

T-68-21-51



GigaBit Logic

10G042
ADVANCE

1.5 Gbit/s 16:1 Time Division Multiplexer

SONET OC-3 to OC-24 Compatible Parallel to Serial Converter

10G PicoLogic™ Family

2

FEATURES

- DC to 1.5 GHz operation
- Programmable 4-phase differential clock +16 outputs
- Loopback data output for "on-board" AC testing with companion 10G043 1:16 DEMUX
- MUX RESET for DC testing
- Low Power Dissipation: 950mW (typ.)
- Single Power Supply (-5.2V)
- ECL compatible I/O
- Available in 68-pin leaded chip carrier or in die form

APPLICATIONS

- SONET OC-3 to OC-24 Fiber optic transmitter
- HIPPI fiber optic transmitter compatible with DEC's 8B/10B + FEC coding
- Computer-to-peripheral data communication
- High speed LAN
- High data rate word or test vector generator
- High resolution graphic display terminal
- Digital RF memory

FUNCTIONAL DESCRIPTION

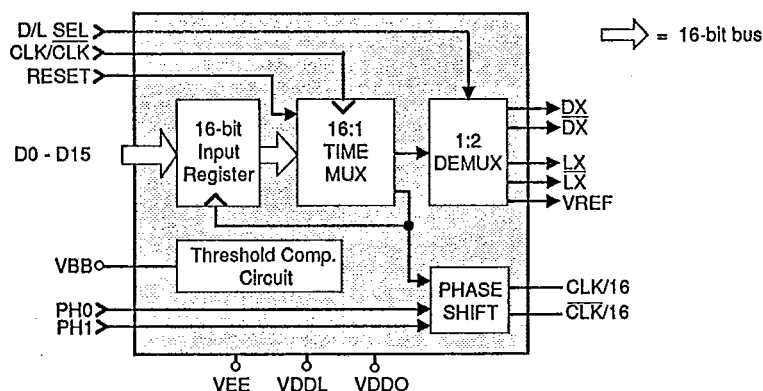
The 10G042 is a complete 16:1 time division multiplexer capable of converting parallel to serial data at rates up to 1.5 Gb/s. With its 16:1 ratio the 10G042 is ideally suited to convert two SONET OC-3 bytes in a serial OC-24 data stream or to serialize data encoded with Digital Equipment's 8B/10B + FEC code in high speed fiber optic telecom and computer datacom links, respectively.

The 10G042 16:1 multiplexer accepts 16 parallel ECL data (D0-D15) at rates up to 93.75 Mb/s. For example, two SONET OC-3 bytes would require an input data rate of 77.76 Mb/s (155.52 Mb/s ÷ 2). The parallel

data inputs are clocked into a 16-bit input register with the "on-chip" generated CLK/16. CLK/16 and CLK/16 are also provided as outputs with 4 different programmable phases for easy timing interface with the protocol encoder IC driving the 10G042.

The 10G042 features selectable loopback differential outputs (LX and LX) for "on-board" electrical AC testing with companion 10G043 1:16 DEMUX and a MUX RESET for DC testing. It also provides an output data threshold (VREF) for optimum interfacing to a laser diode driver.

