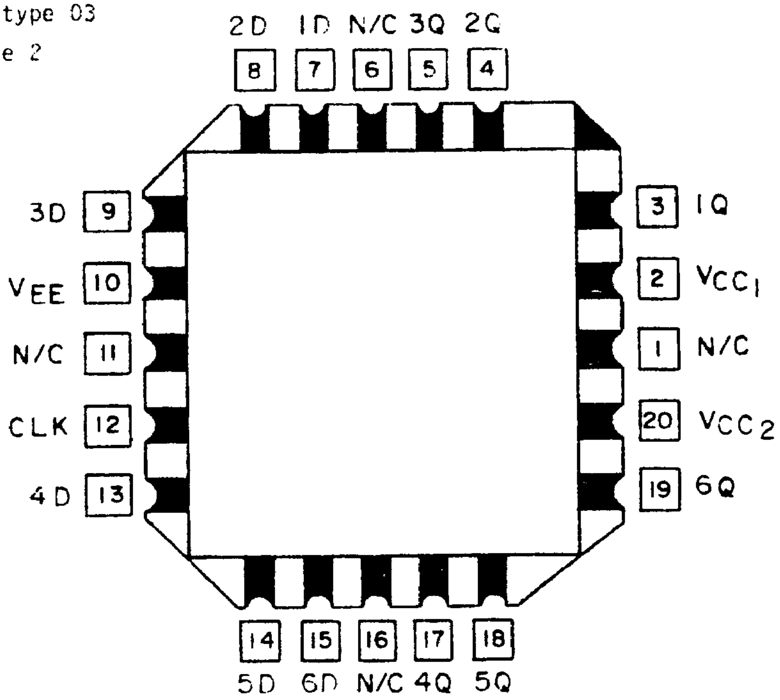


FIGURE 1. Logic diagrams and terminal connections - Continued.

Device type 03

Case 2



Device type 04

Case 2

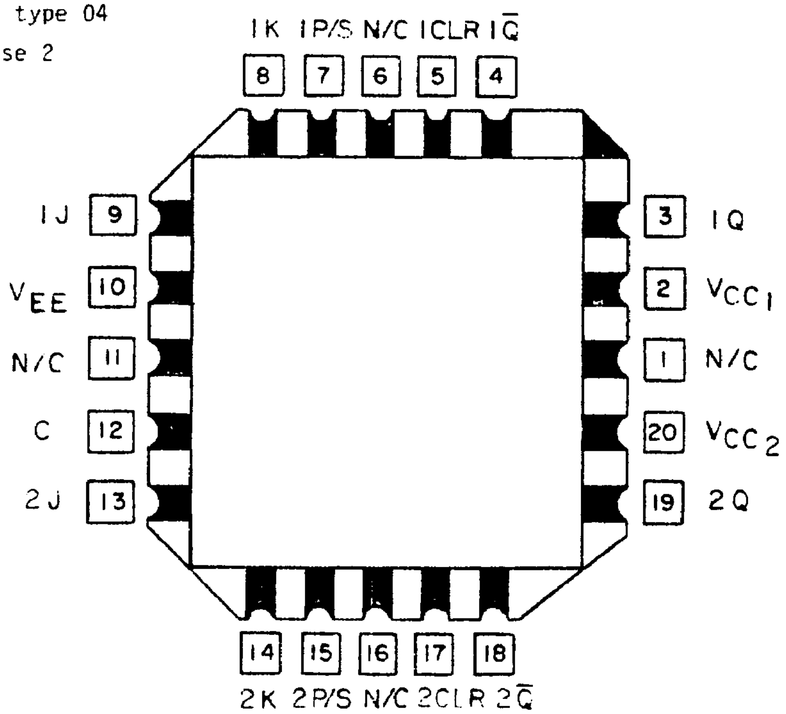


FIGURE 1. Logic diagrams and terminal connections - Continued.

Device types 01 and 02

ASYNCHRONOUS

CLR	P/S	Q	$\overline{Q}$
L	L	Q	$\overline{Q}$
L	H	H	L
H	L	L	H
H	H	H*	H*

*This is an unstable condition, when clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

SYNCHRONOUS

C	D	Q_{n+1}
L	X	Q_n
H*	L	L
H*	H	H

X = Don't care
C = $\overline{C}_E + C_C$
*A clock H is a clock transition from a low to a high state.

Preset (P/S) and clear (CLR) override clock (CC) and clock enable (CE) inputs. Each flip-flop may be clocked separately by holding the common clock in the low state and using the enable inputs for the clocking function. If the common clock is to be used to clock the flip-flop, the clock enable inputs must be in the low state. In this case, the enable inputs perform the function of controlling the common clock. The output states of the flip-flop change on the positive transition of the clock.

Device type 03

SYNCHRONOUS

C	D	Q_{n+1}
L	X	Q_n
H*	L	L
H*	H	H

X = Don't care
*A clock H is a clock transition from a low to a high state.

Clocking is common to all six flip-flops. Data transfer is accomplished on positive going transition of the clock.

FIGURE 2. Truth tables.

Device type 04

ASYNCHRONOUS

CLR	P/S	Q	$\overline{Q}$
L	L	Q	$\overline{Q}$
L	H	H	L
H	L	L	H
H	H	H*	H*

*This is an unstable condition, when the clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

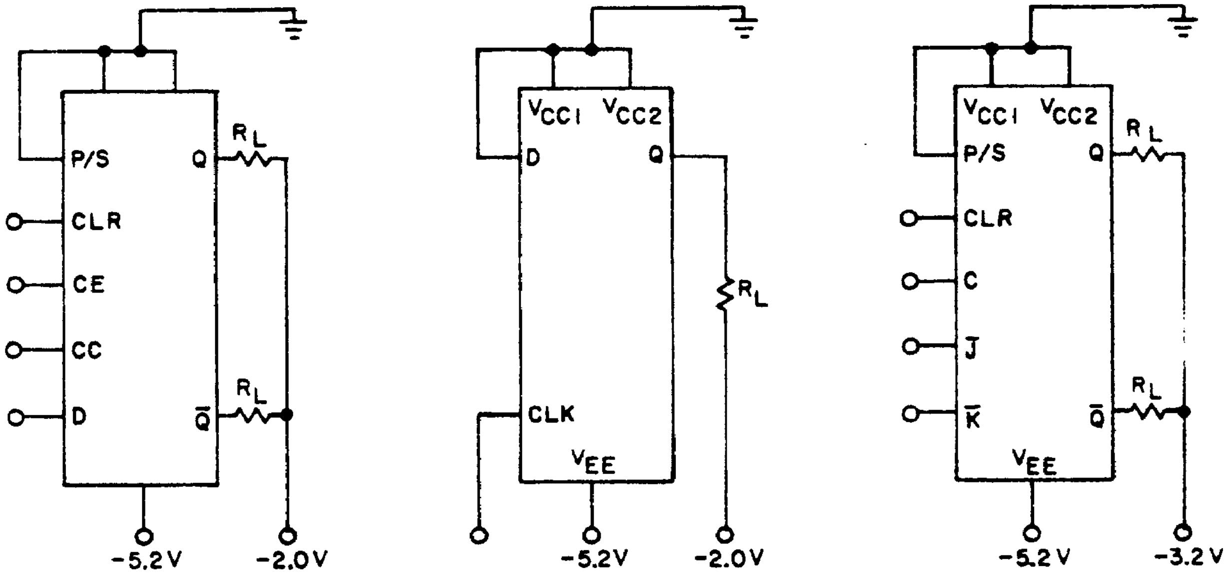
SYNCHRONOUS

$\overline{J}$	$\overline{K}$	Q_{n+1}
L	L	$\overline{Q}_n$
H	L	L
L	H	H
H	H	Q_n

Output states change on positive transition of clock for $\overline{J}$-$\overline{K}$ input conditions present.

Preset (P/S) and clear (CLR) override the clock. The output states of the flip-flop change on the positive transition of the clock.

FIGURE 2. Truth tables - Continued.



Device types 01 and 02

(1 2 circuit shown)

$T_A = 125 ^{+10}_{-0}$ C

(Case E & F)

Device type 03

(1 6 circuit shown)

T_A = 100 C ±5 C (Case E)
T_A = 110 C ±5°C (Case F)

Device type 04

(1/2 circuit shown)

$T_A = 125 ^{+10}_{-0}$ C

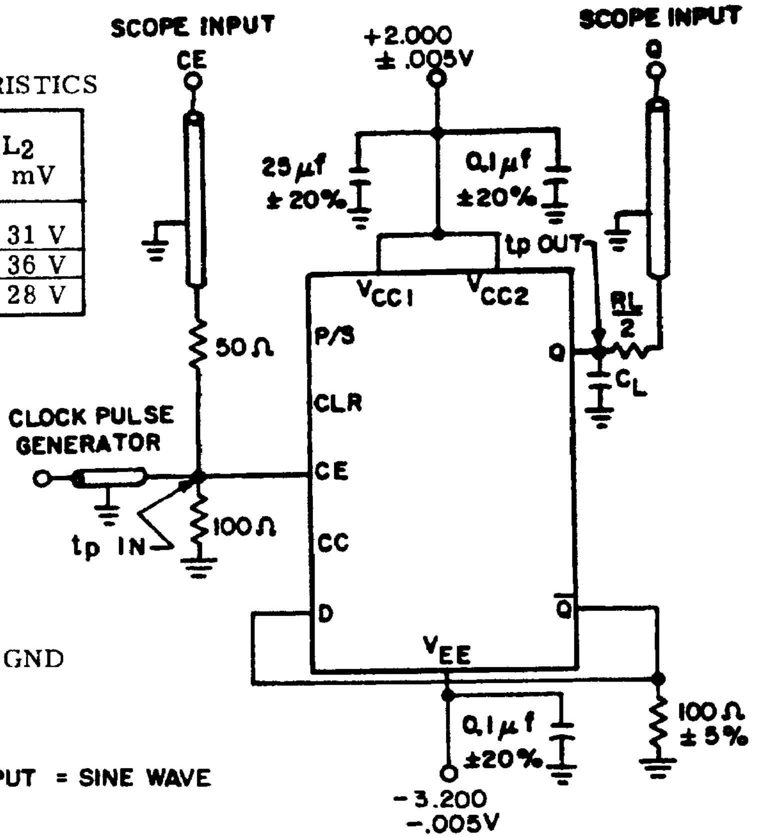
(Case E & F)

NOTES:
1. R_L = 100Ω ±5% rated at 70 MW at 125 C (or equivalent).
2. Momentary ground on clock input (device type 03) after V_{EE} and -2.0 V have been applied.
3. Inputs are internally returned to V_{EE} through 50 kΩ resistors.

FIGURE 3. Burn-in and life test circuits.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

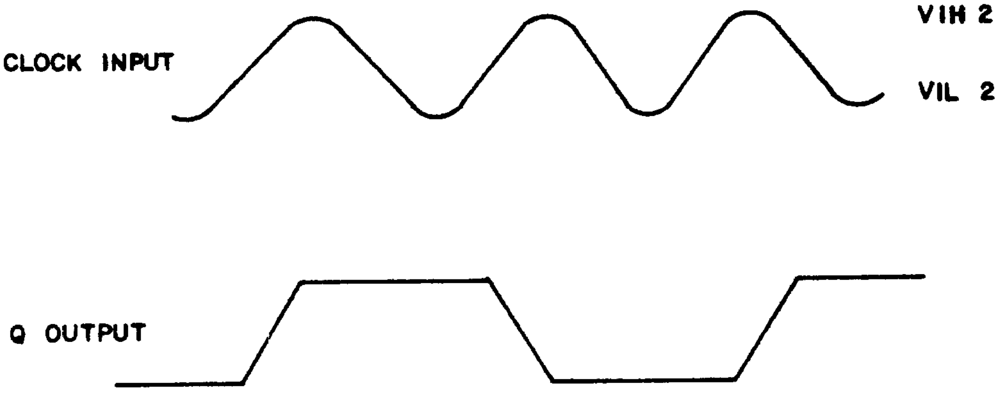


$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) $\leq$ 5 pF

CLOCK INPUT = SINE WAVE



$$\text{FREQ. (OUT)} = \frac{\text{FREQ. (IN)}}{2}$$

FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

NOTES:

1. Perform test in accordance with test table: each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be $\leq$ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 4. F_{MAX} test circuit for device types 01 and 02.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω

t_p (P/S & CLR) = 40 ns

PRR = 1 MHz

Device type 01

t_{THL} = 2.0 ns (20%-80%)

t_{TLH} = 2.0 ns (20%-80%)

Device type 02

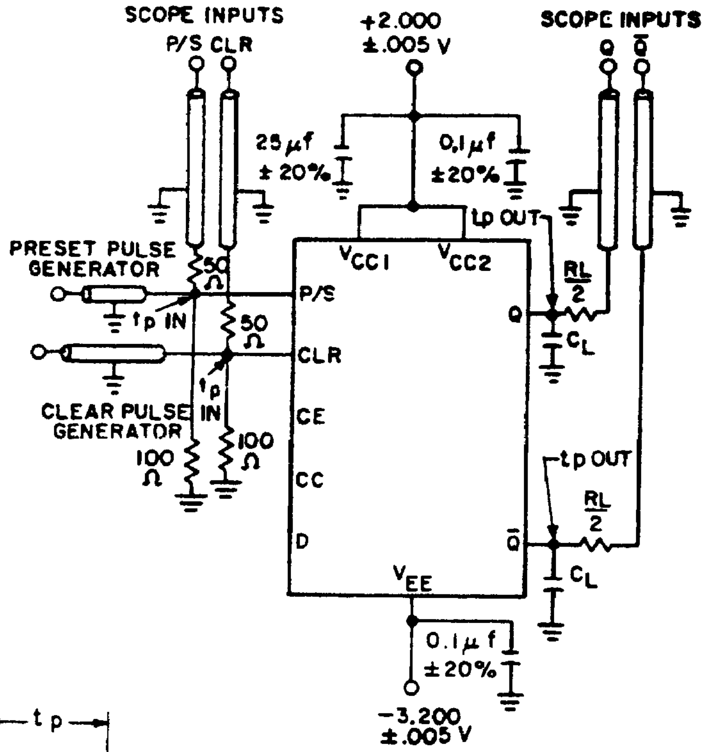
t_{THL} = 1.5 ns (20%-80%)

