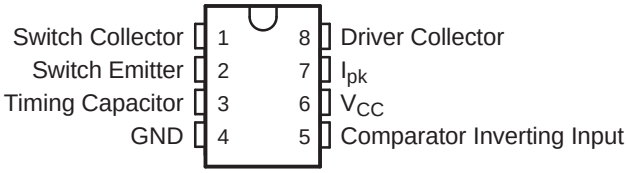
1.5-A PEAK BOOST/BUCK/INVERTING SWITCHING REGULATORS

Check for Samples: MC33063A, MC34063A

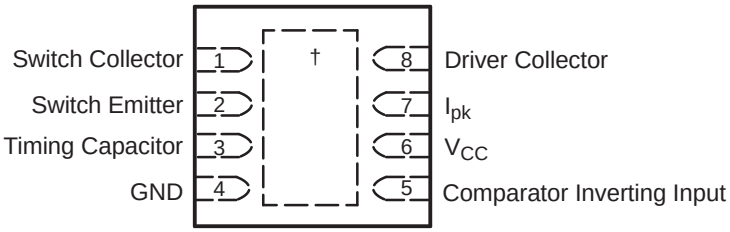
FEATURES

- **Wide Input Voltage Range: 3 V to 40 V**
- **High Output Switch Current: Up to 1.5 A**
- **Adjustable Output Voltage**
- **Oscillator Frequency Up to 100 kHz**
- **Precision Internal Reference: 2%**
- **Short-Circuit Current Limiting**
- **Low Standby Current**

D (SOIC) OR P (PDIP) PACKAGE
(TOP VIEW)



DRJ (QFN) PACKAGE
(TOP VIEW)



† The exposed thermal pad is electrically bonded internally to pin 4 (GND) .

DESCRIPTION/ORDERING INFORMATION

The MC33063A and MC34063A are easy-to-use ICs containing all the primary circuitry needed for building simple dc-dc converters. These devices primarily consist of an internal temperature-compensated reference, a comparator, an oscillator, a PWM controller with active current limiting, a driver, and a high-current output switch. Thus, the devices require minimal external components to build converters in the boost, buck, and inverting topologies.

The MC33063A is characterized for operation from 40 C to 85 C, while the MC34063A is characterized for operation from 0 C to 70 C.

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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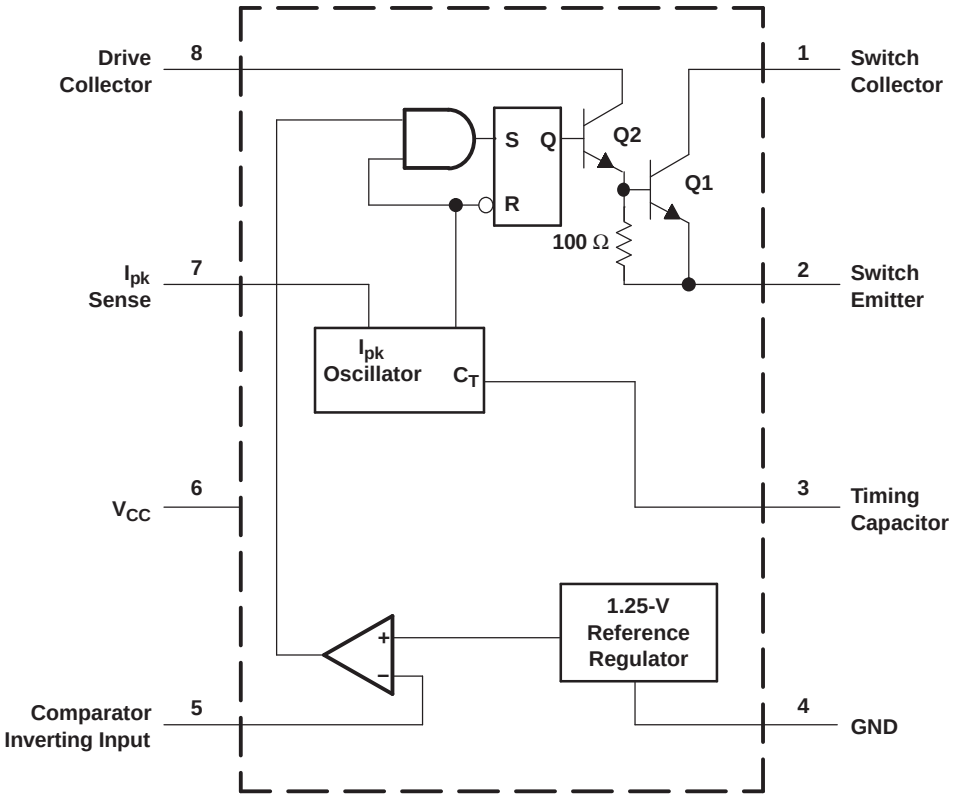
ORDERING INFORMATION(1)

T_A	PACKAGE(2)		ORDERABLE PART NUMBER	TOP-SIDE MARKING
40 C to 85 C	PDIP P	Tube of 50	MC33063AP	MC33063AP
	QFN DRJ	Reel of 1000	MC33063ADRJR	ZYF
	SOIC D	Tube of 75	MC33063AD	M33063A
		Reel of 2500	MC33063ADR	
0 C to 70 C	PDIP P	Tube of 50	MC34063AP	MC34063AP
	QFN DRJ	Reel of 1000	MC34063ADRJR	ZYG
	SOIC D	Tube of 75	MC34063AD	M34063A
		Reel of 2500	MC34063ADR	

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
(2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.

FUNCTIONAL BLOCK DIAGRAM



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Output Switch(1)

PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
$V_{CE(sat)}$	Saturation voltage Darlington connection	I_{SW} = 1 A, pins 1 and 8 connected	Full range		1	1.3	V
$V_{CE(sat)}$	Saturation voltage non-Darlington connection(2)	I_{SW} = 1 A, R_{PIN8} = 82 to V_{CC}, forced 20	Full range		0.45	0.7	V
h_{FE}	DC current gain	I_{SW} = 1 A, V_{CE} = 5 V	25 C	50	75		
$I_{C(off)}$	Collector off-state current	V_{CE} = 40 V	Full range		0.01	100	A

(1) Low duty-cycle pulse testing is used to maintain junction temperature as close to ambient temperature as possible.
(2) In the non-Darlington configuration, if the output switch is driven into hard saturation at low switch currents (300 mA) and high driver currents (30 mA), it may take up to 2 s for the switch to come out of saturation. This condition effectively shortens the off time at frequencies 30 kHz, becoming magnified as temperature increases. The following output drive condition is recommended in the non-Darlington configuration:
Forced of output switch = $I_{C,SW}$ / ($I_{C,driver}$ 7 mA) 10, where 7 mA is required by the 100- resistor in the emitter of the driver to forward bias the V_{be} of the switch.

Comparator

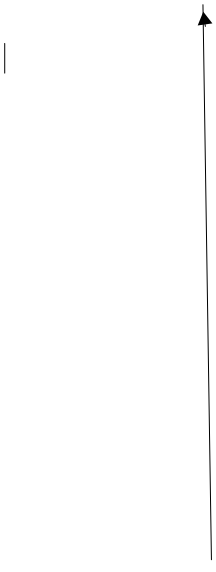
PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
V_{th}	Threshold voltage		25 C	1.225	1.25	1.275	V
			Full range	1.21		1.29	

1.225

is assigned to be allocated already to an existing

is known to be [illegible]

MEN



E
Pad Geometry

Example
Solder Mask Opening
(See Note E)

IMPORTANT NOTICE

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