4.2V to 18V Input, 3A, Synchronous Buck Converter

1 FEATURES

- **Configured for a Wide Range of Applications**
  - **Input Voltage Range: 4.2V to 18V**
  - **Output Voltage Range: 0.6V to 7V**
  - **Reference voltage: 0.6V**
  - **±1.5% Reference Voltage Accuracy at 25°C**
  - **±2% Reference Voltage Accuracy from −40°C to 125°C**
  - **Integrated 115mΩ and 65mΩ FETs**
  - **Low Quiescent Current: 110µA**
  - **Switching Frequency: 650kHz**
  - **Maximum 95% Large Duty Cycle Operation**
  - **Fixed Soft-Start Time: 1.2ms**
- **Easy of use and Small Design Size**
  - **Eco-mode at light loading**
  - **ACOT Control Mode with Fast Transient Response**
  - **Support Start-up with Prebiased Output**
  - **Non-latch for OV、OT and UVLO Protection**
  - **Cycle-By-Cycle Overcurrent Limit**
  - **Hiccup Mode for UV Protection**
  - **Operating Junction Temperature Range from -40°C to 125°C**
  - **Micro Size Package: TSOT23-6 and SOT563**

2 APPLICATIONS

- **TV**
- **Digital Set Top Box (STB)**
- **Building Automation**
- **Broadband Fixed Line Access**

3 DESCRIPTIONS

RS6203 is a simple, easy-to-use, 3A synchronous buck converter.

The devices are designed to operate with minimum external component counts and designed to achieve low standby current.

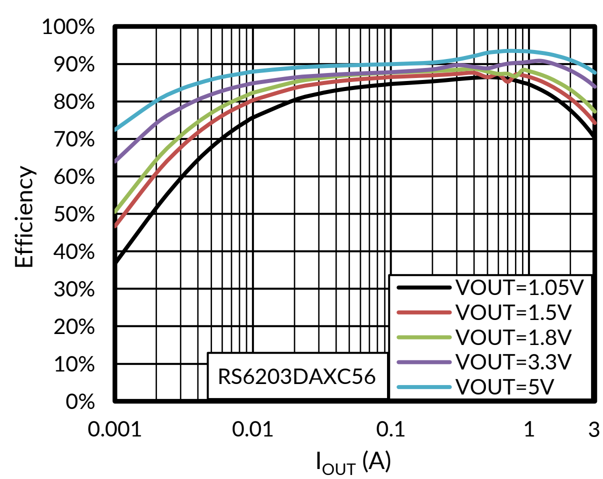
This switch mode power supply (SMPS) device employs ACOT control mode providing a fast transient response and supporting both low equivalent series resistance (ESR) output capacitors, such as specialty polymer and ultra-low ESR ceramic capacitors with no external compensation components.

RS6203 operates in Eco-mode, which maintains high-efficiency during light load operation. The device integrates complete protection through OCP, UVLO, OTP, and UVP with hiccup. RS6203 is available in TSOT23-6 and SOT563 package and specified from a −40°C to 125°C junction temperature.

Device Information (1)

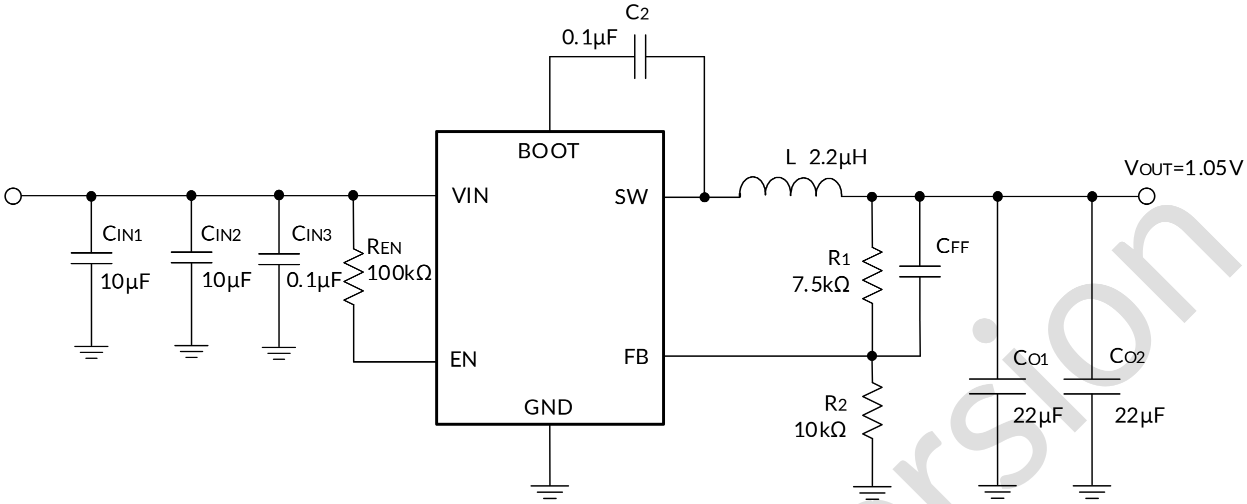
PART NUMBER	PACKAGE	BODY SIZE(NOM)
RS6203	TSOT23-6	2.92mm×1.60mm
	SOT563	1.60mm×1.20mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.



Efficiency

4 SIMPLIFIED APPLICATION CIRCUIT



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5 REVISION HISTORY

Note: Page numbers for previous revisions may different from page numbers in the current version.

VERSION	Change Date	Change Item
A.0	2025/04/18	Preliminary version completed

6 PACKAGE/ORDERING INFORMATION (1)

PRODUCT	ORDERING NUMBER (2)	TEMPERATURE RANGE	PACKAGE LEAD	PACKAGE MARKING (3)	MSL (4)	PACKAGE OPTION
RS6203	RS6203DAXH6	-40°C ~125°C	TSOT23-6	3DAX	MSL3	Tape and Reel,3000
	RS6203DAXC56	-40°C ~125°C	SOT563	3DAX	MSL3	Tape and Reel,5000

NOTE:

(1) This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the right-hand navigation.

(2) RS6203□□□□□

Package Type
XH6: TSOT23-6
XC56: SOT563

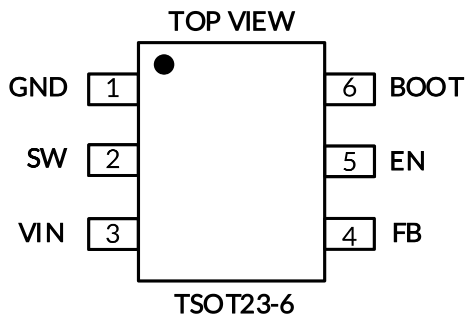
PWM Operation Mode
A: ECO
B: FCCM

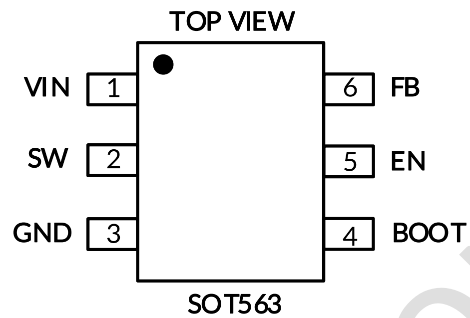
VFB
D: 0.6V
E: 0.765V
F: 0.8V

(3) There may be additional marking, which relates to the lot trace code information (data code and vendor code), the logo or the environmental category on the device.