10G042 BLOCK DIAGRAM

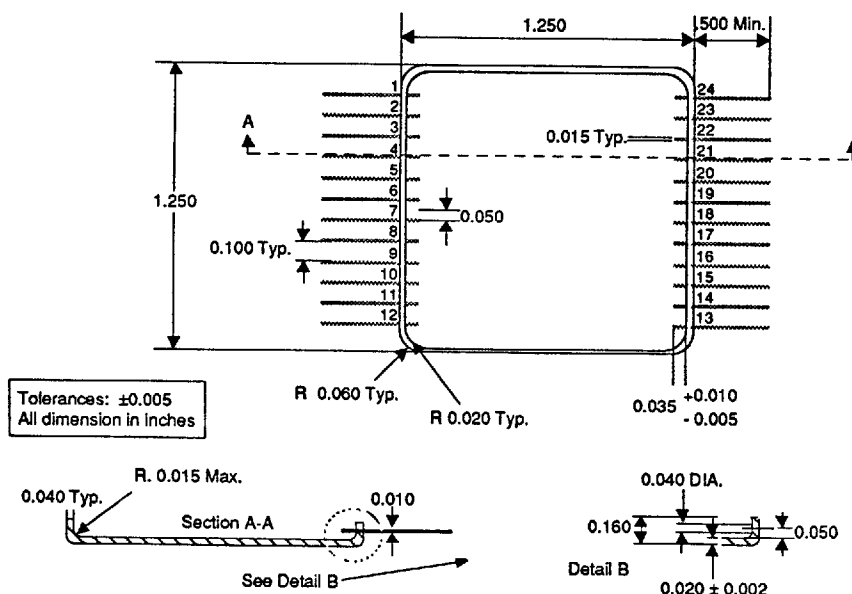


T-90-20

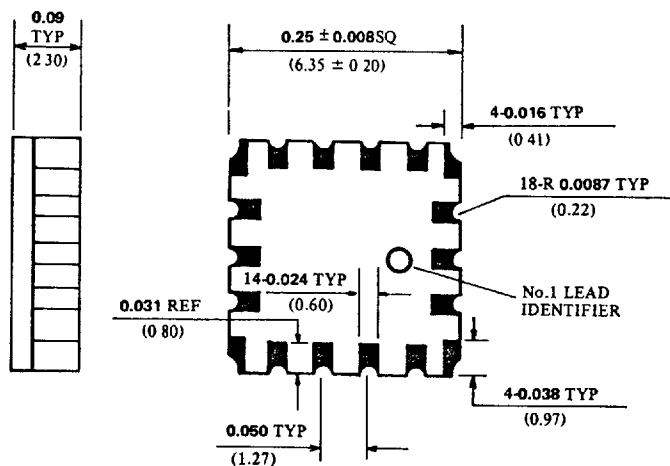


24 PIN METAL FLATPACK 18 PIN PACKAGE

24 PIN METAL FLATPACK Type H



18 PIN LEADLESS CHIP CARRIER TYPE L1



All dimensions shown in inches and (millimeters)

