



**MOTOROLA  
INTEGRATED CIRCUITS**

3100 Series  
3000 Series

TTL III integrated circuits comprise a family of transistor-transistor logic designed for general purpose digital applications. The family has a high operating speed (30-50 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 Operating Voltage Range - $V_{CC}$	4.5 to 5.5	Vdc
Input Voltage - $V_{in}$	+5.5	Vdc
Output Voltage - $V_{out}$	+5.5	Vdc
Operating Temperature Range	-55 to +125	°C

**PACKAGING AVAILABLE**

(See page 88):

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

**TTL III**

**FUNCTIONS AND  
CHARACTERISTICS**

FUNCTION	TYPE/PKG	OUTPUT LOADING FACTOR	PROPAGATION DELAY $t_{pd}$ ns typ	POWER DISSIPATION mW typ/pkg
Quad 2-Input NAND Gate	3100/C,A	10	6.0	88
Quad 2-Input AND Gate	3101/C,A	10	9.0	112
Quad 2-Input NOR Gate	3102/C,A	10	6.0	122
Quad 2-Input OR Gate	3103/C,A	10	9.0	150
Quad 2-Input NAND Gate (O. C.)	3104/C,A	10	8.0	88
Triple 3-Input NAND Gate	3105/C,A	10	6.0	66
Triple 3-Input AND Gate	3106/C,A	10	9.0	84
Triple 3-Input NAND Gate (O. C.)	3107/C,A	10	8.0	66
Hex Inverter	3108/C,A	10	6.0	140
Hex Inverter	3109/C,A	10	8.0	90
Dual 4-Input NAND Gate	3110/C,A	10	6.0	44
Dual 4-Input AND Gate	3111/C,A	10	9.0	56
Dual 4-Input NAND Gate (O. C.)	3112/C,A	10	8.0	44
8-Input NAND Gate	3115/C,A	10	8.0	22
8-Input NAND Gate	3116/C,A	10	8.0	22
4-Wide 3-2-2-3 Input Expander for A.O.I. Gates	3118/C,A	—	—	40
Triple 3-Input Expander for AND-OR Gates	3119/C,A	—	—	25

# TTL III FUNCTIONS AND CHARACTERISTICS (continued)

FUNCTION	TYPE/PKG	OUTPUT LOADING FACTOR	PROPAGATION DELAY $t_{pd}$ ns typ	POWER DISSIPATION mW typ/pkg
Expandable Dual 2-Wide 2-Input A.O.I. Gate	3120/C,A	10	6.0	62.5
Quad 2-Input Exclusive OR Gate	3121/C,A	8	14	100
Quad 2-Input Exclusive NOR Gate	3122/C,A	8	14	85
Dual 2-Wide 2-Input AND-OR-INVERT Gate	3123/C,A	10	6.0	62.5
Dual 4-Input NAND Buffer Gate	3124/C,A	30	6.0	90
Dual 4-Input NAND Power Gate	3125/C,A	20	6.0	70
Dual 4-Input AND Power Gate	3126/C,A	20	9.0	90
Dual 3-Input 3-Output AND Series Terminated Line Driver	3128/C,A	*	9.0	56
Dual 3-Input 3-Output NAND Series Terminated Line Driver	3129/C,A	*	6.0	44
Dual 4-Input Expander for AND-OR-INVERT Gates	3130/C,A	10	1.0	15
Expandable 4-Wide 2-2-2-3 Input A.O.I. Gate	3131/C,A	10	10	87.5
Expandable 4-Wide 2-2-2-3 Input A.O.I. Gate	3132/C,A	10	7.0	40
4-Wide 2-2-2-3 Input AND-OR-INVERT Gate	3133/C,A	10	7.0	40
Expandable 2-Wide 4-Input AND-OR-INVERT Gate	3134/C,A	10	7.0	30
AND J-K Flip-Flop	3150/C,A	10	f = 40 MHz <sup>1</sup>	50
AND J-K Flip-Flop	3151/C,A	10	f = 50 MHz <sup>1</sup>	50
AND Input JJ-KK Flip-Flop	3152/C,A	10	f = 40 MHz <sup>1</sup>	75
Double Edge-Triggered Master-Slave Type D Flip-Flop	3153/C,A	10	—	100
OR Input J-K Flip-Flop	3154/C,A	10	20	95
AND Input J-K Flip-Flop	3155/C,A	10	10	80
Dual Type D Flip-Flop	3160/C,A	10	f = 30 MHz <sup>1</sup>	120
Dual J-K Flip-Flop	3161/C,A	10	f = 50 MHz <sup>1</sup>	100
Dual J-K Flip-Flop	3162/C,A	10	f = 50 MHz <sup>1</sup>	100
Dual J-K Flip-Flop	3163/C,A	10	10	176
Dual Type D Edge-Triggered Flip-Flop	3164/C,A	—	—	—

\* Direct Output = 10 minus the number of resistor-terminated outputs being used.

<sup>1</sup> Toggle Frequency in MHz

# 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**