



DC-DC Conversion Control Circuit

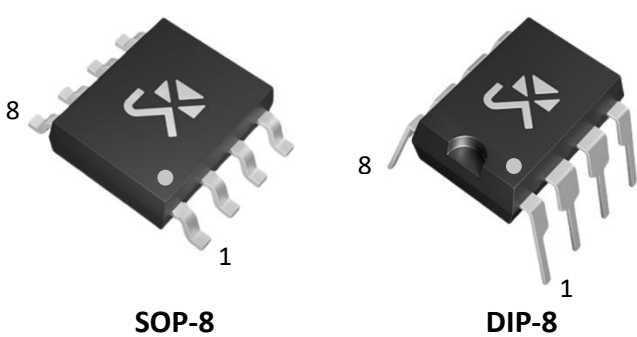
Description

SKI34063B is a monolithic DC-DC conversion integrated circuit, incorporating a temperature compensated reference voltage source (1.25V), a comparator, an oscillator capable of effectively limiting current and controlling duty cycle, a driver, and a high-current output switch. With a few external components, it can form boost, buck, and voltage-inverting converters. SKI34063B is available in SOP-8 and DIP-8 packages.

Features

- Wide operating voltage range: 3V~36V
- Low quiescent current
- Output current limiting and protection functions
- Maximum output switch current up to 1.2A
- Adjustable output voltage
- Operating frequency up to 100kHz
- Internal reference voltage accuracy of 2%

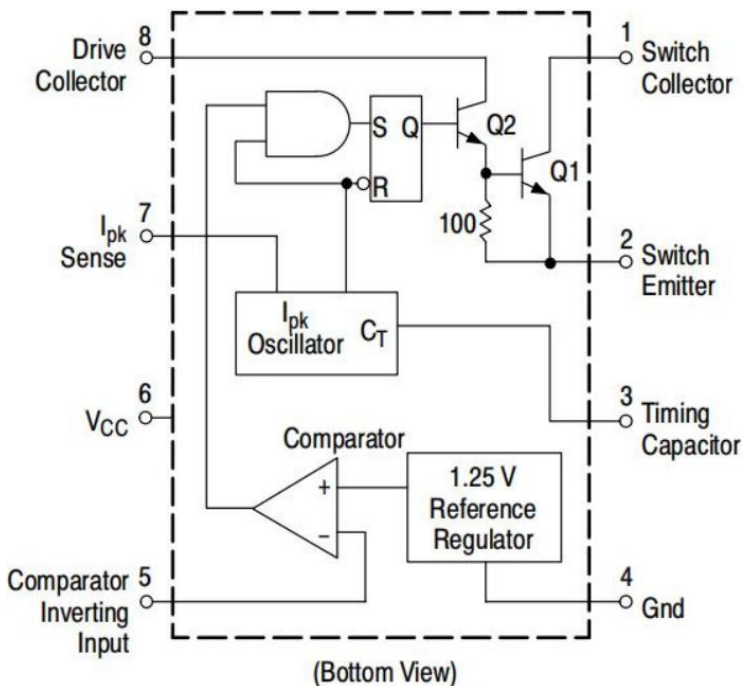
Package Outline Drawing



Ordering Information

Type	Marking	Package
SKI34063B-D8	3525	DIP-8
SKI34063B-P8	3525	SOP-8

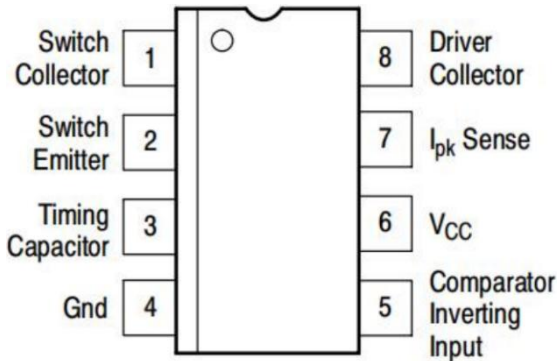
Function Block Diagram





SKI34063B

Pin Description

Pin Number	Pin Name	I/O	Description	Pin Configuration Diagram
1	SC	I	Switch Collector	
2	SE	O	Switch Emitter	
3	CT	I	Timing Capacitor	
4	GND	P	Ground	
5	FB	I	Comparator Inverting Input	
6	V _{CC}	P	Power Supply	
7	I _{PK}	P	Sense	
8	DC	I	Driver Collector	

