DESCRIPTION

The SC1628 is a high performance step-up DC-DC converter, designed to drive an external power switch to generate programmable positive voltages. In the particularly suitable LCD contrast bias and flash memory programming power supply applications, typical full load efficiencies are 85% to 95%. The 4V to 24V input operation range allows the SC1628 to be powered directly by the battery pack in most battery-powered applications for greater efficiency. The output voltage can be scaled to 40V or greater by two external resistors. A pulse-frequency modulation scheme is employed to maintain high efficiency conversion under wide input voltage ranges. Quiescent current is about 100µA and can be reduced down to 8µA in shutdown mode. With a switching frequency range of 90kHz to 250kHz, small size switching components may be used, which is ideal for battery powered portable equipment such as notebook and palmtop computers.
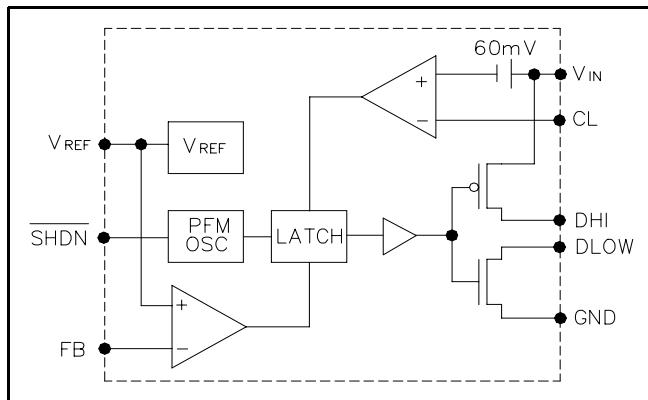
APPLICATIONS

- Flash memory programming power supply
- Positive LCD contrast bias for notebook and palm-top computers
- Step-up DC-DC converter module
- Telecom power supply

FEATURES

- 4V to 24V input voltage operation
- Adjustable output voltage
- Low quiescent current at 100µA
- Pulse-skipping and pulse-frequency modulation maintain high efficiency (max. 95%)
- 90kHz to 250kHz oscillator frequency
- Power-saving shutdown mode (8µA typical)
- Push-pull driver output

BLOCK DIAGRAM
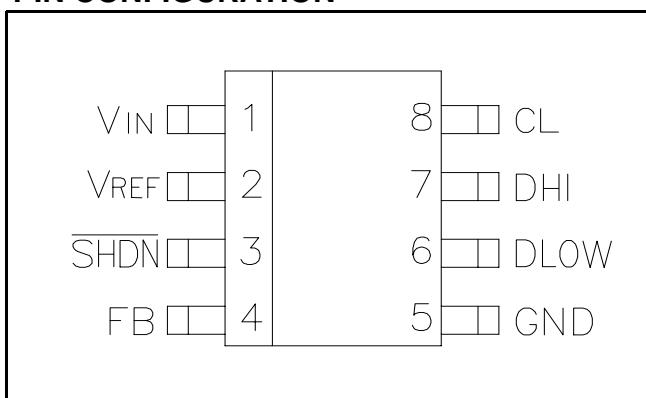
ORDERING INFORMATION

DEVICE[1]	PACKAGE
SC1628CS	SO-8

Note:
(1) Add suffix 'TR' for tape and reel.

