

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

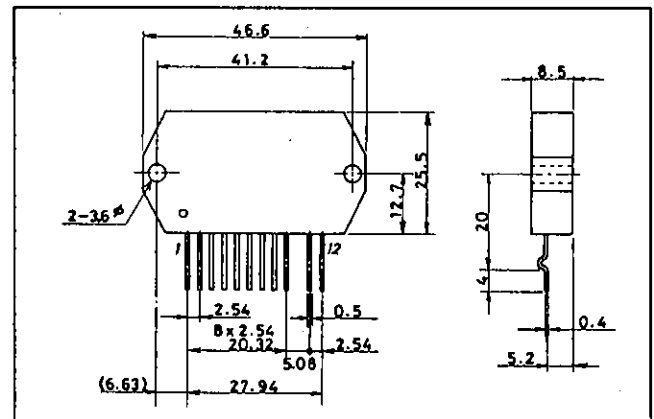
- Power supplies in CRT and CTV products
- Power supplies in office automation products
- Switching power supplies in general

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

4121

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

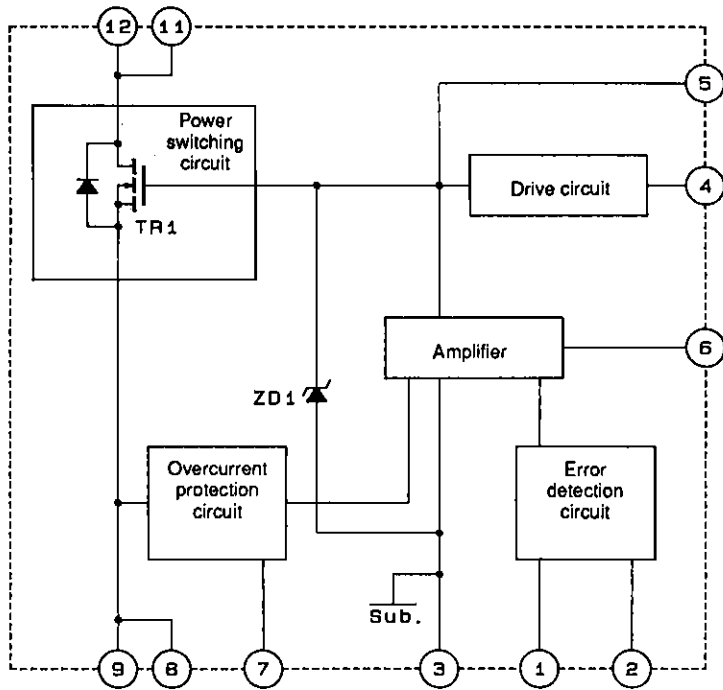
Parameter	Symbol	Condition	Rating	Unit
Pin 4 input voltage	V4		±8 to ±24	V
Oscillator frequency	fosc		20 to 120	kHz