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V _{CC}	36	V
Comparator Input Voltage Range	V _{IR}	-0.3~36	V
Output Transistor Collector Voltage	V _C (switch)	36	V
Output Transistor Emitter Voltage(V _{pin1} =32V)	V _e (switch)	36	V
Output Transistor Collector-Emitter Voltage	V _{ce} (switch)	36	V
Driver Transistor Collector Voltage	V _C (driver)	36	V
Driver Transistor Collector Current	I _C (Driver)	100	mA
Output Current	I _{sw}	1.2	A
Junction Temperature	T _J	150	°C
Operating Temperature	T _A	-20~+85	°C
Storage Temperature	T _S	-65~+150	°C
Lead Temperature	T _W	260	°C

Note: Exceeding the above limit values may cause permanent damage to the chip.



SKI34063B

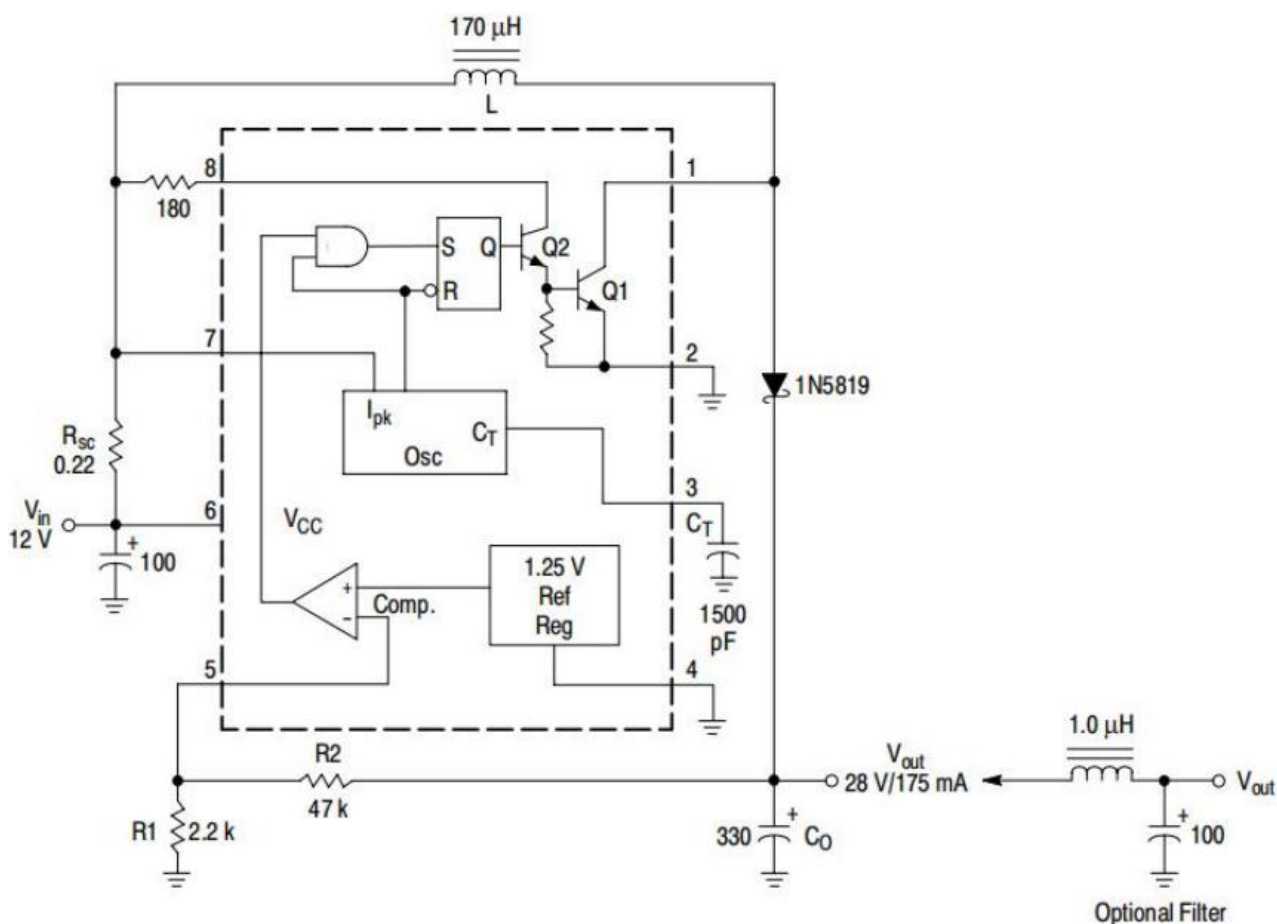
Electrical Characteristics($T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Oscillator Section						
Oscillator Frequency	F_{OSC}	$V_{PIN5}=0\text{V}, C_T=1\mu\text{F}$	24	33	42	KHz
Charging Current	I_{CHG}	$V_{CC}=5\text{V}\sim 32\text{V}$	24	33	42	μA
Discharging Current	I_{DISCHG}	$V_{CC}=5\text{V}\sim 32\text{V}$	140	200	260	μA
Discharging to Charging Current Ratio	I_{DISCHG}/I_{CHG}	$V_{PIN7}=V_{CC}$	5.2	6.2	7.5	
Current Limiter Voltage Sensitivity	V_{IPK}	$I_{CHG}=I_{DISCHG}$	250	300	350	mV
Output Section						
Saturation Voltage Drop	$V_{CE(sat)}$	$I_{SW}=1\text{A}, \text{PIN1 and 8 connected}$		1.0	1.3	V
Saturation Voltage Drop	$V_{CE(sat)}$	$I_{SW}=1\text{A}, R_{PIN8}=82\Omega \text{ to } V_{CC}$		0.45	0.7	V
DC Current Gain	h_{FE}	$I_{SW}=1\text{A}, V_{CE}=5\text{V}$	50	120		
Collector Leakage Current	$I_{C(off)}$	$V_{CE}=30\text{V}$		0.01	100	μA
Comparator Section						
Threshold Voltage	V_{TH}	$T_A=25^{\circ}\text{C}$	1.23	1.25	1.27	V
		$T_A=-20\sim +85^{\circ}\text{C}$	1.21		1.29	
Input Bias Current	I_{IB}	$V_{IN}=0\text{V}$		-40	-400	nA
Threshold Voltage Line Regulation	Regline	$V_{CC}=3\sim 30\text{V}$		1.4	5.0	mV
Overall Section						
Supply Current	I_{CC}	$V_{CC}=5\text{V}\sim 30\text{V}, C_T=1.0\text{nF},$ $V_{PIN7}=V_{CC}, V_{PIN5}>V_{TH},$ $V_{PIN2}=\text{GND}, \text{others floating}$		2.5	4.0	mA