(4) RUNIC classify the MSL level with using the common preconditioning setting in our assembly factory conforming to the JEDEC industrial standard J-STD-20F, Please align with RUNIC if your end application is quite critical to the preconditioning setting or if you have special requirement.

7 PIN CONFIGURATION AND FUNCTIONS





PIN DESCRIPTION

NAME	PIN		I/O (1)	FUNCTION
	TSOT23-6	SOT563		
VIN	3	1	I	Input voltage supply pin.
SW	2	2	O	Switch node connection between high-side NFET and low-side NFET.
GND	1	3	—	Ground pin source terminal of low-side power NFET as well as the ground terminal for controller circuit. Connect sensitive FB to this GND at a single point.
BOOT	6	4	O	Supply input for the high-side NFET gate drive circuit. Connect a 0.1-µF capacitor between the BOOT and SW pin.
EN	5	5	I	Enable input control. Active high and must be pulled up to enable the device.
FB	4	6	I	Converter feedback input. Connect to output voltage with feedback resistor divider.

(1) I = Input, O = Output.

8 SPECIFICATIONS

8.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted) (1)

			MIN	MAX	UNIT
Input voltage	VIN		-0.3	20	V
Input voltage	FB, EN		-0.3	6	V
Input voltage	GND		-0.3	0.3	V
Output voltage	BOOT		-0.3	25	V
Output voltage	SW		-2	18	V
Package thermal impedance (2)	θ_{JA}	SOT563		150	°C/W
		TSOT23-6		TBD	
Operating Junction temperature Range (3)	T_J		-40	150	°C
Storage temperature range	T_{stg}		-55	150	°C

(1) Operation outside the Absolute Maximum Ratings may cause permanent device damage. Absolute Maximum Ratings do not imply functional operation of the device at these or any other conditions beyond those listed under Recommended Operating Conditions. If used outside the Recommended Operating Conditions but within the Absolute Maximum Ratings, the device may not be fully functional, and this may affect device reliability, functionality, performance, and shorten the device lifetime.

(2) The package thermal impedance is calculated in accordance with JESD-51.

(3) The maximum power dissipation is a function of $T_{J(MAX)}$, $R_{\theta JA}$, and T_A. The maximum allowable power dissipation at any ambient temperature is PD = ($T_{J(MAX)}$ - T_A) / $R_{\theta JA}$. All numbers apply for packages soldered directly onto a PCB.

8.2 ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human-Body Model (HBM)	TBD	V
		Charged-Device Model (CDM)	TBD	

ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

8.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
Input voltage	VIN	4.2	18	V
Input voltage	FB, EN	-0.1	5.5	V
Input voltage	GND	-0.1	0.1	V
Output voltage	BOOT	SW-0.3	SW+5.5	V
Output voltage	SW	-1	18	V
Output Current	IO	0	3	A
Operating Junction temperature	T_J	-40	125	°C
Storage temperature	T_{stg}	-40	150	°C

8.4 ELECTRICAL CHARACTERISTICS

Over operating temperature range (–40°C≤ T_J ≤ 125°C), V_{IN}=12V, Typical values are at T_A = 25°C. (1)

SYMBOL	PARAMETER	CONDITIONS	MIN (2)	TYP (3)	MAX (2)	UNITS
INPUT SUPPLY VOLTAGE						
VIN	Input Voltage Range		4.2		18	V
I_{VIN}	Ground Current	No load, V_{EN} = 5V, non-switching, PSM version		110		µA
I_{SD}	Shutdown Current	No load, V_{EN} = 0V		8		µA
UVLO						
UVLOrise	VIN undervoltage lockout	Wake up VIN voltage		4.05		V
UVLOfall	VIN undervoltage lockout	Shut down VIN voltage		3.75		V
$UVLO_{HYS}$	VIN undervoltage lockout	Hysteresis VIN voltage		300		mV
FEEDBACK VOLTAGE						
VFB	FB voltage	T_J = 25°C, VIN = 4.2V – 18V		600		mV
VFB	FB voltage	T_J =–40°C to 125°C, VIN = 4.2V – 18V		600		mV
MOSFET						
$R_{DS(ON)HI}$	High-side MOSFET $R_{DS(ON)}$	T_J= 25°C, V_{VIN} ≥ 5V		115		mΩ
$R_{DS(ON)LO}$	Low-side MOSFET $R_{DS(ON)}$	T_J= 25°C, V_{VIN} ≥ 5V		65		mΩ
DUTY CYCLE and FREQUENCY CONTROL						
F_{SW}	Switching frequency	T_J= 25°C, V_{VOUT} = 1.0V		650		kHz
$T_{OFF(Min)}$	Minimum off-time	V_{FB}= 0.5V		150		ns
$T_{ON(Min)}$	Minimum on-time	T_J= 25°C		130		ns
CURRENT LIMIT						
I_{OCL_LS}	Over current threshold	Valley current set point		4.5		A
LOGIC THRESHOLD						
$V_{EN(ON)}$	EN threshold high-level	VIN = 4.2V – 18V		1.25		V
$V_{EN(OFF)}$	EN threshold low-level	VIN = 4.2V – 18V		0.85		V
V_{ENHYS}	EN hysteresis			400		mV
OUTPUT DISCHARGE and SOFT START						
I_{EN}	EN pulldown current	V_{EN} = 1.8V		0.4		µA
t_{SS}	Internal soft-start time			1.2		ms
OUTPUT UNDERVOLTAGE AND OVERVOLTAGE PROTECTION						
V_{UVP}	UVP trip threshold			60		%
t_{UVPON}	In continuous hiccup mode, the switching time	Hard short, UVP detect		0.5		ms
t_{UVPOFF}	In continuous hiccup mode, non-switching time	Hard short, UVP detect		11.5		ms
THERMAL PROTECTION						
T_{OTP}	OTP trip threshold			160		°C
T_{OTPHYS}	OTP hysteresis			25		°C

NOTE:
(1) Electrical table values apply only for factory testing conditions at the temperature indicated. Factory testing conditions result in very limited self-heating of the device.
(2) Limits are 100% production tested at 25°C. Limits over the operating temperature range are ensured through correlations using statistical quality control (SQC) method.
(3) Typical values represent the most likely parametric norm as determined at the time of characterization. Actual typical values may vary over time and will also depend on the application and configuration.

