

Isolation Transformers for SN650x Transformer Drivers From Texas Instruments



Coilcraft Off-the-shelf Push-pull Transformers

Introduction

Coilcraft miniature push-pull transformers, along with low-noise transformer drivers from Texas Instruments, enable simple, high-performance solutions for isolated power system designs.

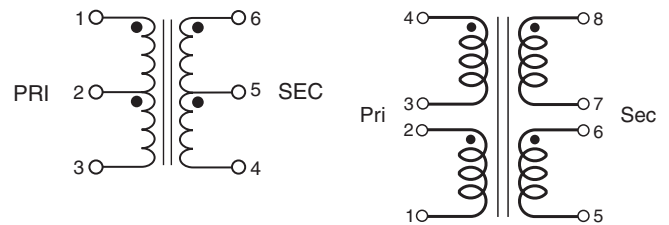
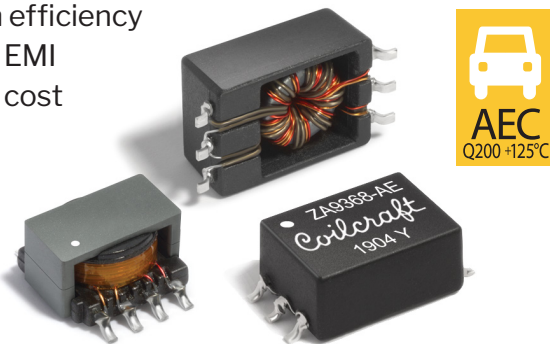
The new SN6507 push-pull drive from Texas Instruments features 3 to 36 V wide input voltage and high switching frequency at 1 MHz which represents a technology advancement to offer higher power density and reduce the size of the transformers.

The SN6505A and SN6505B drive transformers from 2.25 to 5 V DC power supply for current up to 1 A on the primary side with 160 kHz and 420 kHz respectively, while the original SN6501 drives the converter with 0.35 A output current.

Coilcraft offers a variety of surface-mount, push-pull driver transformers that have been optimized for the SN650x Family to provide the smallest size, highest efficiency, and most cost-effective solutions. These transformers have either a center-tapped primary or two primary windings connected in series to operate in a push-pull topology. They are driven by the SN650x from a power supply and provide high isolation up to 5000 Vrms across the isolation barrier for isolated interface such as CAN, RS-485, RS-422, RS-232, SPI, I2C, and Low-Power LAN in both industrial and automotive applications.

Features

- Small size
- High isolation voltage
- High efficiency
- Low EMI
- Low cost



Primary windings and secondary windings to be connected in series on the PC board.

Push-pull Transformer Drivers From Texas Instruments

Texas Instruments IC	V _{IN} Range (V)	Output current (A)	F _{SW} (kHz)
SN6507	3 to 36	0.5	1000
SN6505A/SN6505A-Q1	2.25 to 5.5	1	160
SN6505B/SN6505B-Q1	2.25 to 5.5	1	420
SN6501/SN6501-Q1	3 to 5.5	0.35	410

Part Number	IC from Texas Instruments	V _{in} / V _{out} Voltage	Turns Ratio	Volt-time (V _{μs})	Isolation (V _{rms})	Dimensions (mm) (L x W x H)												
TX1-ZB1445-CED	SN6507	12/15	1:1.4	22	2500	12.07 x 10 x 5.97												
TX1-ZC1892-AED	SN6507	12/30	1:2.8	22		12.07 x 10 x 5.97												
TX1-ZB1459-BED	SN6507	24/15	1:0.71	30		12.07 x 10 x 5.97												
TX1-ZC1891-AED	SN6507	24/30	1:1.43	30		12.07 x 10 x 5.97												
UA8251-AE	SN6501	3.3/3.3	1CT:1.1CT	9.7		2500	10 x 6.8 x 4.3											
	SN6505B																	
UA8252-AE	SN6501	5/5	1CT:1.1CT	11.7			2500	10 x 6.8 x 4.3										
	SN6505B																	
UA8253-AE	SN6501	3.3/5	1CT:1.7CT	9.9				2500	10 x 6.8 x 4.3									
	SN6505B																	
UA8254-AE	SN6501	3.3/3.3	1CT:1.3CT	11.7					2500	10 x 6.8 x 4.3								
	SN6505B																	
UA8255-AE	SN6501	3.3/5	1CT:2CT	11.7						2500	10 x 6.8 x 4.3							
	SN6505B																	
DA2303-AL	SN6501	5/6	1:1.5	34.4							2500	12.07 x 10 x 5.97						
	SN6505A																	
	SN6505B																	
DA2304-AL	SN6501	3.3/6	1:2.2	21.5								2500	12.07 x 10 x 5.97					
	SN6505A																	
	SN6505B																	
MA5632	SN6501	3.3/5	1CT:2CT	17.6									2500	12.07 x 10 x 5.97				
GA3157-AL	SN6501	5/3.3	1:0.88	34.4										2500	12.07 x 10 x 5.97			
	SN6505A																	
	SN6505B																	
JA4631-BL	SN6501	5/3.3-5	1:2	17.6											2500	12.07 x 10 x 5.97		
	SN6505B																	
JA4650-BL	SN6501	5/12-15	1:3	17.6												2500	12.07 x 10 x 5.97	
	SN6505B																	
KA4976-AL	SN6501	5/3.3-15	1:5	17.6	2500												12.07 x 10 x 5.97	
	SN6505B																	
PA6547-AL	SN6501	5/3.3-5	1:2	17.6													2500	12.07 x 10 x 5.97
	SN6505B																	
PA6548-AL	SN6501	5/12-15	1:3	17.6		2500												12.07 x 10 x 5.97
	SN6505B																	
PA6549-AL	SN6501	5V/12-15	1:5	17.6			2500											12.07 x 10 x 5.97
	SN6505B																	
WA8427-CL	SN6505B	5/5	1CT:1.1CT	8.6				2500										13 x 8.82 x 4.34
ZA9709-AE	SN6505B	3.3/3.3	1CT:1.7CT	9														13 x 8.82 x 4.34

Part Number	IC from Texas Instruments	V _{in} / V _{out} Voltage	Turns Ratio	Volt-time (V _{μs})	Isolation (V _{rms})	Dimensions (mm) (L x W x H)
ZA9368-AE	SN6501	3.3/5	1CT:1.75CT	16	3500*	15.2 x 8.5 x 5.6
	SN6505B					
ZA9801-AE	SN650x	3.3/5	1:1.5	34.4	5000	17.07 x 10.3 x 5.97
CR7983-CL	SN6501	5/3.3-15	1:2	18	5000	21.85 x 21 x 10.8
	SN6505B					
CR7984-CL	SN6501	5/12-24	1:3	18		21.85 x 21 x 10.8
	SN6505B					
CR7985-CL	SN6501	5/5-15	1:5	18		21.85 x 21 x 10.8
	SN6505B					

Note * Designed to meet UL/CSA/IEC 60950 Reinforced Insulation Class with 8 mm creepage and 4.5 mm clearance.