



Working Together for a
Greener Society

Future of Power Electronics and the Earth

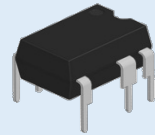


Power Management ICs for PWM Off-line Switching Power Supply

STR6A100xV **STR6A100xVD** Series

- Better efficiency?
- Lower-noise power supply?

To answer your requests, let us introduce
“STR6A100xV/xVD Series”



up to 33 W*

* Open frame, universal input

which will bring you ideal solutions!

Description

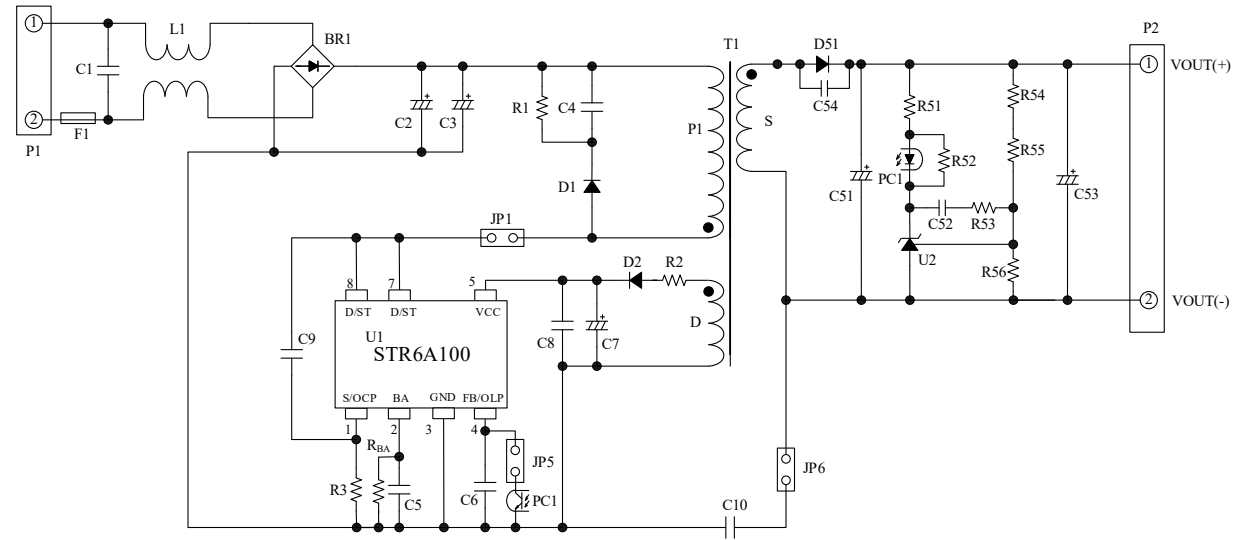
The STR6A100xV/xVD series are power ICs for switching power supplies, incorporating a power MOSFET and a current mode PWM control IC.

Main Features

- **Step Drive Control**
- **Green Mode Function**
- **Standby Operating Point Adjustment**