8.5 TYPICAL CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

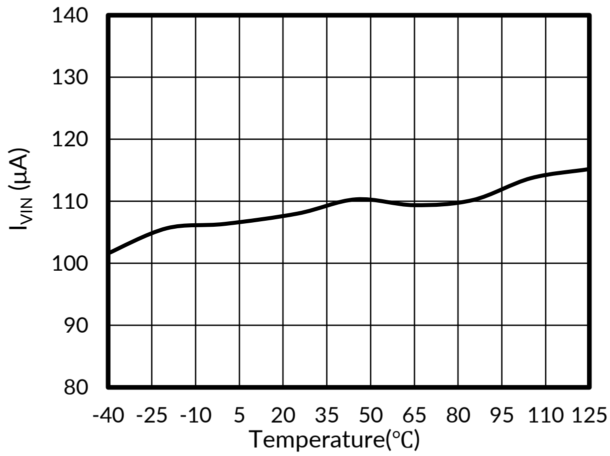


Figure 1. Quiescent Current vs Temperature

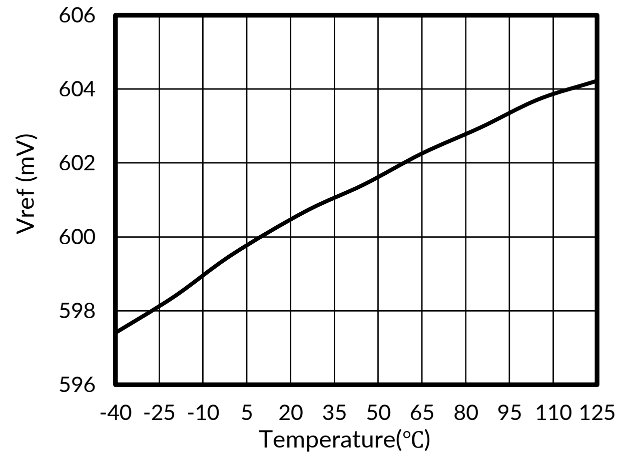


Figure 2. Vref Voltage vs Temperature

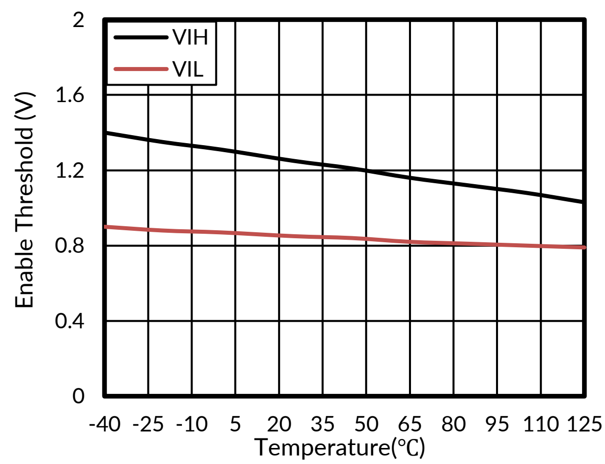


Figure 3. Enable Threshold Voltage vs Temperature

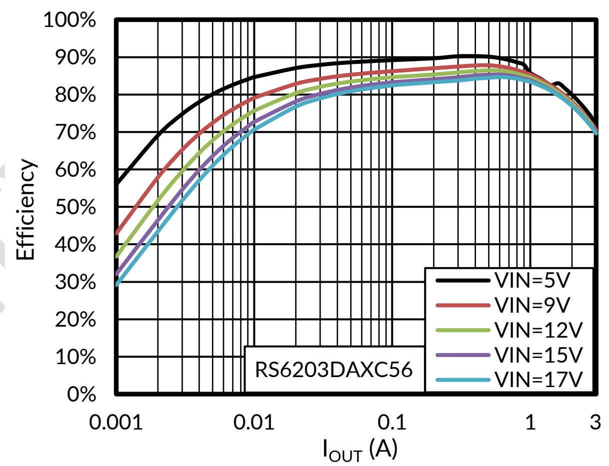


Figure 4. Efficiency at 1.05 V_{OUT} With 2.2uH Inductor

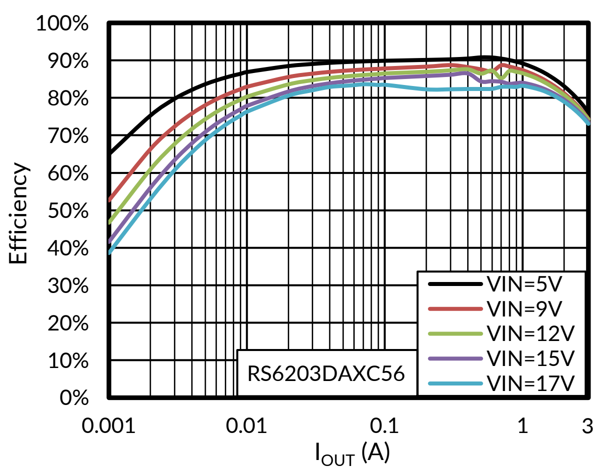


Figure 5. Efficiency at 1.5 V_{OUT} With 2.2uH Inductor

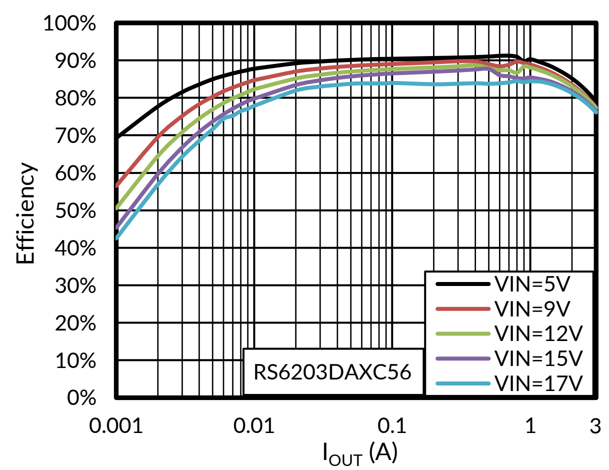


Figure 6. Efficiency at 1.8 V_{OUT} With 2.2uH Inductor

TYPICAL CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

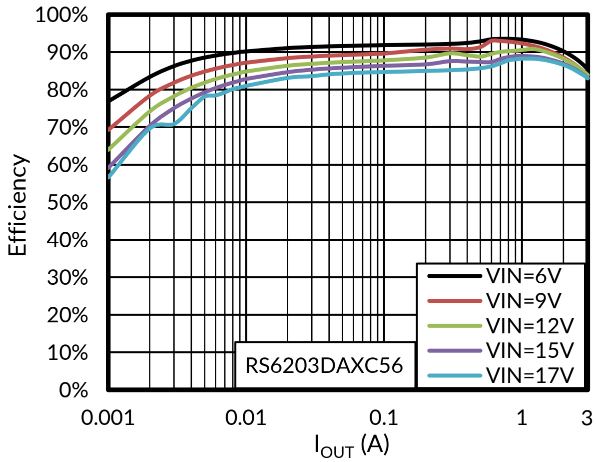


Figure 7. Efficiency at 3.3 V_{OUT} With 4.7uH Inductor

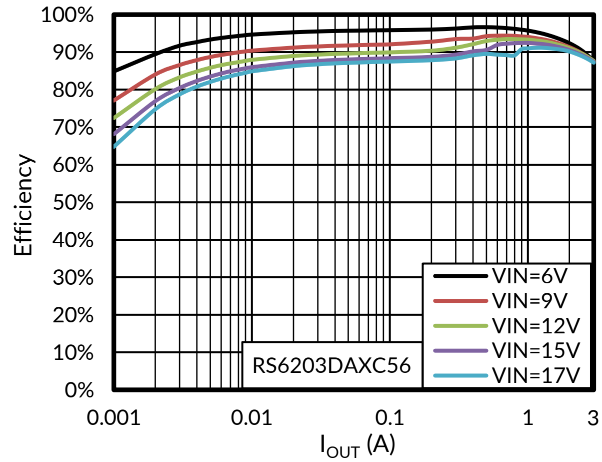


Figure 8. Efficiency at 5 V_{OUT} With 4.7uH Inductor

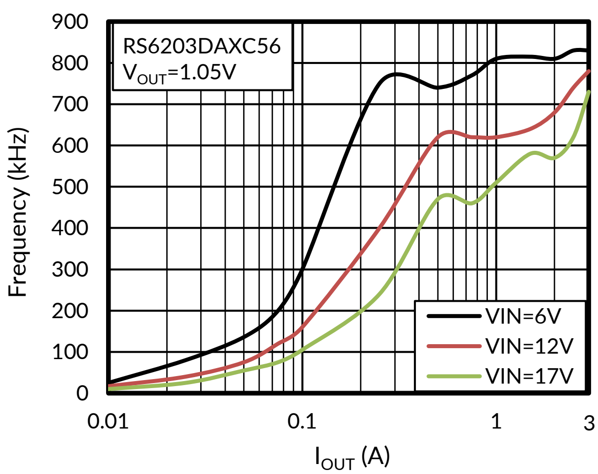


Figure 9. Frequency vs Loading

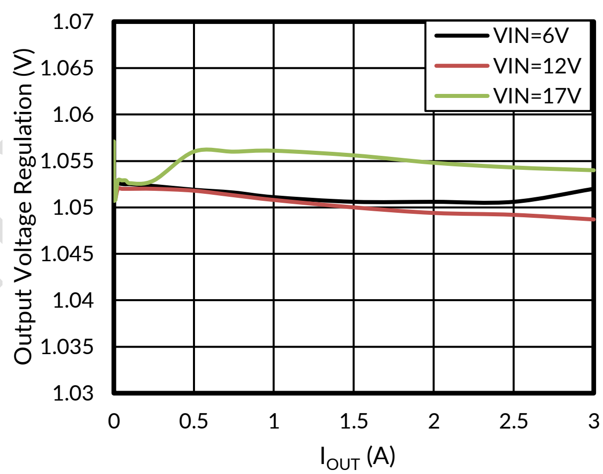


Figure 10. Load Regulation vs Loading

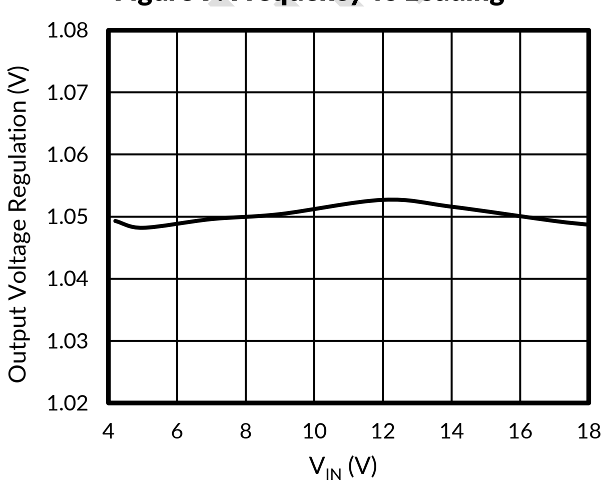


Figure 11. Line Regulation vs Vin at 3A Loading

TYPICAL CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

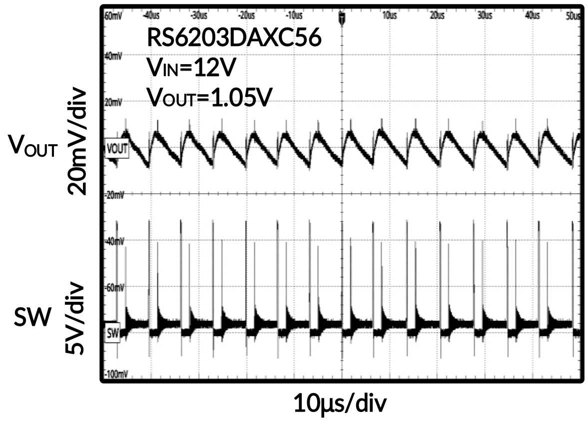


Figure 12. Output Voltage Ripple With 0.1A Loading

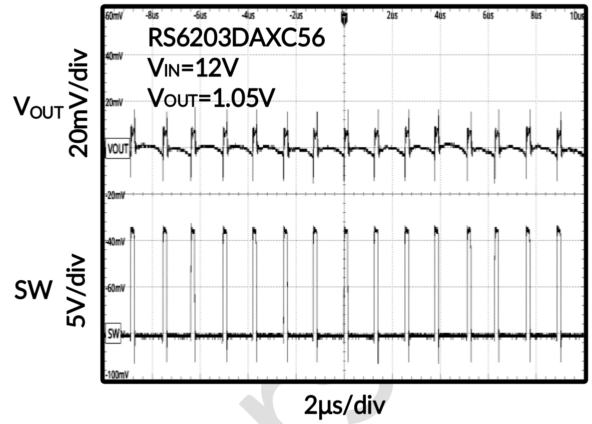


Figure 13. Output Voltage Ripple With 3A Loading

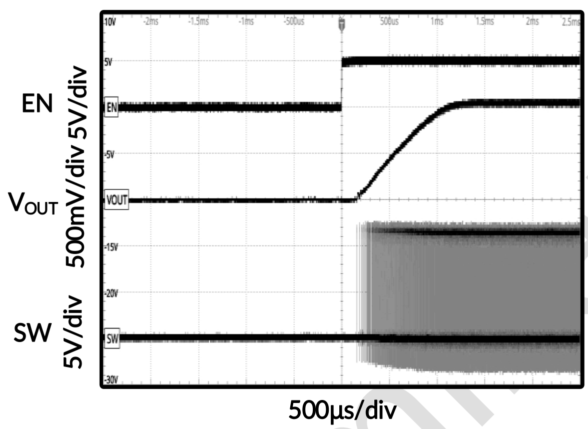


Figure 14. Enable on With 3A Loading

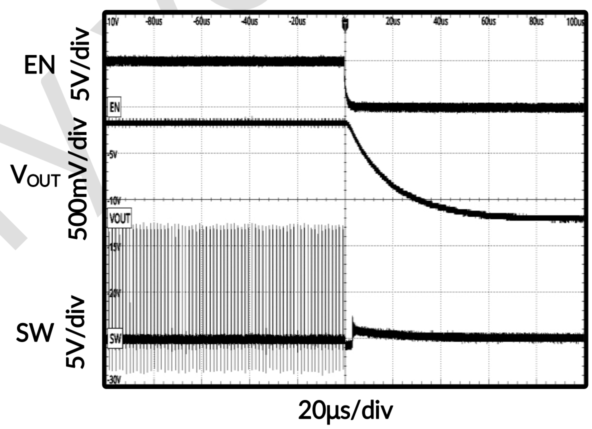


Figure 15. Enable off With 3A Loading

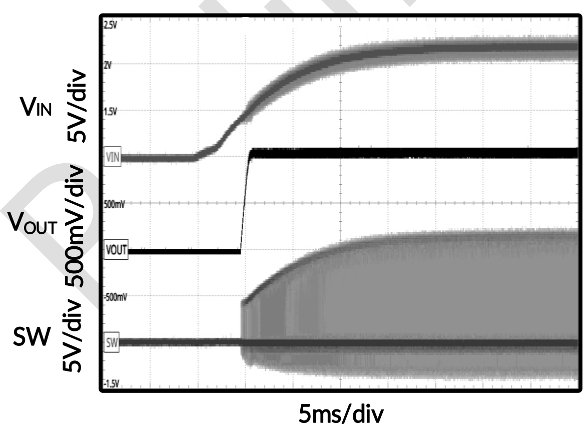


Figure 16. Power on With 3A Loading

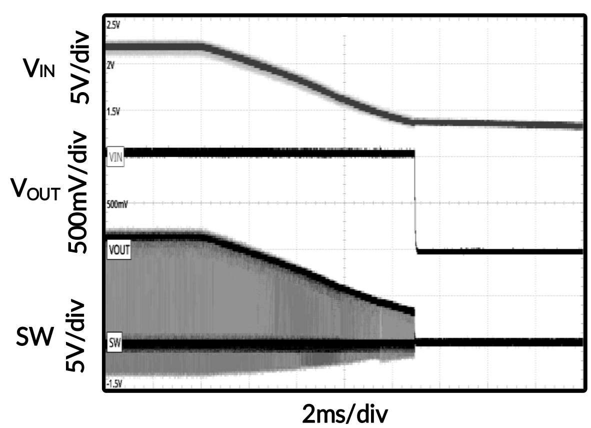


Figure 17. Power off With 3A Loading

TYPICAL CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

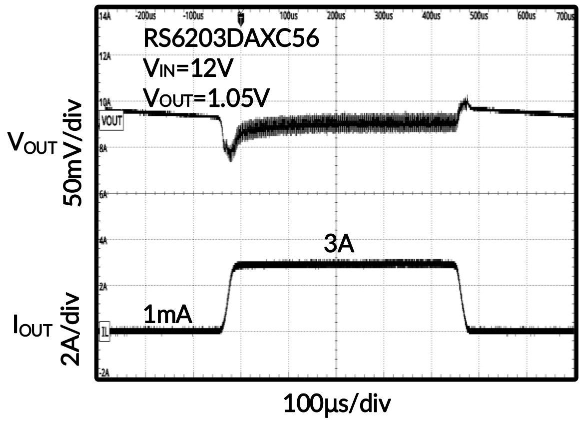


Figure 18. Load Transient With 1mA to 3A

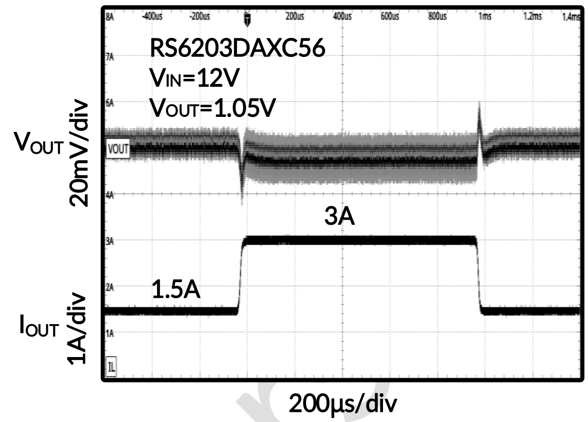


Figure 19. Load Transient With 1.5A to3A

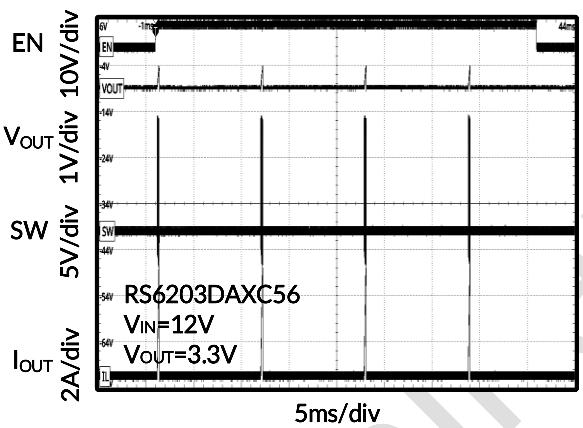


Figure 20. Short Circuit First, Then Turn On

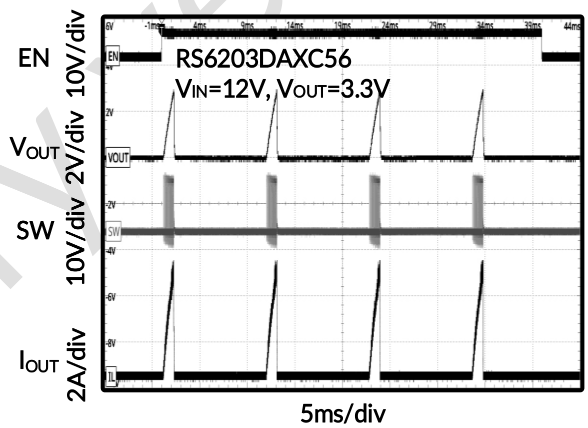


