

MINIATURE MIL-TEMP 0.260" MAXIMUM HEIGHT MIL-STD-1553 SMT TRANSFORMERS

FEATURES

- *Miniature package requires less board space*
- *Surface Mount
-Tape and Reel Available*
- *For Use with MIL-STD-1553A and B,
MacAir A-5690, A-5232, and A-4905*
- *Withstands conventional
IR/Convection Reflow Process*
- *Low Profile*
- *-55°C to +130°C Operating
Temperature Range*
- *Built and Tested to MIL-PRF-21038
and MIL-STD-202*

DESCRIPTION AND APPLICATIONS

The military data bus specification, MIL-STD-1553, has brought about the need for versatile pulse transformers that meet all the electrical requirements of Manchester II serial bi-phase data transmission. The MMT-3000 series of transformers provide the turns ratio configurations, component isolation, and common mode rejection ratio characteristics necessary for MIL-STD-1553A and B compliance.

The step-up and step-down ratios that are available with the MMT-3000 series complement DDC's entire MIL-STD-1553 product line. These transformers are low-profile and provide a 70% reduction in board space compared to surface mount QPL pulse transformers. They are encapsulated and meet the performance requirements of MIL-PRF-21038. Sinusoidal or trapezoidal waveforms are accurately processed, making the MMT-3000 series of transformers an excellent choice for any MIL-STD-1553A or B application.

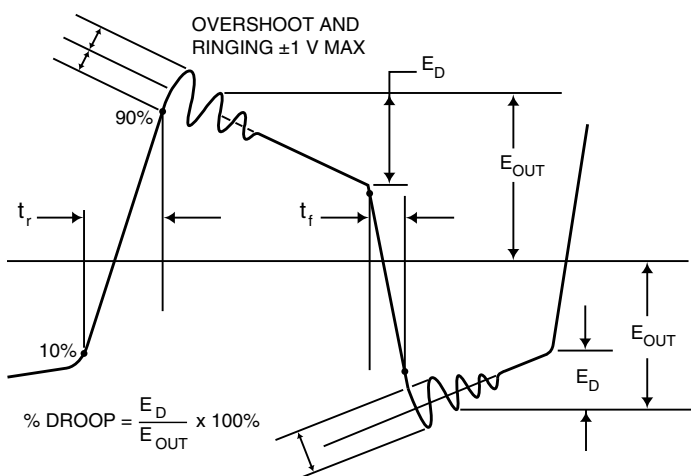


FIGURE 1. WAVEFORM INTEGRITY

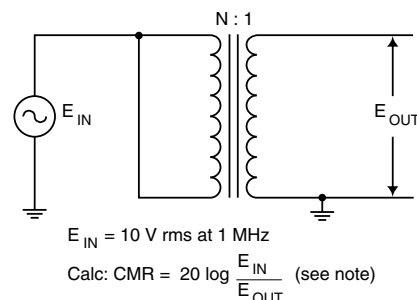
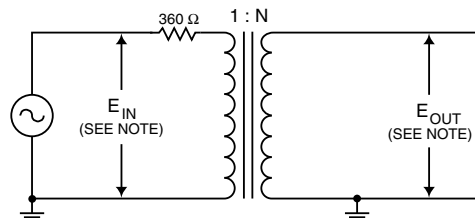


FIGURE 2. CIRCUIT FOR COMMON MODE REJECTION



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

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

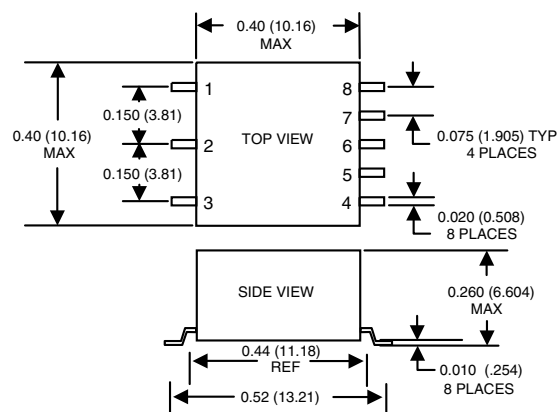
FIGURE 3. CIRCUIT FOR WAVEFORM INTEGRITY

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

TABLE 1. GENERAL SPECIFICATIONS

PARAMETER	UNIT	VALUE	REMARKS
Case	—	—	Flame Resistant, Diallyl Phthalate
Terminals	—	—	C11000 ETP Copper, Sn60 Plated over nickel underplating
Terminals (Alternate)	—	—	C11000 ETP Copper, Sn63 Dipped, over matte Sn100 plating, over nickel underplating
Weight	Oz (gm)	0.0530(1.5) 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 (of Output Pulse)	ns	—	Tested using FIGURE 3 with resulting FIGURE 1 waveform. See respective ELECTRICAL CHARACTERISTICS TABLE.
Common Mode Rejection	dB	45	Tested using FIGURE 2.
Operating Temperature Range	°C	-55° to +130°	
Drop	%	≤ 20	Tested using FIGURE 3 with resulting FIGURE 1 waveform.
DC Resistance	Ω	—	See respective ELECTRICAL CHARACTERISTICS TABLE.
Input Impedance	Ω	—	See respective ELECTRICAL CHARACTERISTICS TABLE.