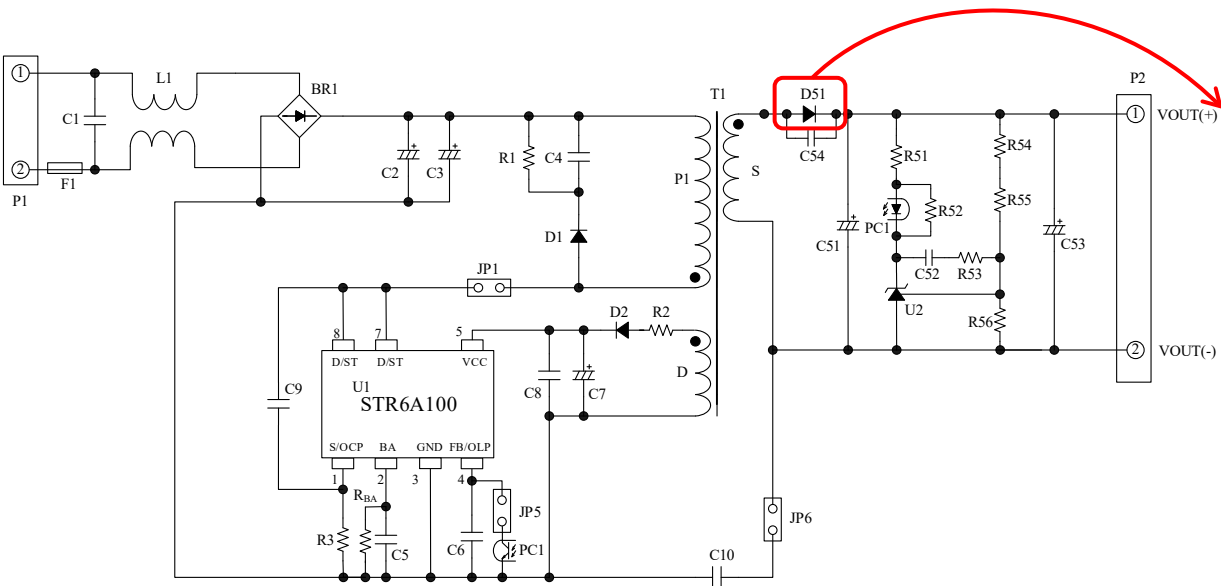
These will contribute to efficiency improvement and noise reduction.

Typical Application

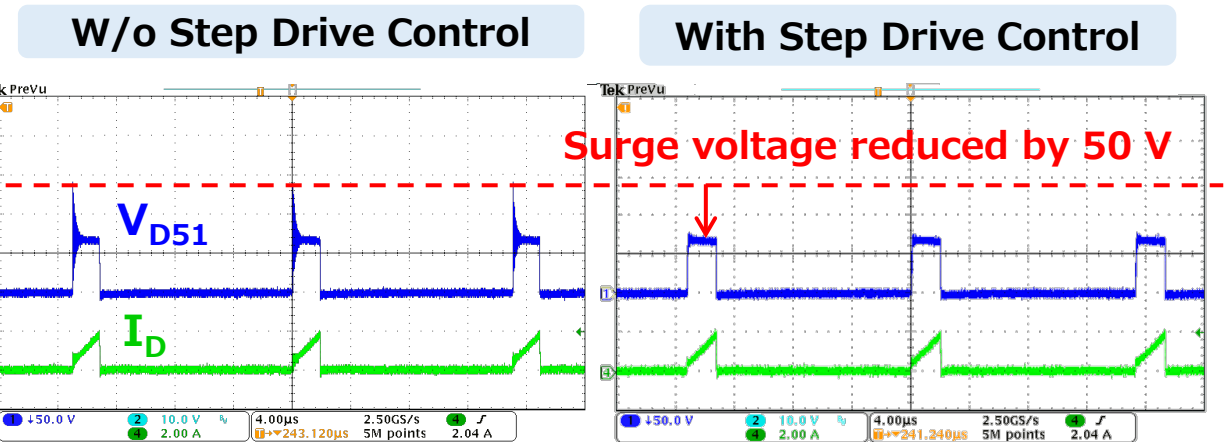


This function internally controls the gate drive of the power MOSFET in an optimal way, according to load conditions.

The step drive control reduces the surge voltage of the secondary rectifier diode at power MOSFET turn-on.

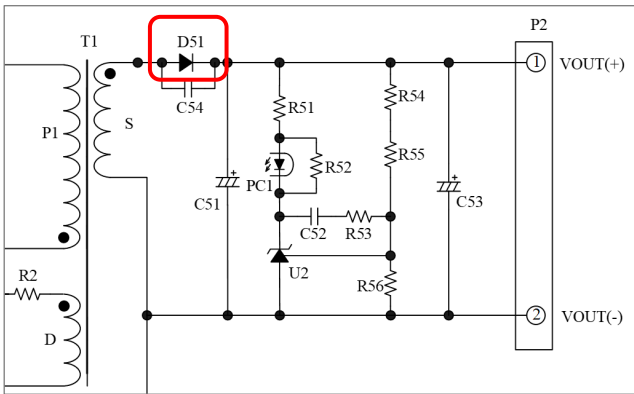


Typical Application



Waveform Comparison:
Secondary Rectifier Diode

By reducing surge voltages, the secondary rectifier diode can be set to the breakdown voltage lower than that of conventional diodes. This results in lower VF and loss.



