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
Maximum Junction Temperature	+175	°C
Thermal Resistance - Junction to Case (θ_{JC})	0.09	°C/mW
Thermal Resistance - Junction to Ambient (θ_{JA})	0.26	°C/mW

PACKAGING AVAILABLE
(See page 52):
C - 14-LEAD DUAL INLINE A - 14-LEAD FLAT PACK

FUNCTIONS AND CHARACTERISTICS

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

TTL I FUNCTIONS AND CHARACTERISTICS (continued)

FUNCTION	TYPE	LOADING FACTOR EACH OUTPUT	PROPAGATION DELAY ns typ	POWER DISSIPATION mW typ/pkg
Quad 2-Input NAND Gate	508 558	15 7	10	60
4-Wide 3-2-2-3-Input Expander for AND-OR-INVERT Gates	509 559	15 7	–	–
Dual 4-Input Expander for AND-OR-INVERT Gates	510 560	15 7	–	–
Dual 4-Input Expander for NAND Gates	511 561	15 7	–	–
Triple 3-Input NAND Gate	512 562	15 7	10	45
R-S Flip-Flop	513 563	15 7	t_{on} = 15 t_{off} = 20	30
Gated R-S Flip-Flop	514 564	15 7	t_{on} = 7.5 t_{off} = 20	30
AND J-K Flip-Flop	515 565	15 7	t_{on} = 25 t_{off} = 13	40
OR J-K Flip-Flop	516 566	15 7	t_{on} = 25 t_{off} = 13	50
Triple 2-Input Bus Driver	519 569	–	50/15	54
Expandable Dual 2-Wide 2-Input AND-OR-INVERT Gate	520 570	15 7	12	40
AC Coupled R-S Flip-Flop	521 571	15 7	18	30
Dual Type D Flip-Flop	522 572	15 7	16	84
Dual J-K Flip-Flop (Separate Clock)	523 573	16 8	t_{on} = 12 t_{off} = 10	110
Dual J-K Flip-Flop (Common Clock)	524 574	16 8	t_{on} = 12 t_{off} = 10	110
Hex Inverter	525 575	15 7	10	90
Dual 3-Input Pulse Shaper/Delay AND Gate	526 576	16 8	15	60
OR Expandable Dual 4-Input AND Gate	527 577	15 7	10	38
Dual 2-Wide 2-3-Input OR Expander	528 578	–	–	15
Hex Inverter	529 579	15 7	10	90

PACKAGING INFORMATION

Per MIL-M-38510 Package Case Outline

Lansdale's products come in 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 provides a description of the packages.

LETTER	DESIGNATION	DESCRIPTION
A *	F-1	14-LEAD FLAT PACK (1/4" X 1/4")
B	F-3	14-LEAD FLAT PACK (3/16" X 1/4")
C *	D-1	14-LEAD DUAL INLINE (1/4" X 3/4")
D *	F-2	14-LEAD FLAT PACK (1/4" X 3/8")
E *	D-2	16-LEAD DUAL INLINE (1/4" X 7/8")
F *	F-5	16-LEAD FLAT PACK (1/4" X 3/8")
G	A-1	8-LEAD CAN
H *	F-4	10-LEAD FLAT PACK (1/4" X 1/4")
I *	A-2	10-LEAD CAN
J *	D-3	24-LEAD DUAL INLINE (1/2" X 1 1/4")
K *	F-6	24-LEAD FLAT PACK (3/8" X 5/8")
L	D-9	24-LEAD DUAL INLINE (1/4" X 1 1/4")
M *	A-3	12-LEAD CAN
P	D-4	8-LEAD DUAL INLINE (1/4" X 3/8")
Q *	D-5	40-LEAD DUAL INLINE (9/16" X 2 1/16")
R *	D-8	20-LEAD DUAL INLINE (1/4" X 1 1/16")
S	F-9	20-LEAD FLAT PACK (1/4" X 1/2")
V	D-6	18-LEAD DUAL INLINE (1/4" X 15/16")
W	D-7	22-LEAD DUAL INLINE (3/8" X 1 1/8")
Y *	D-10	28-LEAD DUAL INLINE (1/2" X 1 1/2")

** LANSDALE STANDARD PACKAGES*

CONTACT FACTORY FOR OTHER PACKAGE QUOTES