Figure 21. Overload Circuit First, Then Turn On

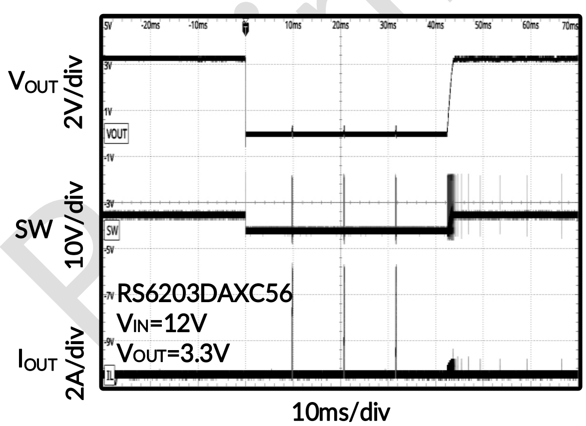


Figure 22. Turn On First, Then Short Circuit

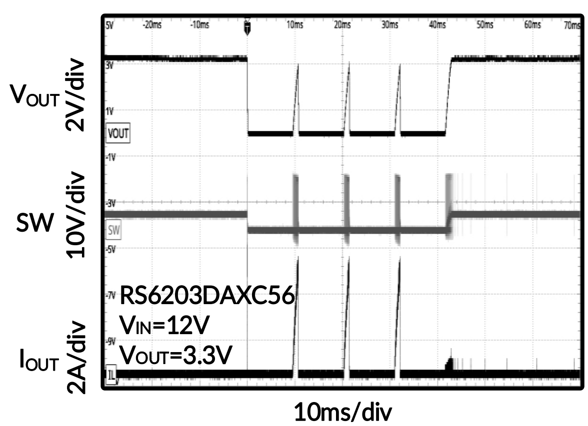


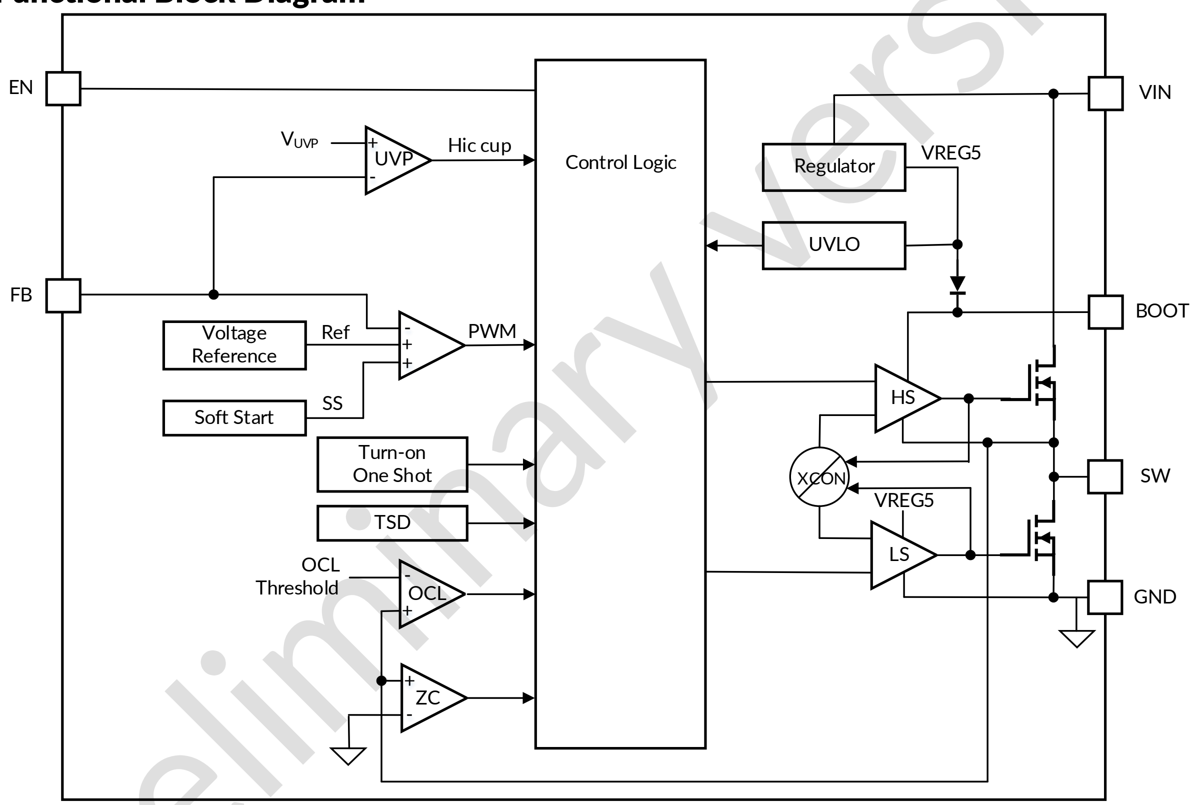
Figure 23. Turn On First, Then Overload Circuit

9 DETAILED DESCRIPTION

9.1 Overview

The RS6203 is a 3A integrated, FET, synchronous step-down buck converter that operates from 4.2V to 18V input voltage (VIN) and 0.6V to 7V output voltage. The device employs ACOT control mode that provides fast transient response with no external compensation components and an accurate feedback voltage. The proprietary ACOT control mode enables low external component count, ease of design, and optimization of the power design for cost, size, and efficiency. The topology provides a seamless transition between CCM operating mode at higher load condition and DCM operation at lighter load condition.
The Eco-mode version allows the RS6203 to maintain high efficiency at light load. The RS6203 is able to adapt to both low equivalent series resistance (ESR) output capacitors, such as POSCAP or SP-CAP and ultra-low ESR ceramic capacitors.

9.2 Functional Block Diagram



9.3 Feature Description

9.3.1 Adaptive On-Time Control and PWM Operation

The main control loop of the RS6203 is an adaptive on-time pulse width modulation (PWM) controller that supports a proprietary ACOT control mode. The ACOT control mode combines adaptive on-time control with an internal compensation circuit for pseudo-fixed frequency and low external component count configuration with both low-ESR and ceramic output capacitors. ACOT control mode is stable even with virtually no ripple at the output. The RS6203 also includes an error amplifier that makes the output voltage very accurate.
At the beginning of each cycle, the high-side MOSFET is turned on. This MOSFET is turned off after internal one shot timer expires. This one shot duration is set proportional to the output voltage, V_O, and inversely proportional to the converter input voltage, VIN, to maintain a pseudo-fixed frequency over the