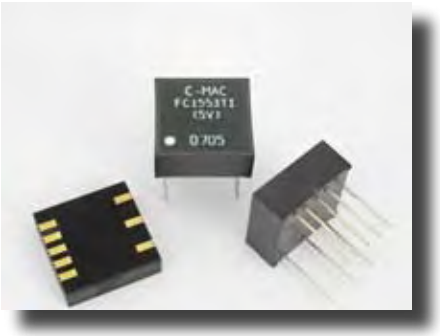
MIL-STD-1553 and 1760 DATA BUS TRANSFORMERS

C-MAC MicroTechnology

FEATURES

- Meets the requirements of MIL-STD-1553B
- Centre-tapped primary and secondary for increased flexibility
- Choice of transformation ratios to accommodate the complete range of C-MAC transceivers and remote terminals, in either transformer or direct-coupled configurations
- Leaded and surface mount versions available



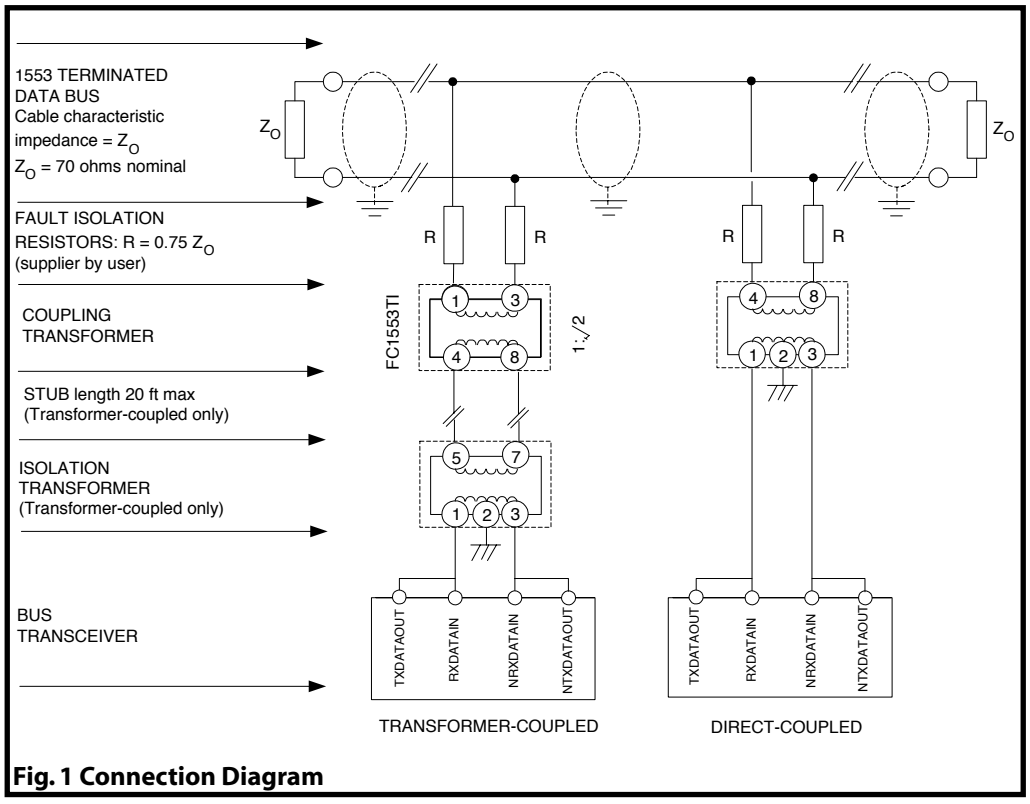


Fig. 1 Connection Diagram

C-MAC Part No.	TRANSFORMATION RATIOS		
	Pins (1-3) : (5-7)	Pins (1-3) : (4-8)	(1-2)+(2-3) : (5-6)+(6-7) : (4-6)+(6-8)
FC1553TI	2 : 1	1.41 : 1	1+1 : 0.5+0.5 : 0.71+0.71
FC1553TI (12V)	1.66 : 1	1.20 : 1	1+1 : 0.6+0.6 : 0.83+0.83
FC1553TI (V)	1.41 : 1	1 : 1	1+1 : 0.71+0.71 : 1+1
FC1553TI (5V)	0.67 : 1	0.47 : 1	1+1 : 1.5+1.5 : 2.12+2.12
FC1553TI (5VX)	0.57 : 1	0.40 : 1	1+1 : 1.75+1.75 : 2.5+2.5
FC1760TI	0.60 : 1	0.42 : 1	1+1 : 1.67+1.67 : 2.38+2.38