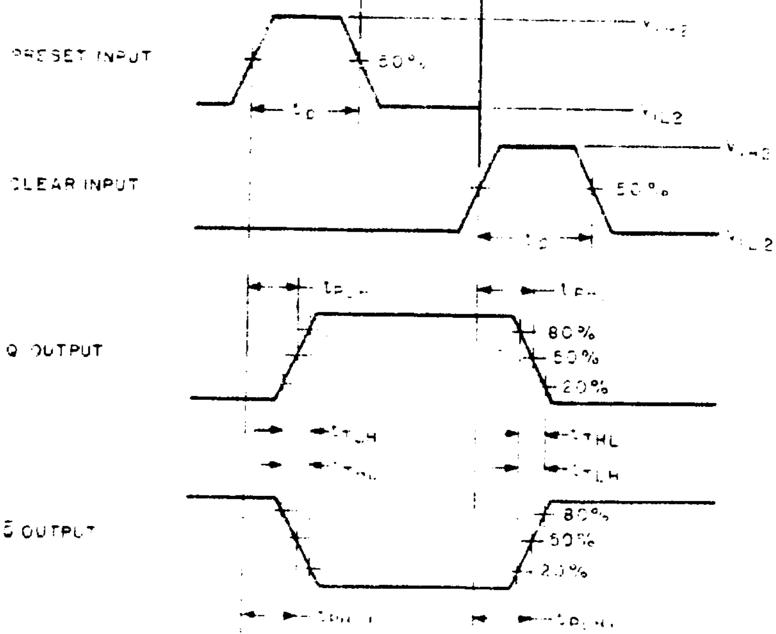
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table: each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 5. Preset and clear switching test circuit for device types 01 and 02.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω

t_p (data) = 150 ns

t_p (clock) = 40 ns

PRR = 1 MHz

Device type 01

t_{THL} = 2.0 ns (20%-80%)

t_{TLH} = 2.0 ns (20%-80%)

Device type 02

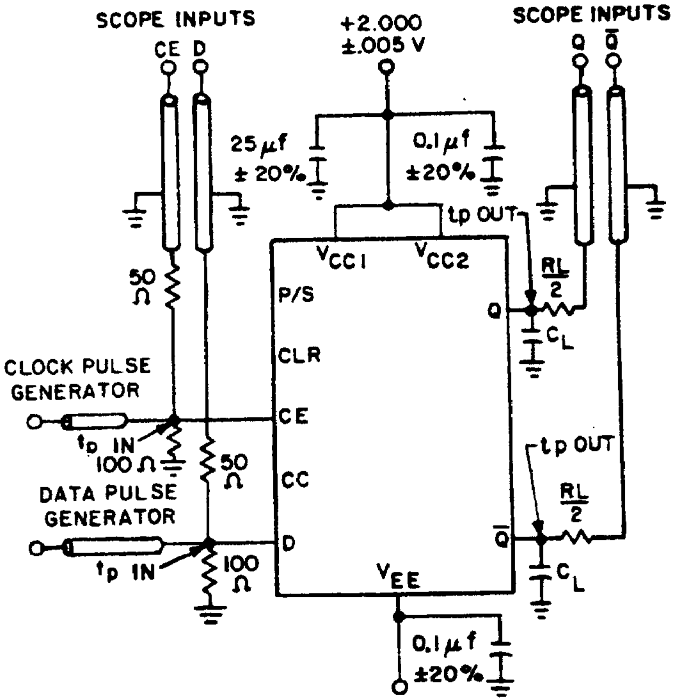
t_{THL} = 1.5 ns (20%-80%)

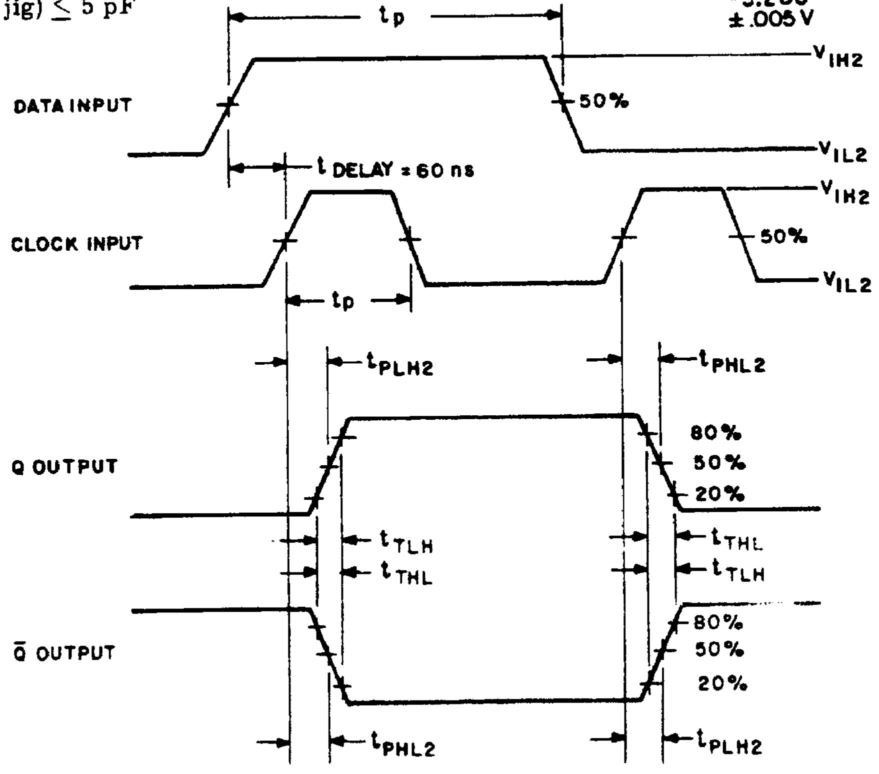
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table, each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 6. Synchronous switching test circuit for device types 01 and 02.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω

t_p (data) = 40 ns

t_p (clock) = 40 ns

Device type 01

t_{THL} = 2.0 ns (20%-80%)

t_{TLH} = 2.0 ns (20%-80%)

Device type 02

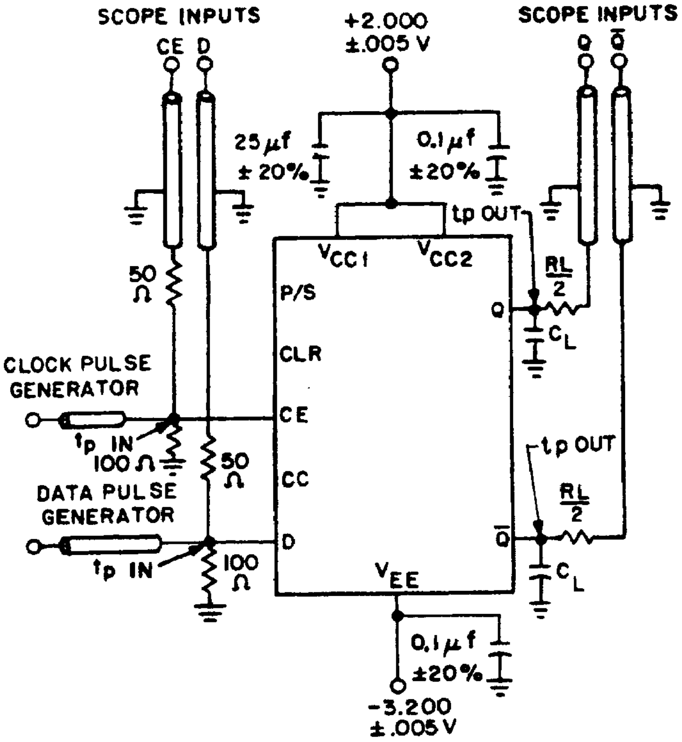
t_{THL} = 1.5 ns (20%-80%)

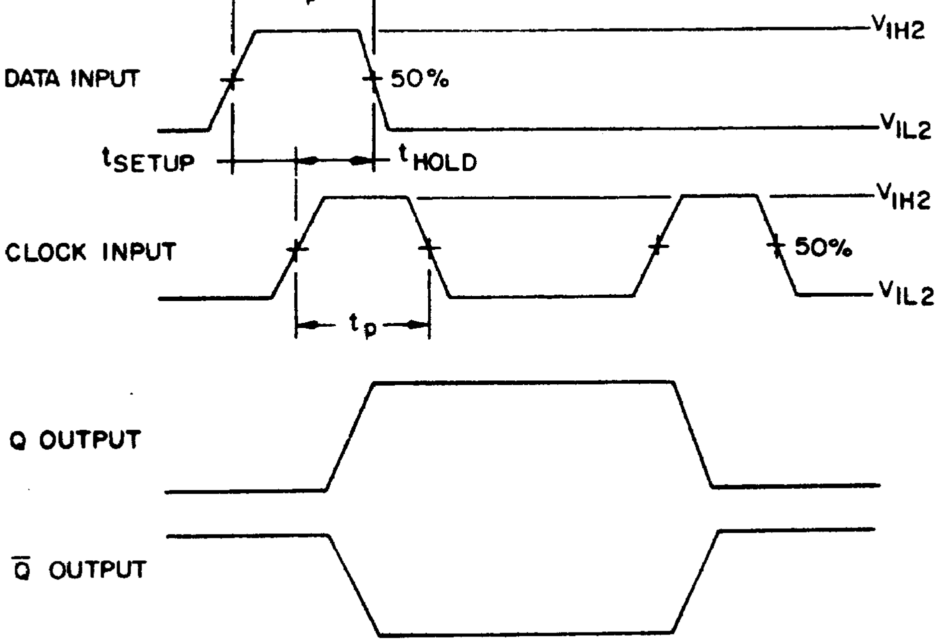
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 7. Setup and hold test circuit for device types 01 and 02.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω

t_{THL} = 2.0 ns (20%-80%)

t_{TLH} = 2.0 ns (20%-80%)

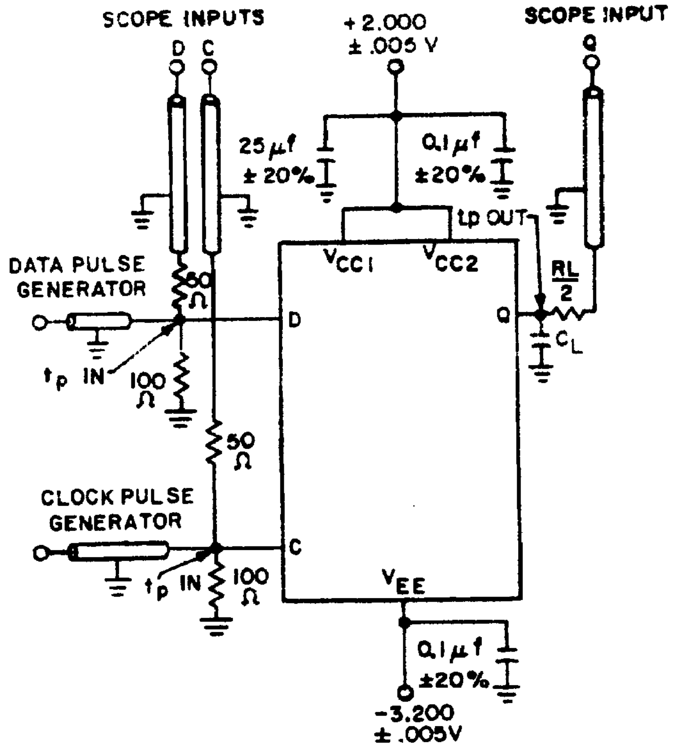
t_p (data) = 40 ns

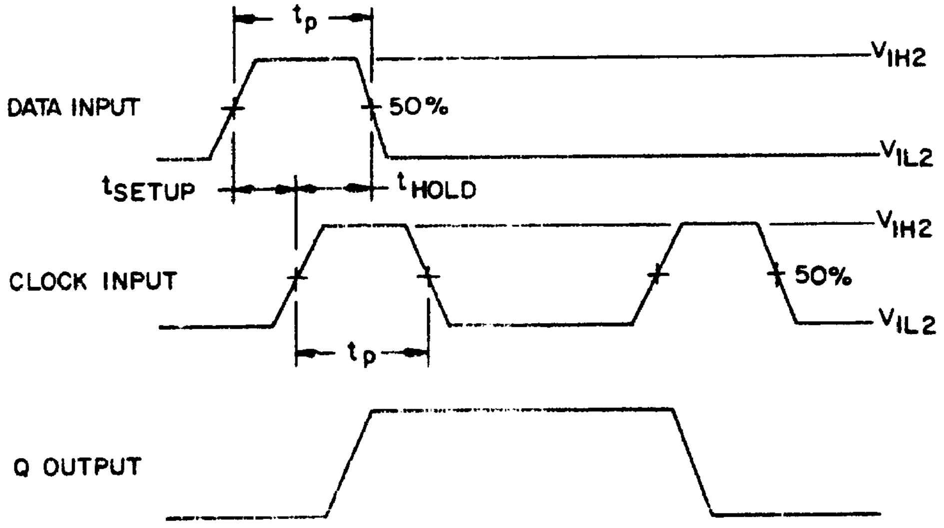
t_p (clock) = 40 ns

$\frac{RL}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table: each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

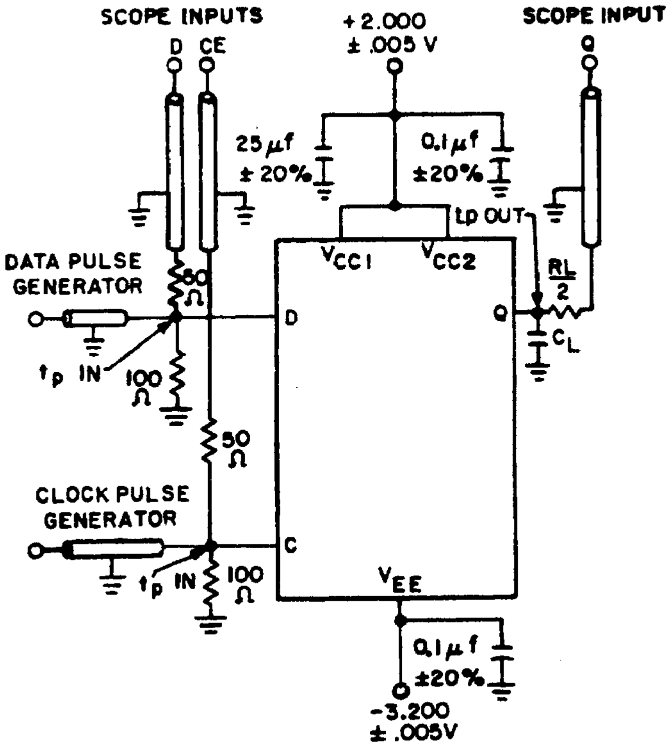
FIGURE 8. Setup and hold test circuit for device type 03.

