



**MOTOROLA INTEGRATED CIRCUITS**

5400 Series  
7400 Series

The 5400/7400 series of transistor-transistor logic is a medium-speed, high noise immunity family of saturating integrated logic circuits designed for general digital logic applications requiring clock frequencies to 30 MHz and switching speeds in the 12-15 ns range under moderate capacitive loading.

**MAXIMUM RATINGS**

T-43-01

Rating	Value	Unit
Supply Voltage - $V_{CC}$	+7.0	Vdc
Supply Operating Voltage Range	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
Storage Temperature Range	-65 to +150	°C

**PACKAGING AVAILABLE**

(See page 52):

C - 14-LEAD DUAL INLINE      A - 14-LEAD FLAT PACK  
E - 16-LEAD DUAL INLINE      F - 16-LEAD FLAT PACK  
J - 24-LEAD DUAL INLINE      K - 24-LEAD FLAT PACK

**FUNCTIONS AND CHARACTERISTICS**

FUNCTION	TYPE/PKG	LOADING FACTOR EACH OUTPUT	POWER DISSIPATION mW typ/pkg
Quad 2-Input NAND Gate	5400/C,A	10	40
Quad 2-Input NAND Gate (O.C.)	5401/C,A	10	40
Quad 2-Input NOR Gate	5402/C,A	10	40
Quad 2-Input NAND Gate (O.C.)	5403/C,A	10	40
Hex Inverter	5404/C,A	10	60
Hex Inverter (O.C. Output)	5405/C,A	10	60
Hex Inverter Buffer/Driver (O.C. Output)	5406/C,A	-	-
Hex Buffer/Driver (O.C. Output)	5407/C,A	-	-
Quad 2-Input AND Gate	5408/C,A	-	-
Quad 2-Input AND Gate (O.C. Output)	5409/C,A	-	-
Triple 3-Input NAND Gate	5410/C,A	10	30
Triple 3-Input NAND Gate	5412/C,A	-	-
Dual 4-Input NAND Schmitt Trigger	5413/C,A	-	-
Hex Schmitt Trigger/Inverter	5414/C,A	-	-
Hex Inverter Buffer/Driver (O.C.)	5416/C,A	-	-
Hex Buffer/Driver	5417/C,A	-	-
Dual 4-Input NAND Gate	5420/C,A	10	20
Expandable Dual 4-Input NOR Gate	5423/E,F	-	-
Dual 4-Input NOR Gate	5425/C,A	-	-
Quad 2-Input Interface NAND Gate	5426/C,A	10	40
Triple 3-Input NOR Gate	5427/C,A	-	-
Quad 2-Input NOR Buffer	5428/C,A	-	-
8-Input NAND Gate	5430/C,A	10	10
Quad 2-Input NAND Buffer	5437/C,A	-	-
Quad 2-Input NAND Buffer (O.C.)	5438/C,A	-	-
Dual 4-Input NAND Buffer	5440/C,A	30	50
BCD-to-Decimal Decoder/Driver	5441A/E,F	-	105

