

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

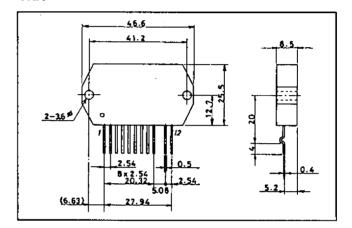
### **Features**

- · 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 $Ta = 25^{\circ}C$ ( $Tc = 25^{\circ}C$ unless specified otherwise)

Parameter	Symbol	Condition	Rating	Unit
Operating substrate temperature	Tc max	*1	115	•€
AC input voltage	V <sub>AC</sub>	*2	280	Vrms
Operating temperature	Topr		-10 to +85	°C
Storage temperature	Tstg		-30 to +115	~⊂
Maximum output power	Wo max	*2 When V <sub>O</sub> = 135 V	210	W
[TR1]				
Drain current	I <sub>D</sub>	*3	6	A
Pulse drain current	I <sub>D</sub> (puls)	*3	15	A
Drain reverse current	IDR		6	Α
Gate-source voltage	V <sub>GSS</sub>		±30	V
Allowable power dissipation	Pd		100	W
Chip junction temperature	Tj max		150	•c
Thermal resistance	θј-с		1.25	•c/w
[ZD1]				
Allowable power dissipation	P <sub>ZD1</sub>		500	mW
Chip junction temperature	Tj (ZD1) max		125	°C
Thermal resistance	θj-c <sub>(ZD1)</sub>		0.2	°C/mW

Note: 1. The recommended substrate temperature is 105°C (maximum).

- In the specified test circuit
   See the ASO characteristics for these values in overcurrent states.

## Recommended Operating Conditions at $Ta = 25^{\circ}C$

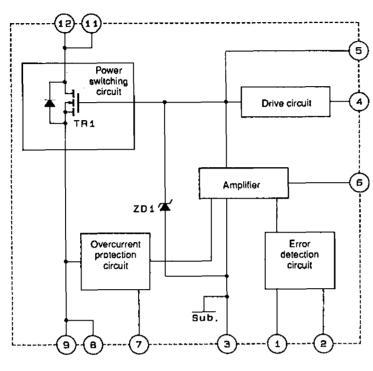
Parameter	Symbol	Condition	Rating	Unit
Pin 4 input voltage	V4		±8 to ±24	٧
Oscillator frequency	fosc		20 to 120	kHz

## Operating Characteristics at $Ta = 25^{\circ}C$ ( $Tc = 25^{\circ}C$ unless specified otherwise)

Parameter						
	Symbol	Condition	min	typ	max	Unit
Output voltage setting		* lin = 8 mA	40.0	40.5	41.0	V
Output voltage temperature coefficient		* Tc = 0 to + 105°C, lin = 8 mA		7		mV/°C
[TR1]						
Drain-source breakdown voltage	V (BR) DSS	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0 V	900			V
Gate-source cutoff voltage	V <sub>GS</sub> (off)	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V	2.0		3.0	V
On resistance	R <sub>DS</sub> (on)	I <sub>D</sub> = 3 A, V <sub>GS</sub> = 10 V		2.0	3.0	Ω
Input capacitance	Ciss	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 V, f = 1 MHz		1200		ρF
[ZD1]			~ <del></del>			
Zener voltage	Vz	I <sub>Z</sub> = 5 mA	23.7		26.3	V

Note: • In the specified test circuit

## **Equivalent Circuit Block Diagram**

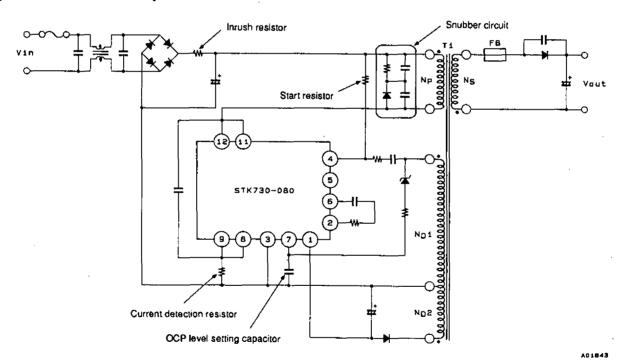


Pin No.	Description
1	Vref (40.5 V typical) input
2	Error detection level
3	Ground
4	Drive voltage input
5	TR1 gate
6	Amplifier circuit control
7	OCP setting level input
8 9	TR1 source
11 12	TR1 drain

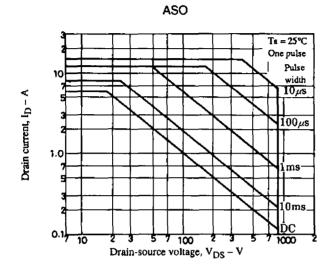
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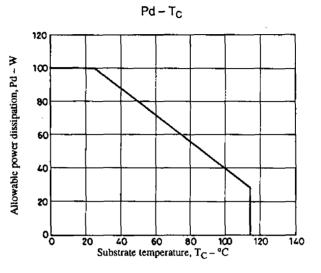
Note: The back surface of the IC is not an insulator, and may be shorted to pin 3.

#### **Application Circuit Example**



#### **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 <sub>DSS</sub>	Tstg*	Tc max	Tj max	ID	AC input range	Wo max	Ron typ.	
	V		<u></u>	°C	Α	V	W	Ω	
STK730-010			+115		6.0	85 to 132	110	1.4	
STK730-020				1	8.0		145	0.8	
STK730-030	500			+150	10.0		180	0.7	
STK730-040					12.0		210	0.55	
STK730-050		-30 to +115			15.0		280	0.3	
STK730-060		7 :			3.0		110	5.0	
STK730-070					5.0	170 to 264	180	3.0	
STK730-080	900				6.0		210	2.0	
STK730-090		1 1		Į.	8.0	7	280	1.2	

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

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