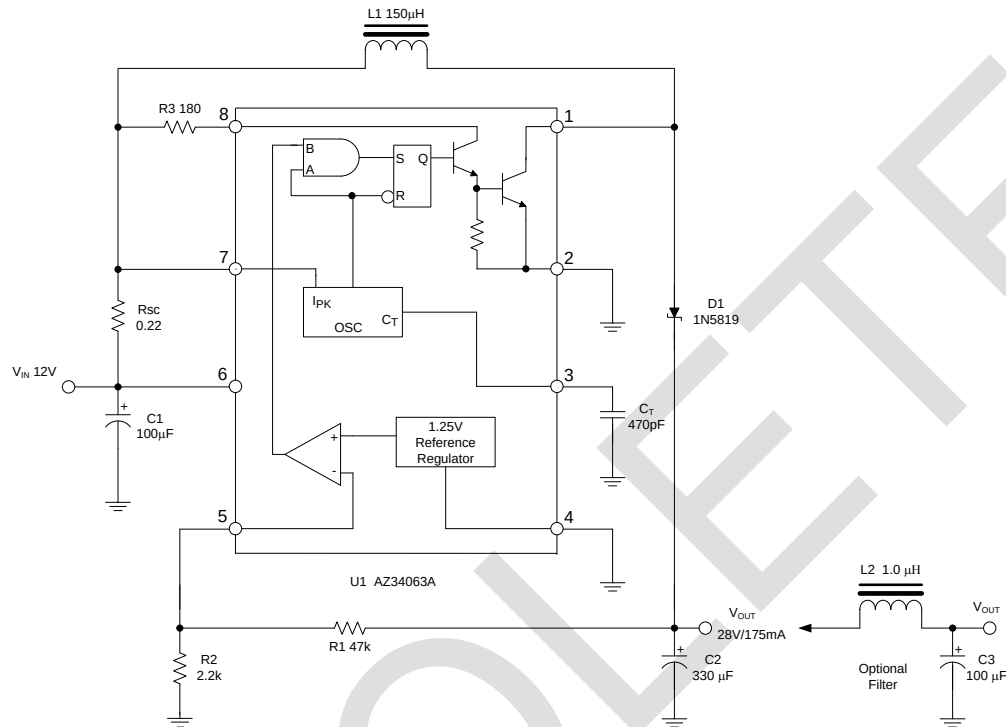


Typical Applications Circuit

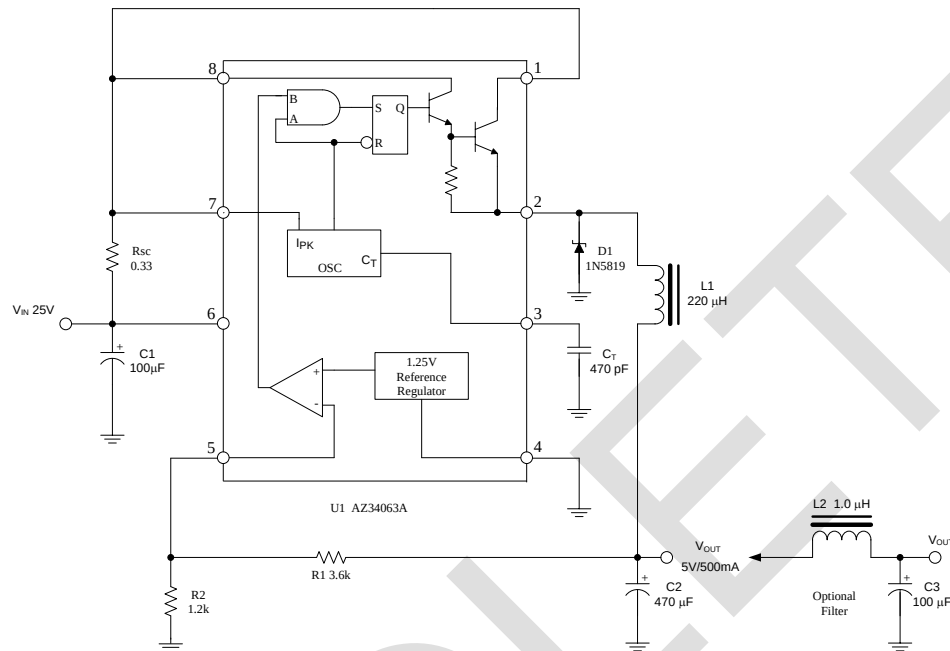
Step-up converter



Note 1: This is a typical step-up converter configuration. In the steady state, if the resistor divider voltage at pin 5 is greater than the voltage in the non-inverting input, which is 1.25V determined by the internal reference, the output of the comparator will go low. At the next switching period, the output switch will not conduct and the output voltage will eventually drop below its nominal voltage until the divider voltage at pin 5 is lower than 1.25V. Then the output of the comparator