**TTL** FUNCTIONS AND CHARACTERISTICS (continued)

FUNCTION	TYPE/PKG	LOADING FACTOR EACH OUTPUT	POWER DISSIPATION mW typ/pkg
BCD-to-Decimal Decoder	5442/E,F	10	140
BCD-to-Decimal Decoder	5442A/E,F	10	140
Excess 3-to-Decimal Decoder	5443/E,F	10	140
Excess 3 Gray-to-Decimal Decoder	5444/E,F	10	140
BCD to 1-of-10 Decimal Decoder	5445/E,F	-	215
BCD-to-7 Segment Decoder/Driver	5446/E,F	5	265
BCD-to-7 Segment Decoder/Driver	5447/E,F	5	265
BCD-to-7 Segment Decoder/Driver	5448/E,F	5	265
BCD-to-7 Segment Decoder/Driver	5449/C,A	6	165
Expandable Dual 2-Wide 2-Input AOI Gate	5450/C,A	10	28
Dual 2-Wide 2-Input AOI Gate	5451/C,A	10	28
Expandable 4-Wide 2-Input AOI Gate	5453/C,A	10	22
4-Wide 2-Input AOI Gate	5454/C,A	10	22
Dual 4-Input Gate Expander	5460/C,A	10	8
Edge-Triggered J-K Flip-Flop	5470/C,A	10	65
J-K Master-Slave Flip-Flop	5472/C,A	10	40
Dual J-K Master-Slave Flip-Flop	5473/C,A	10	80
Dual Type D Edge-Triggered Flip-Flop	5474/C,A	10	84
Quad Bistable Latch	5475/E,F	10	160
Dual J-K Master-Slave Flip-Flop	5476/E,F	10	80
Quad Bistable Latch	5477/C,A	-	-
Dual Type D Edge-Triggered Flip-Flop	5479/C,A	10	84
Gated Full Adder	5480/C,A	10	105
16-Bit Memory	5481/C,A	-	-
4-Bit Binary Full Adder	5483/E,F	10	390
16-Bit Scratch Pad Memory Cell	5484/E,F	-	250
4-Bit Magnitude Comparator	5485/E,F	-	-
Quad 2-Input Exclusive OR Gate	5486/C,A	-	-
Decade Counter	5490/C,A	10	160
Decade Counter	5490A/C,A	10	160
8-Bit Shift Register	5491A/C,A	10	175
Divide-by-12 Counter	5492/C,A	10	160
Divide-by-12 Counter	5492A/C,A	10	160
4-Bit Binary Counter	5493/C,A	10	160
4-Bit Binary Counter	5493A/C,A	10	160
4-Bit Shift Register	5494/E,F	-	175
4-Bit Shift Register	5495/C,A	10	250
4-Bit Shift Register (Parallel Access)	5495A/C,A	10	250
5-Bit Shift Register (Parallel-In/Out)	5496/E,F	-	240
Synchronous 6-Bit Binary Rate Multiplier	5497/E,F	-	-
8-Bit Bistable Latch	54100/J,K	-	-
Dual J-K Master-Slave Flip-Flop	54107/C,A	10	80
Dual Pulse Synchronizer/Driver	54120/E,F	-	-
Monostable Multivibrator	54121/C,A	10	90
Retriggerable Monostable Multivibrator	54122/C,A	-	-
Dual Retriggerable Monostable Multivibrator	54123/E,F	-	-
Quad 2-Input NOR Buffer	54128/C,A	-	-
Quad 2-Input NAND Schmitt	54132/C,A	-	-
Quad 2-Input Exclusive OR Gate (O.C.)	54136/C,A	-	-
BCD-to-Decimal Decoder/Driver	54141/E,F	-	-
BCD to One-Of-Ten Decoder/Driver	54145/E,F	-	215
16-Channel Data Selector/Multiplexer	54150/J,K	-	200
8-Channel Data Selector/Multiplexer	54151/E,F	-	145
8-Channel Data Selector/Multiplexer	54152/C,A	-	-

**TTL** FUNCTIONS AND CHARACTERISTICS (continued)

FUNCTION	TYPE/PKG	LOADING FACTOR EACH OUTPUT	POWER DISSIPATION mW typ/pkg
Dual 4-to-1 Line Data Selector/Multiplexer	54153/E,F	-	-
4 Line to 16 Line Decoder/Demultiplexers	54154/J,K	-	-
Dual 2 to 4 Line Decoder/Demultiplexer	54155/E,F	-	-
Dual 2 to 4 Line Decoder/Demultiplexer (O.C.)	54156/E,F	-	-
Synchronous Decade Counter	54160/E,F	-	-
Synchronous 4-Bit Binary Counter	54161/E,F	-	-
Fully Synchronous Decade Counter	54162/E,F	-	-
Fully Synchronous 4-Bit Binary Counter	54163/E,F	-	-
8-Bit Shift Register	54164/C,A	-	-
8-Bit Shift Register	54164A/C,A	-	-
Parallel Load 8-Bit Shift Register	54165/E,F	-	-
8-Bit Shift Register	54166/E,F	-	-
Synchronous Decade Decimal Rate Multiplier	54167/E,F	-	-
Hex Type D Flip-Flop w/Clear	54174/E,F	-	-
Quad Type D Flip-Flop w/Clear	54175/E,F	-	-
35 MHz Presettable Decade Counter/Latch	54176/C,A	-	-
34 MHz Presettable 4-Bit Binary Counter/Latch	54177/C,A	-	-
4-Bit Shift Register	54178/C,A	-	-
4-Bit Shift Register	54179/E,F	-	-
8-Bit Odd/Even Parity Generator/Checker	54180/C,A	-	-
4-Bit ALU and Function Generator	54181/J,K	-	-
Look Ahead Carry Generator for ALU	54182/E,F	-	-
Synchronous Up/Down Decade Counter	54190/E,F	-	-
Synchronous Up/Down 4-Bit Binary Counter	54191/E,F	-	-
Synchronous Up/Down Decade Counter	54192/E,F	-	-
Synchronous Up/Down 4-Bit Binary Counter	54193/E,F	-	-
4-Bit Parallel-In/Out Bidirectional Shift Register	54194/E,F	-	-
4-Bit Parallel-In/Out Shift Register	54195/E,F	-	-
50 MHz Presettable Decade Counter/Latch	54196/C,A	-	-
50 MHz Presettable 4-Bit Binary Counter/Latch	54197/C,A	-	-
8-Bit Shift Register	54198/J,K	-	-
8-Bit Shift Register	54199/J,K	-	-
Quad S-R Latch	54279/E,F	-	-
Decade Counter	54290/C,A	-	-
4-Bit Binary Counter	54293/C,A	-	-
Quad 2-Input Multiplexer w/Storage	54298/E,F	-	-
2-Bit Full Adder	15482/C,A	-	-
2-Bit Full Adder	25482/C,A	-	-

T-90-20

## 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**