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

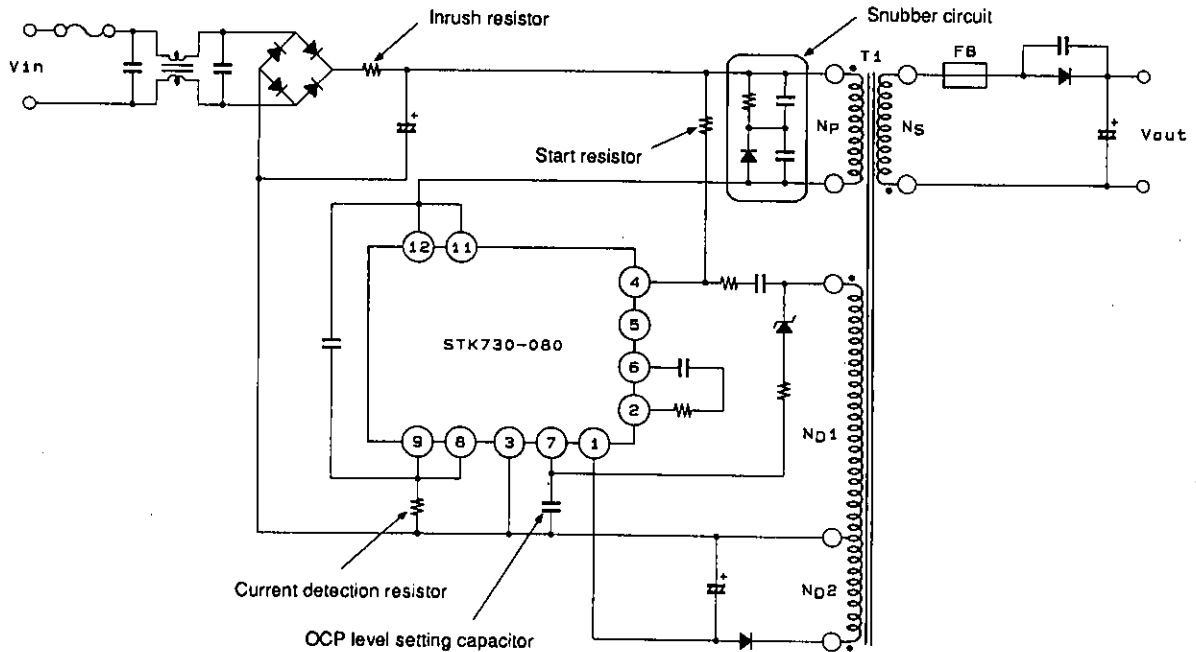


Pin No.	Description
1	Vref (40.5 V typical) input
2	Error detection level
3	Ground
4	Drive voltage input
5	TR1 gate
6	Amplifier circuit control
7	OCP setting level input
8	TR1 source
9	TR1 source
11	TR1 drain
12	TR1 drain

A01842

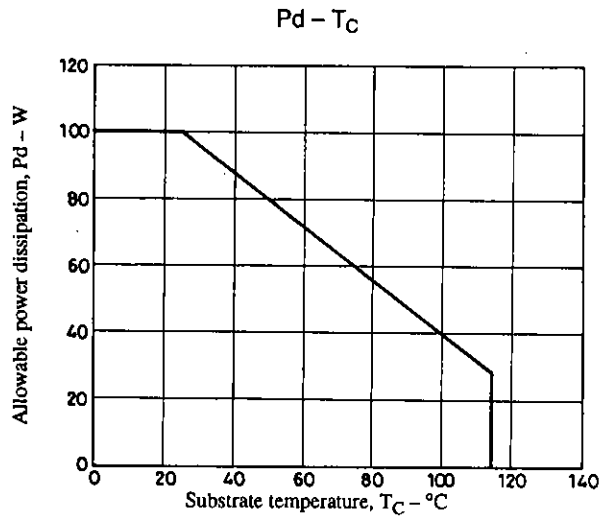
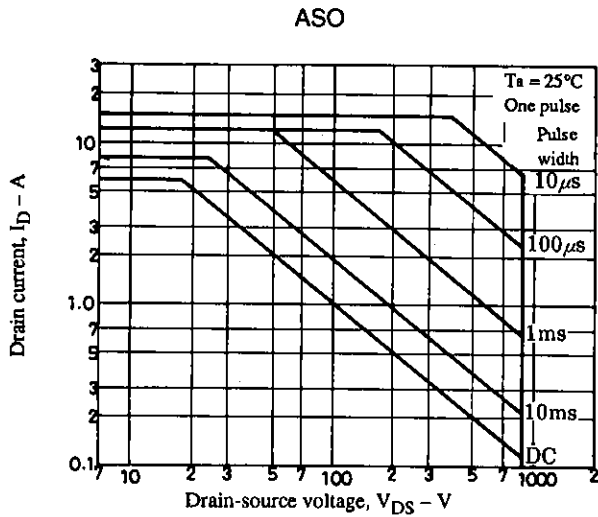
Note: The back surface of the IC is not an insulator, and may be shorted to pin 3.

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}	T_{stg}^*	$T_c \text{ max}$	$T_j \text{ max}$	I_D	AC input range	$W_o \text{ max}$	$R_{on \text{ typ.}}$
	V	$^\circ\text{C}$	$^\circ\text{C}$	$^\circ\text{C}$	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 $^\circ\text{C}$ (maximum).

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