input voltage range, hence called adaptive on-time control. The one-shot timer is reset and the high-side MOSFET is turned on again when the feedback voltage falls below the reference voltage. An internal ramp is added to reference voltage to simulate output ripple, eliminating the need for ESR induced output ripple from ACOT control mode.

9.3.2 Eco-mode Control

RS6203 is designed with advanced Eco-mode to maintain high light load efficiency. As the output current decreases from heavy load condition, the inductor current is also reduced and eventually comes to point that its ripple valley touches zero level, which is the boundary between continuous conduction and discontinuous conduction modes. The rectifying MOSFET is turned off when the zero inductor current is detected. As the load current further decreases the converter runs into discontinuous conduction mode. The on-time is kept almost the same as it was in the continuous conduction mode so that it takes longer time to discharge the output capacitor with smaller load current to the level of the reference voltage. This action makes the switching frequency lower, proportional to the load current, and keeps the light load efficiency high. Use Equation 1 to calculate the transition point to the light load operation $I_{OUT(LL)}$ current.

$$I_{OUT(LL)} = \frac{1}{2 \times L \times f_{SW}} \times \frac{(V_{IN}-V_{OUT}) \times V_{OUT}}{V_{IN}} \quad (1)$$

9.3.3 Soft Start and Prebiased Soft Start

RS6203 have an internal typical 1.2ms soft-start time. When the EN pin becomes high, the internal soft-start function begins ramping up the reference voltage to the PWM comparator.

If the output capacitor is prebiased at start-up, the device initiates switching and start ramping up only after the internal reference voltage becomes greater than the feedback voltage V_{FB}. This scheme makes sure that the converters ramp up smoothly into regulation point.

9.3.4 Large Duty Operation