Conventional Secondary Rectifier Diodes

FML-G14S

- VRM = 400 V
- VF = 1.3 V



STR6A100xV/xVD Series Secondary Rectifier Diodes

SJPB-H9

- VRM = 90 V
- VF = 0.82 V

In this circuit example,
VF is reduced by 0.48 V (1.3 V \rightarrow 0.82 V).

When the current through the diode is 1 A,
the loss is reduced by **0.48 W** (0.48 V \times 1 A).

**More
Efficient!**

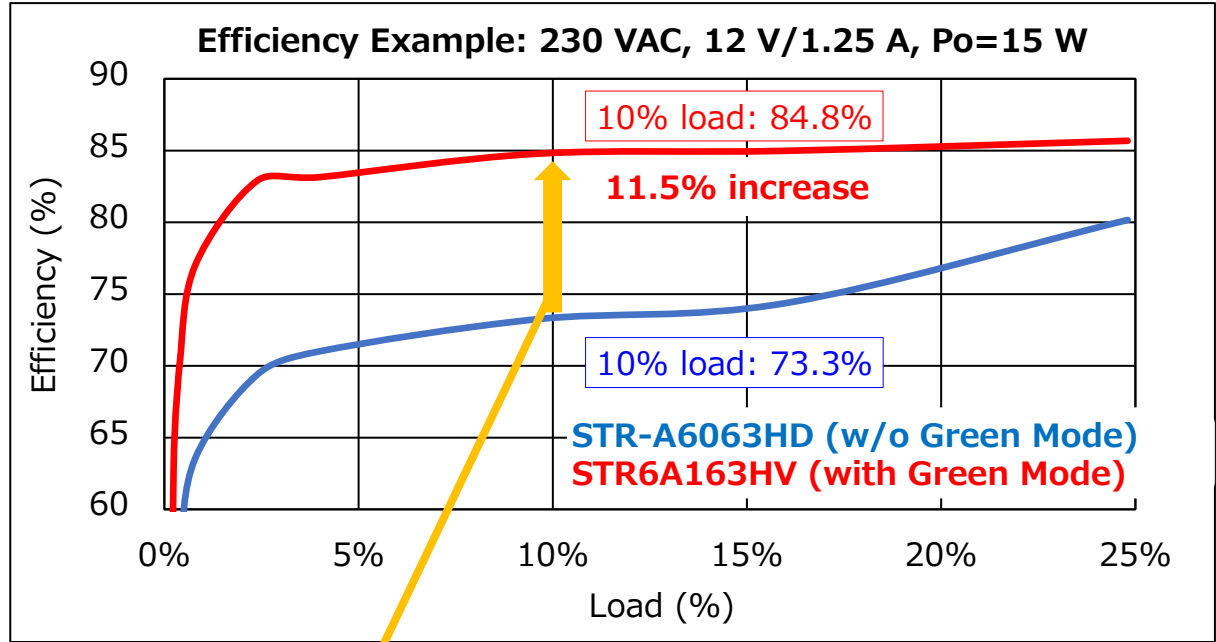
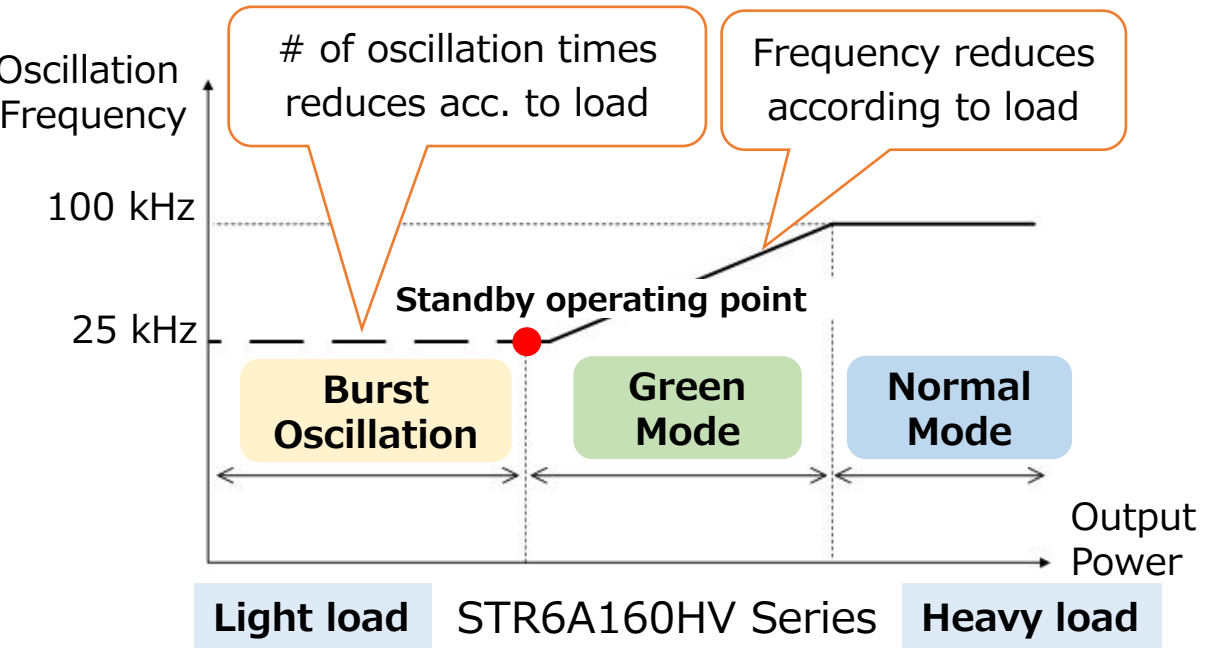
Green Mode is the function to control the oscillation frequency according to load.