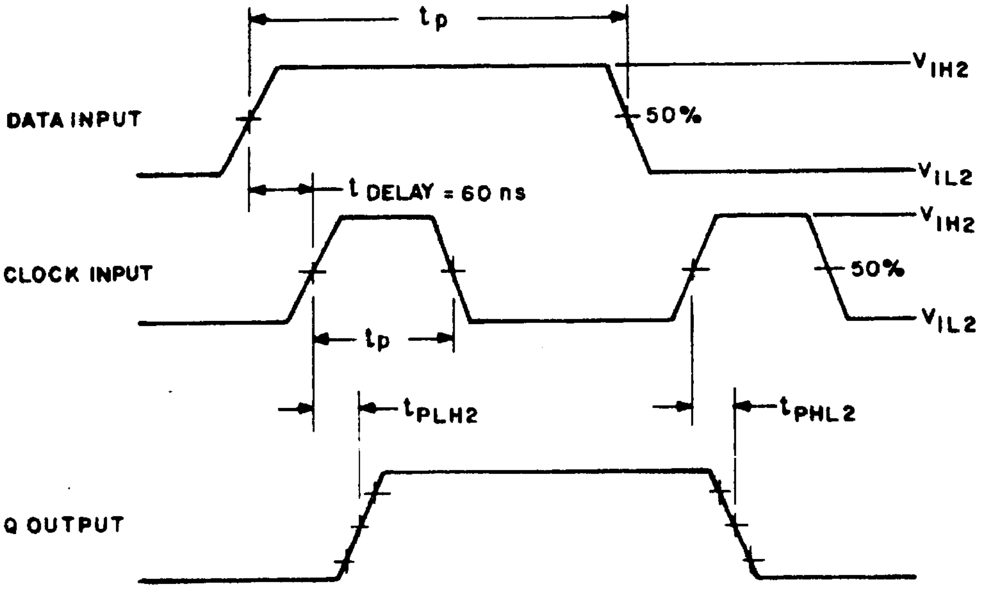
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_p (data) = 150 ns
t_p (clock) = 40 ns
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF

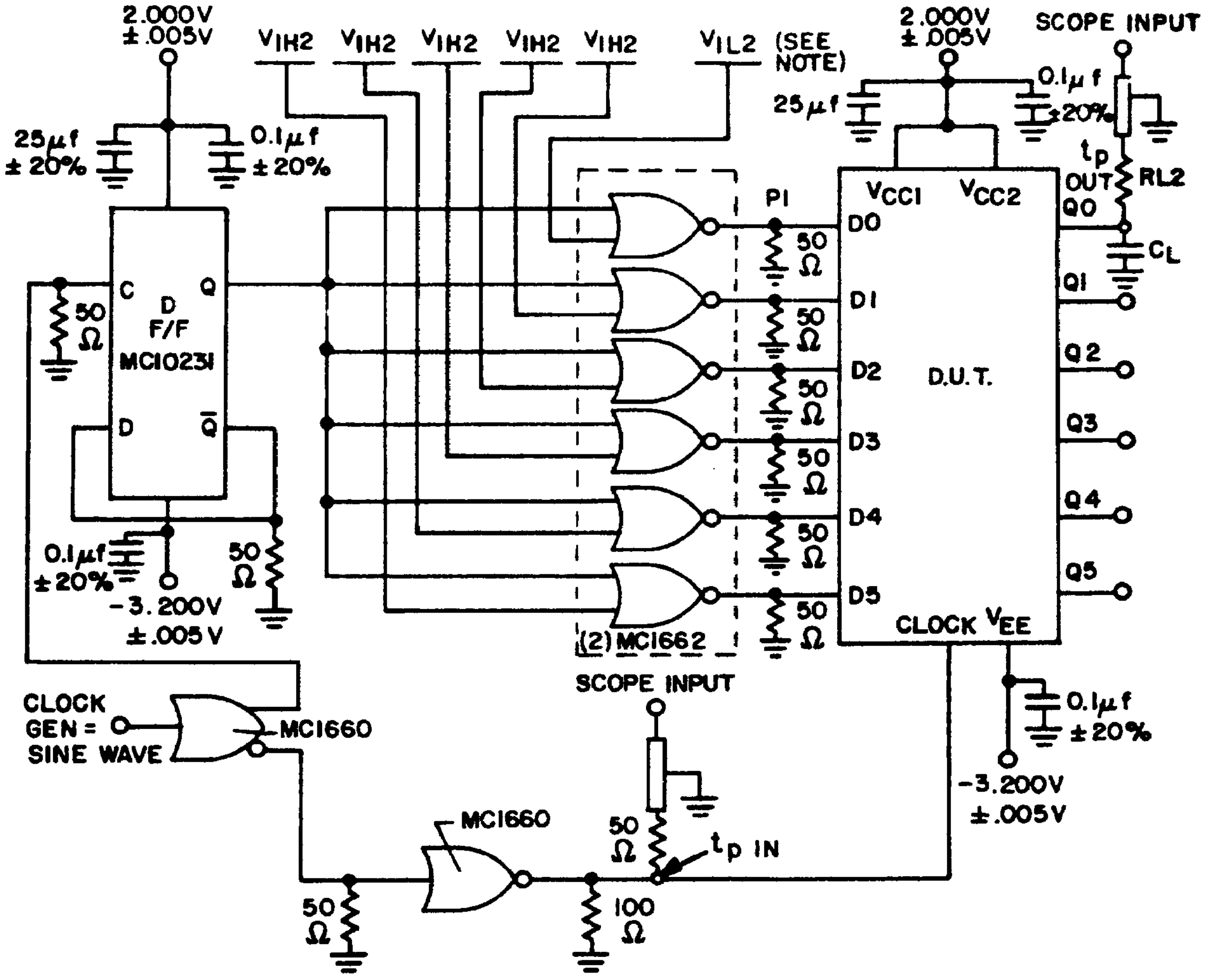




NOTES:

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 9. Synchronous switching test circuit for device type 03.



GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	-0.36 V
-55°C	+1.01 V	+0.28 V

All resistors ±5%

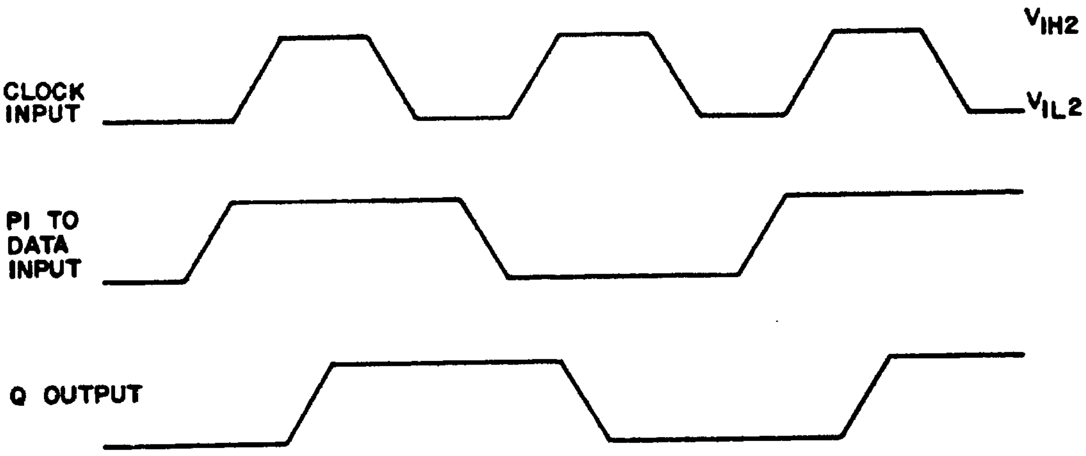
$\frac{RL}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF

NOTE: The flip flop under test will have a "V_{IL2}" applied to the NOR gate and the remaining NOR gates will have a "V_{IH2}" applied.

FIGURE 10. F_{MAX} test circuit for device type 03.



GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (data) = 200 ns
t_P (clock) = 40 ns

NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤.250 (6.35 mm) from t_P in to input pin and t_P out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.
5. Power supply configuration on MC1660 and MC1662's identical to D.U.T.

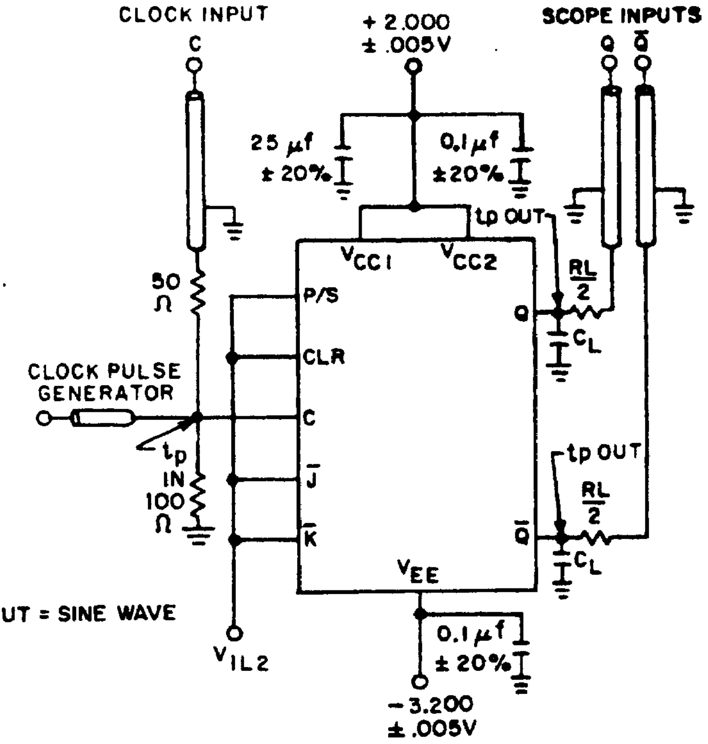
FIGURE 10. F_{MAX} test circuit for device type 03 - Continued.

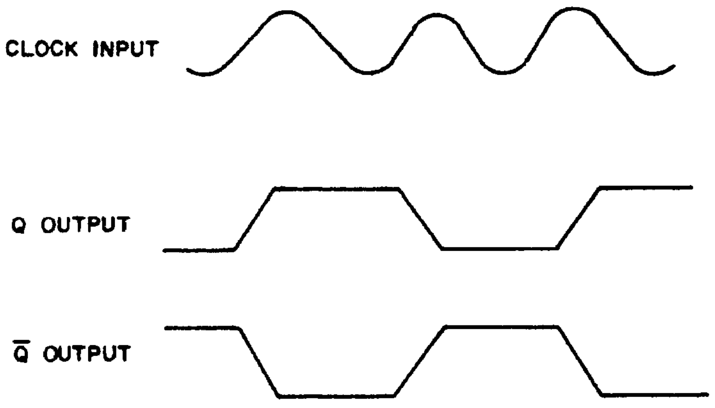
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





$$\text{FREQ. (OUT)} = \frac{\text{FREQ. (IN)}}{2}$$

FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

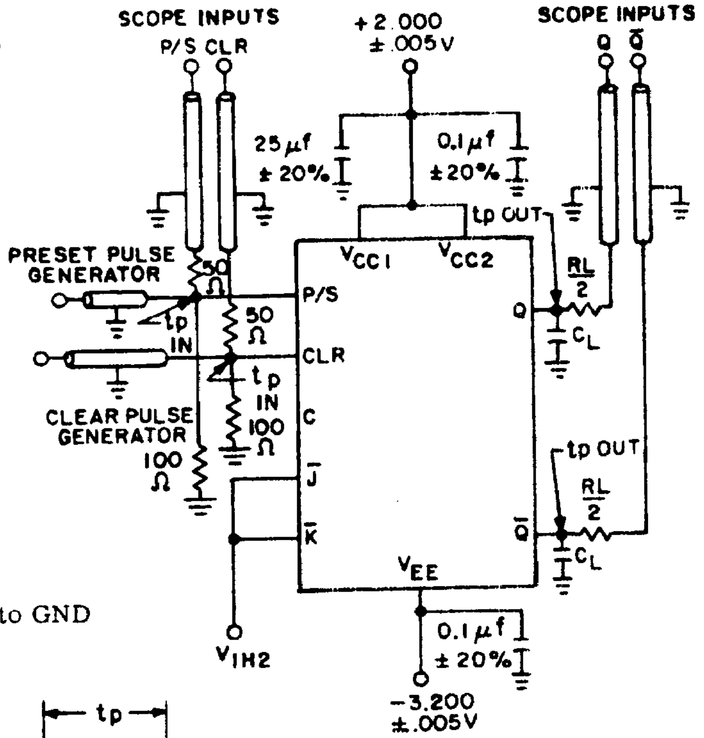
FIGURE 11. F_{MAX} test circuit for device type 04.

