BETA TRANSFORMER
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DLVB-4000 SERIES

DUAL 3.3 VOLT PULSE TRANSFORMERS

DESCRIPTION AND APPLICATIONS

The DLVB-4000 Series transformers are 3.3 volt pulse transformers that comply with the MIL-STD-1553 Data Bus specification in applications employing 3.3 volt transceivers. These versatile Dual Low Voltage Bus (DLVB) pulse transformers meet all the electrical requirements of Manchester II serial bi-phase data transmission. Additionally, these transformers meet the demanding requirements of both mission critical military and high reliability commercial applications.

FEATURES:

- ***Built and Tested to MIL-PRF-21038***
  - ***M-Level Screening (standard)***
  - ***T-Level Screening (optional)***
- ***Surface Mount Configurations***
  - ***Tape and Reel Available***
- ***Dual Packages Require Less Board Space***
- ***Compatible with 3.3 Volt Transceivers such as Data Device Corporation's Mini-ACE® Mark3***
- ***0.155", 0.165", and 0.185" Versions Available in Full Military Operating Temperature Range (-55°C to +130°C)***

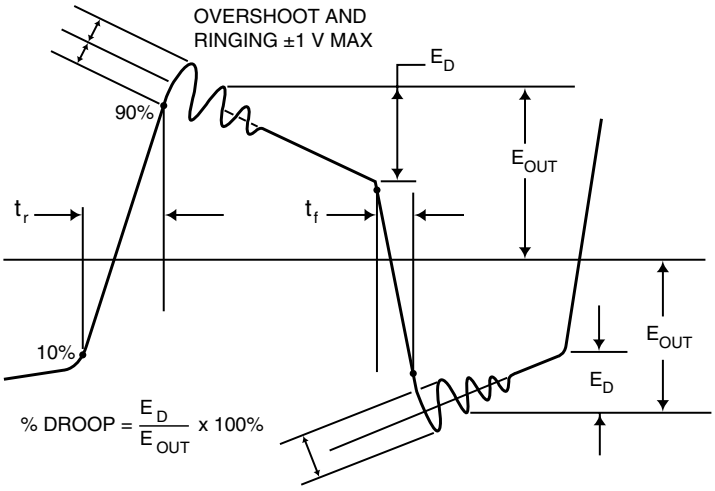
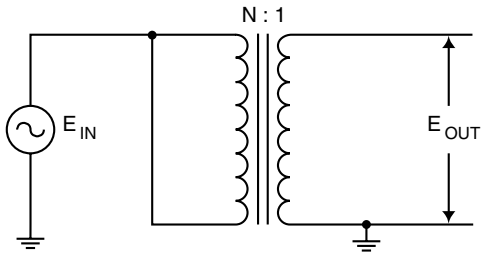


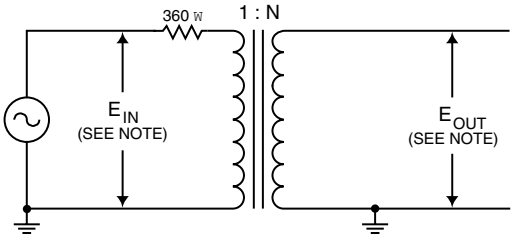
FIGURE 1. WAVFORM INTEGRITY



E_{IN} = 10 V rms at 1 MHz

Calc: CMR = 20 log $\frac{E_{IN}}{E_{OUT}}$ (see note)

FIGURE 2. CIRCUIT FOR COMMON MODE REJECTION



E_{IN} = 250 kHz square wave, 27.0 volts peak-to-peak with a rise and fall time no greater than 100 ns.