The oscillation frequency is lowered at lighter load.

The ICs enter Burst Oscillation Mode when load decreases to the standby operating point.

During this mode, the number of oscillation times is lowered at lighter load.

This leads to less switching loss and more efficiency at medium to light loads.

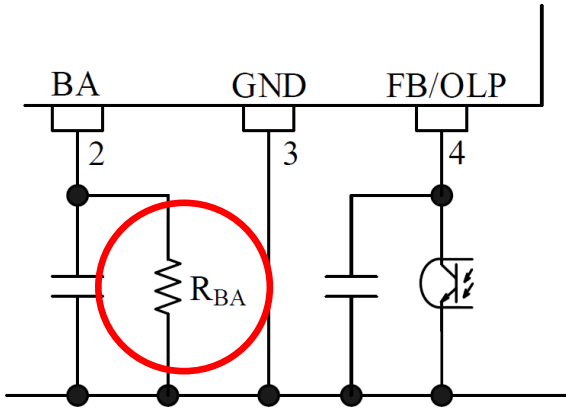


11.5% higher at light load (10% load)!

05. Standby Operating Point Adjustment

This function is to adjust the standby operating point (i.e., the switching point from Green Mode to Burst Oscillation).

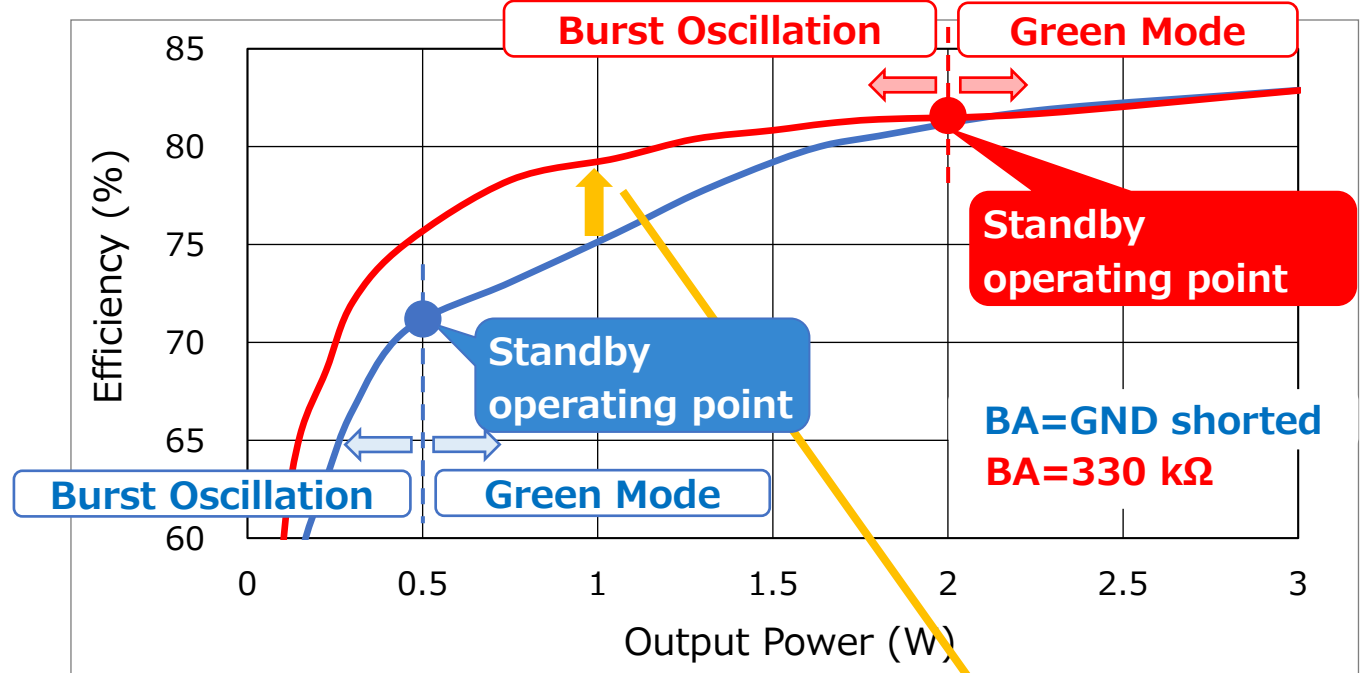
Very easy to adjust! You only have to connect a resistor to the BA pin.



Resistance, R_{BA}	Load% at Standby Operating Point
Shorted	About 3 to 6%
Open	About 4 to 8%
330 k Ω	About 6 to 11%
68 k Ω	About 8 to 13%

Adjusting the standby operating point reduces further switching loss at light load.

STR6A161HVD Ex.: Efficiency when standby operating point is changed



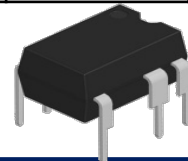
Increased by $\geq 4\%$ at light load (1 W)!

Here's a selection guide to the STR6A100xV/xVD series. Besides what we introduced, the ICs have various functions.

Selection Guide