Application Circuits

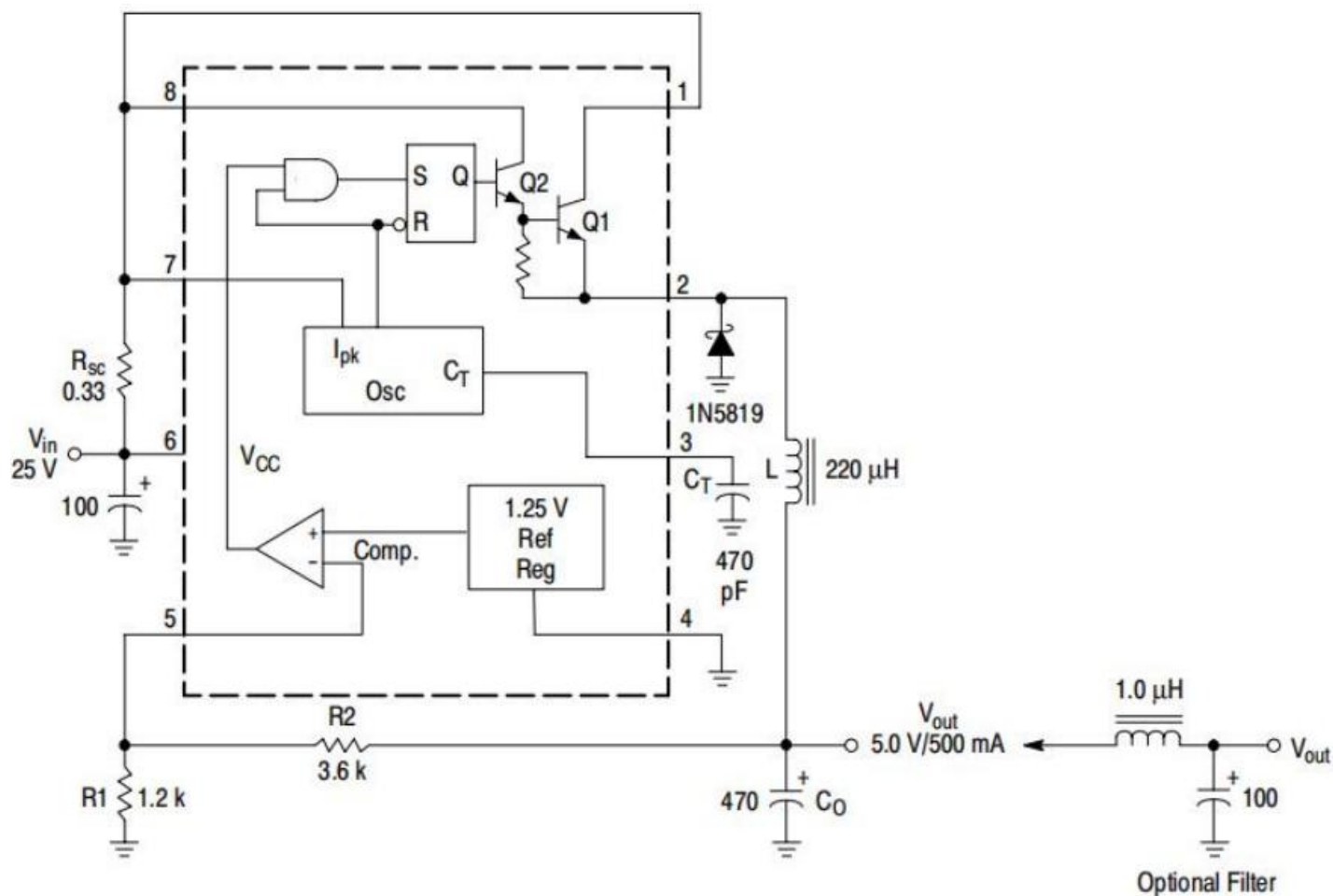
1.Boost Converter



Test Item	Test Conditions	Result
Line Regulation	$V_{IN}=8.0\sim 16V, I_O=175mA$	$30mV = \pm 0.05\%$
Load Regulation	$V_{IN}=12V, I_O=75\sim 175mA$	$10mV = + 0.017\%$
Output Ripple	$V_{IN}=12V, I_O=175mA$	$400m V_{pp}$
Efficiency	$V_{IN}=12V, I_O=175mA$	87.7%
Output Ripple(With External Filter)	$V_{IN}=12V, I_O=175mA$	$40m V_{pp}$