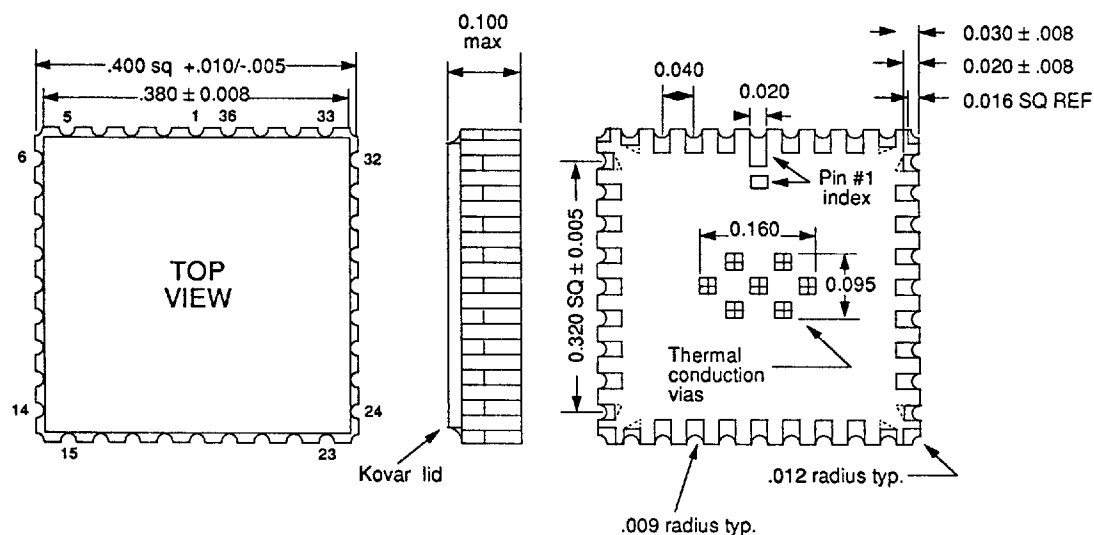
T-90-20



GigaBit Logic

36 PIN PACKAGES

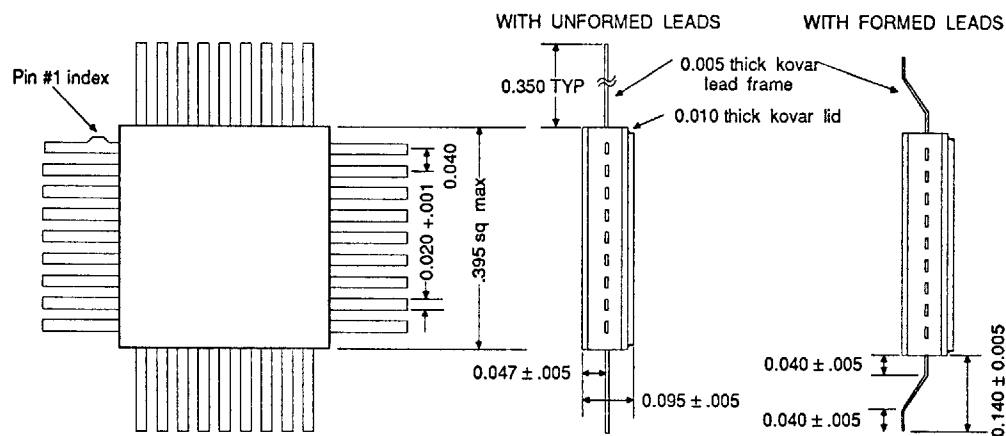
36 PIN LEADLESS CHIP CARRIER TYPE L36



NOTES:

- 1) The package bottom thermal vias, top lid surface and 4 metallized corner castellations (when present) are all at Vss potential.
- 2) All dimensions in inches.
- 3) Pin #1 identifier may be an elongated pad or small, square gray marker.