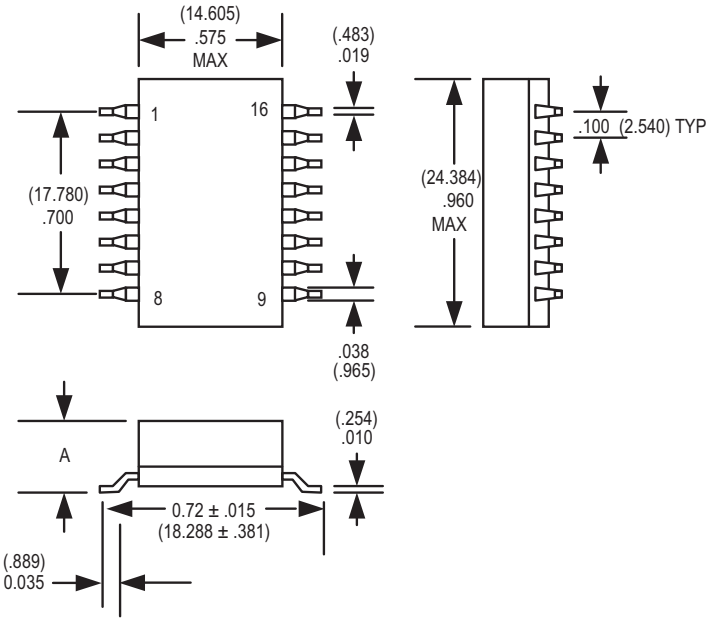
Calc : Droop = $\frac{E_D}{E_{OUT}}$ x 100%. (see figure 1 for E_D)

FIGURE 3. CIRCUIT FOR WAVEFORM INTEGRITY

Note: Input to be applied and output to be measured for all dash numbers are shown. N represents highest turns winding in each test.

TABLE 1. GENERAL SPECIFICATIONS			
PARAMETER	**UNIT**	**VALUE**	**REMARKS**
Case	—	—	Flame Resistant, Diallyl Phthalate
Terminals	—	—	C5191 Phosphor Bronze, Sn60Pb40 Plated, over Nickel Underplating
Terminals (Alternative)	—	—	C5191 Phosphor Bronze, SN63Pb37 Dipped, over Matte SN100 Plating, over Nickel Underplating
Weight	0z (gm)	0.353 (10) max	—
Terminal Strength	lbs	2	2 pounds applied force, Method 211, MIL-STD-202, Test Condition A
Dielectric Withstanding Voltage	Vrms	100	Method 310, MIL-STD-202
Life (expectancy "X")	Hrs	10,000 min	In accordance with MIL-PRF-21038
Insulation Resistance	MΩ	1,000 min	At 250 Vdc using Method 302, Test Condition B, MIL-STD-202
Pulse Width (Output Pulse)	µs	2	Tested using FIGURE 3 with resulting FIGURE 1 waveform
Overshoot	V	± 1 max	Tested using FIGURE 3 with resulting FIGURE 1 waveform
Rise Time (of Output Pulse)	ns	250 max	Tested using FIGURE 3 with resulting FIGURE 1 waveform
Common Mode Rejection	dB	45	Tested using FIGURE 2
Operating Temperature Range	°C	—	See respective ELECTRICAL CHARACTERISTICS TABLE
Droop	%	≤ 20	Tested useing Figure 2 with resulting FIGURE 1 waveform
DC Resistance	Ω	—	See respective ELECTRICAL CHARACTERISTICS TABLE
Input Resistance	Ω	—	See respective ELECTRICAL CHARACTERISTICS TABLE