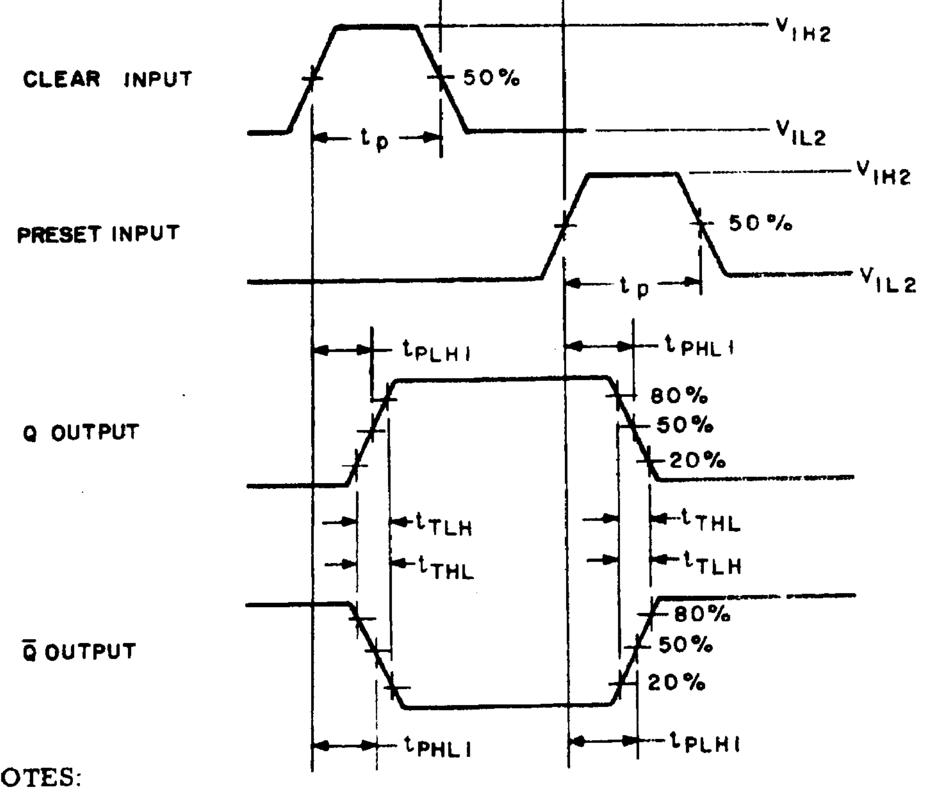
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_p (P/S & CLR) = 40 ns
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be _ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 12. Preset and clear switching test circuit for device type 04.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω

t_{THL} = 2.0 ns (20%-80%)

t_{TLH} = 2.0 ns (20%-80%)

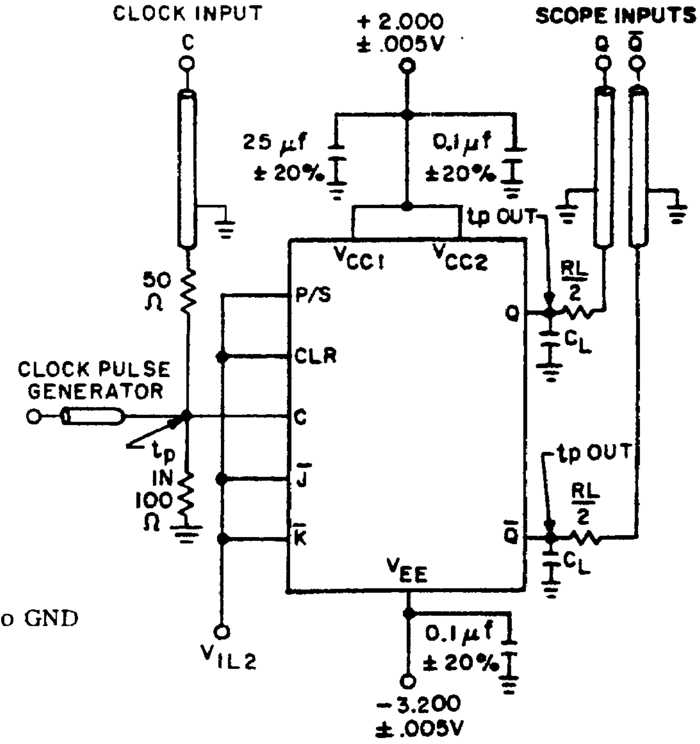
t_p (clock) = 40 ns

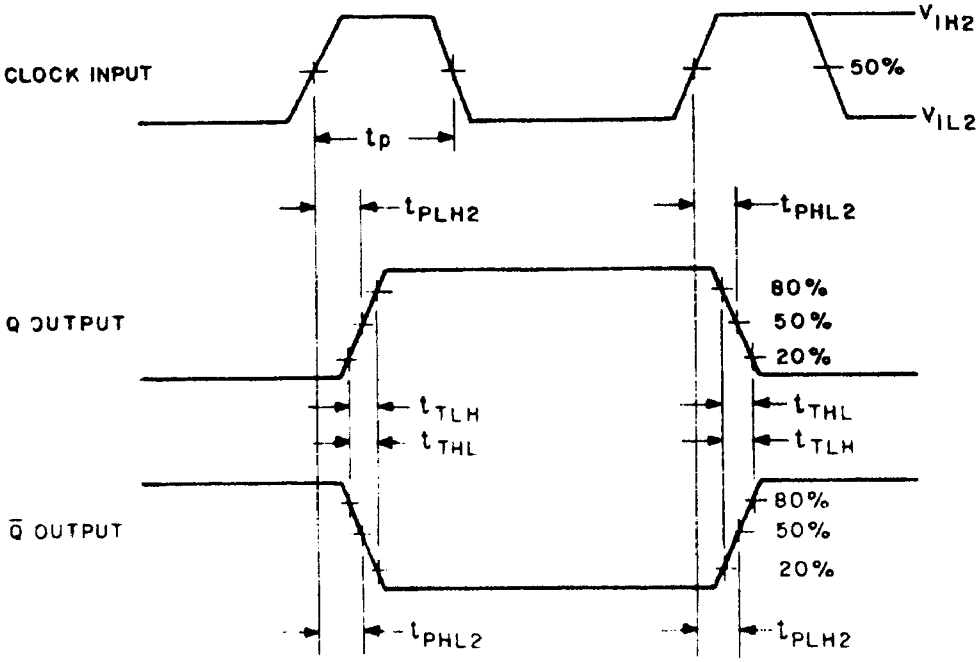
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF





NOTES:

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

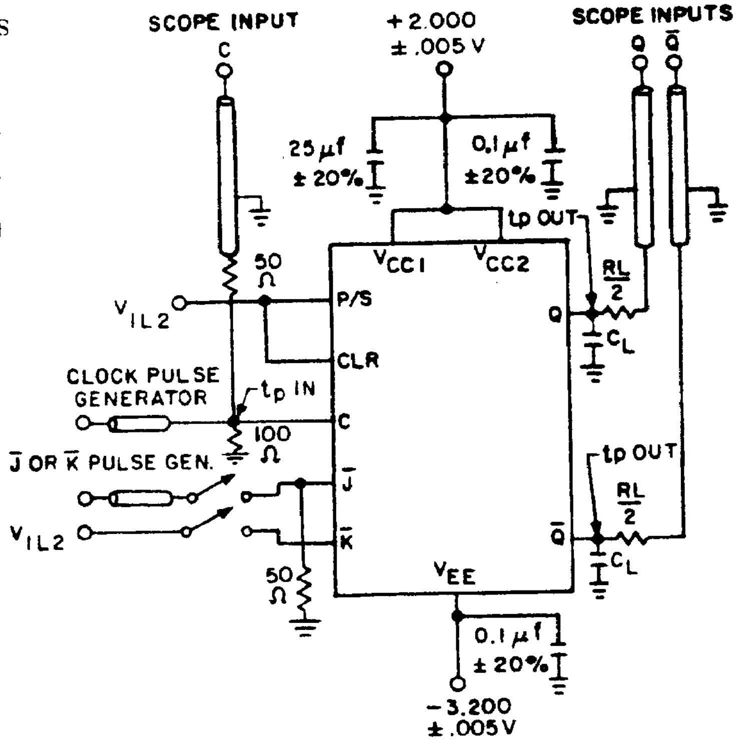
FIGURE 13. Synchronous test circuit for device type 04.

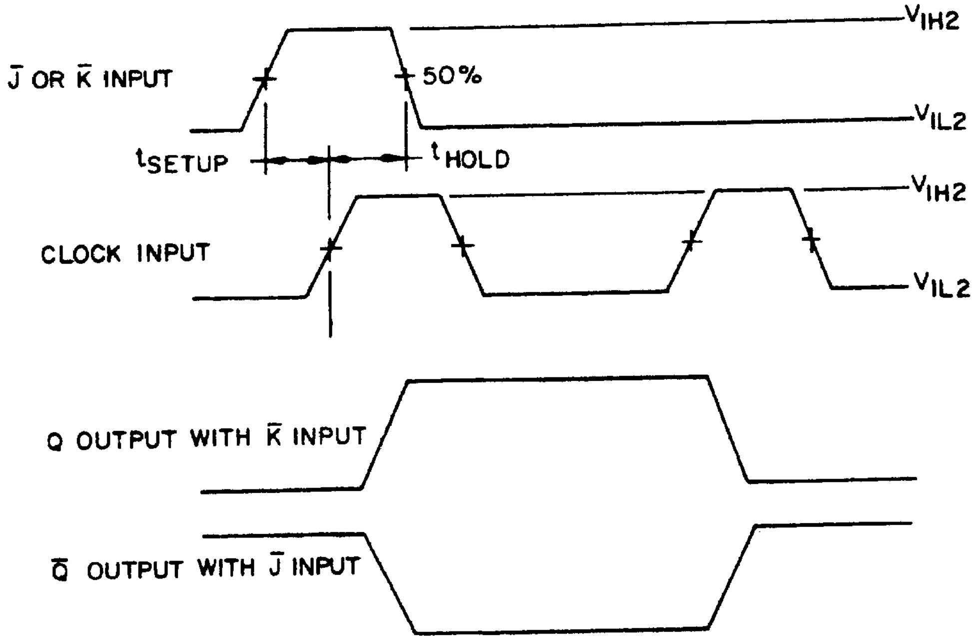
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

Z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_p (clock) = 40 ns

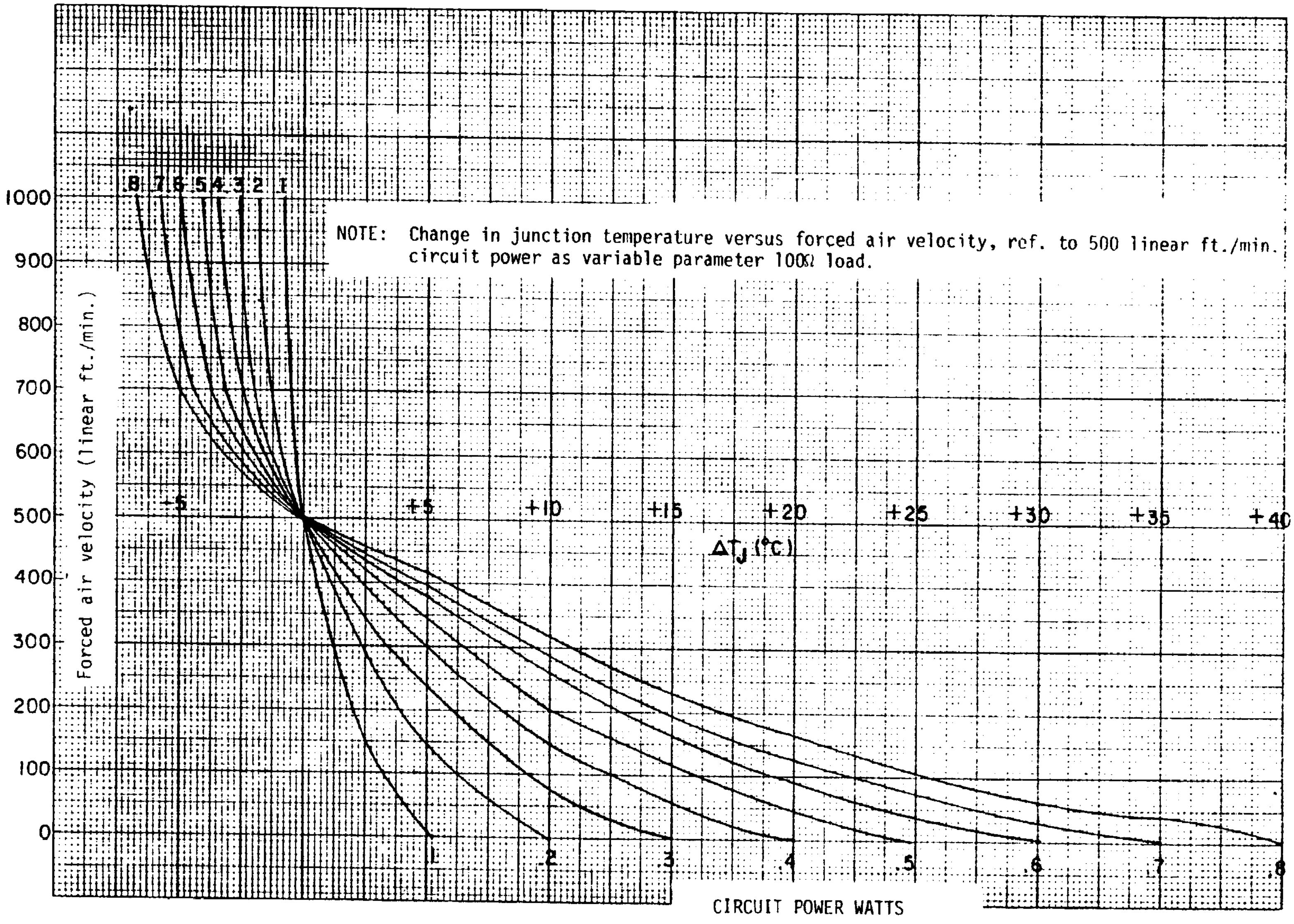
$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





