

STR6A100xV/xVD Series

■ Features

Downsized, Low Power Consumption

- Built-in startup circuit
(automatically turn off after startup, zero power consumption)
- Built in power MOSFET of 650 V/700 V

High Efficiency in All Load Ranges

- Step drive control (lower V_F of secondary-side rectifier diode)
- Standby operating point can be changed
- Automatically switch the operation mode according to the load
Heavy load: frequency fixed, 65 kHz/100 kHz
Medium load: green mode, 25 kHz to 65 kHz /100 kHz
Light load: burst oscillation operation

Highly Stable Control

- Current mode PWM control
- Leading edge blanking function

Low Noise

- Soft start function (reduces stresses on parts)
- Random switching function

Providing Highly Reliable Circuits by Various Protections

- Overload protection (OLP): auto-restart
- Overvoltage protection (OVP): latch/ auto-restart
- Thermal shutdown (TSD) with hysteresis: latch/ auto-restart

■ Selection Guide

Pb-free (RoHS compliant)



Part Number	V_{DSS} (min.)	$R_{DS(ON)}$ (max.)	P_{OUT}^*	$f_{OSC(AVG)}$	Operation of OVP, TSD
STR6A124MV	700 V	1.4 Ω	33 W	65 kHz	Latch
STR6A153MV	650 V	1.9 Ω	28 W	65 kHz	Latch
STR6A153MVD					Auto-restart
STR6A163HVD	700 V	2.3 Ω	28 W	100 kHz	Auto-restart
STR6A161HV		3.95 Ω	23.5 W		Latch
STR6A161HVD			Auto-restart		
STR6A169HVD		6.0 Ω	19.5 W		Auto-restart
STR6A168HV		10 Ω	14 W		Latch
STR6A168HVD					Auto-restart

■ Evaluation Board

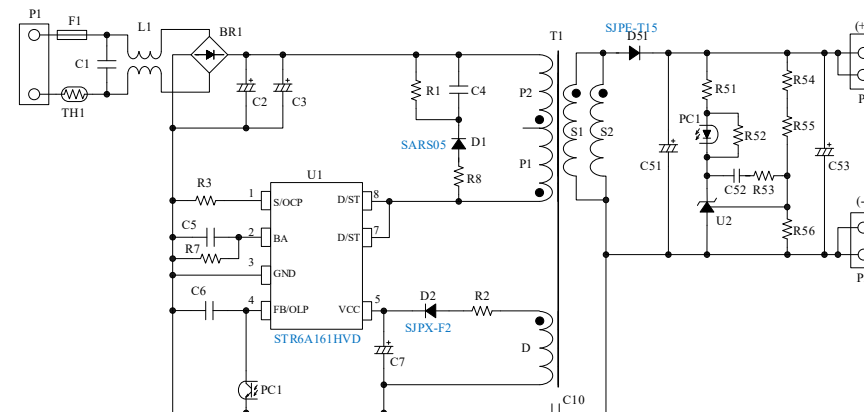
*Universal, open frame

We also provide an evaluation board for an isolated flyback converter of 12 W (12 V/1 A) using STR6A161HVD.



48.5 mm × 120.5 mm

Evaluation Board Circuit



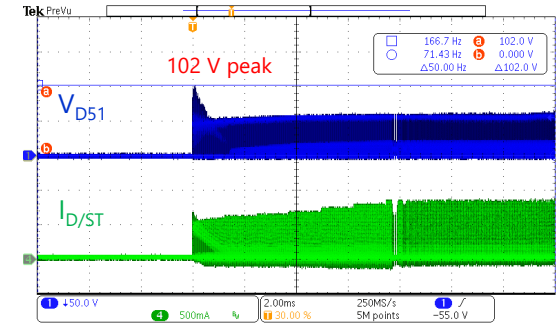
STR6A100xV/xVD Series

◆ Step Drive Control

The STR6A100xV/xVD series employ step drive control that optimally controls the gate drive of the internal power MOSFET according to the load. This reduces the surge voltage of the secondary rectifier diode, D51, at turn-on, resulting in setting the breakdown voltage of D51 lower than before. By this means, the improvement of circuit efficiency is achieved by lowering the cost and V_F of D51. A 150 V Schottky diode is used for the evaluation board.