The RS6203 can support large duty operations up to 95% by smoothly dropping down the switching frequency. When input voltage Vin < 7V and VFB is lower than internal reference voltage, the switching frequency is allowed to smoothly drop to make TON extended to keep output voltage and improve the load transient performance. The minimum switching frequency is limited to about 200kHz.

9.3.5 Current Protection

The output overcurrent limit (OCL) is implemented using a cycle-by-cycle valley detect control circuit. The switch current is monitored during the OFF state by measuring the low-side FET drain to source voltage. This voltage is proportional to the switch current.

There are some important considerations for this type of overcurrent protection. The load current is higher than the overcurrent threshold by one half of the peak-to-peak inductor ripple current. Also, when the current is being limited, the output voltage tends to fall as the demanded load current can be higher than the current available from the converter. This action even can cause the output voltage to fall. When the FB voltage falls below the UVP threshold voltage, the UVP comparator detects the fall. And then, the device shuts down after the UVP delay time and re-starts after the hiccup time.

When the overcurrent condition is removed, the output voltage returns to the regulated value.

9.3.6 Enable Circuit

The EN pin controls the turn-on and turn-off of the device. When EN pin voltage is above the turn-on threshold, the device starts switching, and when the EN pin voltage falls below the turn-off threshold, the device stops switching. The default status is low because there is a 0.4uA pulldown current in internal IC.

EN can be controlled by a typical divider resistor circuit from Vin or by a voltage of lower than 5.5V.

RS6203 also allows EN to connect to Vin by only a pullup resistor, which is suggested a 100kohm resistor. EN voltage is clamped by a Zener diode. This Zener diode is not allowed to go through large current. R_{EN} is not allowed smaller than 80kohm. R_{EN} must also not use a too large resistor to avoid EN not being able to turn on. So R_{EN} range is 80kohm to 3Mohm. R_{EN} must to use 100kohm.