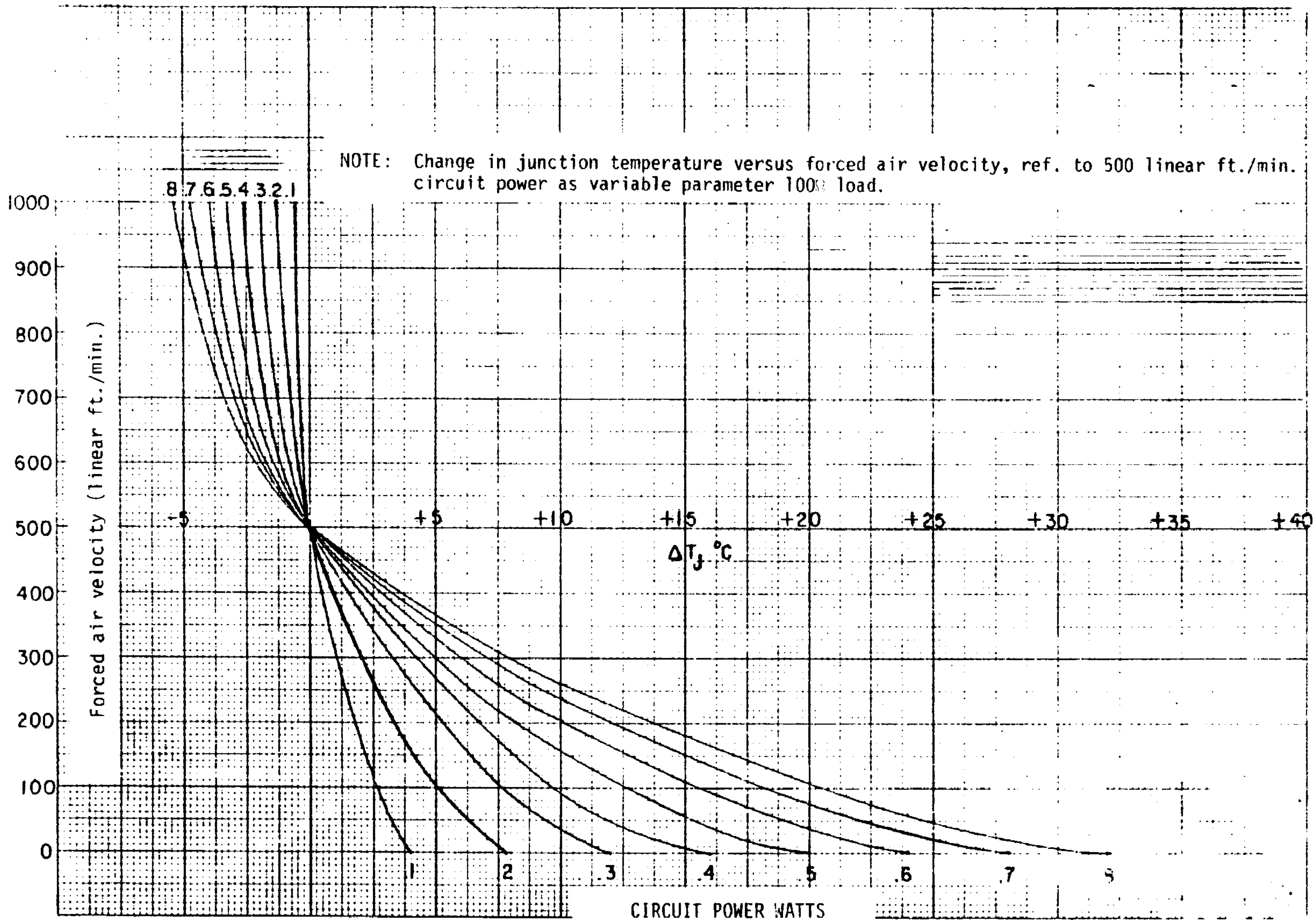
NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 14. Setup and hold test circuit for device type 04.



NOTE: Change in junction temperature versus forced air velocity, ref. to 500 linear ft./min. circuit power as variable parameter 100Ω load.

FIGURE 15. Junction temperature versus air velocity case E.

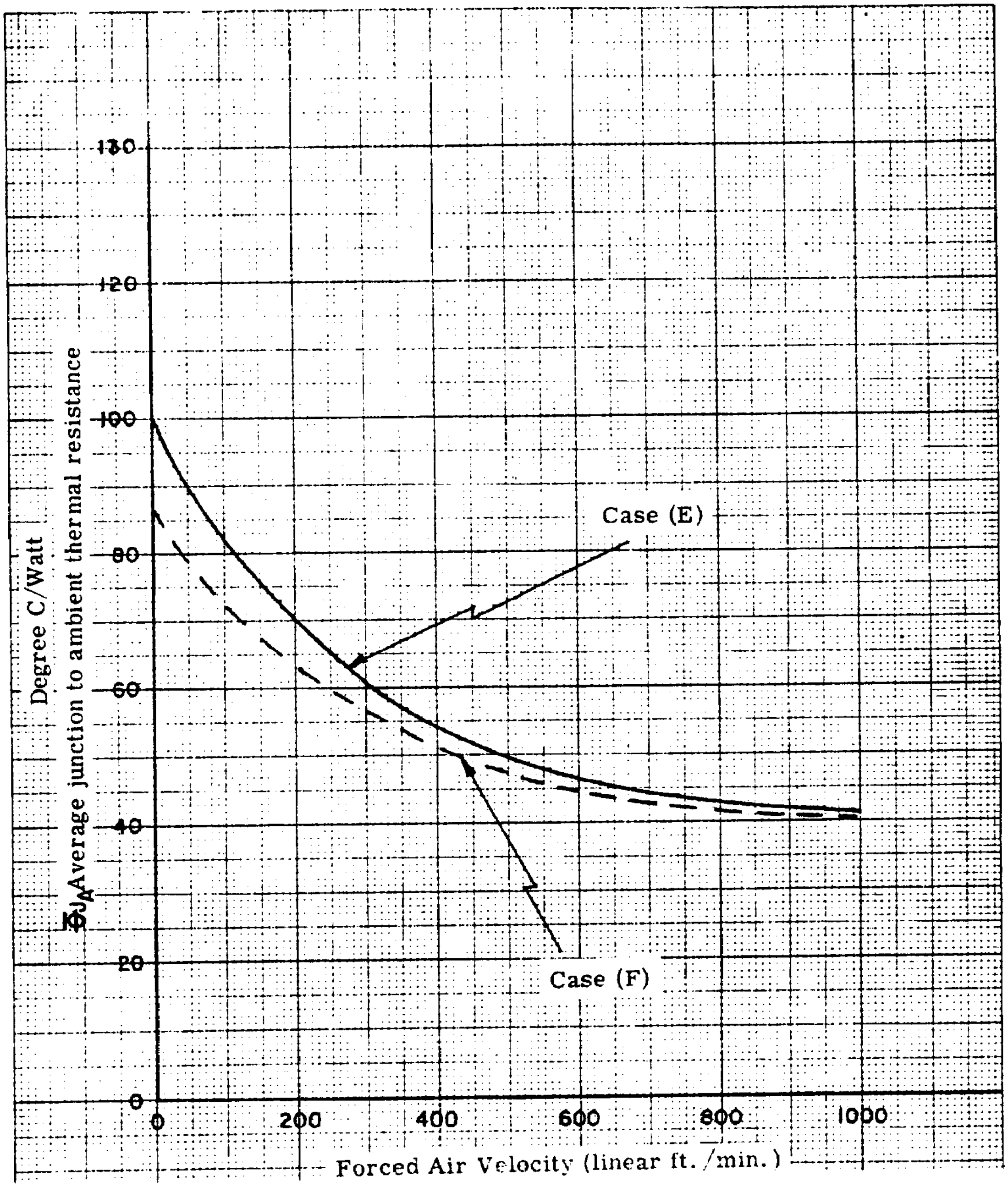


NOTE: Change in junction temperature versus forced air velocity, ref. to 500 linear ft./min. circuit power as variable parameter 100% load.

FIGURE 16. Junction temperature versus air velocity case F.

	-55°C (mV/°C)		+25°C (mV/°C)		+125°C (mV/°C)	
Parameter	$+\Delta T_J$	$-\Delta T_J$	$+\Delta T_J$	$-\Delta T_J$	$+\Delta T_J$	$-\Delta T_J$
V_{OH} max, V_{IH1}	1.25	1.25	1.50	1.25	1.50	1.50
V_{OH} min, V_{OTH}	1.88	1.88	1.05	1.88	1.05	1.05
V_{OL} max, V_{OTL}	0.44	0.44	0.75	0.44	0.75	0.75
V_{OL} min, V_{IL}	0.88	0.88	0.30	0.88	0.30	0.30
V_{ITH}	1.88	1.88	1.05	1.88	1.05	1.05
V_{ITL}	0.44	0.44	0.75	0.44	0.75	0.75

FIGURE 17. Adjustment coefficients for forcing function and test limit compensation.



NOTE: (θ_{JA} - vs - Forced air velocity) for case (E) and (F).
$T_J = T_C + \theta_{JA} \times P_D$ (max).

FIGURE 18. Air velocity versus thermal resistance.

TABLE III. Group A inspection for device type 01.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
V_{OH}	3006	1	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.93	-.78	-.825	-.63	-1.09	-.88	V
	"	2	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	2Q	"	"	"	"	"	"	"
	"	3	"	"	"	V_{IH1}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	4	"	"	"			"	"	"	"	"	"			"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
V_{OL}	3007	5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	-1.85	-1.62	-1.92	-1.545	-1.92	-1.655	"
	"	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"	"	"	"	"	"	"
	"	7	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	8	"	"	"			"	"	"	"	"	"			"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
V_{OTH}		9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	-.95		-.845		-1.1		"
		10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"		"		"
		12	"	"	"	V_{ITH}		"	"	"	"	"	"		V_{ITH}	"	"	"	$2\overline{Q}$	"		"		"		"
		13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		14	"	"	"		"	"	"	"	"	"	"	"		"	"	"	$2\overline{Q}$	"		"		"		"
		15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"		"		"
		16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"		"		"
		17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"		"		"
		18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"		"		"
		19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"		"		"
		20	"	"	"	"		"	"	"	"	"	"		"	"	"	"	2Q	"		"		"		"
		21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"		"		"
		22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"		"		"
		23	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	1Q	"		"		"		"
		24	"	"	"			"	"	"	"	"	"			"	"	"	2Q	"		"		"		"
		25	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	1Q	"		"		"		"
		26	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	2Q	"		"		"		"
		27	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"		"		"		"
		28	"	"	"	V_{IH1}			"	"		"			V_{IH1}	"	"	"	$2\overline{Q}$	"		"		"		"
		29	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		30	"	"	"		"	"		"	"		"	"		"	"	"	$2\overline{Q}$	"		"		"		"
		31	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		32	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		33	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	1Q	"		"		"		"
		34	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	2Q	"		"		"		"
		35	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		36	"	"	"	"	"	V_{IL1}		"	V_{IL1}		V_{IL1}	"	"	"	"	"	2Q	"		"		"		"
		37	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q	"		"		"		"
		38	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q	"		"		"		"
		39	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		40	"	"	"	"	"	V_{IL1}		"	V_{IL1}		V_{IL1}	"	"	"	"	"	2Q	"		"		"		"
		41	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$1\overline{Q}$	"		"		"		"
		42	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"		"		"
V_{OTL}		43	"	"	"	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$		-1.6		-1.525		-1.635	"
		44	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$2\overline{Q}$		"		"		"	"
		45	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$		"		"		"	"
		46	"	"	"	V_{ITH}		"	"	"	"	"	"		V_{ITH}	"	"	"	$2\overline{Q}$		"		"		"	"
		47	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"		"		"	"

TABLE III. Group A inspection for device type 01 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	Min	Max	Min	Max	
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}								
V_{OL}		48	GND	A	A	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	A	A	GND	2Q		-1.6		-1.525		-1.635	V
		49	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	1Q		"		"		"	"
		50	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	2Q		"		"		"	"
		51	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q		"		"		"	"
		52	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q		"		"		"	"
		53	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"		"		"	"
		54	"	"	"	"		"	"	"	"	"	"		"	"	"	"	$2\overline{Q}$		"		"		"	"
		55	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$1\overline{Q}$		"		"		"	"
		56	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"		"		"	"
		57	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	$1\overline{Q}$		"		"		"	"
		58	"	"	"			"	"	"	"	"	"			"	"	"	$2\overline{Q}$		"		"		"	"
		59	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		60	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		61	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	1Q		"		"		"	"
		62	"	"	"	V_{IH1}			"	"		"			V_{IH1}	"	"	"	2Q		"		"		"	"
		63	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	1Q		"		"		"	"
		64	"	"	"		"	"	"	"	"	"	"	"		"	"	"	2Q		"		"		"	"
		65	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q		"		"		"	"
		66	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q		"		"		"	"
		67	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		68	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		69	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		70	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		71	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		72	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		73	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		74	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		75	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	1Q		"		"		"	"
		76	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	2Q		"		"		"	"
I_{EE}	3005	77	"							"								"	V_{EE}	-56		-62		-62		mA
I_{IH1}	3010	78	"					V_{IH1}		"								"	1CE		220		375		375	µA
	"	79	"							"			V_{IH1}					"	2CE		220		375		375	"
I_{IH2}	"	80	"			V_{IH1}				"								"	1CLR		330		565		565	"
	"	81	"							"					V_{IH1}			"	2CLR		"		"		"	"
	"	82	"				V_{IH1}			"								"	1P/S		"		"		"	"
	"	83	"							"				V_{IH1}				"	2P/S		"		"		"	"
I_{IH3}	"	84	"						V_{IH1}	"								"	1D		245		420		420	"
	"	85	"							"		V_{IH1}						"	2D		245		420		420	"
I_{IH4}	"	86	"							"	V_{IH1}							"	CC		265		450		450	"
I_{IL}	3009	87	"			V_{IL1}				"								"	1CLR	0.5		0.3		0.5		"
	"	88	"				V_{IL1}			"								"	1P/S	"		"		"		"
	"	89	"					V_{IL1}		"								"	1CE	"		"		"		"
	"	90	"						V_{IL1}	"								"	1D	"		"		"		"
	"	91	"							"		V_{IL1}						"	2D	"		"		"		"
	"	92	"							"			V_{IL1}					"	2CE	"		"		"		"
	"	93	"							"				V_{IL1}				"	2P/S	"		"		"		"
	"	94	"							"					V_{IL1}			"	2CLR	"		"		"		"
	"	95	"							"	V_{IL1}							"	CC	"		"		"		"