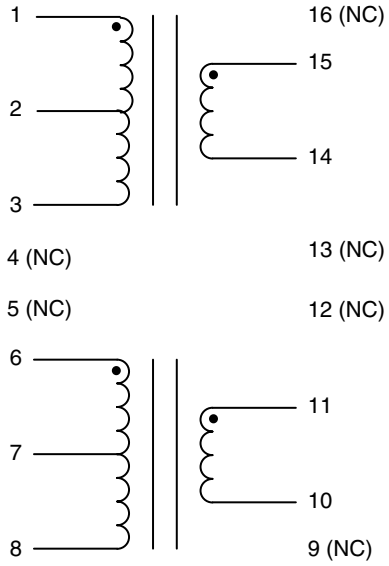
CONFIGURATION



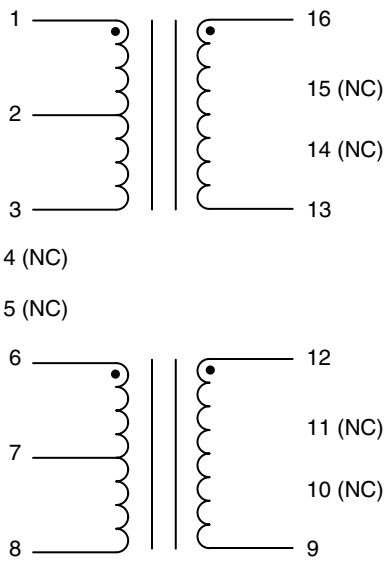
COMPONENT HEIGHT DIMENSIONS	
DLVB-4233, DLVB-4133	A = .185 (4.699) Max.
DLVB-4213, DLVB-4113	A = .155 (3.937) Max.
DLVB-4230	A = .165 (4.191) Max.

Notes:
1. Dimensions are in inches (mm)
2. Tolerance, unless specified otherwise:
   .xx is ± 0.010 inches (0.254)
   .xxx is ± 0.005 inches (0.127)

CIRCUIT DIAGRAM



DLVB-4233, DLVB-4213, DLVB-4230
(Transformer Coupled Design)



DLVB-4133, DLVB-4113
(Direct Coupled Design)