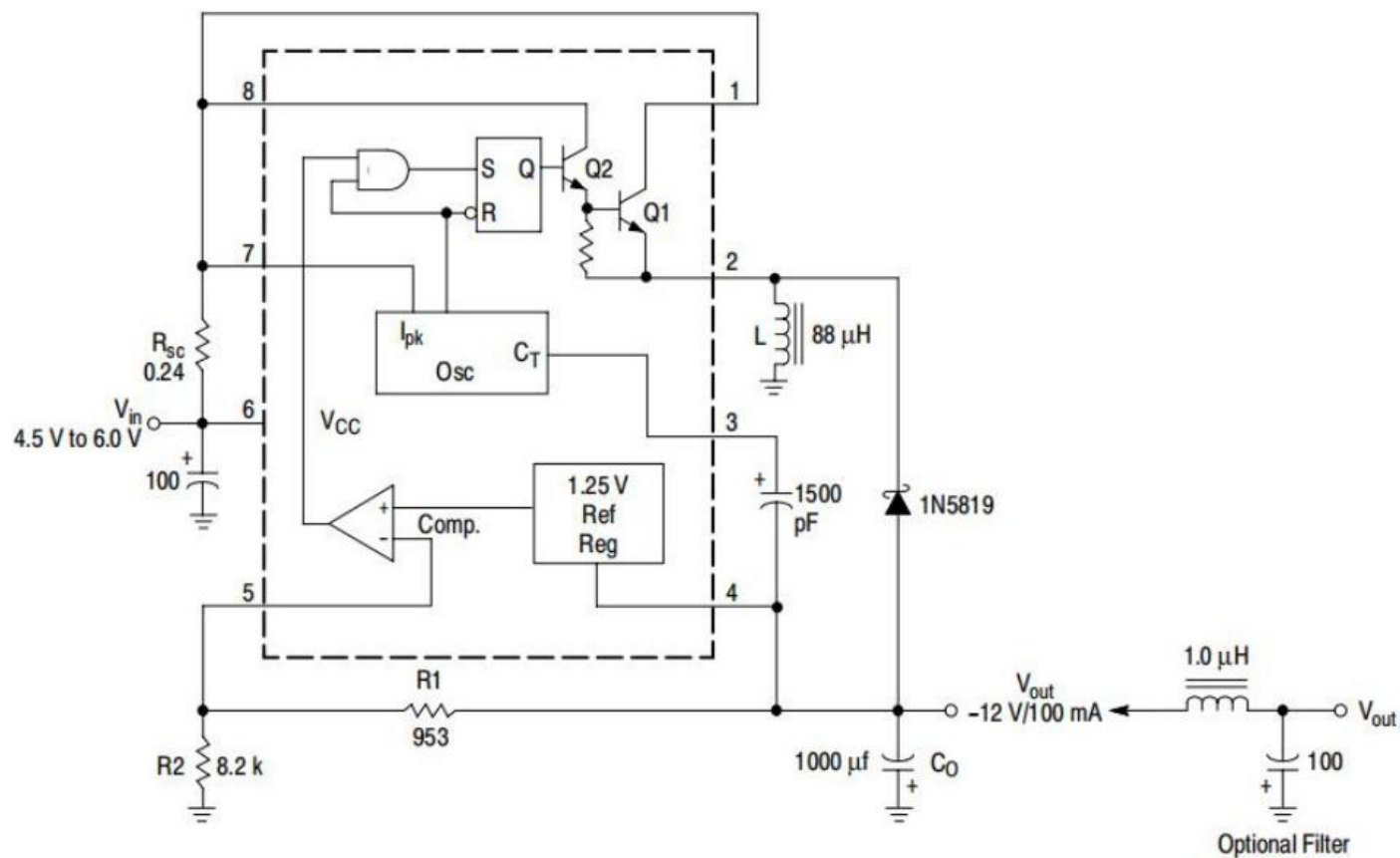
2. Buck Converter



Test Item	Test Conditions	Result
Line Regulation	$V_{IN}=15\sim 25V, I_O=500mA$	$12mV = \pm 0.12\%$
Load Regulation	$V_{IN}=25V, I_O=50\sim 500mA$	$3.0mV = + 0.03\%$
Output Ripple	$V_{IN}=25V, I_O=500mA$	$120m V_{pp}$
Short-Circuit Current	$V_{IN}=25V, R_L=0.1\Omega$	$1.1A$
Efficiency	$V_{IN}=25V, I_O=500mA$	83.7%
Output Ripple(With External Filter)	$V_{IN}=25V, I_O=500mA$	$40m V_{pp}$



