

SANYO

No. 4740

STK730-080**Self-Excitation Type Semi-Regulated
Switching Regulator (210 W Output)****Overview**

The STK730-080 provides on-chip the power switching, error detection, amplifier, and overcurrent protection circuits required in a self-excitation type semi-regulated switching regulator. As a result, it can be used to construct a switching power supply with a minimal number of external components. Furthermore, due to the adoption of MOSFETs as the power switching elements, an oscillator frequency higher than that possible with bipolar transistors can be used. This allows miniaturized power supply systems to be constructed by reducing the size of the pulse transformer and capacitors.

Applications

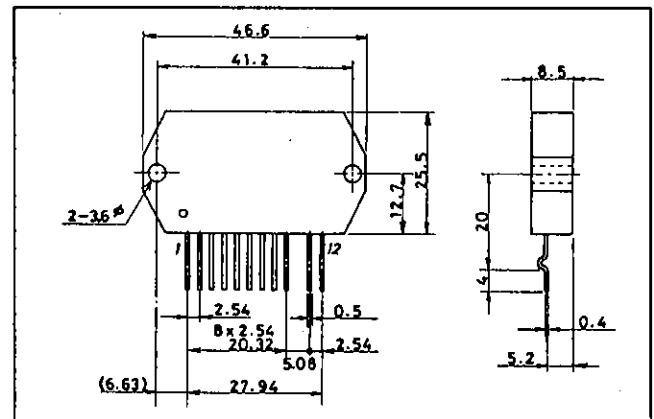
- Power supplies in CRT and CTV products
- Power supplies in office automation products
- Switching power supplies in general

Features

- Power MOSFETs adopted
- Built-in error detection circuit
- Built-in overcurrent protection circuit
- Product series differentiated by output capacity (110 to 280 W)
- Few external components required
- Since the STK730-080 supports higher oscillator frequencies, smaller pulse transformers can be used.
- Takes all major national stability standards and EMF hazard standards into consideration.
- The IMST (insulated metal substrate technology) substrate functions as an EMF shield plate and supports low noise design.

Package Dimensions

unit: mm

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Specifications

Maximum Ratings at Ta = 25°C (Tc = 25°C unless specified otherwise)

| Parameter | Symbol | Condition | Rating | Unit |
|---------------------------------|--------------|--------------------|-------------|-------|
| Operating substrate temperature | Tc max | *1 | 115 | °C |
| AC input voltage | VAC | *2 | 280 | Vrms |
| Operating temperature | Topr | | -10 to +85 | °C |
| Storage temperature | Tstg | | -30 to +115 | °C |
| Maximum output power | Wo max | *2 When VO = 135 V | 210 | W |
| [TR1] | | | | |
| Drain current | ID | *3 | 6 | A |
| Pulse drain current | ID (puls) | *3 | 15 | A |
| Drain reverse current | IDR | | 6 | A |
| Gate-source voltage | VGS | | ±30 | V |
| Allowable power dissipation | Pd | | 100 | W |
| Chip junction temperature | TJ max | | 150 | °C |
| Thermal resistance | θj-c | | 1.25 | °C/W |
| [ZD1] | | | | |
| Allowable power dissipation | PZD1 | | 500 | mW |
| Chip junction temperature | TJ (ZD1) max | | 125 | °C |
| Thermal resistance | θj-c (ZD1) | | 0.2 | °C/mW |

Note: 1. The recommended substrate temperature is 105°C (maximum).
 2. In the specified test circuit
 3. See the ASO characteristics for these values in overcurrent states.

