

**Transformer Drivers Automotive 6-Pin SOT-23 T/R****Manufacturer:** [Texas Instruments, Inc](#)**Package/Case:** SOT-23-6**Product Type:** Power Management ICs**RoHS:** RoHS Compliant/Lead free **Lifecycle:** Active

Images are for reference only

[Inquiry](#)**General Description**

The SN6505x-Q1 is a low-noise, low-EMI push-pull transformer driver, specifically designed for small form factor, isolated power supplies. It drives low-profile, center-tapped transformers from a 2.25 V to 5 V DC power supply. Very low noise and EMI are achieved by slew rate control of the output switch voltage and through Spread Spectrum Clocking (SSC). The SN6505x-Q1 consists of an oscillator followed by a gate drive circuit that provides the complementary output signals to drive ground-referenced N-channel power switches. The device includes two 1-A Power-MOSFET switches to ensure start-up under heavy loads. The switching clock can also be provided externally for accurate placement of switcher harmonics, or when operating with multiple transformer drivers. The internal protection features include a 1.7 A current limiting, under-voltage lockout, thermal shutdown, and break-before-make circuitry. SN6505A-Q1 and SN6505B-Q1 include a soft-start feature that prevents high inrush current during power up with large load capacitors. Soft-start feature has been disabled in SN6505D-Q1 for applications that require fast output start-up. SN6505A-Q1 has a 160 kHz internal oscillator for applications that need to minimize emissions whereas SN6505B-Q1 and SN6505D-Q1 have a 420 kHz internal oscillators for applications that require higher efficiency and smaller transformer size. The SN6505x-Q1 is available in a small 6-pin SOT23/DBV package. The device operation is characterized for a temperature range from -40°C to 125°C.

## Key Features

AEC-Q100 (Grade 1) qualified for automotive applications  
Device temperature grade 1:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ,  $T_A$

Functional Safety-Capable

Documentation available to aid functional safety system design: SN6505A-Q1, SN6505B-Q1, SN6505D-Q1

Push-pull driver for transformers

Wide input voltage range: 2.25 V to 5.5 V

High output drive: 1 A at 5 V supply

Low  $R_{ON}$  0.25  $\Omega$  max at 4.5 V supply

Reduced conducted and radiated EMI

Spread spectrum clocking

Precision internal oscillator options: 160 kHz (SN6505A-Q1) and 420 kHz (SN6505B-Q1 and SN6505D-Q1)

Synchronization of multiple devices with external clock input

Slew-rate control

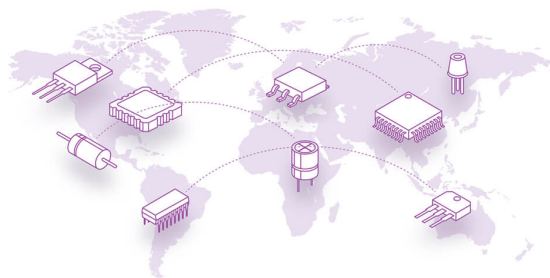
1.7 A Current-limit

Low shutdown current:  $<1 \mu\text{A}$

Thermal shutdown

Small 6-Pin SOT23 (DBV) package

Soft-start enabled (SN6505A-Q1 and SN6505B-Q1) to reduce in-rush current and soft-start disabled (SN6505D-Q1) for fast start-up



## Recommended For You

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**SNI05125DBVR**

Texas Instruments, Inc  
SOT23-5

**SN6501QDBVRQ1**

Texas Instruments, Inc  
SOT23-5

**BQ2050HSN-A508**

Texas Instruments, Inc  
SOP16

**BQ2000SN-B5**

Texas Instruments, Inc  
SOP8

**SN6501DBVT**

Texas Instruments, Inc  
SOT23-5

**BQ2014HSN**

Texas Instruments, Inc  
SOP-16

**BQ2002FSN**

Texas Instruments, Inc  
SOP8

**BQ2002TSN**

Texas Instruments, Inc  
SOP-8

**BQ2004HSN**

Texas Instruments, Inc  
SOP16

**BQ2004SN**

Texas Instruments, Inc  
SOP16

**BQ2002SN**

Texas Instruments, Inc  
SOP8

**BQ2057WSNTR**

Texas Instruments, Inc  
SOP8

**BQ2004ESN**

Texas Instruments, Inc  
SOP16

**BQ2000TSN-B5**

Texas Instruments, Inc  
SOP8

**BQ2004HSNTR**

Texas Instruments, Inc  
SOP16