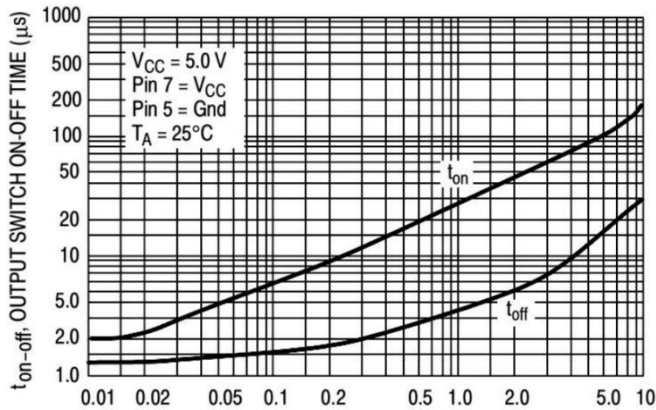
3.Voltage-Inverting Converter



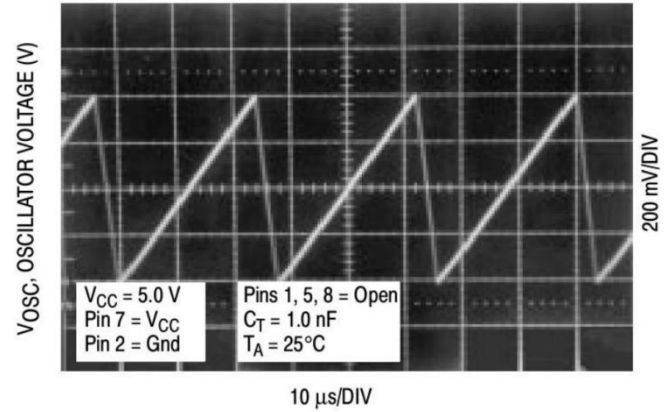
Test Item	Test Conditions	Result
Line Regulation	$V_{IN}=4.5\sim 6.0V, I_O=100mA$	$3.0mV = \pm 0.012\%$
Load Regulation	$V_{IN}=5.0V, I_O=10\sim 100mA$	$0.022V = + 0.09\%$
Output Ripple	$V_{IN}=5.0V, I_O=100mA$	$500m V_{pp}$
Short-Circuit Current	$V_{IN}=5.0V, R_L=0.1\Omega$	$910mA$
Efficiency	$V_{IN}=5.0V, I_O=100mA$	62.2%
Output Ripple(With External Filter)	$V_{IN}=5.0V, I_O=100mA$	$70m V_{pp}$



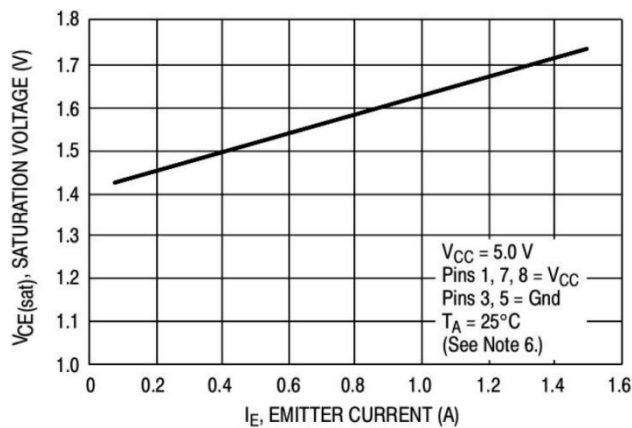
Typical Characteristics



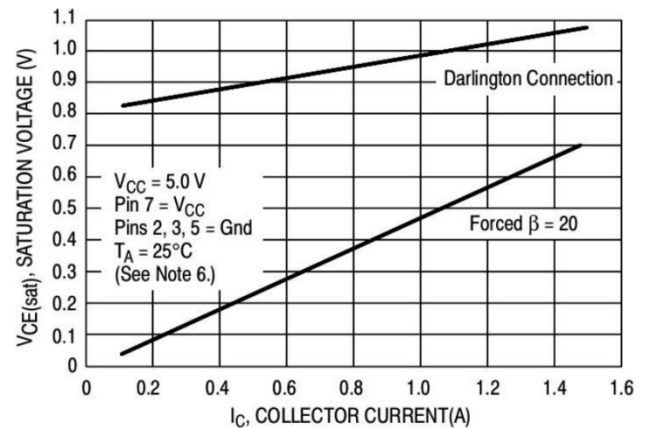
Oscillator Timing Capacitor Switching
Characteristic Curve



