STR-A6251 AND STR-A6252

Data Sheet
28103.42c

Universal-Input/15 W 50 kHz Flyback Switching Regulators

ABSOLUTE MAXIMUM RATINGS
at T_A = +25°C

Control Supply Voltage, V_{CC} . . . . **36 V**
Drain-Source Voltage, V_{DSS} . . . . . **650 V**
Drain Switching Current, I_D
STR-A6251 . . . . . **2.5 A***
STR-A6252 . . . . . **3.0 A***
Peak Drain Switching Current, I_{DM}
STR-A6251 . . . . . **2.5 A**
STR-A6252 . . . . . **3.0 A**
Single-Pulse Avalanche Energy, E_{AS}
STR-A6251 . . . . . **72 mJ**
STR-A6252 . . . . . **123 mJ**
S/OCP Voltage Range,
V_{OCP} . . . . . **–0.3 V to +6 V**
FB/CC/OLP Voltage Range,
$V_{FB/OLP}$ . . . . . **–0.3 V to +12 V**
FM Voltage Range,
V_{FM} . . . . . **–0.3 V to +6 V**
Package Power Dissipation, P_D
control (V_{CC} × $I_{CC(ON)}$) . . . . . **0.15 W**
MOSFET (V_{DSS} × I_D) . . . . . **1.35 W**
total . . . . . **1.5 W**
MOSFET Channel Temp., T_J . **+150°C**
Internal Frame Temp., T_F . . . . **+125°C**
Storage Temperature Range,
T_S . . . . . **-40°C to +125°C**

* Drain switching current is limited by temperature (page 2) and safe operating area (page 4).

The STR-A6251 and STR-A6252 are 50 kHz PWM topology (with ±5% frequency jittering for minimum EMI) regulators specifically designed to satisfy the requirements for increased integration and reliability in flyback converters. They incorporate a primary control and drive circuit with avalanche-rated power MOSFETs. The STR-A6252 features higher allowable switching current and lower on-resistance. The STR-A6251 is also available for 67 kHz operation.

Covering the power range from below 21 watts or 24 watts for a 230 VAC input, or to 15 or 20 watts for a universal (85 to 264 VAC) input, these devices can be used in a wide range of applications, from DVD players and VCR player/recorders to ac adapters for cellular phones and digital cameras. An auto-burst standby function reduces power consumption at light load, while multiple protections, including the avalanche-energy guaranteed MOSFET, provide high reliability of system design.

Cycle-by-cycle current limiting, undervoltage lockout with hysteresis, overvoltage protection, and thermal shutdown protect the power supply during the normal overload and fault conditions. Overvoltage protection and thermal shutdown are latched after a short delay. The latch may be reset by cycling the input supply. Low start-up current and a low-power standby mode selected from the secondary circuit completes a comprehensive suite of features. Both devices are provided in an 8-pin mini-DIP plastic package with pin 6 removed.