36 I/O LEAD FLATPACK TYPE F

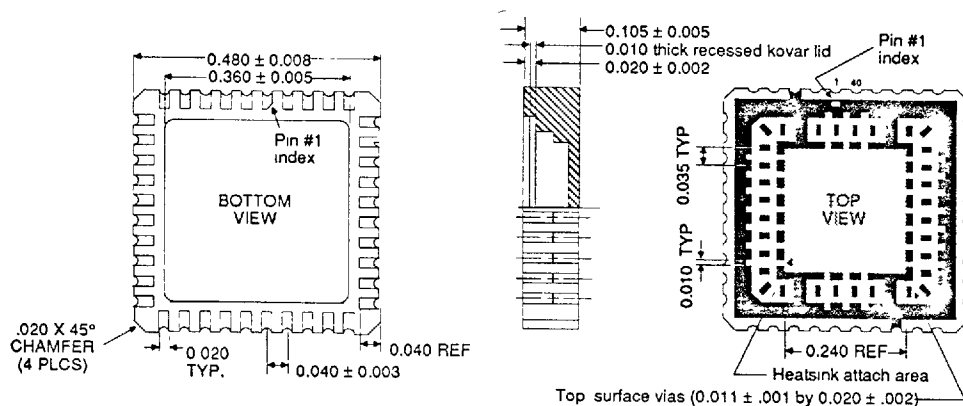




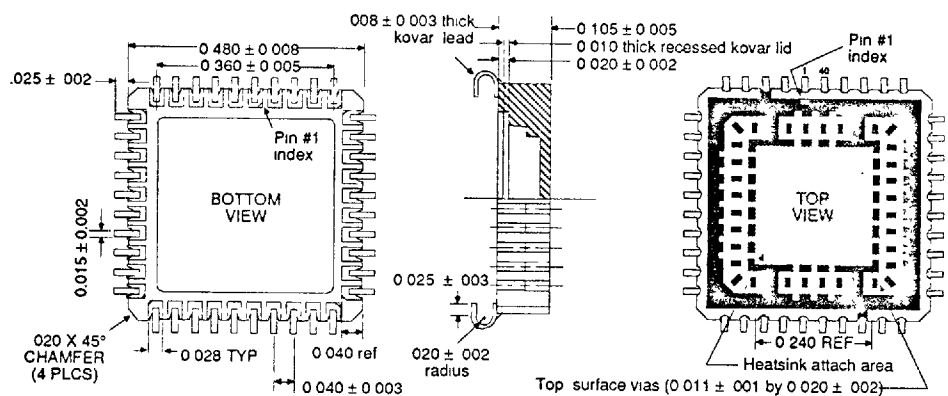
GigaBit Logic

T-90-20
40 PIN PACKAGES

40 PIN LEADLESS CHIP CARRIER TYPE L



40 PIN LEADED CHIP CARRIER TYPE C

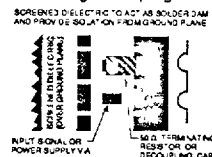


NOTES

- (1) Footprint is JEDEC standard outline
- (2) Top surface vias (for terminating resistors and decoupling capacitors) are not available on pins 3, 4, 17, 18, 23, 24, 37, and 38
- (3) Top surface metal (not including vias) and pins 3 and 23 are fixed at VTT potential
- (4) Recommended top surface chip resistors are 0.040 long by 0.020 wide by 0.010 thick typ. 100 mw min. nominal power rating (Mini-Systems MSR 21 or equivalent)
- (5) Recommended top surface chip capacitors are 0.040 long by 0.030 wide by 0.020 thick typ. 25V VCCW 1000 of min. (Johnson R09, case or equivalent)
- (6) Recommended heat/sinks are GBL P/Ns 90GHS 40 A and 90GHS 40 B
- (7) Thermally conductive, electrically non-conductive epoxy is recommended for heatsink attachment (Ablestick 789 4 or 561K, or Thermalloy Thermalbond™ or equivalent)
- (8) L40 and C40 packages are dimensionally identical except for contact finger width

TOP SURFACE LEGEND	
Metalized Ceramic	
Screened Dielectric	
Bare Ceramic	

Top Surface Terminating/Decoupling Detail

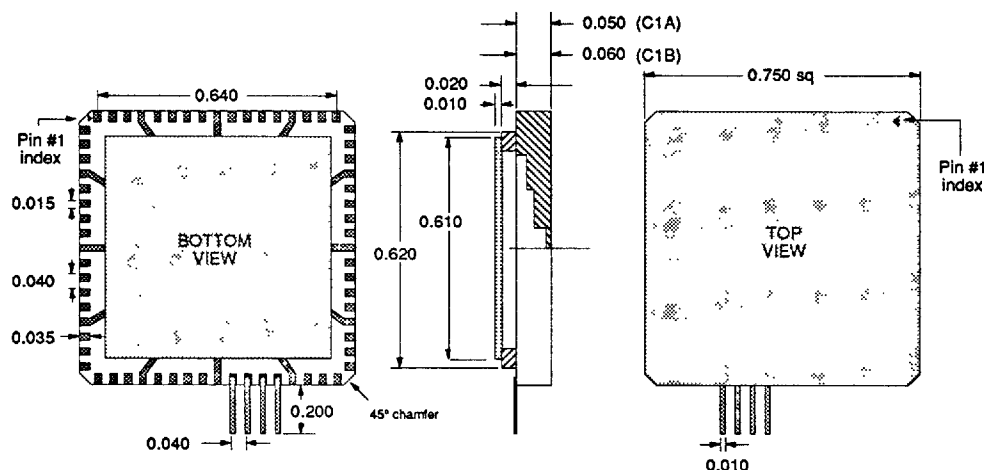




GigaBit Logic

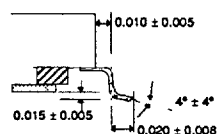
T-90-20
68 & 132 PIN
PACKAGES

68 PIN LEADED CHIP CARRIER TYPE C1



1. All dimensions in inches.
2. C1A PACKAGE: Package lid, top, and pins 4, 9, 14, 21, 26, 31, 38, 43, 48, 55, 60, 65 are at common potential (system ground).
3. C1B PACKAGE: Package lid and pins 4, 9, 14, 21, 26, 31, 38, 43, 48, 55, 60, 65 are at common potential (system ground).
4. Tolerance on all dimensions is $\pm 1\%$ but not larger than ± 0.005 . Tolerance on 0.640 end pad to end pad dimension is ± 0.003 .

GULLWING LEADS



132 PIN LEADED CHIP CARRIER TYPE C3