Part Number	f _{osc}	MOSFET		P _{OUT} (Adapter)		P _{OUT} (Open Frame)		OVP, TSD
		V _{DSS}	R _{DS(ON)}	230 VAC	Universal	230 VAC	Universal	
STR6A124MV	65 kHz	700 V	1.4 Ω	29 W	23 W	46 W	33 W	Latched
STR6A153MV	65 kHz	650 V	1.9 Ω	26 W	21 W	40 W	28 W	Latched
STR6A153MVD								Auto-restart
STR6A163HVD*	100 kHz	700 V	2.3 Ω	25 W	20 W	40 W	28 W	Auto-restart
STR6A161HV			3.95 Ω	20.5 W	15 W	35 W	23.5 W	Latched
STR6A161HVD								Auto-restart
STR6A169HVD			6.0 Ω	17 W	11 W	30 W	19.5 W	Auto-restart
STR6A168HV			10.0 Ω	14 W	8 W	24 W	14 W	Latched
STR6A168HVD								Auto-restart

*Under development



Various Functions

- Soft Start Function
- Input Power at No Load, P_{IN} < 15 mW
- Random Switching Function
- Slope Compensation Function (Subharmonic Oscillation Prevention)
- Leading Edge Blanking Function
- Bias Assist Function
- Overcurrent Protection (OCP): Pulse-by-Pulse Two Different OCP, with Input Compensation Function
- Overload Protection (OLP) with Timer: Auto-restart
- Overvoltage Protection (OVP): Latched/ Auto-restart
- Thermal Shutdown (TSD): Latched/ Auto-restart with Hysteresis

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DSGN-CEZ-16003