will go high, the output switch will be allowed to conduct. Since $V_{PIN5} = V_{OUT} \cdot R2 / (R1 + R2) = 1.25(V)$, the output voltage can be decided by $V_{OUT} = 1.25 \cdot (R1 + R2) / R2 (V)$.

Typical Applications Circuit (Cont.)

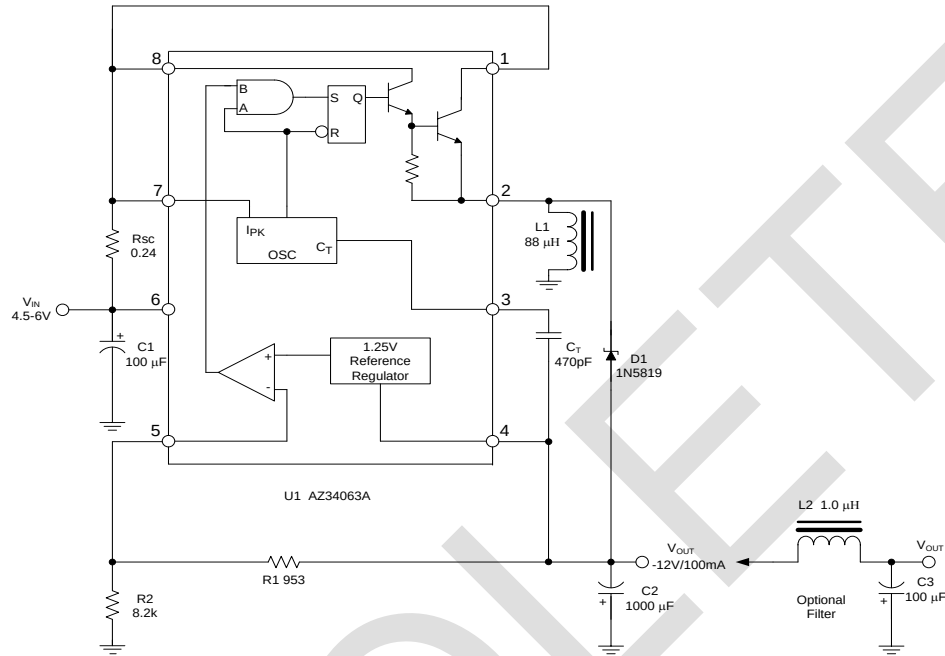
Step-down converter



Note 2: This is a typical step-down converter configuration. The working process in the steady state is similar to step-up converter, $V_{PIN5} = V_{OUT} \cdot R2 / (R1 + R2) = 1.25 \text{ (V)}$, the output voltage can be decided by $V_{OUT} = 1.25 \cdot (R1 + R2) / R2 \text{ (V)}$.

Typical Applications Circuit (Cont.)