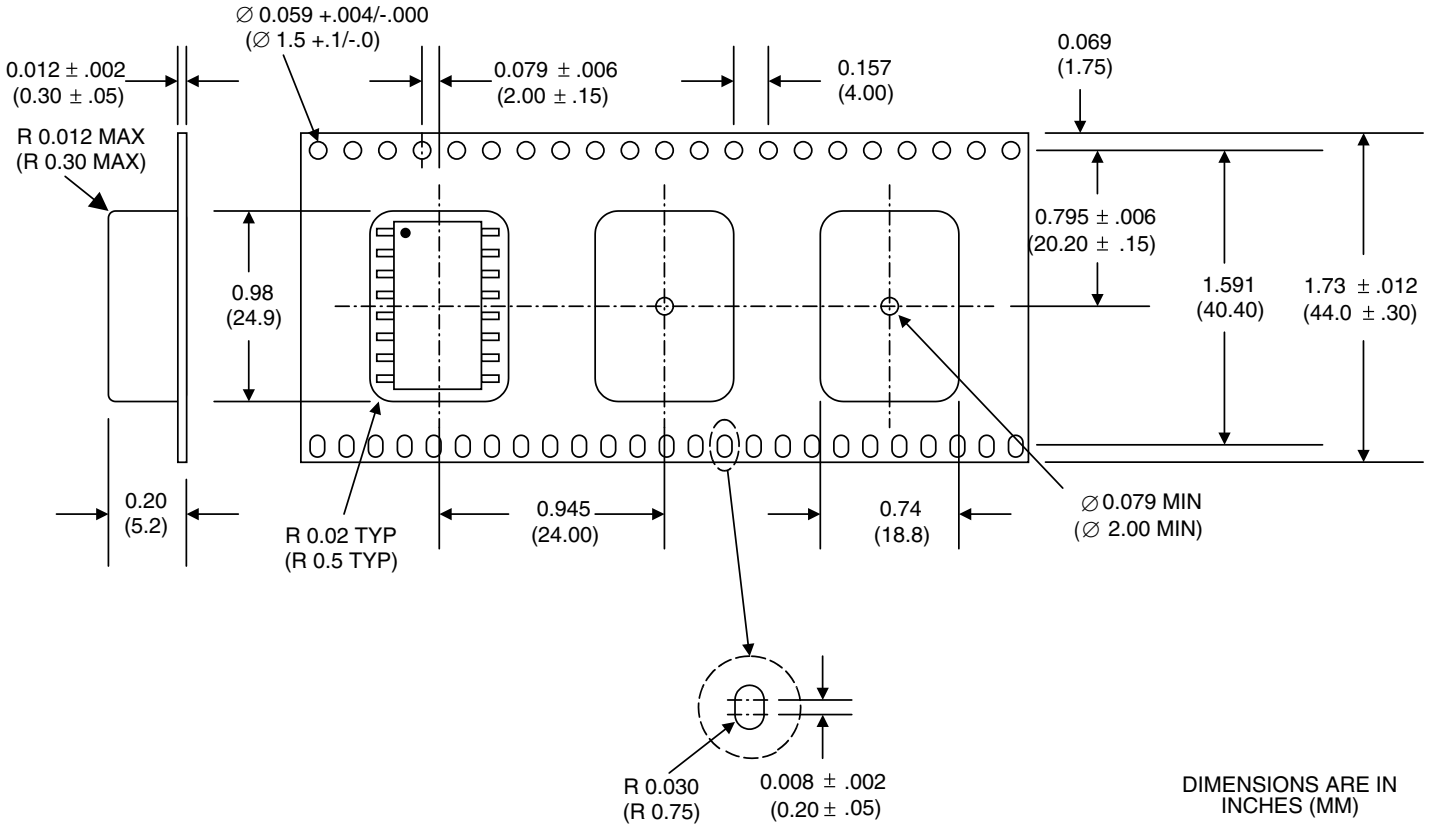
TABLE 1. ELECTRICAL CHARACTERISTICS

BETA P/N	PIN #S	TURNS RATION ± 1.5%	DC RESISTANCE Ω (MAX)	IMPEDANCE Ω (MIN)	OPERATING TEMPERATURE (°C)
DLVB-4233	1-3 (6-8) : 15-14 (11-10)	1 : 2.70	(1-3), (6-8) 0.25 (15-14), (11-10) 2.0	(15-14), (11-10) 2000	-55 to +130
DLVB-4133	1-3 (6-8) : 16-13 (12-9)	1 : 3.75	(1-3), (6-8) 0.25 (16-13), (12-9) 3.0	(16-13), (12-9) 4000	-55 to +130
DLVB-4213	1-3 (6-8) : 15-14 (11-10)	1 : 2.70	(1-3), (6-8) 0.25 (15-14), (11-10) 2.0	(15-14), (11-10) 2000	-55 to +130
DLVB-4113	1-3 (6-8) : 16-13 (12-9)	1 : 3.75	(1-3), (6-8) 0.25 (16-13), (12-9) 3.0	(16-13), (12-9) 4000	-55 to +130
DLVB-4230	1-3 (6-8) : 15-14 (11-10)	1 : 2.07	(1-3), (6-8) 0.29 (15-14), (11-10) 0.82	(15-14), (11-10) 2000	-55 to +130

Notes:

1. These transformers have been classified as Level 3 rating per IPC-9503, and must be processed accordingly. To ensure product integrity and maintain product warranty, the customermust comply with the storage and handling conditions as specified in IPC-9503 for a level 3 device. Transformers must be reflowed within 168 hours of removal from sealed bag. Reflow process must not cause the peak body temperature of the device to exceed 225°C and must not expose the device to temperatures above 183°C for more than 90 seconds. These parts are provided dry-packed in accordance with J-STD-033. Tape and Reel packaging is available. Contact factory for further information.
2. By providing surface mount parts that have been dried per IPC-9503 (Moisture Sensitivity Classification for Non-IC components) and Dry-Packed in accordance with J-STD-033 (Standard for handling, packing, shipping, and use of Moisture/Reflow sensitive surface mount devices), Beta has significantly reduced the possibility of moisture sensitivity/reflow induced "Pop-corning" or Buldging during customer's reflow soldering process. Experiments performed by Beta and data provided by manufactureres of similar devices indicate that the post reflow visual/mechanical anomalies can be reduced by more that 90%. Since customer reflow profiles and CCA density can vary, Beta recommends that the customer verify solder process compatibility and yield assessment of these devices.

TAPE AND REEL MECHANICAL OUTLINE



DIMENSIONS ARE IN INCHES (MM)

TOLERANCES
.XX (.X) = ± .008 (0.20)
.XXX (.XX) = ± .004 (0.10)

PARTS PACKAGED ON 13" DIAMETER REEL,
450 PARTS PER FULL REEL.

The information in this data sheet is believed to be accurate; however, no responsibility is assumed by Beta Transformer Technology Corporation for its use, and no license or rights are granted by implication or otherwise in connection therewith.
Specifications are subject to change without notice.
Visit our Web site at **www.bttc-beta.com** for the latest information.

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