CONFIGURATION



- NOTES:
- (1) Dimensions are in inches (mm.)
- (2) Tolerance (unless specified otherwise):
- .xx is ± 0.010 (.254)
- .xxx is ± .005 (.127)

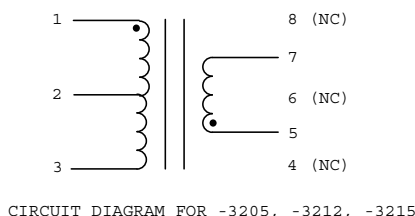
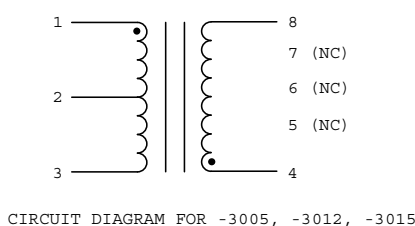


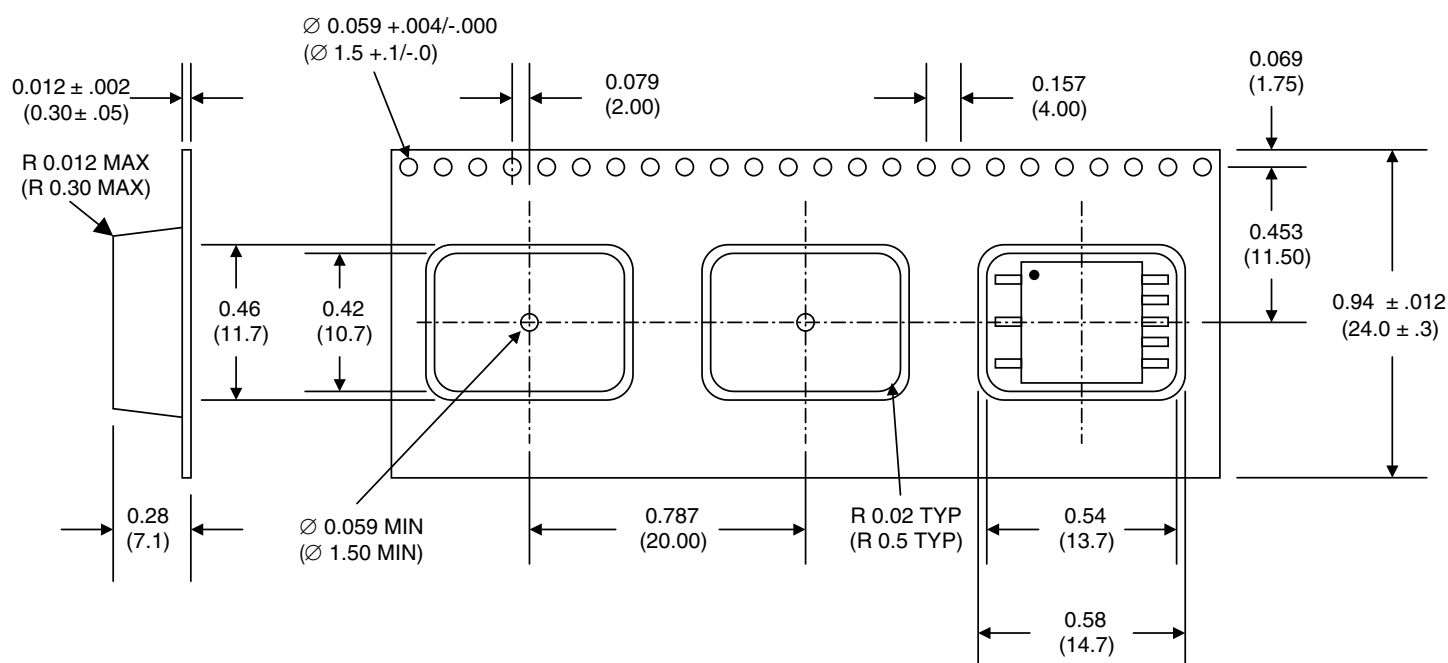
TABLE 2. ELECTRICAL CHARACTERISTICS

BETA P/N	TURNS RATIO	PRIMARY	SECONDARY	DC RESISTANCE Ω (MAX)	OUTPUT RISE TIME (MAX)	IMPEDANCE Ω (MIN)	
						75KHZ TO 249KHZ	250KHZ TO 1 MHZ
MMT-3005	1:2.50 ±3%	1-3	4-8	(1-3) 1.5 (4-8) 3.5	250 ns	(4-8) 3,000	(4-8) 4,000
MMT-3012	1.25:1 ±3%	1-3	4-8	(1-3) 2.4 (4-8) 1.5	150 ns	(1-3) 3,000	(1-3) 4,000
MMT-3015	1.41:1 ±3%	1-3	4-8	(1-3) 2.7 (4-8) 2.2	150 ns	(1-3) 5,000	(1-3) 7,200
MMT-3205	1:1.79 ±3%	1-3	5-7	(1-3) 1.5 (5-7) 2.5	150 ns	(5-7) 3,000	(5-7) 4,000
MMT-3212	1.66:1 ±3%	1-3	5-7	(1-3) 2.4 (5-7) 1.5	150 ns	(1-3) 3,000	(1-3) 4,000
MMT-3215	2.00:1 ±3%	1-3	5-7	(1-3) 2.6 (5-7) 1.3	150 ns	(1-3) 5,000	(1-3) 7,200

Note:

These transformers have been classified as Level 5A IPC-9503 and must be processed accordingly. To ensure product integrity and maintain the product warranty, these transformers require a 24 hour bake at +125°C prior to any solder reflow processing. Dried transformers must be reflowed within 24 hours. J-STD-033 preconditioning (dry-pack) can be provided by Beta upon request. 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.

TAPE AND REEL MECHANICAL OUTLINE



DMENSIONS ARE IN
INCHES (MM)

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

TOLERANCES
.XX (.X) = $\pm .008$ (0.20)
.XXX (.XX) = $\pm .004$ (0.10)

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