Voltage Inverting Converter

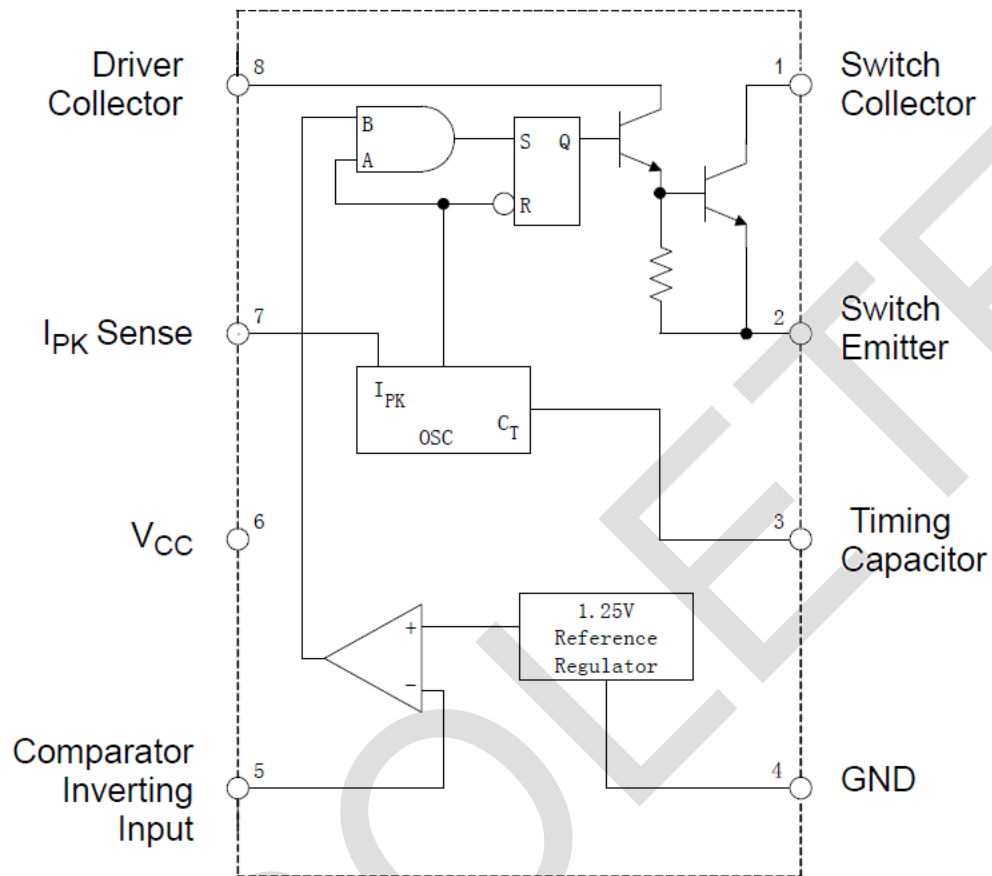


Note 3: This is a typical inverting converter configuration. The working process in the steady state is similar to step-up converter, the difference in this situation is that the voltage at the non-inverting pin of the comparator is equal to $1.25V + V_{OUT}$, then $V_{PIN5} = V_{OUT} \cdot R2 / (R1 + R2) = 1.25V + V_{OUT}$, so the output voltage can be decided by $V_{OUT} = -1.25 \cdot (R1 + R2) / R1$ (V).

Pin Descriptions

Pin Number	Pin Name	Function
1	Switch Collector	Internal switch transistor collector
2	Switch Emitter	Internal switch transistor emitter
3	Timing Capacitor	Timing Capacitor to control the switching frequency
4	GND	Ground pin for all internal circuits
5	Comparator Inverting Input	Inverting input pin for internal comparator
6	V _{CC}	Voltage supply
7	I _{PK} Sense	Peak Current Sense Input by monitoring the voltage drop across an external current sense resistor to limit the peak current through the switch
8	Driver Collector	Voltage driver collector

Functional Block Diagram



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Absolute Maximum Ratings (Note 4)