TABLE III. Group A inspection for device type 01 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
f_{MAX}	Fig 4	96	+2.0 V	OUT	B			IN	$\overline{Q}1$	-3.2 V						B	B	+2.0 V	1Q	62.5		62.5		52.5		MHz
	Fig 4	97	"	B	B					"		$\overline{Q}2$	IN			"	OUT	"	2Q	62.5		62.5		52.5		MHz
t_{TLH}	3004	98	"	B	OUT	IN	IN			"						"	B	"	$1\overline{Q}$	1.1	4.5	1.1	4.9	1.0	4.6	ns
	Fig 5	99	"	OUT	B	IN	IN			"						"	"	"	1Q	"	"	"	"	"	"	"
	"	100	"	B	"					"				IN	IN	OUT	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
	"	101	"	B	"					"				IN	IN	B	OUT	"	2Q	"	"	"	"	"	"	"
	Fig 6	102	"	OUT	"			IN	IN	"						"	B	"	1Q	"	"	"	"	"	"	"
	"	103	"	B	OUT			IN	IN	"						"	B	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	104	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	105	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"
t_{THL}	Fig 5	106	"	OUT	"	IN	IN			"						B	"	"	1Q	"	"	"	"	"	"	"
	"	107	"	B	OUT	IN	IN			"						"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	108	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	109	"	"	"					"				IN	IN	OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"
	Fig 6	110	"	OUT	"			IN	IN	"						B	"	"	1Q	"	"	"	"	"	"	"
	"	111	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	112	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	113	"	"	B					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"
t_{PLH1}	3003	114	"	"	OUT	IN	IN			"						B	"	"	$1\overline{Q}$	1.2	4.3	1.2	4.9	1.1	4.5	"
	Fig 5	115	"	OUT	B	IN	IN			"						B	"	"	1Q	"	"	"	"	"	"	"
	"	116	"	B	"					"				IN	IN	OUT	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
	"	117	"	B	"					"				IN	IN	B	OUT	"	2Q	"	"	"	"	"	"	"
t_{PLH2}	"	118	"	OUT	"			IN	IN	"						"	B	"	1Q	1.5	4.5	1.5	5.0	1.4	4.6	"
	"	119	"	B	OUT			IN	IN	"						"	B	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	120	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	121	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"
t_{PHL1}	Fig 6	122	"	OUT	"	IN	IN			"						B	"	"	1Q	1.2	4.3	1.2	4.9	1.1	4.5	"
	"	123	"	B	OUT	IN	IN			"						"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	124	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	125	"	"	"					"				IN	IN	OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"
t_{PHL2}	Fig 6	126	"	OUT	"			IN	IN	"						B	"	"	$1\overline{Q}$	1.5	4.5	1.5	5.0	1.4	4.6	"
	"	127	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	128	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	129	"	"	B					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"	"	"	"	"

TABLE III. Group A inspection for device type 02.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 $T_C = 25°C$		Subgroup 2 $T_C = 125°C$		Subgroup 3 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
V_{OH}	3006	1	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.93	-.78	-.825	-.63	-1.08	-.88	V
	"	2	"	"	"	V_{IL1}	V_{IH1}			"				V_{IH1}	V_{IL1}	"	"	"	2Q	"	"	"	"	"	"	"
	"	3	"	"	"	V_{IH1}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	4	"	"	"			"	"	"	"	"	"			"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
V_{OL}	3007	5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	-1.85	-1.62	-1.82	-1.545	-1.92	-1.655	"
	"	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"	"	"	"	"	"	"
	"	7	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$	"	"	"	"	"	"	"
	"	8	"	"	"			"	"	"	"	"	"			"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
V_{OTH}		9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	-.95		-.845		-1.1		"
		10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"		"		"
		12	"	"	"	V_{ITH}		"	"	"	"	"	"		V_{ITH}	"	"	"	$2\overline{Q}$	"		"		"		"
		13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		14	"	"	"		"	"	"	"	"	"	"	"		"	"	"	$2\overline{Q}$	"		"		"		"
		15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"		"		"
		16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"		"		"
		17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"		"		"
		18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"		"		"
		19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"		"		"
		20	"	"	"	"		"	"	"	"	"	"		"	"	"	"	2Q	"		"		"		"
		21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"		"		"
		22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"		"		"
		23	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	1Q	"		"		"		"
		24	"	"	"			"	"	"	"	"	"			"	"	"	2Q	"		"		"		"
		25	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	1Q	"		"		"		"
		26	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	2Q	"		"		"		"
		27	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"		"		"		"
		28	"	"	"	V_{IH1}			"	"		"			V_{IH1}	"	"	"	$2\overline{Q}$	"		"		"		"
		29	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		30	"	"	"		"	"		"	"		"	"		"	"	"	$2\overline{Q}$	"		"		"		"
		31	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		32	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		33	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	1Q	"		"		"		"
		34	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	2Q	"		"		"		"
		35	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		36	"	"	"	"	"	V_{IL1}		"	V_{IL1}		V_{IL1}	"	"	"	"	"	2Q	"		"		"		"
		37	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q	"		"		"		"
		38	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q	"		"		"		"
		39	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		40	"	"	"	"	"	V_{IL1}		"	V_{IL1}		V_{IL1}	"	"	"	"	"	2Q	"		"		"		"
		41	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$1\overline{Q}$	"		"		"		"
		42	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"		"		"
V_{OTL}		43	"	"	"	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$		-1.6		-1.525		-1.635	"
		44	"	"	"	V_{IL1}	V_{IH1}			"				V_{IH1}	V_{IL1}	"	"	"	$2\overline{Q}$		"		"		"	"
		45	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$		"		"		"	"
		46	"	"	"	V_{ITH}		"	"	"	"	"	"		V_{ITH}	"	"	"	$2\overline{Q}$		"		"		"	"
		47	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"		"		"	"
		48	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	2Q		"		"		"	"

TABLE III. Group A inspection for device type 02 - Continued.

Symbol	MIL-STD-883 method	[illegible]	For terminal conditions see table IIIA																Measured terminal	Test limits						Units
		[illegible]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		[illegible]	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		[illegible]	2	3	4	6	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	Min	Max	Min	Max	
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}								
V_{OL}		49	GND	A	A	V_{IL1}	V_{ITL}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{ITL}	V_{IL1}	A	A	GND	1Q		-1.6		-1.525		-1.635	V
		50	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	2Q		"		"		"	"
		51	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	$1\overline{Q}$		"		"		"	"
		52	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	$2\overline{Q}$		"		"		"	"
		53	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"		"		"	"
		54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		55	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$1\overline{Q}$		"		"		"	"
		56	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"		"		"	"
		57	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	$1\overline{Q}$		"		"		"	"
		58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		59	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		60	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		61	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	1Q		"		"		"	"
		62	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	2Q		"		"		"	"
		63	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	1Q		"		"		"	"
		64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		65	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q		"		"		"	"
		66	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q		"		"		"	"
		67	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		68	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		69	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		70	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		71	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		72	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		73	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		74	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		75	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	1Q		"		"		"	"
		76	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	2Q		"		"		"	"
I_{EE}	3005	77	"							"								"	V_{EE}	-65		-72		-72		mA
I_{IH1}	3010	78	"					V_{IH1}		"								"	1CE		220		375		375	μA
	"	79	"							"			V_{IH1}					"	2CE		220		375		375	"
I_{IH2}	"	80	"			V_{IH1}				"								"	1CLR		410		700		700	"
	"	81	"				V_{IH1}			"								"	1P/S		"		"		"	"
	"	82	"							"				V_{IH1}				"	2P/S		"		"		"	"
	"	83	"							"					V_{IH1}			"	2CLR		"		"		"	"
I_{IH3}	"	84	"						V_{IH1}	"								"	1D		220		420		375	"
	"	85	"							"		V_{IH1}						"	2D		220		420		375	"
I_{IH4}	"	86	"							"	V_{IH1}							"	CC		290		450		495	"
I_{IL}	3009	87	"			V_{IL1}				"								"	1CLR	0.5		0.3		0.5		"
	"	88	"				V_{IL1}			"								"	1P/S	"		"		"		"
	"	89	"					V_{IL1}		"								"	1CE	"		"		"		"
	"	90	"						V_{IL1}	"								"	1D	"		"		"		"
	"	91	"							"		V_{IL1}						"	2D	"		"		"		"
	"	92	"							"			V_{IL1}					"	2CE	"		"		"		"
	"	93	"							"				V_{IL1}				"	2P/S	"		"		"		"
	"	94	"							"					V_{IL1}			"	2CLR	"		"		"		"
	"	95	"							"	V_{IL1}							"	CC	"		"		"		"

TABLE III. Group A inspection for device type 02 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	Min	Max	Min	Max	
		Test no.	V_{CC1}	1Q	1$\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	2$\overline{Q}$	2Q	V_{CC2}								
F_{MAX}	Fig 4	96	+2.0 V	OUT	B			IN	$\overline{Q}$1	-3.2 V						B	B	+2.0 V	1Q	100		100		100		MHz
	Fig 4	97	"	B	B					"		$\overline{Q}$2	IN			"	OUT	"	2Q	100		100		100		MHz
t_{TLH}	3004	98	"	B	OUT	IN	IN			"						"	B	"	1$\overline{Q}$	1.0	3.1	1.1	3.5	0.9	3.4	ns
	Fig 5	99	"	OUT	B	IN	IN			"						"	"	"	1Q	"	"	"	"	"	"	"
	"	100	"	B	"					"				IN	IN	OUT	"	"	2$\overline{Q}$	"	"	"	"	"	"	"
	"	101	"	B	"					"				IN	IN	B	OUT	"	2Q	"	"	"	"	"	"	"
	Fig 6	102	"	OUT	"			IN	IN	"						"	B	"	1Q	"	"	"	"	"	"	"
	"	103	"	B	OUT			IN	IN	"						"	B	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	104	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	105	"	"	"					"		IN	IN			OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{THL}	Fig 5	106	"	OUT	"	IN	IN			"						B	"	"	1Q	"	"	"	"	"	"	"
	"	107	"	B	OUT	IN	IN			"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	108	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	109	"	"	"					"				IN	IN	OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
	Fig 6	110	"	OUT	"			IN	IN	"						B	"	"	1Q	"	"	"	"	"	"	"
	"	111	"	B	OUT			IN	IN	"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	112	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	113	"	"	B					"		IN	IN			OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PLH1}	3003	114	"	"	OUT	IN	IN			"						B	"	"	1$\overline{Q}$	1.1	3.3	1.0	3.9	1.0	3.7	"
	Fig 5	115	"	OUT	B	IN	IN			"						B	"	"	1Q	"	"	"	"	"	"	"
	"	116	"	B	"					"				IN	IN	OUT	"	"	2$\overline{Q}$	"	"	"	"	"	"	"
	"	117	"	B	"					"				IN	IN	B	OUT	"	2Q	"	"	"	"	"	"	"
t_{PLH2}	3003	118	"	OUT	"			IN	IN	"						"	B	"	1Q	1.5	"	1.2	"	1.3	"	"
	Fig 6	119	"	B	OUT			IN	IN	"						"	B	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	120	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	121	"	"	"					"		IN	IN			OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PHL1}	3003	122	"	OUT	"	IN	IN			"						B	"	"	1Q	1.1	"	1.0	"	1.0	"	"
	Fig 5	123	"	B	OUT	IN	IN			"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	124	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	125	"	"	"					"				IN	IN	OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PHL2}	3003	126	"	OUT	"			IN	IN	"						B	"	"	1$\overline{Q}$	1.5	"	1.2	"	1.3	"	"
	Fig 6	127	"	B	OUT			IN	IN	"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	128	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"	"	"	"	"
	"	129	"	"	B					"		IN	IN			OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"

