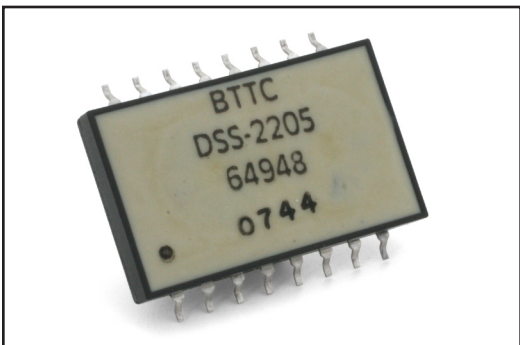


## DUAL SIDE-BY-SIDE PULSE TRANSFORMERS

### FEATURES

- 0.130" Overall Height
- Built and Tested to MIL-PRF-21038 & MIL-STD-202
  - M-Level Screening (Standard)
  - T-Level Screening (Optional)
- Available in 3.3, 5, 12, & 15 Volt Ratios
- For use with MIL-STD-1553A & B, MacAir A-5690, A-5232, A-3818, & A-4905
- -55°C to +130°C Operating Temperature Range
- Peak Reflow Temperature 225°C



### DESCRIPTION AND APPLICATIONS

The DSS-2000 Series of transformers are dual, side-by-side pulse transformers that provide the turns ratio configurations, component isolation, and common mode rejection ratio characteristics necessary for MIL-STD-1553 Data Bus specification compliance. These versatile pulse transformers meet all the electrical requirements of Manchester II serial bi-phase data transmission.

The step-up and step-down ratios available with the DSS series complement Data Device Corporation's (DDC's) entire MIL-STD-1553 line. These transformers are low-profile, modular units that are multi-tapped to accommodate existing system configurations. To meet the rugged demands of airborne and ground based military applications, they are encapsulated in accordance with MIL-PRF-21038. Sinusoidal or trapezoidal waveforms are transmitted with minimal distortion, making the DSS Series an excellent choice for any MIL-STD-1553A or B application.

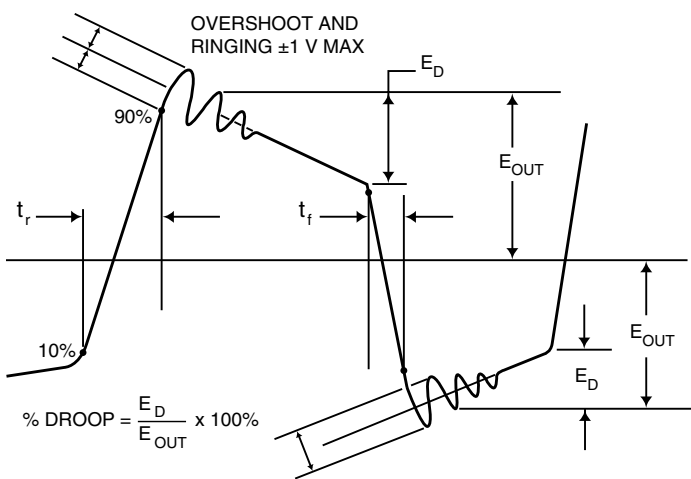


FIGURE 1. WAVEFORM INTEGRITY

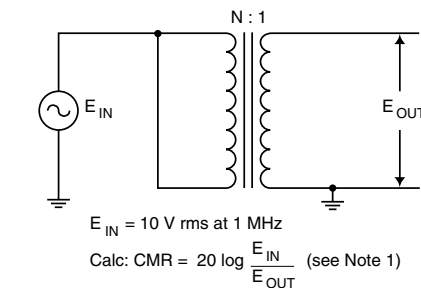


FIGURE 2. CIRCUIT FOR COMMON MODE REJECTION

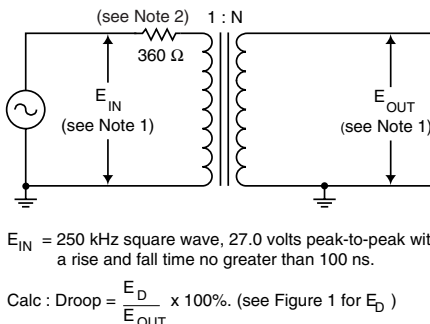
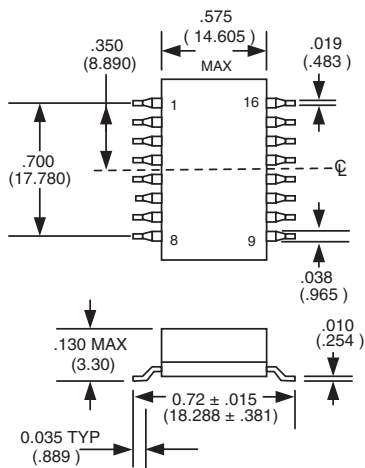