Symbol	Parameter		Value	Unit
V_{CC}	Power Supply Voltage		40	V
V_{IR}	Comparator Input Voltage Range		-0.3 to 40	V
$V_C(\text{switch})$	Switch Collector Voltage		40	V
$V_E(\text{switch})$	Switch Emitter Voltage ($V_{PIN1}=40V$)		40	V
$V_{CE}(\text{switch})$	Switch Collector to Emitter Voltage		40	V
$V_C(\text{driver})$	Driver Collector Voltage		40	V
$I_C(\text{driver})$	Driver Collector Current (Note 5)		100	mA
I_{SW}	Switch Current		1.5	A
P_D	Power Dissipation ($T_A=+25^\circ\text{C}$)	DIP-8	1.25	W
		SOIC-8	780	mW
$R_{\theta JA}$	Thermal Resistance	DIP-8	100	$^\circ\text{C/W}$
		SOIC-8	160	
T_J	Operating Junction Temperature		+150	$^\circ\text{C}$
T_{LEAD}	Lead Temperature (Soldering, 10s)		+260	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-65 to +150	$^\circ\text{C}$
—	ESD (Human body model)		2000	V

Note 4: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Note 5: Maximum package power dissipation limits must be observed.

OBSOLETE – PART DISCONTINUED

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	3	36	V
T_A	Ambient Temperature	-40	+85	°C

Electrical Characteristics ($V_{CC}=5.0\text{ V}$, $T_A=-40$ to $+85^\circ\text{C}$, unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
OSCILLATOR						
f_{OSC}	Frequency	$V_{PINS}=0\text{V}$, $C_T=1.0\text{nF}$ $T_A=+25^\circ\text{C}$	30	38	45	KHz
I_{CHG}	Charge Current	$V_{CC}=5.0\text{V}$ to 36V , $T_A=+25^\circ\text{C}$	30	38	45	μA
I_{DISCHG}	Discharge Current	$V_{CC}=5.0\text{V}$ to 36V , $T_A=+25^\circ\text{C}$	180	240	290	μA
I_{DISCHG}/I_{CHG}	Discharge to Charge Current Ratio	Pin 7 to V_{CC} , $T_A=+25^\circ\text{C}$	5.2	6.5	7.5	—
$V_{IPK}(\text{sense})$	Current Limit Sense Voltage	$I_{CHG}=I_{DISCHG}$, $T_A=+25^\circ\text{C}$	250	300	350	mV
OUTPUT SWITCH (Note 6)						
$V_{CE}(\text{sat})$	Saturation Voltage, Dlington Connection	$I_{SW}=1.0\text{A}$, Pins 1, 8 connected, Common Emitter	—	1.0	1.3	V
$V_{CE}(\text{sat})$	Saturation Voltage (Note 7.)	$I_{SW}=1.0\text{A}$, $R_{PIN8}=82\Omega$ to V_{CC} , Forced $\beta=20$, Common Emitter	—	0.45	0.7	V
h_{FE}	DC Current Gain	$I_{SW}=1.0\text{A}$, $V_{CE}=5.0\text{V}$, $T_A=+25^\circ\text{C}$	50	75	—	—
$I_C(\text{off})$	Collector Off-State Current	$V_{CE}=36\text{V}$	—	0.01	100	μA

Electrical Characteristics (Cont. $V_{CC}=5.0\text{ V}$, $T_A=-40$ to $+85^\circ\text{C}$, unless otherwise specified.)