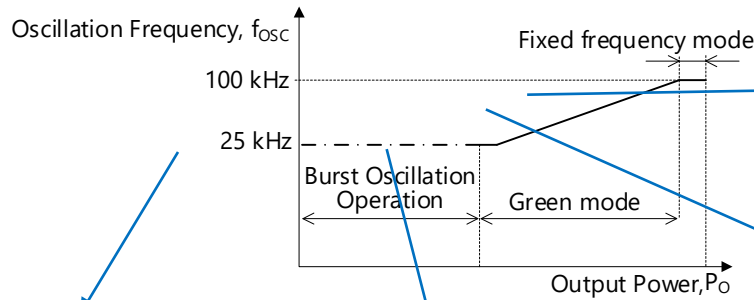
Evaluation Board Operational Waveform at Startup

($V_{IN}=265$ VAC, $V_{OUT}=12$ V, $I_O=1$ A)

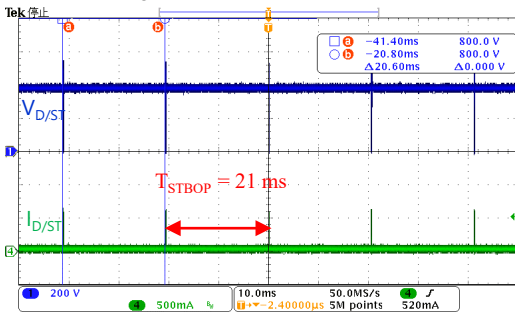


◆ Automatic Switching of Operation Mode according to the Load

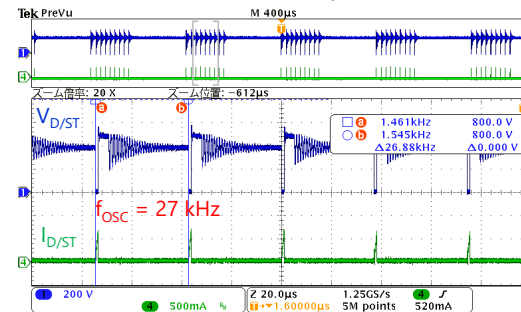
Evaluation Board Operational Waveform ($V_{IN}=265$ VAC, $R7=330$ k Ω , $V_{OUT}=12$ V)



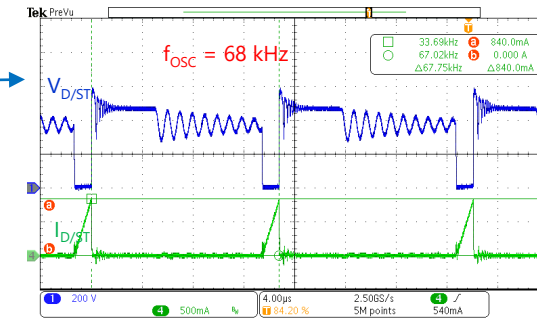
No load ($I_O=0$ A)



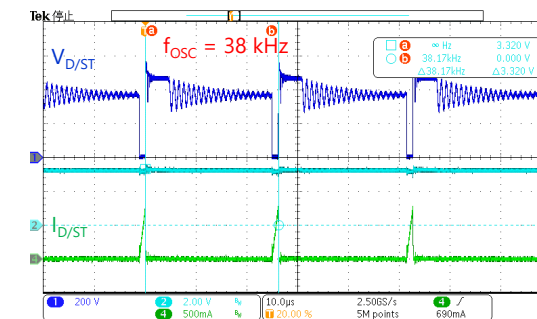
Standby operating point ($I_O=0.1$ A)



Heavy load ($I_O=1$ A)



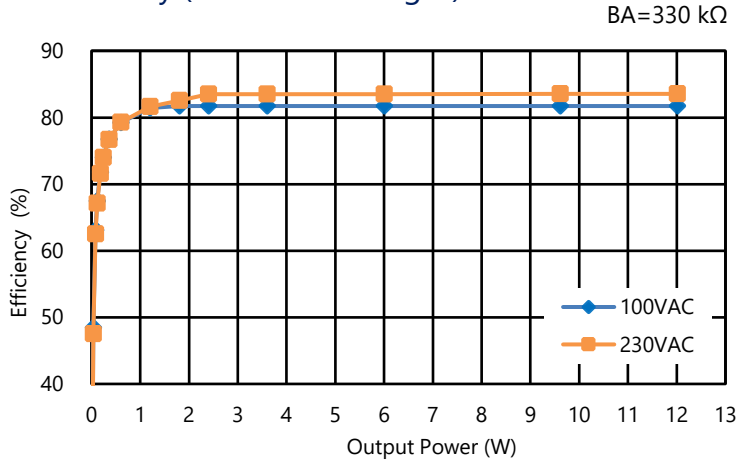
Medium load ($I_O=0.7$ A)