FIGURE 3. CIRCUIT FOR WAVEFORM INTEGRITY

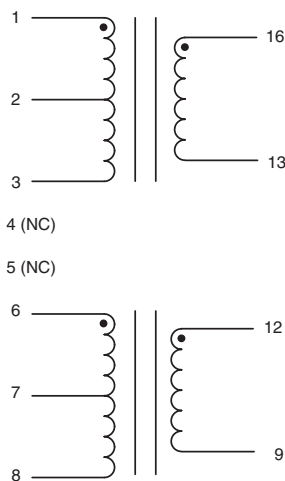
Notes: 1. Input to be applied and output to be measured for all dash numbers are as shown. N represents highest turns winding in each test.  
 2. For DSS-1003, the 360 ohm resistor in Figure 3 is replaced with a 50 ohm resistor for conducting the waveform test.

TABLE 1. GENERAL SPECIFICATIONS			
PARAMETER	UNIT	VALUE	REMARKS
Case	—	—	Flame Resistant, Diallyl Phthalate
Terminals	—	—	Sn90 Plated Alloy 42, Meeting MIL-STD-202, Method 208 Solderability
Weight	oz (gm)	0.176 (5) max.	—
Terminal Strength	lbs	2	2 pounds applied force, Method 211, MIL-STD-202, Test Condition A
Dielectric Withstanding Voltage	Vrms	100	Method 301, 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 (Output Pulse)	ns	—	Tested using FIGURE 3 with resulting FIGURE 1 waveform See ELECTRICAL CHARACTERISTICS TABLE
Common Mode Rejection	dB	45	Tested using FIGURE 2.
Operating Temperature Range	°C	-55 to +130	—
Droop	%	≤ 20	Tested using FIGURE 3 with resulting FIGURE 1 waveform
DC Resistance	Ω	—	See ELECTRICAL CHARACTERISTICS TABLE
Input Impedance	Ω	—	See ELECTRICAL CHARACTERISTICS TABLE

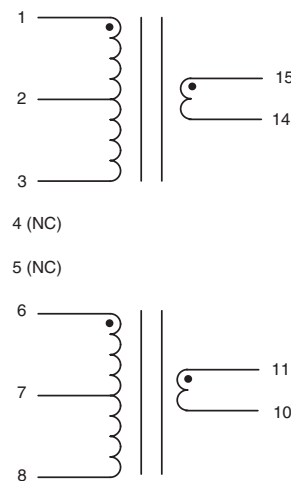
**CONFIGURATION**



MECHANICAL OUTLINE



CIRCUIT DIAGRAM FOR  
-2005, -2012,  
-2015, -2033



CIRCUIT DIAGRAM FOR  
-2205, -2212,  
-2215, -2233

NOTES:

- (1) Dimensions are in inches (mm)
- (2) Tolerance (unless specified otherwise):
  - .xx is ± .010 inches (.254)
  - .xxx is ± .005 inches (.127)