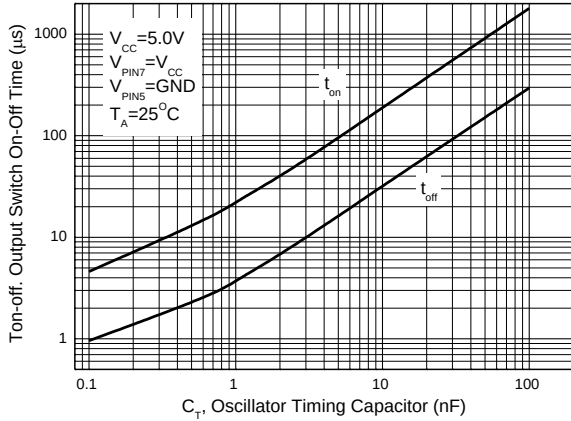
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
COMPARATOR						
V_{TH}	Threshold Voltage	$T_A=+25^\circ\text{C}$	1.225	1.250	1.275	V
		$T_A=-40$ to $+85^\circ\text{C}$	1.21	1.250	1.29	
R_{EGLINE}	Threshold Voltage Line Regulation	$V_{CC}=3.0\text{V to }36\text{V}$	—	1.4	5	mV
I_{IB}	Input Bias Current	$V_{IN}=0\text{V}$	—	-20	-400	nA
TOTAL DEVICE						
I_{CC}	Supply Current	$V_{CC}=5.0\text{V to }36\text{V}$, $C_T=1.0\text{nF}$, $V_{PIN7}=V_{CC}$, $V_{PIN5} > V_{TH}$, $V_{PIN2}=GND$, other pins open	—	—	4	mA

Note 6: Low duty cycle pulse technique are used during test to maintain junction temperature as close to ambient temperature as possible.

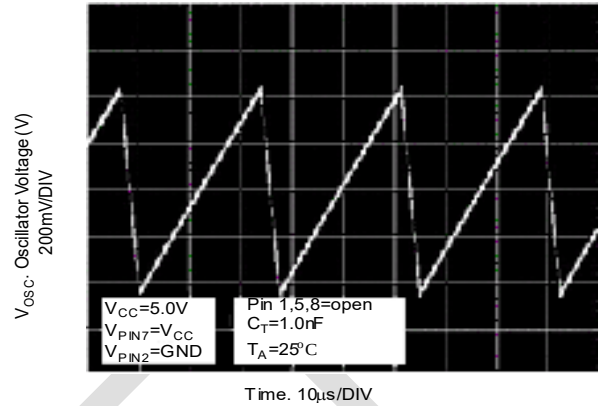
Note7: If the output switch is driven into hard saturation (non-Darlington configuration) at low switch currents ($\leq 300\text{mA}$) and high driver currents ($\geq 30\text{mA}$), it may take up to 2.0us for it to come out of saturation. This condition will shorten the off time at frequencies 30KHz, and is magnified at high temperatures. This condition does not occur with a Darlington configuration, since the output switch cannot saturate. If a non-Darlington configuration is used, the following output drive condition is recommended:

Performance Characteristics ($V_{IN} = 5V$, $T_A = +25^\circ C$, unless otherwise noted.)

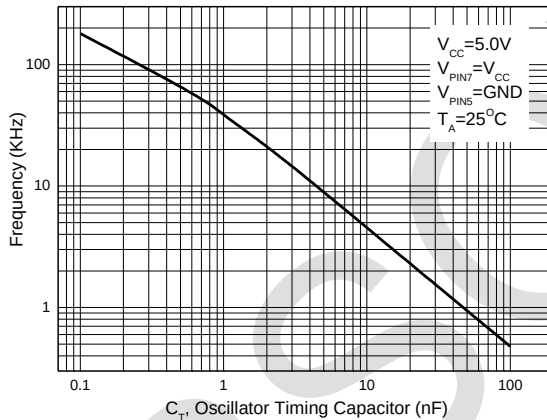
**Output Switch On-off Time vs.
Oscillator Timing Capacitor**