FEATURES AND BENEFITS

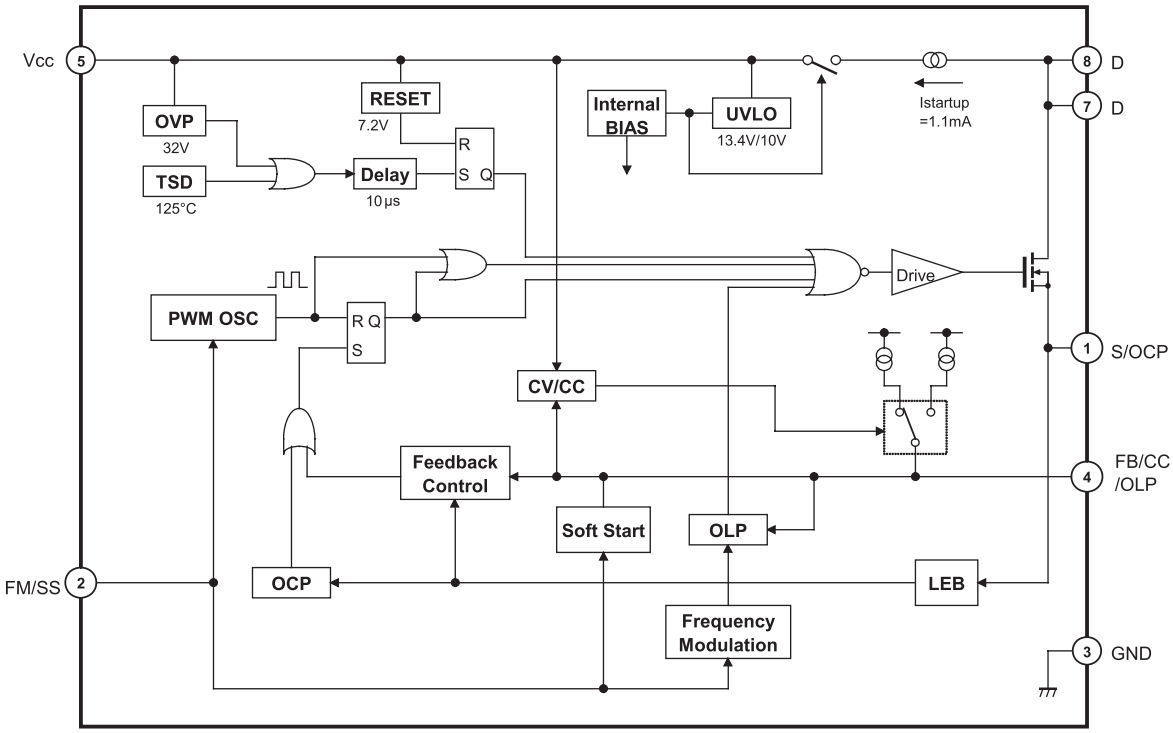
- 50 kHz PWM with ±5% Frequency Jittering
  Cost Reduction of EMI Noise Filtering
- Rugged 650 V Avalanche-Rated MOSFET
  Simplified Surge Absorption
  No V_{DSS} Derating Required
- Choice of $r_{DS(on)}$ (2.8 Ω or 3.95 Ω maximum)
- Auto-Burst Mode for Stand-By Operation or Light Loads
  Less Transformer Audible Noise
- Built-In Leading Edge Blanking
- Soft Start and Low Start-Up Current
  Start-Up Circuit Disabled in Operation
- Low Operating Current (4 mA max)

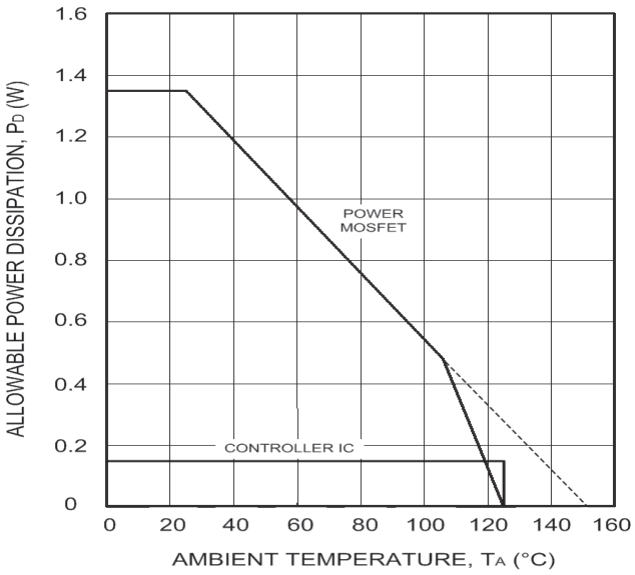
continued

Always order by complete part number, e.g., **STR-A6251** .

STR-A6251 and STR-A6252
Universal-Input/15 W 50 kHz
Flyback Switching Regulators

FUNCTIONAL BLOCK DIAGRAM





FEATURES AND BENEFITS (cont'd)

- Automatic Burst Stand-By (intermittent operation)
  Input Power <0.1 W at No Load
- Auto-Bias Function
  Stable Burst Operation Without Generating Interference
- Internal Off-Timer Circuit
- Built-In Constant-Voltage/Constant Current
- Multiple Protections:
  Pulse-by-Pulse Overcurrent Protection (OCP)
  Overload Protection (OLP) with Auto Restart
  Latching Overvoltage Protection (OVP)
  Undervoltage Lockout (UVLO) with Hysteresis
  Latching Thermal Shutdown (TSD)
- Molded Small-Size 8-Pin Package
  For Low-Height SMPS

This data sheet is based on Sanken data sheet SSE-23297 and SSE-23298.