TABLE III. Group A inspection for device type 03.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 $T_C = 25°C$		Subgroup 2 $T_C = 125°C$		Subgroup 3 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
V_{OH}	3006	1	GND	A	A	A	V_{IH1}			-5.2 V	C				A	A	A	GND	1Q	-.93	-.78	-.825	-.63	-1.08	-.88	V
"	"	2	"	"	"	"		V_{IH1}		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
"	"	3	"	"	"	"			V_{IH1}	"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
"	"	4	"	"	"	"				"	"	V_{IH1}			"	"	"	"	4Q	"	"	"	"	"	"	"
"	"	5	"	"	"	"				"	"		V_{IH1}		"	"	"	"	5Q	"	"	"	"	"	"	"
"	"	6	"	"	"	"				"	"			V_{IH1}	"	"	"	"	6Q	"	"	"	"	"	"	"
V_{OL}	3007	7	"	"	"	"	V_{IL1}			"	"				"	"	"	"	1Q	-1.85	-1.62	-1.82	-1.545	-1.92	-1.655	"
"	"	8	"	"	"	"		V_{IL1}		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
"	"	9	"	"	"	"			V_{IL1}	"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
"	"	10	"	"	"	"				"	"	V_{IL1}			"	"	"	"	4Q	"	"	"	"	"	"	"
"	"	11	"	"	"	"				"	"		V_{IL1}		"	"	"	"	5Q	"	"	"	"	"	"	"
"	"	12	"	"	"	"				"	"			V_{IL1}	"	"	"	"	6Q	"	"	"	"	"	"	"
Precond		13	"	"	"	"	V_{IL1}			"	C				"	"	"	"		-.95		-.845		-1.1		"
V_{OTH}		14	"	"	"	"	V_{ITH}			"	C				"	"	"	"	1Q	"		"		"		"
V_{OTH}		15	"	"	"	"	V_{IL1}			"	D				"	"	"	"	1Q	"		"		"		"
Precond		16	"	"	"	"	V_{IL1}			"	C				"	"	"	"		"		"		"		"
V_{OTH}		17	"	"	"	"	V_{IH1}			"	E				"	"	"	"	1Q	"		"		"		"
Precond		18	"	"	"	"		V_{IL1}		"	C				"	"	"	"		"		"		"		"
V_{OTH}		19	"	"	"	"		V_{ITH}		"	C				"	"	"	"	2Q	"		"		"		"
V_{OTH}		20	"	"	"	"		V_{IL1}		"	D				"	"	"	"	2Q	"		"		"		"
Precond		21	"	"	"	"		V_{IL1}		"	C				"	"	"	"		"		"		"		"
V_{OTH}		22	"	"	"	"		V_{IH1}		"	E				"	"	"	"	2Q	"		"		"		"
Precond		23	"	"	"	"			V_{IL1}	"	C				"	"	"	"		"		"		"		"
V_{OTH}		24	"	"	"	"			V_{ITH}	"	C				"	"	"	"	3Q	"		"		"		"
V_{OTH}		25	"	"	"	"			V_{IL1}	"	D				"	"	"	"	3Q	"		"		"		"
Precond		26	"	"	"	"			V_{IL1}	"	C				"	"	"	"		"		"		"		"
V_{OTH}		27	"	"	"	"			V_{IH1}	"	E				"	"	"	"	3Q	"		"		"		"
Precond		28	"	"	"	"				"	C	V_{IL1}			"	"	"	"		"		"		"		"
V_{OTH}		29	"	"	"	"				"	C	V_{ITH}			"	"	"	"	4Q	"		"		"		"
V_{OTH}		30	"	"	"	"				"	D	V_{IL1}			"	"	"	"	4Q	"		"		"		"
Precond		31	"	"	"	"				"	C	V_{IL1}			"	"	"	"		"		"		"		"
V_{OTH}		32	"	"	"	"				"	E	V_{IH1}			"	"	"	"	4Q	"		"		"		"
Precond		33	"	"	"	"				"	C		V_{IL1}		"	"	"	"		"		"		"		"
V_{OTH}		34	"	"	"	"				"	C		V_{ITH}		"	"	"	"	5Q	"		"		"		"
V_{OTH}		35	"	"	"	"				"	D		V_{IL1}		"	"	"	"	5Q	"		"		"		"
Precond		36	"	"	"	"				"	C		V_{IL1}		"	"	"	"		"		"		"		"
V_{OTH}		37	"	"	"	"				"	E		V_{IH1}		"	"	"	"	5Q	"		"		"		"
Precond		38	"	"	"	"				"	C			V_{IL1}	"	"	"	"		"		"		"		"
V_{OTH}		39	"	"	"	"				"	C			V_{ITH}	"	"	"	"	6Q	"		"		"		"
V_{OTH}		40	"	"	"	"				"	D			V_{IL1}	"	"	"	"	6Q	"		"		"		"
Precond		41	"	"	"	"				"	C			V_{IL1}	"	"	"	"		"		"		"		"
V_{OTH}		42	"	"	"	"				"	E			V_{IH1}	"	"	"	"	6Q	"		"		"		"
Precond		43	"	"	"	"	V_{IH1}			"	C				"	"	"	"			-1.6		-1.525		-1.635	"
V_{OTL}		44	"	"	"	"	V_{ITL}			"	C				"	"	"	"	1Q		"		"		"	"
V_{OTL}		45	"	"	"	"	V_{IH1}			"	D				"	"	"	"	1Q		"		"		"	"
Precond		46	"	"	"	"	V_{IH1}			"	C				"	"	"	"			"		"		"	"
V_{OTL}		47	"	"	"	"	V_{IL1}			"	E				"	"	"	"	1Q		"		"		"	"

TABLE III. Group A inspection for device type 03 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 $T_C = 25°C$		Subgroup 2 $T_C = 125°C$		Subgroup 3 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EF}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
Precond		48	GND	A	A	A		V_{IH1}		-5.2 V	C				A	A	A	GND			-1.6		-1.525		-1.635	V
V_{OTH}		49	"	"	"	"		V_{ITL}		"	C				"	"	"	"	2Q		"		"		"	"
V_{OTL}		50	"	"	"	"		V_{IH1}		"	D				"	"	"	"	2Q		"		"		"	"
Precond		51	"	"	"	"		V_{IH1}		"	C				"	"	"	"			"		"		"	"
V_{OTL}		52	"	"	"	"		V_{IL1}		"	E				"	"	"	"	2Q		"		"		"	"
Precond		53	"	"	"	"			V_{IH1}	"	C				"	"	"	"			"		"		"	"
V_{OTH}		54	"	"	"	"			V_{ITL}	"	C				"	"	"	"	3Q		"		"		"	"
V_{OTL}		55	"	"	"	"			V_{IH1}	"	D				"	"	"	"	3Q		"		"		"	"
Precond		56	"	"	"	"			V_{IH1}	"	C				"	"	"	"			"		"		"	"
V_{OTL}		57	"	"	"	"			V_{IL1}	"	E				"	"	"	"	3Q		"		"		"	"
Precond		58	"	"	"	"				"	C	V_{IH1}			"	"	"	"			"		"		"	"
V_{OTL}		59	"	"	"	"				"	C	V_{ITL}			"	"	"	"	4Q		"		"		"	"
V_{OTL}		60	"	"	"	"				"	D	V_{IH1}			"	"	"	"	4Q		"		"		"	"
Precond		61	"	"	"	"				"	C	V_{IH1}			"	"	"	"			"		"		"	"
V_{OTL}		62	"	"	"	"				"	E	V_{IL1}			"	"	"	"	4Q		"		"		"	"
Precond		63	"	"	"	"				"	C		V_{IH1}		"	"	"	"			"		"		"	"
V_{OTL}		64	"	"	"	"				"	C		V_{ITL}		"	"	"	"	5Q		"		"		"	"
V_{OTH}		65	"	"	"	"				"	D		V_{IH1}		"	"	"	"	5Q		"		"		"	"
Precond		66	"	"	"	"				"	C		V_{IH1}		"	"	"	"			"		"		"	"
V_{OTL}		67	"	"	"	"				"	E		V_{IL1}		"	"	"	"	5Q		"		"		"	"
Precond		68	"	"	"	"				"	C			V_{IH1}	"	"	"	"			"		"		"	"
V_{OTL}		69	"	"	"	"				"	C			V_{ITL}	"	"	"	"	6Q		"		"		"	"
V_{OTL}		70	"	"	"	"				"	D			V_{IH1}	"	"	"	"	6Q		"		"		"	"
Precond		71	"	"	"	"				"	C			V_{IH1}	"	"	"	"			"		"		"	"
V_{OTH}		72	"	"	"	"				"	E			V_{IL1}	"	"	"	"	6Q		"		"		"	"
I_{EE}	3005	73	"							"								"	V_{EF}	-110		-121		-121		mA
I_{IH1}	3010	74	"				V_{IH1}			"								"	1D		220		375		375	μA
	"	75	"					V_{IH1}		"								"	2D		"		"		"	"
	"	76	"						V_{IH1}	"								"	3D		"		"		"	"
	"	77	"							"		V_{IH1}						"	4D		"		"		"	"
	"	78	"							"			V_{IH1}					"	5D		"		"		"	"
	"	79	"							"				V_{IH1}				"	6D		"		"		"	"
I_{IH2}	"	80	"							"	V_{IH1}							"	CLK		310		527		527	"
I_{IL}	3009	81	"				V_{IL1}			"								"	1D	0.5		0.3		0.5		"
	"	82	"					V_{IL1}		"								"	2D	"		"		"		"
	"	83	"						V_{IL1}	"								"	3D	"		"		"		"
	"	84	"							"		V_{IL1}						"	4D	"		"		"		"
	"	85	"							"			V_{IL1}					"	5D	"		"		"		"
	"	86	"							"				V_{IL1}				"	6D	"		"		"		"
f_{MAX}	Fig 10	87	2.0 V	OUT	B	B	P1	V_{OL}	V_{OL}	-3.2 V	IN	V_{OL}	V_{OL}	V_{OL}	B	B	B	2.0 V	1Q	67.5		62.5		57.5		MHz
	"	88	"	B	OUT	B	V_{OL}	P1	V_{OL}	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
	"	89	"	"	B	OUT	"	V_{OL}	P1	"	"	"	"	"	"	"	"	"	3Q	"		"		"		"
	"	90	"	"	"	B	"	"	V_{OL}	"	"	P1	"	"	OUT	"	"	"	4Q	"		"		"		"
	"	91	"	"	"	"	"	"	"	"	"	V_{OL}	P1	"	B	OUT	"	"	5Q	"		"		"		"
	"	92	"	"	"	"	"	"	"	"	"	V_{OL}	V_{OL}	P1	B	B	OUT	"	6Q	"		"		"		"

TABLE III. Group A inspection for device type 03 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 9 $T_C = 25°C$		Subgroup 10 $T_C = 125°C$		Subgroup 11 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
t_{PLH}	Fig 10	93	2.0 V	OUT	B	B	IN			-3.2 V	IN				B	B	B	2.0 V	1Q	1.1	4.0	1.0	4.5	1.0	4.3	ns
	"	94	"	B	OUT	B		IN		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
	"	95	"	"	B	OUT				"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
	"	96	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"	"	"	"	"
	"	97	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"	"	"	"	"
	"	98	"	"	"	"				"	"			IN	"	B	OUT	"	6Q	"	"	"	"	"	"	"
t_{PHL}	"	99	"	OUT	"	"	IN			"	"				"	"	B	"	1Q	"	"	"	"	"	"	"
	"	100	"	B	OUT	"		IN		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
	"	101	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
	"	102	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"	"	"	"	"
	"	103	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"	"	"	"	"
	"	104	"	"	"	"				"	"			IN	"	B	OUT	"	6Q	"	"	"	"	"	"	"
[illegible]	"	105	"	OUT	"	"	IN			"	"				"	"	B	"	1Q	1.5	4.5	1.3	5.3	1.2	4.9	"
	"	106	"	B	OUT	"		IN		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
	"	107	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
	"	108	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"	"	"	"	"
	"	109	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"	"	"	"	"
	"	110	"	"	"	"				"	"			IN	"	B	OUT	"	6Q	"	"	"	"	"	"	"
	"	111	"	OUT	"	"	IN			"	"				"	"	B	"	1Q	"	"	"	"	"	"	"
	"	112	"	B	OUT	"		IN		"	"				"	"	"	"	2Q	"	"	"	"	"	"	"
	"	113	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"	"	"	"	"
	"	114	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"	"	"	"	"
	"	115	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"	"	"	"	"
	"	116	"	"	"	"				"	"			IN	B	B	OUT	"	6Q	"	"	"	"	"	"	"

TABLE III. Group A inspection for device type 04.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 $T_C = 25°C$		Subgroup 2 $T_C = 125°C$		Subgroup 3 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
V_{OH}	3006	1	GND	A	A	V_{IH1}				-5.2 V						A	A	GND	$1\overline{Q}$	-.93	-.78	-.825	-.63	-1.08	-.88	V
	"	2	"	"	"		V_{IH1}			"						"	"	"	1Q	"	"	"	"	"	"	"
	"	3	"	"	"					"					V_{IH1}	"	"	"	2Q	"	"	"	"	"	"	"
	"	4	"	"	"					"				V_{IH1}		"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
V_{OL}	3007	5	"	"	"		V_{IH1}			"						"	"	"	$1\overline{Q}$	-1.85	-1.62	-1.82	-1.545	-1.92	-1.655	"
	"	6	"	"	"	V_{IH1}				"						"	"	"	1Q	"	"	"	"	"	"	"
	"	7	"	"	"					"				V_{IH1}		"	"	"	$2\overline{Q}$	"	"	"	"	"	"	"
	"	8	"	"	"					"					V_{IH1}	"	"	"	2Q	"	"	"	"	"	"	"
V_{OTH}		9	"	"	"	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	1Q	-.95		-.845		-1.1		"
		10	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	2Q	"		"		"		"
		11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"		"		"
		12	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"		"		"
		13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"		"		"
		16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"		"		"
		17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"		"		"
		18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"		"		"
		19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"		"		"
		20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"		"		"
		22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"		"		"
		23	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$1\overline{Q}$	"		"		"		"
		24	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"		"		"
		25	"	"	"	V_{IL1}	"	V_{ITH}	"	"	"	"	V_{ITH}	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"		"		"
		26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		27	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		28	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		29	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	1Q	"		"		"		"
		30	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	2Q	"		"		"		"
		31	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"		"		"
		32	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	2Q	"		"		"		"
		33	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		34	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		35	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	"	1Q	"		"		"		"
		36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		37	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	1Q	"		"		"		"
		38	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	2Q	"		"		"		"
		39	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	1Q	"		"		"		"
		40	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		41	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		42	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		43	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		44	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		45	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	"		"		"		"
		46	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"

TABLE III. Group A inspection for device type 04 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	7	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	Min	Max	Min	Max	
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}								
V_{OTH}		47	GND	A	A	V_{IL1}	V_{IL1}	V_{IL1}	V_{ITL}	-5.2 V	V_{IL1}	V_{ITL}	V_{IL1}	V_{IL1}	V_{IL1}	A	A	GND	1Q	-.95		-.845		-1.1		V
		48	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	"	2Q	"		"		"		"
		49	"	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	"	"	"	"	"	1Q	"		"		"		"
		50	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		51	"	"	"	"	"	V_{ITL}	"	"	"	"	V_{ITL}	"	"	"	"	"	1Q	"		"		"		"
		52	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		53	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		54	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		55	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		56	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		57	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		59	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q	"		"		"		"
		60	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q	"		"		"		"
		61	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"		"		"
		62	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		63	"	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	"	"	"	"	"	1Q	"		"		"		"
		64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		65	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q	"		"		"		"
		66	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q	"		"		"		"
		67	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"		"		"
		68	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		69	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	"	1Q	"		"		"		"
		70	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"		"		"
		71	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		72	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		73	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		75	"	"	"	"	"	V_{IH1}	"	"	"	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		76	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		77	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITH}	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		78	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		79	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		80	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
		81	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"		"		"
		82	"	"	"	"	V_{IH1}	"	"	"		"	"	"	"	"	"	"	$2\overline{Q}$	"		"		"		"
V_{OTL}		83	"	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	"	$1\overline{Q}$		-1.6		-1.525		-1.635	"
		84	"	"	"	"	V_{IL1}	V_{IH1}		"	"	"	"	V_{IH1}	"	"	"	"	$2\overline{Q}$		"		"		"	"
		85	"	"	"	V_{ITH}		V_{IL1}	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	1Q		"		"		"	"
		86	"	"	"	V_{ITH}	"		"	"	"	"	"		V_{ITH}	"	"	"	2Q		"		"		"	"
		87	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"		"		"	"
		88	"	"	"		"	"	"	"	"	"	"	"		"	"	"	2Q		"		"		"	"
		89	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	1Q		"		"		"	"
		90	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	2Q		"		"		"	"
		91	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	$1\overline{Q}$		"		"		"	"
		92	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	$2\overline{Q}$		"		"		"	"
		93	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"		"		"	"
		94	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$2\overline{Q}$		"		"		"	"

TABLE III. Group A inspection for device type 04 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 $T_C = 25°C$		Subgroup 2 $T_C = 125°C$		Subgroup 3 $T_C = -55°C$		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
V_{OTL}		95	GND	A	A	V_{ITL}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{ITL}	A	A	GND	$1\overline{Q}$		-1.6		-1.525		-1.635	V
		96	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"		"		"	"
		97	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	1Q		"		"		"	"
		98	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	2Q		"		"		"	"
		99	"	"	"	V_{IL1}	"	V_{ITH}	"	"	"	"	V_{ITH}	"	V_{IL1}	"	"	"	1Q		"		"		"	"
		100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		101	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	1Q		"		"		"	"
		102	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	2Q		"		"		"	"
		103	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		104	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		105	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		106	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		107	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		108	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		109	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		110	"	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		111	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		112	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		113	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	1Q		"		"		"	"
		114	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	2Q		"		"		"	"
		115	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		116	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		117	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	"	1Q		"		"		"	"
		118	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		119	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		120	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		121	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		122	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		123	"	"	"	"	V_{IL1}	"	V_{IL1}	"	"	V_{IL1}	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		124	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		125	"	"	"	"	"	V_{ITL}	"	"	"	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		126	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		127	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		128	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q		"		"		"	"
		129	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		130	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		131	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	1Q		"		"		"	"
		132	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	2Q		"		"		"	"
		133	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		134	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		135	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		136	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		137	"	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		138	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		139	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		140	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"
		141	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"		"		"	"
		142	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"		"		"	"

TABLE III. Group A inspection for device type 04 - Continued.