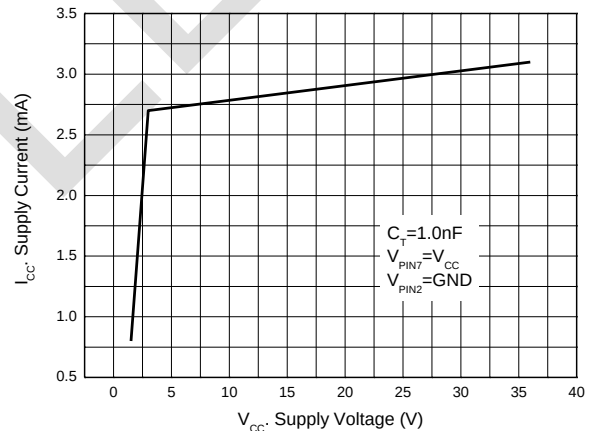
Timing Capacitor Waveform



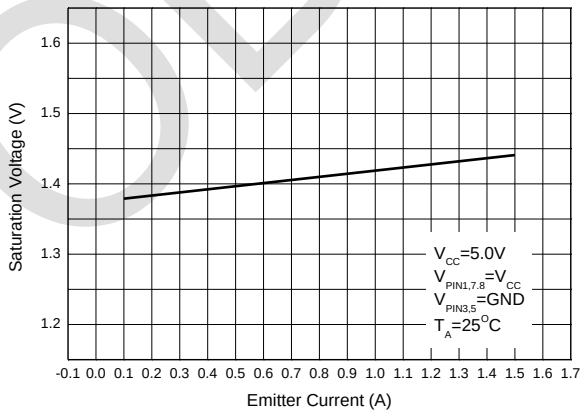
Oscillator Frequency vs. Timing Capacitor



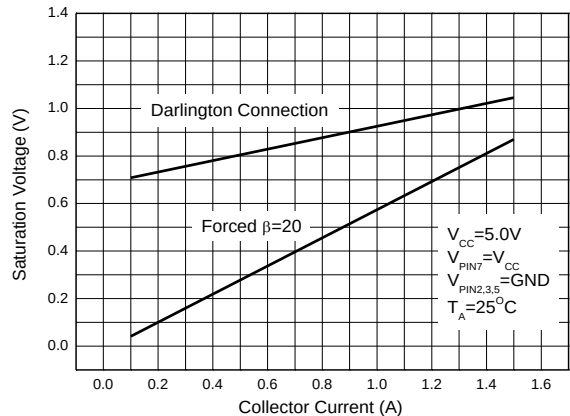
Standard Supply Current vs. Supply Voltage



**Emitter Follower Configuration Output
Saturation Voltage vs. Emitter Current**

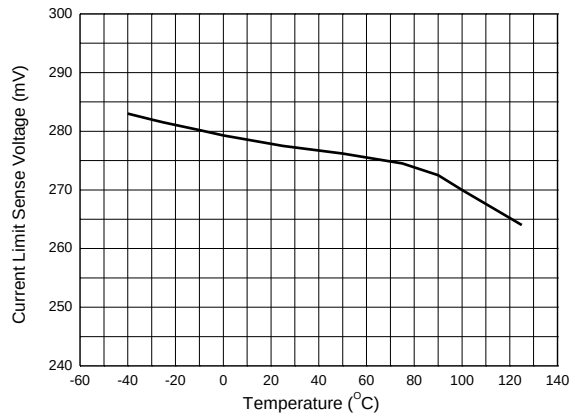


**Common Emitter Configuration Output Switch
Saturation Voltage vs. Collector Current**



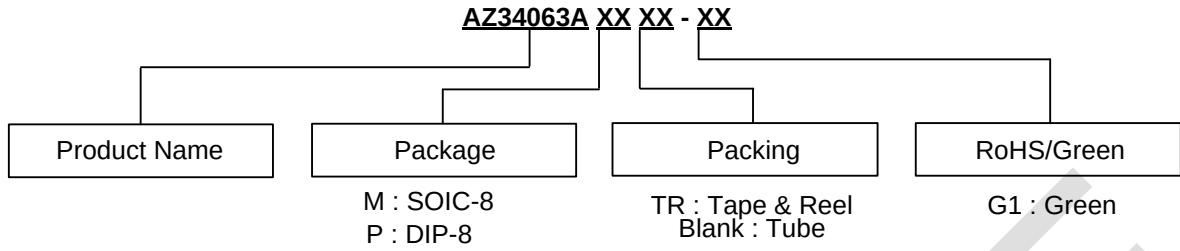
Performance Characteristics (Cont. $V_{IN} = 5V$, $T_A = +25^\circ C$, unless otherwise noted.)

