



**MOTOROLA  
INTEGRATED CIRCUITS**  
660T Series

These HTL integrated circuits are especially designed to meet the requirements of industrial applications because of their outstanding noise immunity. These circuits provide error-free operation in high noise environments far beyond the tolerance of other IC families. Multifunction packages and broad operating temperature range further tailor this device family to industrial requirements.

**MAXIMUM RATINGS**

Rating	Value	Unit
Power Supply Voltage - $V_{cc}$ Continuous Pulsed, 1.0 s	18 20	Vdc Vdc
Threshold Voltage	7.5	Vdc
Temperature Range	-55 to +125	°C
Noise Margin	6.0	Vdc

**PACKAGING AVAILABLE**

(See page 88):

**C - 14-LEAD DUAL INLINE    E - 16-LEAD DUAL INLINE**

**HTL**

**FUNCTIONS AND  
CHARACTERISTICS**

FUNCTION	TYPE/PKG	OUTPUT LOADING FACTOR	PROPAGATION DELAY ns typ	POWER DISSIPATION mW typ/pkg
Expandable Dual 4-Input NAND Gate (Active pullup)	660T/C	10	110	88/26
Expandable Dual 4-Input NAND Gate (Passive pullup)	661T/C	10	125	88/26
Expandable Dual 4-Input NAND Line Driver	662T/C	30	140	180/26
Dual J-K Flip-Flop	663T/C	9	3.0 MHz	200
Master-Slave R-S Flip-Flop	664T/C	8	3.0 MHz	160
Triple Level Translator	665T/C	DTL = 8 TTL III = 5.5 RTL = 5	40	83 — 104
Triple Level Translator	666T/C	10	75	105
Dual Monostable Multivibrator	667T/C	10	140	240
Quad 2-Input NAND Gate (Passive pullup)	668T/C	10	125	176/52
Dual 4-Input Expander	669T/C	—	—	—
Triple 3-Input NAND Gate (Passive pullup)	670T/C	10	125	132/39
Triple 3-Input NAND Gate (Active pullup)	671T/C	10	110	132/39
Quad 2-Input NAND Gate (Active pullup)	672T/C	10	110	176/52

# HTL FUNCTIONS AND CHARACTERISTICS (continued)

FUNCTION	TYPE/PKG	OUTPUT LOADING FACTOR	PROPAGATION DELAY ns typ	POWER DISSIPATION mW typ/pkg
Dual 2-Input AND-OR-INVERT Gate (Active pullup)	673T/C	10	110	160/50
Dual 2-Input AND-OR-INVERT Gate (Passive pullup)	674T/C	10	125	160/50
Dual Pulse Stretcher/Multivibrator	675T/C	10	150(pins 1,6) 110(pins 5,6)	180
BCD-To-Decimal Decoder-Driver	676T/E	—	500	380
Hex Inverter w/ Strobe (Active pullup)	677T/E	10	110	246/96
Hex Inverter w/ Strobe (w/o output resistors)	678T/E	10	125	192/96
Dual Lamp/Line Driver	679T/C	125	0.5 $\mu$ s typ	250/30
Hex Inverter (Active pullup)	680T/C	10	110	246/96
Hex Inverter (Open Collector)	681T/C	10	125	192/96
Quad Latch	682T/E	10	250	375
Quad 2-Input Exclusive OR Gate	683T/C	10	—	380
Decade Counter	684T/E	10	.5 MHz	480
Binary Counter	685T/E	10	.5 MHz	480
4-Bit Shift Register	686T/E	10	.5 MHz	480
Dual J-K Flip-Flop	688T/E	10	2.5 MHz	375
Hex Inverter (High Volume)	689T/C	10	150	173/55
Hex Inverter (Active pullup)	690T/C	10	150	173/55
Hex Inverter/Interface Element	691T/C	10	300	500/150
250 mA Quad 2-Input NAND Gate (Schmitt Trigger)	693T/E	200	400	300
Dual Interface Element, Line Driver/Receiver (Schmitt Trigger)	696T/E	10 @ 10 V $V_{CC}$ 15 @ 25 V $V_{CC}$	400	225/60
Hex Inverter (Passive pullup)	697T/C	10	125	246/96
500 mA Dual 2-Input AND Gate (Schmitt Trigger)	699*/C	400	400	450

\* This Part supplied only as  $T_A = -30^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$

# 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**