Symbol	MIL-STD-883 method	For terminal conditions see table IIIA																	Measured terminal	Test limits						Units
		Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4								
		Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	Min	Max	Min	Max	
		Test no.	V_{CC1}	1Q	1Q̄	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	2Q̄	2Q	V_{CC2}								
V_{OTL}		143	GND	A	A	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	-5.2 V		V_{IH1}	V_{IL1}	V_{IL1}	V_{IL1}	A	A	GND	1Q̄		-1.6		-1.525		-1.635	V
		144	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	2Q̄		"		"		"	"
		145	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		146	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q		"		"		"	"
		147	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		148	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	2Q		"		"		"	"
		149	"	"	"	"	"	V_{IH1}	"	"	"	"	V_{IH1}	"	"	"	"	"	1Q		"		"		"	"
		150	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		151	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	"	1Q		"		"		"	"
		152	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"		"		"	"
		153	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		154	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q		"		"		"	"
		155	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"		"		"	"
		156	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	2Q		"		"		"	"
I_{EE}	3005	157	"							"								"	V_{EE}	-68		-75		-75		mA
I_{IH1}	3010	158	"					V_{IH1}		"								"	1K		265		450		450	μA
	"	159	"						V_{IH1}	"								"	1J		"		"		"	"
	"	160	"							"	V_{IH1}							"	C		"		"		"	"
	"	161	"							"		V_{IH1}						"	2J		"		"		"	"
	"	162	"							"			V_{IH1}					"	2K		"		"		"	"
I_{IH2}	"	163	"			V_{IH1}				"								"	1CLR		390		665		665	"
	"	164	"				V_{IH1}			"								"	1P/S		"		"		"	"
	"	165	"							"				V_{IH1}				"	2P/S		"		"		"	"
	"	166	"							"					V_{IH1}			"	2CLR		"		"		"	"
I_{IL}	3009	167	"					V_{IL1}		"								"	1K	0.5		0.3		0.5		"
	"	168	"						V_{IL1}	"								"	1J	"		"		"		"
	"	169	"							"	V_{IL1}							"	C	"		"		"		"
	"	170	"							"		V_{IL1}						"	2J	"		"		"		"
	"	171	"							"			V_{IL1}					"	2K	"		"		"		"
	"	172	"			V_{IL1}				"								"	1CLR	"		"		"		"
	"	173	"				V_{IL1}			"								"	1P/S	"		"		"		"
	"	174	"							"				V_{IL1}				"	2P/S	"		"		"		"
	"	175	"							"					V_{IL1}			"	2CLR	"		"		"		"

TABLE III. Group A inspection for d   pe 04 - Continued.

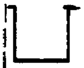
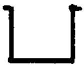
Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits						
		Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		Units
		Case Z	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20								
		Test no.	V_{CC1}	1Q	1$\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	2$\overline{Q}$	2Q	V_{CC2}		Min	Max	Min	Max	Min	Max	
f_{MAX}	Fig 11	176	2.0 V	OUT	B			V_{IL2}	V_{IL2}	-3.2 V	IN	V_{IL2}	V_{IL2}			B	B	2.0 V	1Q	62.5		57.5		52.5		MHz
	Fig 11	177	"	B	"			V_{IL2}	V_{IL2}	"	IN	V_{IL2}	V_{IL2}			"	OUT	"	2Q	62.5		57.5		52.5		MHz
[illegible]	Fig 12	178	"	OUT	"		IN	V_{IH2}	V_{IH2}	"		V_{IH2}	V_{IH2}			"	B	"	1Q	1.1	4.5	1.0	5.3	1.0	4.3	ns
	"	179	"	B	OUT	IN				"						"	B	"	1$\overline{Q}$	"	"	"	"	"	"	"
		180	"	"	B			"	"	"		"	"	IN		"	OUT	"	2Q	"	"	"	"	"	"	"
	"	181	"	"	B			"	"	"		"	"		IN	OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
[illegible]	Fig 13	182	"	OUT	B	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	"	IN	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	B	"	"	1Q	"	"	"	"	"	"	"
	"	183	"	B	OUT	"	"	"	"	"	"	"	"	"	"	"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	184	"	"	B	"	"	"	"	"	"	"	"	"	"	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	185	"	"	"					"	"					OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
[illegible]	Fig 12	186	"	OUT	"	IN		V_{IH2}	V_{IH2}	"		V_{IH2}	V_{IH2}			B	"	"	1Q	"	"	"	"	"	"	"
	"	187	"	B	OUT		IN			"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
		188	"	"				"	"	"		"	"		IN	"	OUT	"	2Q	"	"	"	"	"	"	"
		189	"	"				"	"	"		"	"	IN		OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	
[illegible]	Fig 13	190	"	OUT	"	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	"	IN	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	B	"	"	1Q	"	"	"	"	"	"	"
	"	191	"	B	OUT	"	"	"	"	"	"	"	"	"	"	"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	192	"	"	B	"	"	"	"	"	"	"	"	"	"	"	OUT	"	2Q	"	"	"	"	"	"	"
		193	"	"	"					"	"					OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PLH1}	Fig 12	194	"	OUT	"		IN	V_{IH2}	V_{IH2}	"		V_{IH2}	V_{IH2}			B	"	"	1Q	1.01	5.0	"	5.9	"	5.4	"
	"	195	"	B	OUT	IN				"						"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	196	"	"	B			"	"	"		"	"	IN		"	OUT	"	2Q	"	"	"	"	"	"	"
		197	"	"	"			"	"	"		"	"		IN	OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PHL1}	"	198	"	OUT	"	IN		"	"	"		"	"			B	"	"	1Q	"	"	"	"	"	"	"
	"	199	"	B	OUT		IN	"	"	"		"	"			"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	200	"	"	B			"	"	"		"	"		IN	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	201	"	"	"			"	"	"		"	"	IN		OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PLH2}	Fig 13	202	"	OUT	"	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	"	IN	V_{IL2}	V_{IL2}	V_{IL2}	V_{IL2}	B	"	"	1Q	1.0	4.5	"	5.3	"	4.8	"
	"	203	"	B	OUT	"	"	"	"	"	"	"	"	"	"	"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	204	"	"	B	"	"	"	"	"	"	"	"	"	"	"	OUT	"	2Q	"	"	"	"	"	"	"
	"	205	"	"	"					"	"					OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"
t_{PHL2}	"	205	"	OUT	"	"	"	"	"	"	"	"	"	"	"	B	"	"	1Q	"	"	"	"	"	"	"
	"	207	"	B	OUT	"	"	"	"	"	"	"	"	"	"	"	"	"	1$\overline{Q}$	"	"	"	"	"	"	"
	"	208	"	"	B	"	"	"	"	"	"	"	"	"	"	"	OUT	"	2Q	"	"	"	"	"	"	"
		209	"	"	B	"	"	"	"	"	"	"	"	"	"	OUT	B	"	2$\overline{Q}$	"	"	"	"	"	"	"

4.4.4 Group D inspection. Group D inspection shall be in accordance with table IV of method 5005 of MIL-STD-883. End-point electrical parameters shall be as specified in table II herein.

4.5 Methods of inspection. Methods of inspection shall be specified as follows:

4.5.1 Voltage and current. All voltages given are referenced to the microcircuit ground terminal. Currents given are conventional and positive when flowing into the referenced terminal.

TABLE IIIA. Test conditions for all devices, group A inspection.

Symbol	V_{IH1} (V)	V_{IL1} (V)	V_{IH2} (V)	V_{IL2} (V)	V_{ITL} (V)	V_{ITH} (V)	A	B	C t > 1 µs	D t > 1 µs	E t > 1 µs
T_C = 25°C	-.780	-1.850	+1.11	+0.31	-1.475	-1.105	100Ω to -2 V	100Ω to GND	 V_{IH} V_{IL}	 V_{IH} V_{ITH}	 V_{IH} V_{ITL}
T_C = 125°C	-.630	-1.82	+1.24	+0.36	-1.40	-1.0	100Ω to -2 V	100Ω to GND	 V_{IH} V_{IL}	 V_{IH} V_{ITH}	 V_{IH} V_{ITL}
T_C = -55°C	-.880	-1.92	+1.01	+0.28	-1.51	-1.255	100Ω to -2 V	100Ω to GND	 V_{IH} V_{IL}	 V_{IH} V_{ITH}	 V_{IH} V_{ITL}

5. PACKAGING

5.1 Packaging. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Ordering data. The acquisition document should specify the following:

a. Complete part number (see 1.2).

b. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

c. Requirement for certificate of compliance, if applicable.

d. Requirements for notification of change of product or process to contracting activity in addition to notification to qualifying activity, if applicable.

e. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.

f. Requirements for product assurance options.

g. Requirements for special carriers, lead lengths or lead forming, if applicable. These requirements shall not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.

h. Requirement for "JAN" marking.

6.3 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510, MIL-STD-1331 and as follows:

GND - - - - - - - - - - - - - Ground zero voltage potential.

V_{OTH}- - - - - - - - - - - - High-level threshold output voltage.

V_{OTL}- - - - - - - - - - - - Low-level threshold output voltage.

V_{ITH}- - - - - - - - - - - - High-level threshold input voltage.

V_{ITL}- - - - - - - - - - - - Low-level threshold input voltage.

V_{EEL}- - - - - - - - - - - - Shifted power supply voltage for the purpose of ac testing.

T_J- - - - - - - - - - - - - Circuit junction temperature.

T_C- - - - - - - - - - - - - Case operating temperature.

P_D- - - - - - - - - - - - - Circuit power dissipation.

θ_{JC} - - - - - - - - - - - - - Junction to case thermal resistance.

6.4 Logistic support. Lead materials and finishes (see 3.3), are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish C (see 3.3). Longer length leads and lead forming shall not affect the part number.

5 Substitutability. Microcircuits covered by this specification will replace following commercial device types:

Device type	Commercial type
01	10531
02	10631
03	10576
04	10535

6.6 Test limit compensation examples.

a. A device which has a power dissipation of 100 mW in case F is to be tested under a zero airflow condition. On figure 16, ΔT_J between 500 linear ft/min and zero airflow is +4°C. In order to adjust the various parameter limits, use figure 17 which defines the limit adjustment coefficients for ΔT_J. To adjust V_{OH}(max) at -55°C, use the +ΔT_J column of the -55°C portion of figure 17 and locate the coefficient corresponding to V_{OH}(max). This value is 1.25 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the -55°C V_{OH}(max) limit from table III.

$$V_{OH}(\text{max}) \text{ (adjusted limit)} = (+4^\circ\text{C}) \times (1.25 \text{ mV}/^\circ\text{C}) + (-880 \text{ mV})$$

$$= 5 \text{ mV} - 880 \text{ mV} = -875 \text{ mV}$$

Use - 875 mV

Follow the same procedure to adjust the remaining parameters at -55°C as well as all parameters at 25°C and 125°C.

b. A device with a power dissipation of 150 mW in case E is to be tested at an airflow of 200 linear ft/min and the 25°C testing is to be accomplished at an ambient temperature of +20°C. On figure 15 ΔT_J due to airflow is +3°C. The ΔT_J due to ambient temperature change is -5°C (25-20). Therefore the total $\Delta T_J = -5 + 3 = -2$°C. Using figure 17 find the 25°C, $-\Delta T_J$ column. To adjust the V_{OL} (max) for a negative ΔT_J, this value is 0.44 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the +25°C V_{OL} (max) limit from table III.

$$V_{OL} \text{ (max) (adjusted limit)} = (-2^\circ\text{C}) \times (0.44 \text{ mV}/^\circ\text{C}) + (-1620 \text{ mV})$$

$$= -.88 \text{ mV} - 1620 \text{ mV} = -1620.88 \text{ mV}$$

$$\text{Use } - 1621 \text{ mV}$$

Follow the same procedure to adjust the remaining parameters at +25°C.

Custodians:
Army - ER
Navy - EC
Air Force - 17

Review activities:
Army - AR, MI
Navy - OS, SH
Air Force - 11, 19, 85, 99
DLA - ES

User activities:
Army - SM
Navy - AS, CG, MC

Agent:
DLA - ES

Preparing activity:
Air Force - 17

(Project 5962-0784-2)