



**MOTOROLA  
INTEGRATED CIRCUITS**  
500 Series  
400 Series

TTL I integrated circuits comprise a family of transistor-transistor logic designed for general purpose digital applications. The family has a medium operating speed (20 MHz clock rate), good external noise immunity, high fan out, and the capability of driving lines up to 600 pF capacitance.

**MAXIMUM RATINGS**

Rating	Value	Unit
Supply Voltage - Continuous	+8.0	Vdc
Supply Operating Voltage Range	4.5 to 6.0	Vdc
Input Voltage - $V_{in}$	+5.5	Vdc
Output Voltage - $V_{out}$	+5.5	Vdc
Operating Temperature Range	-55 to +125	°C
Storage Temperature Range	-65 to +150	°C
Thermal Resistance - Junction to Case ( $q_{JC}$ )	0.09	°C/mW
Thermal Resistance - Junction to Ambient ( $q_{JA}$ )	0.26	°C/mW

**TTL**

**PACKAGING AVAILABLE**

(See page 88):

**C - 14-LEAD DUAL INLINE    A - 14-LEAD FLAT PACK**

**FUNCTIONS AND  
CHARACTERISTICS**

FUNCTION	TYPE/PKG	LOADING FACTOR EACH OUTPUT	PROPAGATION DELAY ns typ	POWER DISSIPATION mW typ/pkg
Dual 4-Input NAND Gate	500/C,A 550/C,A	15 7	10	30
Expandable 4-wide 2-2-2-3-Input AND-OR-INVERT Gate	501/C,A 551/C,A	15 7	12	30
8-Input NAND Gate	502/C,A 552/C,A	15 7	12	15
2-Wide 3-Input AND-OR-INVERT Gate with Gated Complement	503/C,A 553/C,A	15 7	11	35
Expandable 3-Wide 3-Input AND-OR-INVERT Gate	504/C,A 554/C,A	15 7	12	25
Expandable 2-Wide 4-Input AND-OR-INVERT Gate	505/C,A 555/C,A	15 7	12	20
Expandable 8-Input NAND Gate	506/C,A 556/C,A	15 7	18	15
Line Driver	507/C,A 557/C,A	15 7	25@ 1000 pF Load	60
Quad 2-Input NAND Gate	508/C,A 558/C,A	15 7	10	60

**TTL I FUNCTIONS AND CHARACTERISTICS (continued)**

FUNCTION	TYPE/PKG	LOADING FACTOR EACH OUTPUT	PROPAGATION DELAY ns typ	POWER DISSIPATION mW typ/pkg
4-Wide 3-2-2-3-Input Expander for AND-OR-INVERT Gates	509/C,A 559/C,A	15 7	—	—
Dual 4-Input Expander for AND-OR-INVERT Gates	510/C,A 560/C,A	15 7	—	—
Dual 4-Input Expander for NAND Gates	511/C,A 561/C,A	15 7	—	—
Triple 3-Input NAND Gate	512/C,A 562/C,A	15 7	10	45
R-S Flip-Flop	513/C,A 563/C,A	15 7	t <sub>on</sub> = 15 t <sub>off</sub> = 20	30
Gated R-S Flip-Flop	514/C,A 564/C,A	15 7	t <sub>on</sub> = 7.5 t <sub>off</sub> = 20	30
AND J-K Flip-Flop	515/C,A 565/C,A	15 7	t <sub>on</sub> = 25 t <sub>off</sub> = 13	40
OR J-K Flip-Flop	516/C,A 566/C,A	15 7	t <sub>on</sub> = 25 t <sub>off</sub> = 13	50
Triple 2-Input Bus Driver	519/C,A 569/C,A	—	50/15	54
Expandable Dual 2-Wide 2-Input AND-OR-INVERT Gate	520/C,A 570/C,A	15 7	12	40
AC Coupled R-S Flip-Flop	521/C,A 571/C,A	15 7	18	30
Dual Type D Flip-Flop	522/C,A 572/C,A	15 7	16	84
Dual J-K Flip-Flop (Separate Clock)	523/C,A 573/C,A	16 8	t <sub>on</sub> = 12 t <sub>off</sub> = 10	110
Dual J-K Flip-Flop (Common Clock)	524/C,A 574/C,A	16 8	t <sub>on</sub> = 12 t <sub>off</sub> = 10	110
Hex Inverter	525/C,A 575/C,A	15 7	10	90
Dual 3-Input Pulse Shaper/Delay AND Gate	526/C,A 576/C,A	16 8	15	60
OR Expandable Dual 4-Input AND Gate	527/C,A 577/C,A	15 7	10	38
Dual 2-Wide 2-3-Input OR Expander	528/C,A 578/C,A	—	—	15
Hex Inverter	529/C,A 579/C,A	15 7	10	90

# PACKAGING INFORMATION

## Per MIL-M-38510 Package Case Outline

All of Lansdale's products come in one of the following configurations. On each of the product pages in the catalog, there is a package box. The letters in that box correspond to one of the letters below. This is a guide to how the product is available.

LETTER	DESIGNATION	DESCRIPTION
A	F-1	14-LEAD FP (1/4" X 1/4")
B	F-3	14-LEAD FP (3/16" X 1/4")
C*	D-1	14-LEAD DIP (1/4" X 3/4")
D*	F-2	14-LEAD FP (1/4" X 3/8")
E*	D-2	16-LEAD DIP (1/4" X 7/8")
F*	F-5	16-LEAD FP (1/4" X 3/8")
G	A-1	8-LEAD CAN
H*	F-4	10-LEAD FP (1/4" X 1/4")
I*	A-2	10-LEAD CAN
J*	D-3	24-LEAD DIP (1/2" X 1 1/4")
K*	F-6	24-LEAD FP (3/8" X 5/8")
L	D-9	24-LEAD DIP (1/4" X 1 1/4")
M	A-3	12-LEAD CAN
P	D-4	8-LEAD DIP (1/4" X 3/8")
Q	D-5	40-LEAD DIP (9/16" X 2 1/16")
R	D-8	20-LEAD DIP (1/4" X 1 1/16")
S	F-9	20-LEAD FP (1/4" X 1/2")
V	D-6	18-LEAD DIP (1/4" X 15/16")
W	D-7	22-LEAD DIP (3/8" X 1 1/8")

**FP (flat pack)**  
**DIP (dual inline)**  
**CAN (metal can)**

\* **LANSDALE STANDARD PACKAGES**

**CONTACT FACTORY FOR OTHER PACKAGE QUOTES**