NOTE: For surface mount variant append part number with '-SM'

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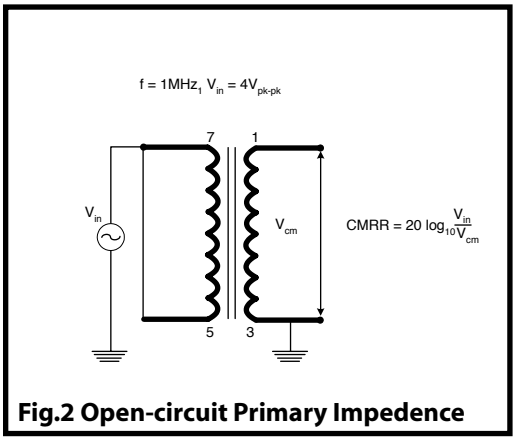


Fig.2 Open-circuit Primary Impedence

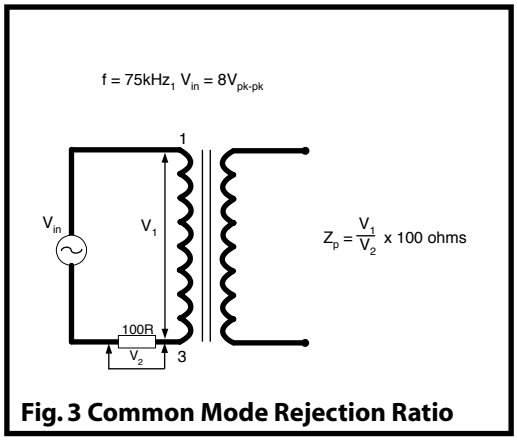


Fig. 3 Common Mode Rejection Ratio

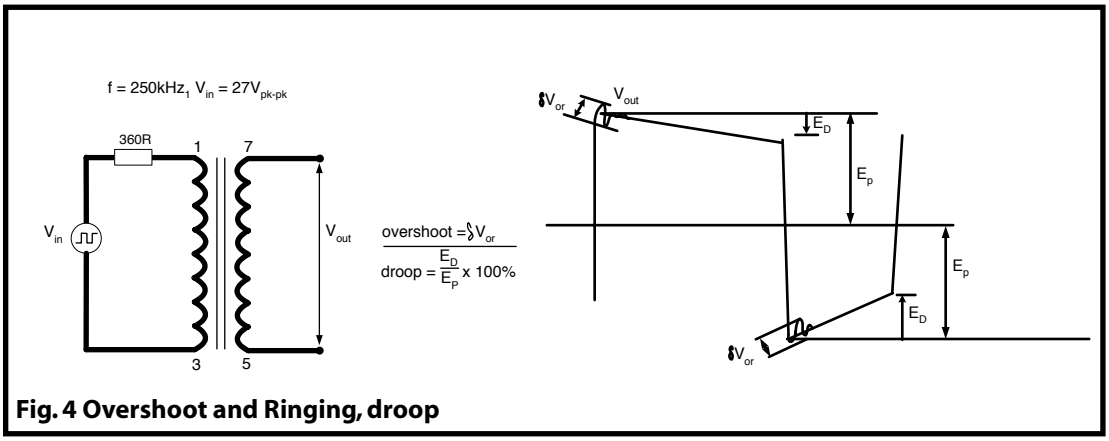


Fig. 4 Overshoot and Ringing, droop

Operating Conditions

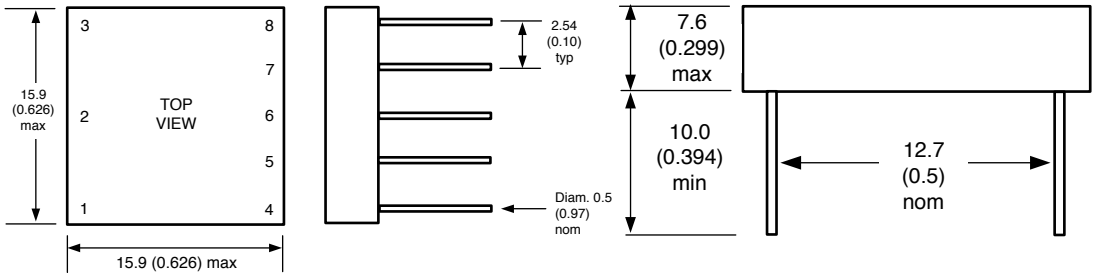
Symbol	Parameter	Min	Typical	Max	Unit
f	Operating Frequency Range	75		1000	kHz
T_{CO}	Operating Case Temperature Range	-55		+125	deg C
T_{CS}	Storage Temperature Range	-55		+150	deg C
V_{WP}	Peak Working Voltage			50	V

Electrical Characteristics

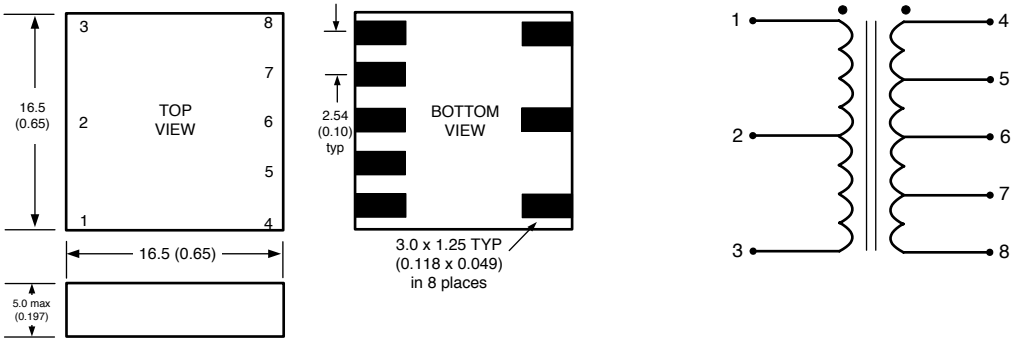
Symbol	Parameter	Test Conditions	Min	Typical	Max	Unit
δ_{TR}	Turns Ratio Tolerance				±3	%
CMRR	Common Mode Rejection Ratio	Fig. 2	45	50		dB
Z_P	Open-Circuit Primary Impedance	Fig. 3	3			kΩ
δV_{or}	Overshoot and Ringing	Fig. 4			±1	Vpk-pk
E_D	Droop	Fig. 4		10	20	%
I	Leakage Industance	(1-3) with				
		(4-8) short circuit			5	uH
R_{DC}	DC Winding Resistance	(1-3), 10mA		1	3	Ω
R_{IW}	Interwinding Resistance	(2-6), 100V	50			MΩ
C_{IW}	Interwinding Capacitance	(2-6), 0.1V, 10kHz			70	pF

MIL-STD 1553 and 1760 DATA BUS TRANSFORMERS OUTLINE DRAWINGS

Plug-in



Surface mount



APPLICATION NOTES

- Refer to the appropriate C-MAC transceiver data sheet for the correct selection of transformer
- In 'transformer-coupled' configuration, the chosen transformer forms the 'isolation transformer', see Fig.1
- In 'direct coupled' configuration, the same transformer forms the 'coupling transformer', see Fig.1
- Always use FC1553TI for the 'coupling transformer' in the 'transformer-coupled' configuration, see Fig. 1
- For PCB layout the transformer connections should be short and balanced to ensure the series inductance and resistance are minimised

For further information contact us at:
C-MAC MicroTechnology
South Denes, Great Yarmouth,
Norfolk, NR30 3PX, UK

Tel: +44 (0) 1493 743 100
Email: info@cmac.com