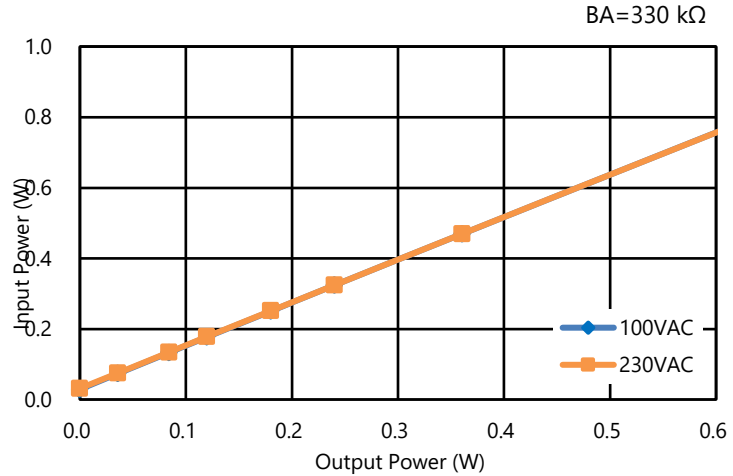
STR6A100xV/xVD Series

Evaluation Board Characteristics: 12 W (12 V / 1.0 A)

◆ Efficiency (In All Load Ranges)



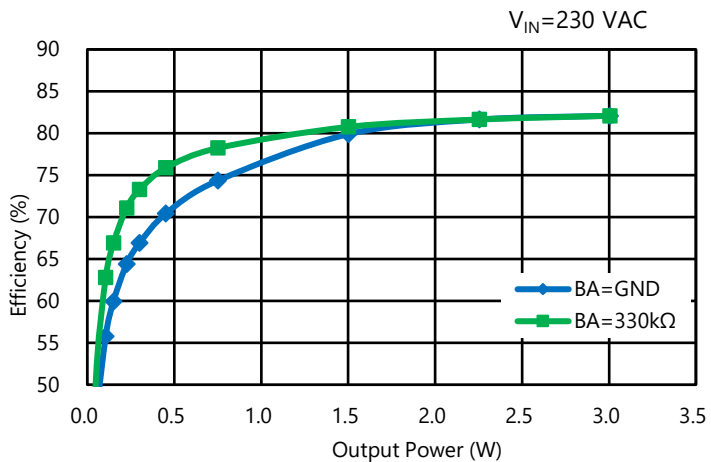
◆ Standby Power



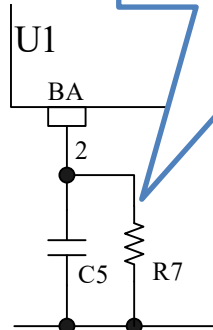
◆ Input Power at No Load

Input Voltage	Input Power
100 VAC	29 mW
230 VAC	32 mW

◆ Efficiency when the Standby Operating Point is Changed



Standby operating point can be changed by the resistance connected to BA pin.



BA Pin Resistance	Load Factor at Standby Operating Point
Shorted	About 3 to 6 %
Open	About 4 to 8 %
330 kΩ	About 6 to 11 %
68 kΩ	About 8 to 13 %

STR6A100xV/xVD Series

The STR6A124MV uses a DIP8 package and supports an output power of 33 W at maximum.

The STR6A124MV is an IC with a built-in power MOSFET with the lowest on-resistance in the STR6A100xV/xVD series.

The maximum output power of conventional products was up to 28 W, but the STR6A124MV using a DIP8 package can now support a maximum output power of 33 W.

Compared to other ICs, this product generates less heat, resulting in improved circuit efficiency, increased component integration, and enhanced reliability of power supplies.

Input/output conditions: 85 VAC, 15VAC, 1.85 A
 $T_A: 25\text{ }^\circ\text{C}$

Comparison of Temp. around the IC (output power of 28 W)

Part Number	$R_{DS(ON)}$ (max.)	Entire PCB	Around the IC
New Product, STR6A124MV	1.4 Ω	<p>Decreased surface temp. of IC by 17.7 $^\circ\text{C}$!</p> <p>IC: 64.1$^\circ\text{C}$, $\Delta T=39.1^\circ\text{C}$</p>	
STR6A153MVD	1.9 Ω	<p>IC: 81.8$^\circ\text{C}$, $\Delta T=56.8^\circ\text{C}$</p>	

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