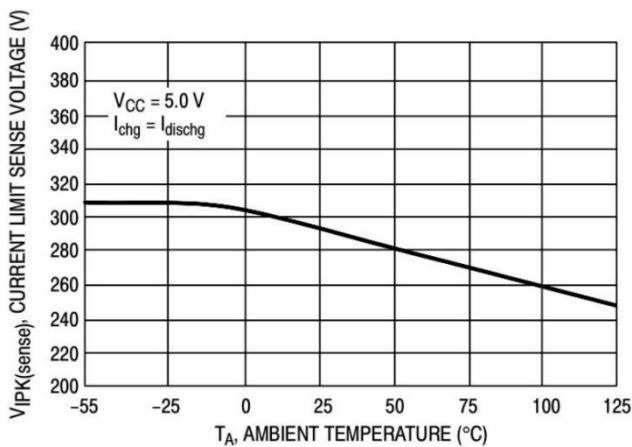
Oscillator Timing Capacitor Waveform



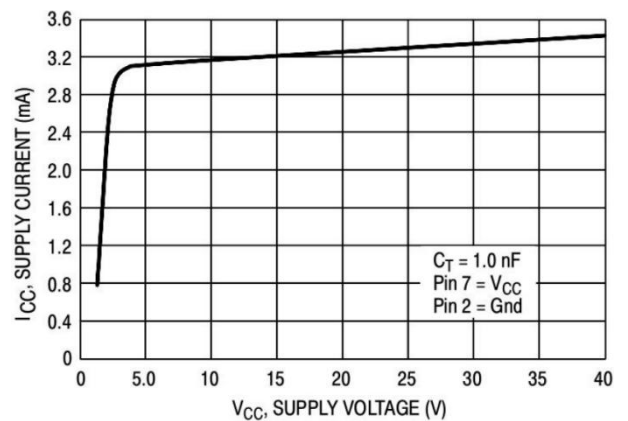
Emitter Output Saturation Voltage Drop vs.
Emitter Current Characteristic Curve



Common-Emitter Switch Output Saturation Voltage
Drop vs. Collector Current Characteristic Curve