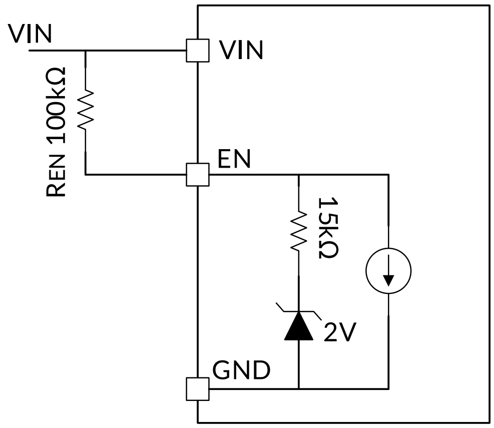


Figure 24. EN Block Circuit

9.3.7 Undervoltage Lockout (UVLO) Protection

UVLO protection monitors the internal regulator voltage. When the voltage is lower than UVLO threshold voltage, the device is shut off. This protection is non-latching.

9.3.8 Thermal Shutdown

The device monitors the temperature of itself. If the temperature exceeds the threshold value (typically 160°C), the device is shut off. This protection is a non-latch protection.

9.4 Device Functional Modes

9.4.1 Eco-mode Operation

The RS6203 operates in Eco-mode, which maintains high efficiency at light loading. As the output current decreases from heavy load conditions, the inductor current is also reduced and eventually comes to a point where the rippled valley touches zero level, which is the boundary between continuous conduction and discontinuous conduction modes. The rectifying MOSFET is turned off when the zero inductor current is detected. As the load current further decreases, the converter runs into discontinuous conduction mode. The on-time is kept almost the same as the on-time was in continuous conduction mode so that discharging the output capacitor with smaller load current to the level of the reference voltage takes longer. This fact makes the switching frequency lower, proportional to the load current, and keeps the light load efficiency high.

10 APPLICATION AND IMPLEMENTATION

Information in the following applications sections is not part of the RUNIC component specification, and RUNIC does not warrant its accuracy or completeness. RUNIC's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

10.1 Output Voltage Resistors Selection

The output voltage is set with a resistor divider from the output node to the FB pin. RUNIC recommends to use 1% tolerance or better divider resistors. Start by using Equation 2 to calculate V_{OUT}.
To improve efficiency at very light loads, consider using larger value resistors. Too high of resistance is more susceptible to noise and voltage errors from the FB input current are more noticeable.

$$V_{OUT} = 0.6 \times (1 + \frac{R1}{R2}) \qquad (2)$$

10.2 Input Capacitor Selection

The RS6203 requires an input decoupling capacitor, and a bulk capacitor is needed depending on the application. RUNIC recommends a ceramic capacitor over 10µF for the decoupling capacitor. An additional 0.1µF capacitor (C3) from VIN to ground is optional to provide additional high frequency filtering. The capacitor voltage rating must be greater than the maximum input voltage.

10.3 Bootstrap Capacitor Selection

Connect a 0.1µF ceramic capacitor between the BOOT to SW pin for proper operation. RUNIC recommends to use a ceramic capacitor.

10.4 Power Supply Recommendations

RS6203 are designed to operate from input supply voltages in the range of 4.2V to 18V. Buck converters require the input voltage to be higher than the output voltage for proper operation. The maximum duty is 95%.

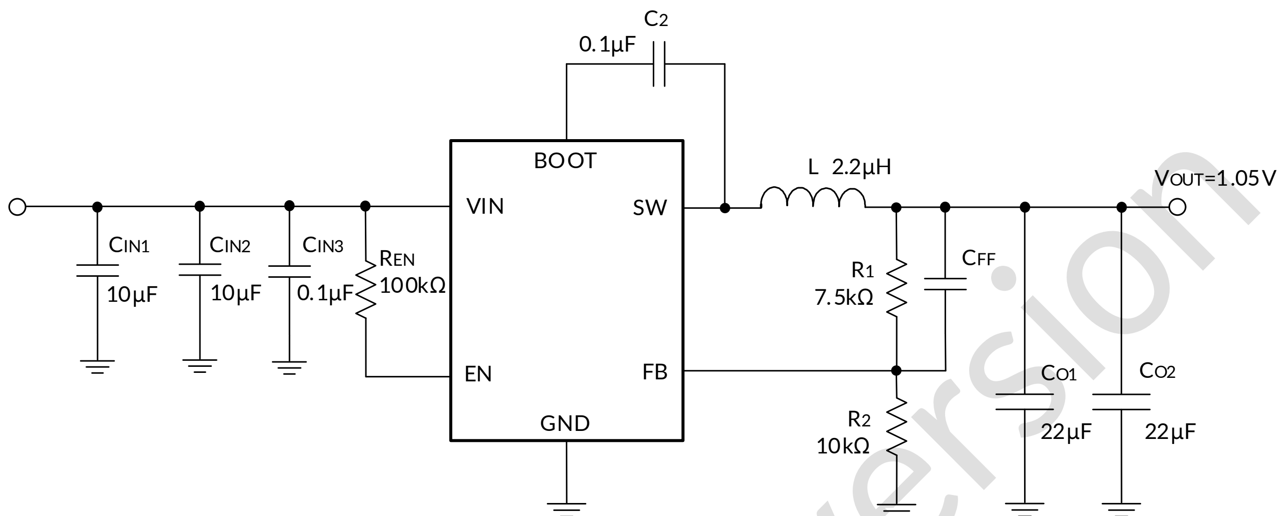


Figure 25. RS6203 1.05V Reference Design

Table 1. Recommended Component Values

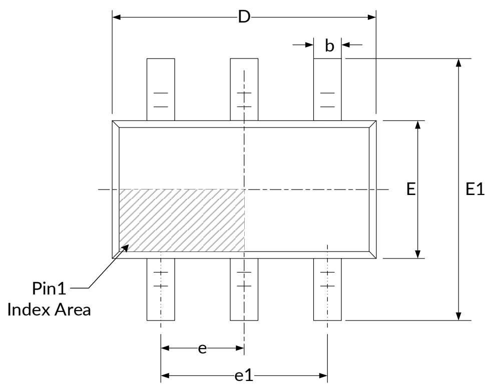
OUTPUT VOLTAGE(V)	R1 (kΩ)	R2 (kΩ)	R_{EN} (kΩ)	Min L(µH)	TYP L(µH)	Max L(µH)	C_{OUT} (µF)	C_{FF} (pF)
0.8	3.33	10	100	1	1.5	2.2	22 to 110	-
1.05	7.5	10	100	1.2	2.2	3.3	22 to 110	-
2.5	2.05	10	100	2.2	3.3	4.7	22 to 110	10
3.3	45	10	100	3.3	4.7	6.8	22 to 110	18
5	73.33	10	100	3.3	4.7	6.8	22 to 110	18
7	106.67	10	100	5.6	6.8	8.2	22 to 110	18

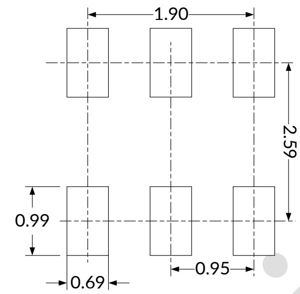
10.5 Layout Guidelines

1. Make VIN and GND traces as wide as possible to reduce trace impedance. The wide areas are also of advantage from the view point of heat dissipation.
2. Place the input capacitor and output capacitor as close to the device as possible to minimize trace impedance.
3. Provide sufficient vias for the input capacitor and output capacitor.
4. Keep the SW trace as physically short and wide as practical to minimize radiated emissions.
5. Do not allow switching current to flow under the device.
6. Connect a separate VOUT path to the upper feedback resistor.
7. Make a Kelvin connection to the GND pin for the feedback path.
8. Place voltage feedback loop away from the high-voltage switching trace, and preferably make sure there is ground shield.
9. Make the trace of the FB node as small as possible to avoid noise coupling.
10. Make the GND trace between the output capacitor and the GND pin as wide as possible to minimize the trace impedance.