**TABLE 2. ELECTRICAL CHARACTERISTICS**

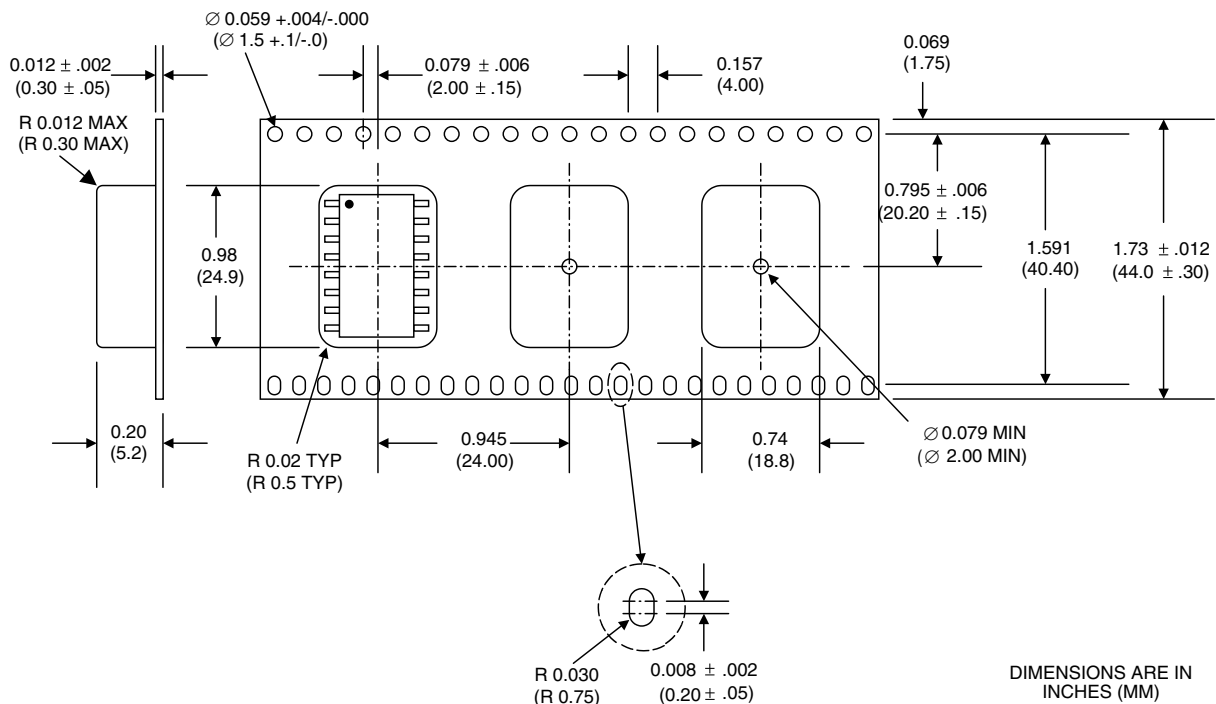
BETA P/N	TURNS RATIO	PRIMARY	SECONDARY	DC RESISTANCE Ω	OUTPUT RISE	IMPEDANCE Ω (MIN)	
						75KHZ to 249KHZ	250KHZ to 1MHZ
DSS-2033	1:3.75 ±3%	1-3 (6-8)	16-13 (12-9)	(6-8), (1-3) 0.35 (16-13), (12-9) 3.0	250 ns	(16-13), (12-9) 3,000	(16-13), (12-9) 4,000
DSS-2005	1:2.50 ±3%	1-3 (6-8)	16-13 (12-9)	(6-8), (1-3) 1.0 (16-13), (12-9) 3.5	250 ns	(16-13), (12-9) 3,000	(16-13), (12-9) 4,000
DSS-2012	1.25:1 ±3%	1-3 (6-8)	16-13 (12-9)	(6-8), (1-3) 3.2 (16-13), (12-9) 3.0	150 ns	(1-3), (6-8) 3,000	(1-3), (6-8) 4,000
DSS-2015	1.41:1 ±3%	1-3 (6-8)	16-13 (12-9)	(6-8), (1-3) 3.5 (16-13), (12-9) 3.0	150 ns	(1-3), (6-8) 5,000	(1-3), (6-8) 7,200
DSS-2233	1:2.70 ±3%	1-3 (6-8)	15-14 (11-10)	(6-8), (1-3) 0.35 (15-14), (11-10) 2.0	250 ns	(15-14), (11-10) 1,500	(15-14), (11-10) 4,000
DSS-2205	1:1.79 ±3%	1-3 (6-8)	15-14 (11-10)	(6-8), (1-3) 1.0 (15-14), (11-10) 2.5	150 ns	(15-14), (11-10) 1,500	(15-14), (11-10) 4,000
DSS-2212	1.66:1 ±3%	1-3 (6-8)	15-14 (11-10)	(6-8), (1-3) 3.2 (15-14), (11-10) 1.5	150 ns	(1-3), (6-8) 3,000	(1-3), (6-8) 4,000
DSS-2215	2.00:1 ±3%	1-3 (6-8)	15-14 (11-10)	(6-8), (1-3) 3.5 (15-14), (11-10) 0.3	150 ns	(1-3), (6-8) 5,000	(1-3), (6-8) 7,200

**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 sutomer must comply with the storage and handling conditions as specified in the IPC-9053 for a level 3 device. Transformers must be re flowed 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 Sensivity 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 Bulging during customer's reflow soldering process. Experiments performed by Beta and data provided by manufacturers of similar devices indicate that post reflow visual/mechanical anomalies can be reduced by more than 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**



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](http://www.bttc-beta.com) for the latest information.



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