Recommended Operating Conditions at Ta = 25°C

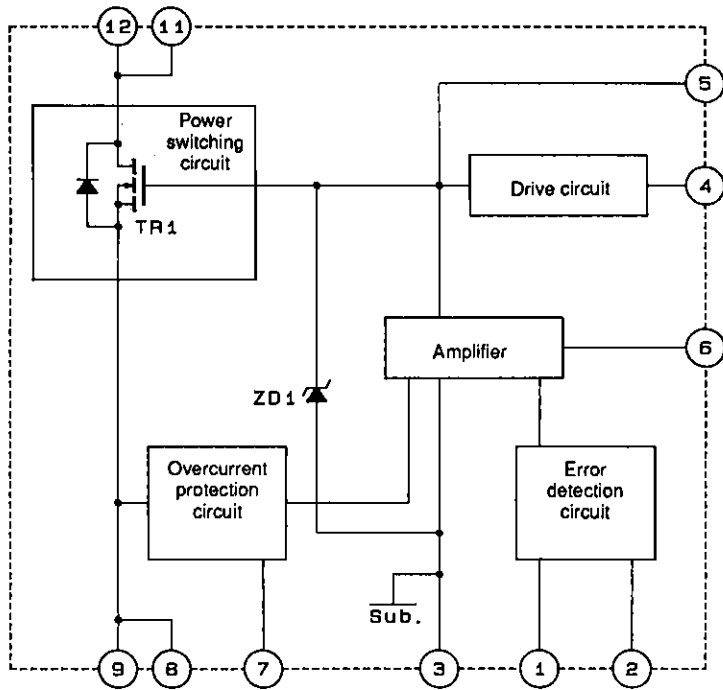
| Parameter | Symbol | Condition | Rating | Unit |
|----------------------|--------|-----------|-----------|------|
| Pin 4 input voltage | V4 | | ±8 to ±24 | V |
| Oscillator frequency | fosc | | 20 to 120 | kHz |

Operating Characteristics at Ta = 25°C (Tc = 25°C unless specified otherwise)

| Parameter | Symbol | Condition | Rating | | | Unit |
|--|-----------|----------------------------------|--------|------|------|-------|
| | | | min | typ | max | |
| Output voltage setting | | * Iin = 8 mA | 40.0 | 40.5 | 41.0 | V |
| Output voltage temperature coefficient | | * Tc = 0 to + 105°C, Iin = 8 mA | | 7 | | mV/°C |
| [TR1] | | | | | | |
| Drain-source breakdown voltage | V(BR)DSS | ID = 10 mA, VGS = 0 V | 900 | | | V |
| Gate-source cutoff voltage | VGS (off) | ID = 1 mA, VDS = 10 V | 2.0 | | 3.0 | V |
| On resistance | RDS (on) | ID = 3 A, VGS = 10 V | | 2.0 | 3.0 | Ω |
| Input capacitance | Ciss | VDS = 10 V, VGS = 0 V, f = 1 MHz | | 1200 | | pF |
| [ZD1] | | | | | | |
| Zener voltage | VZ | Iz = 5 mA | 23.7 | | 26.3 | V |