Current Limit Sense Voltage vs. Temperature



OBsolete - PART DISCONTINUED

Ordering Information

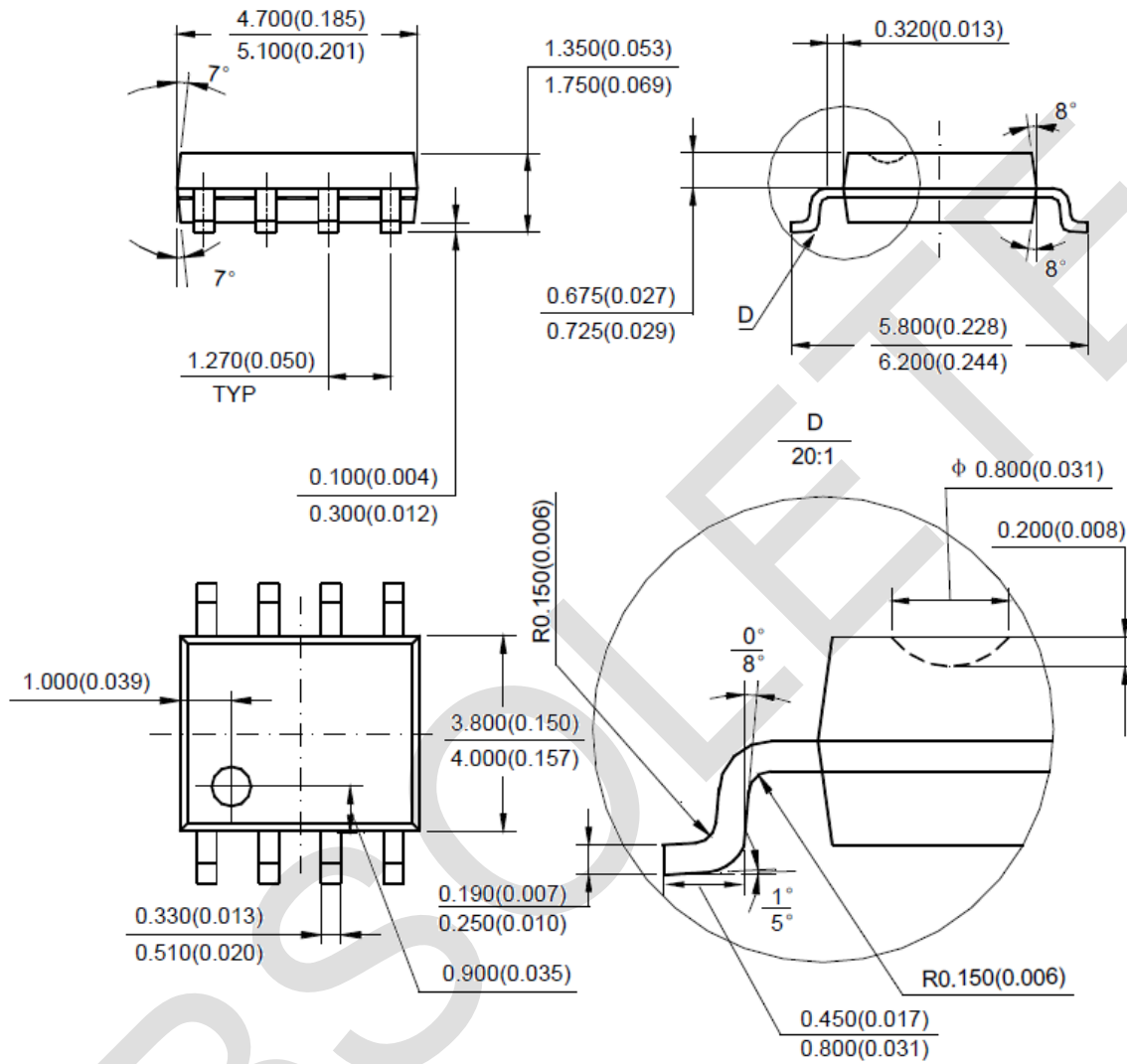


Package	Temperature Range	Part Number		Marking ID		Packing
		Lead Free	Green	Lead Free	Green	
SOIC-8	-40 to +85°C	AZ34063AM-E1	AZ34063AM-G1	34063AM-E1	34063AM-G1	Tube
		AZ34063AMTR-E1	AZ34063AMTR-G1	34063AM-E1	34063AM-G1	Tape & Reel
DIP-8	-40 to +85°C	AZ34063AP-E1	AZ34063AP-G1	AZ34063AP-E1	AZ34063AP-G1	Tube

OBsolete - PART DISCONTINUED

Package Outline Dimensions (All dimensions in mm(inch).)

(1) Package Type: SOIC-8



OBSELETE - PART DISCONTINUED

Technical drawing of a 10-pin D-sub connector housing, showing three views: front, side, and top. Dimensions are provided in millimeters (mm) and inches (in).

Front View Dimensions:

- Overall width: 9.000 (0.354) / 9.600 (0.378)
- Overall height: 4.310 (0.170) / 3.710 (0.146)
- Pin pitch: 1.524 (0.060) TYP
- Pin diameter: $\Phi 3.000 (0.118)$
- Pin depth: 0.100 (0.004) / 0.200 (0.008)
- Pin length: 3.200 (0.126) / 3.600 (0.142)
- Pin thickness: 0.254 (0.010) TYP
- Pin spacing: 0.360 (0.014) / 0.560 (0.022)
- Pin thickness: 0.510 (0.020) MIN
- Pin thickness: 0.130 (0.005) MIN