Current Limiter Voltage Sensitivity vs.
Temperature Characteristic Curve



Quiescent Current vs.
Operating Voltage Characteristic Curve

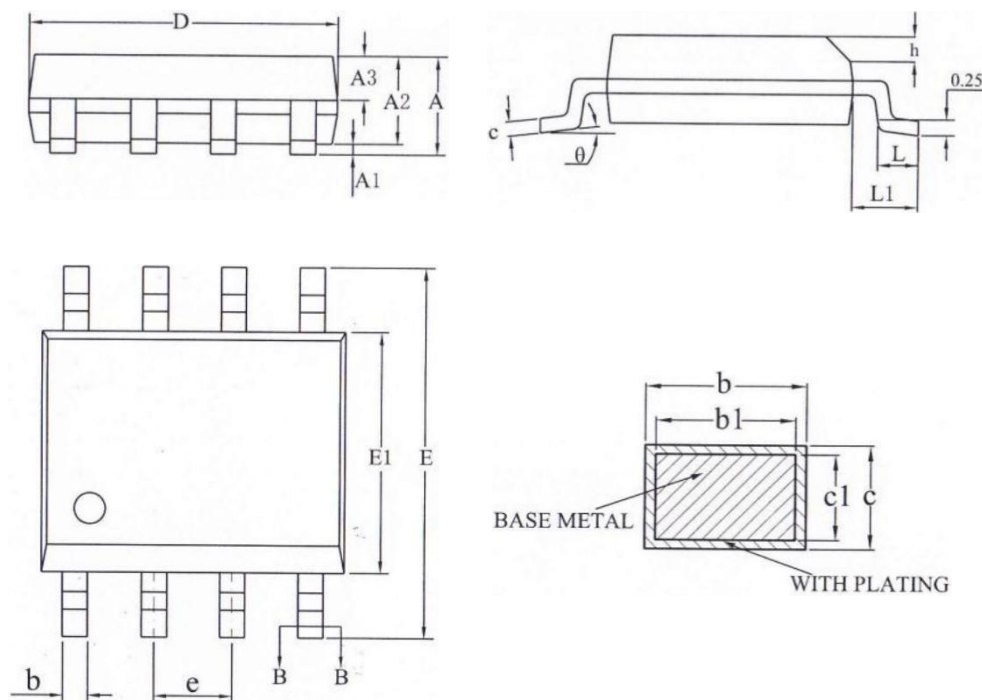


SKI34063B

Package Information

SOP-8

Dimensions in mm



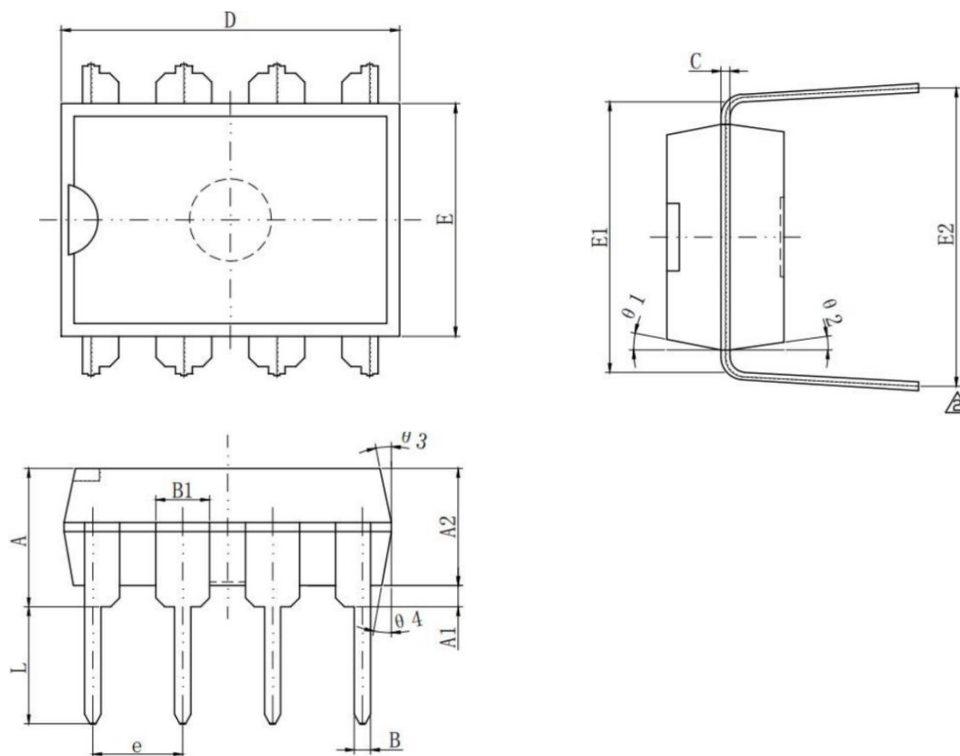
Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	-	-	1.75	D	4.80	4.90	5.00
A1	0.10	-	0.225	E	5.80	6.00	6.20
A2	1.30	1.40	1.50	E1	3.80	3.90	4.00
A3	0.60	0.65	0.70	e	1.27 BSC		
b	0.39	-	0.47	h	0.25	-	0.50
b1	0.38	0.41	0.44	L	0.50	-	0.80
c	0.20	-	0.24	L1	1.05 REF		
c1	0.19	0.20	0.21	θ	0°	-	8°



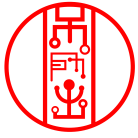
SKI34063B

DIP-8

Dimensions in mm



Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	3.75	3.90	4.15	E1	7.35	7.62	7.85
A1	0.60	-	-	E2	8.00	8.40	8.80
A2	3.15	3.30	3.40	e	2.54 BSC		
B	0.38	0.46	0.56	L	3.00	3.30	3.60
B1	1.52 BSC			θ1	10°	-	14°
C	0.20	0.25	0.34	θ2	8°	-	12°
D	9.00	9.25	9.40	θ3	10°	-	14°
E	6.20	6.35	6.50	θ4	8°	-	12°



Shikues Disclaimer

1.Accuracy of Information and Right to Modify

The information provided in this document is for reference only. Shikues reserves the right to make changes to this document and to the specifications of the products described herein at any time, without prior notice, for the purpose of improving reliability, function, design, or for any other reason. It is the customer's responsibility to obtain and verify the latest product information and specifications before making any final design, procurement, or usage decisions.

2.No Warranty

Shikues makes no express or implied warranties, representations, or guarantees regarding the suitability of its products for any particular purpose.

Shikues assumes no liability for any assistance provided or for the design of customer products. All products are supplied "as is."

3.Intended Use and Limitation of Liability

The products described in this document are intended for use in general-purpose electronic devices. They are neither designed nor tested nor authorized for use in transportation equipment or applications requiring high reliability. Unless expressly authorized in writing by Shikues, these products must not be used as critical components in life-support systems or any applications where failure could directly pose a risk to human life (including, but not limited to, medical devices, transportation systems, aerospace equipment, nuclear facilities, and safety-critical systems).

Shikues assumes no responsibility or liability for any consequences arising from the use of its products in unauthorized or unintended applications.

Neither Shikues nor its representatives shall be held liable for any resulting damages.

4.Intellectual Property

This document does not grant any express or implied license—whether by estoppel, implication, or otherwise—to use any intellectual property rights of Shikues.