Note: * In the specified test circuit

Equivalent Circuit Block Diagram

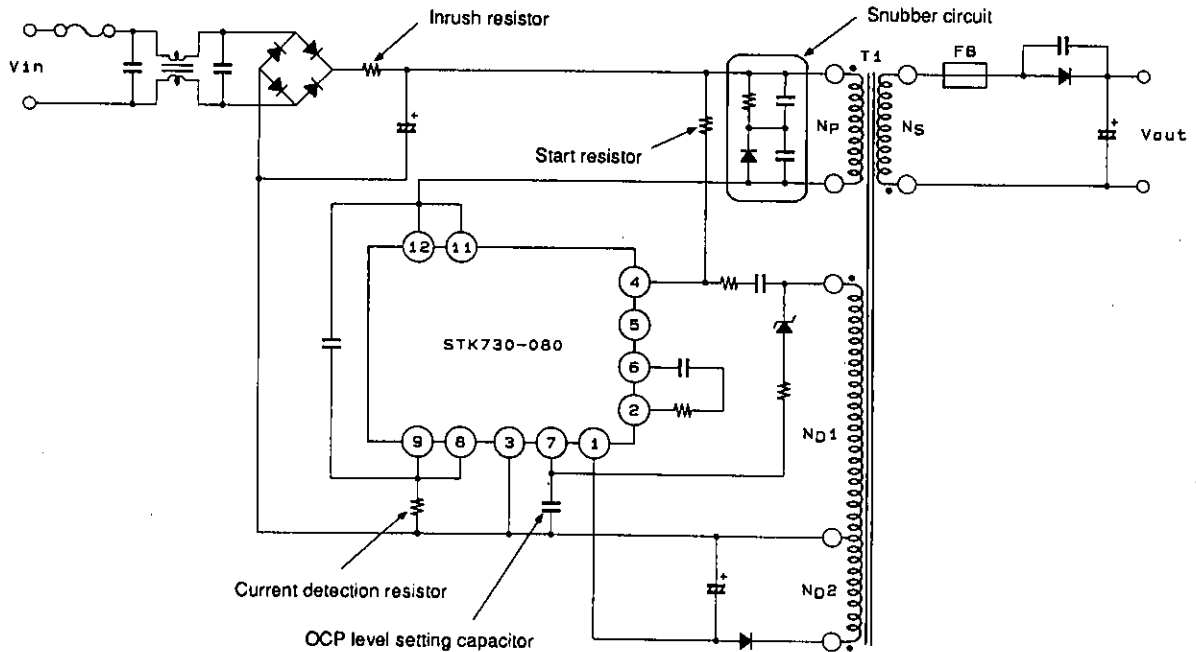


| Pin No. | Description |
|---------|-----------------------------|
| 1 | Vref (40.5 V typical) input |
| 2 | Error detection level |
| 3 | Ground |
| 4 | Drive voltage input |
| 5 | TR1 gate |
| 6 | Amplifier circuit control |
| 7 | OCP setting level input |
| 8 | TR1 source |
| 9 | TR1 drain |
| 11 | TR1 source |
| 12 | TR1 drain |

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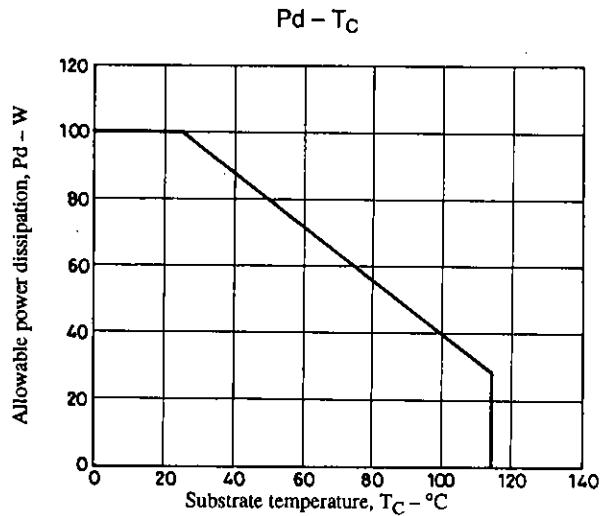
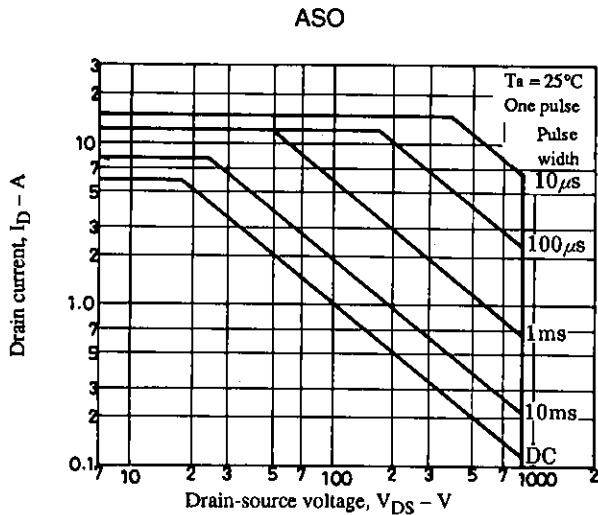
Note: The back surface of the IC is not an insulator, and may be shorted to pin 3.

Application Circuit Example



A01843

Characteristics Data



Series Organization

These products are provided as a product series whose members differ mainly in their power capacity. Note that the following table includes products that are under development. Contact your Sanyo sales representative for information on product availability.

| Product No. | Maximum Rating | | | | | Operating Characteristic | | |
|-------------|------------------|-------------|--------------------|--------------------|----------------|--------------------------|--------------------|----------------------|
| | V _{DSS} | Tstg* | T _c max | T _j max | I _D | AC input range | W _o max | R _{on} typ. |
| | V | °C | °C | °C | A | V | W | Ω |
| STK730-010 | 500 | -30 to +115 | +115 | +150 | 6.0 | 85 to 132 | 110 | 1.4 |
| STK730-020 | | | | | 8.0 | | 145 | 0.8 |
| STK730-030 | | | | | 10.0 | | 180 | 0.7 |
| STK730-040 | | | | | 12.0 | | 210 | 0.55 |
| STK730-050 | | | | | 15.0 | | 280 | 0.3 |
| STK730-060 | 900 | -30 to +115 | +115 | +150 | 3.0 | 170 to 264 | 110 | 5.0 |
| STK730-070 | | | | | 5.0 | | 180 | 3.0 |
| STK730-080 | | | | | 6.0 | | 210 | 2.0 |
| STK730-090 | | | | | 8.0 | | 280 | 1.2 |

Note: * The recommended substrate temperature is 105°C (maximum).

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