- Pin thickness: 0.204 (0.008) / 0.360 (0.014)
- Pin thickness: 0.700 (0.028)

Side View Dimensions:

- Overall width: 7.620 (0.300) TYP
- Overall height: 8.200 (0.323) / 9.400 (0.370)
- Pin pitch: 1.524 (0.060) TYP
- Pin diameter: $\Phi 3.000 (0.118)$
- Pin depth: 0.100 (0.004) / 0.200 (0.008)
- Pin length: 3.200 (0.126) / 3.600 (0.142)
- Pin thickness: 0.254 (0.010) TYP
- Pin spacing: 0.360 (0.014) / 0.560 (0.022)
- Pin thickness: 0.510 (0.020) MIN
- Pin thickness: 0.130 (0.005) MIN
- Pin thickness: 0.204 (0.008) / 0.360 (0.014)
- Pin thickness: 0.700 (0.028)

Top View Dimensions:

- Overall width: 9.000 (0.354) / 9.600 (0.378)
- Overall height: 4.310 (0.170) / 3.710 (0.146)
- Pin pitch: 1.524 (0.060) TYP
- Pin diameter: $\Phi 3.000 (0.118)$
- Pin depth: 0.100 (0.004) / 0.200 (0.008)
- Pin length: 3.200 (0.126) / 3.600 (0.142)
- Pin thickness: 0.254 (0.010) TYP
- Pin spacing: 0.360 (0.014) / 0.560 (0.022)
- Pin thickness: 0.510 (0.020) MIN
- Pin thickness: 0.130 (0.005) MIN
- Pin thickness: 0.204 (0.008) / 0.360 (0.014)
- Pin thickness: 0.700 (0.028)

Note: Eject hole, oriented hole and mold mark is optional.

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