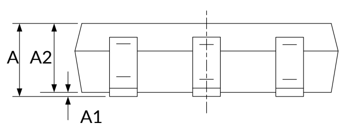
11 PACKAGE OUTLINE DIMENSIONS

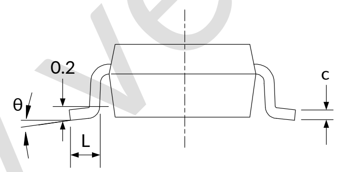
TSOT23-6 (3)





RECOMMENDED LAND PATTERN (Unit: mm)



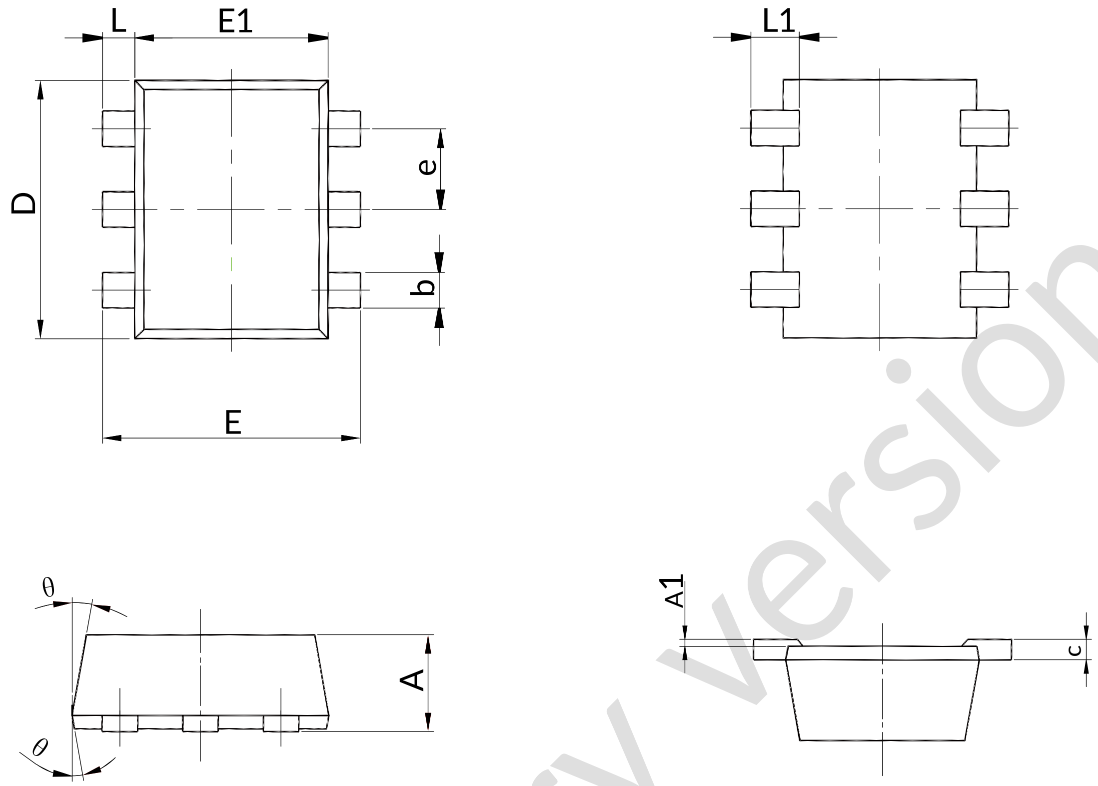


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A (1)	-----	1.100	-----	0.043
A1	0.000	0.100	0.000	0.004
A2	0.700	1.000	0.028	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.200	0.003	0.008
D (1)	2.850	2.950	0.112	0.116
E (1)	1.550	1.650	0.061	0.065
E1	2.650	2.950	0.104	0.116
e	0.950(BSC) (2)		0.037(BSC) (2)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

NOTE:

1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
3. This drawing is subject to change without notice.

SOT563 (3)



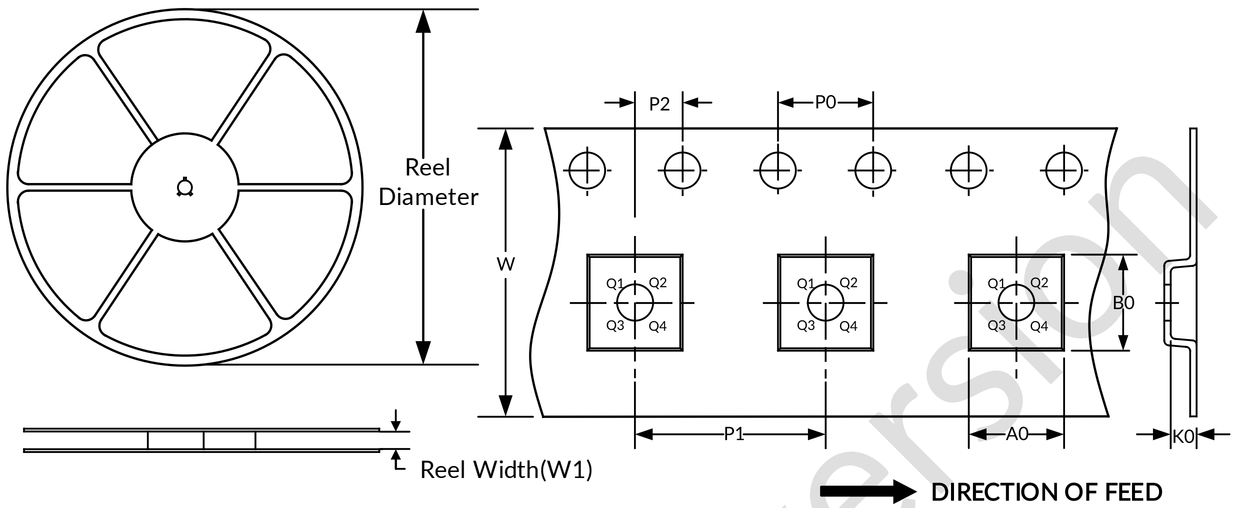
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A (1)	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.180	0.004	0.007
D (1)	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1 (1)	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
θ	9° (REF) (2)		9° (REF) (2)	

NOTE:

1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. REF is the abbreviation for Reference.
3. This drawing is subject to change without notice.

12 TAPE AND REEL INFORMATION

REEL DIMENSIONS   TAPE DIMENSION



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TSOT23-6	7"	9.5	3.17	3.10	1.10	4.0	4.0	2.0	8.0	Q3
SOT563	7"	9.5	1.80	1.80	0.68	4.0	4.0	2.0	8.0	Q3

NOTE:
1. All dimensions are nominal.
2. Plastic or metal protrusions of 0.15mm maximum per side are not included.

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