PIN CONFIGURATION


ABSOLUTE MAXIMUM RATINGS
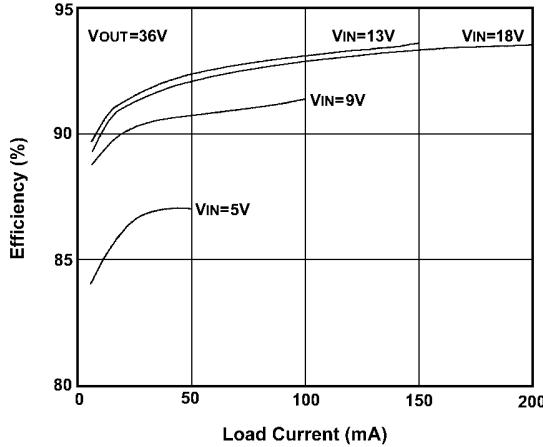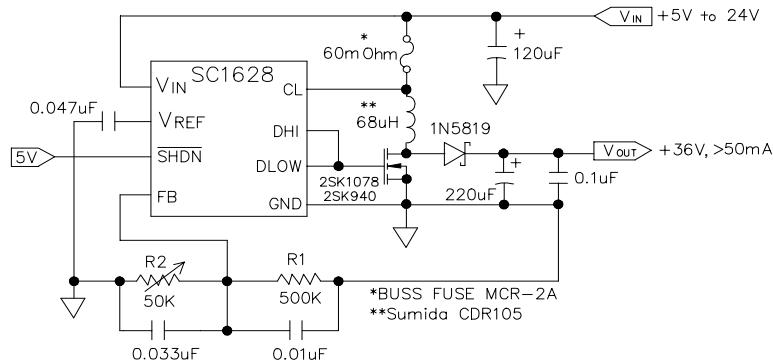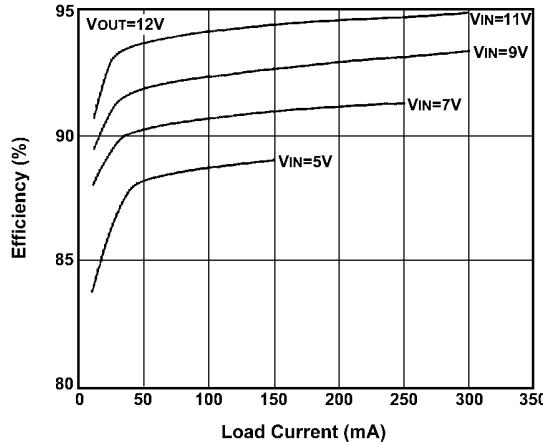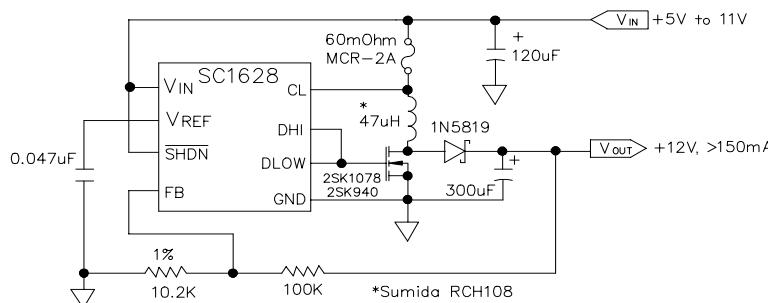
Parameter	Symbol	Maximum	Units
Supply Voltage	V_{IN}	24	V
$\overline{SHDN}$ Voltage	$V_{\overline{SHDN}}$	15	V
Operating Temperature Range	T_A	0 to 70	°C
Storage Temperature Range	T_{STG}	-65 to 125	°C

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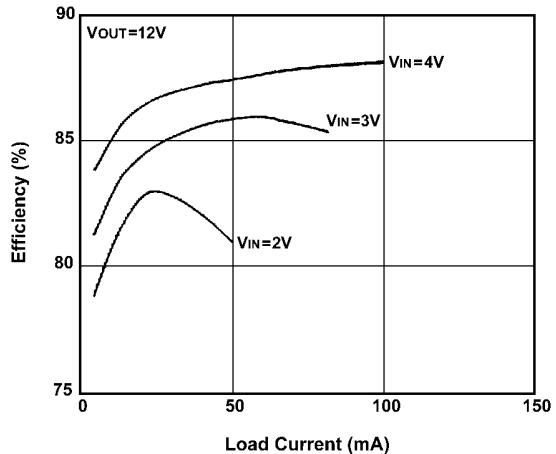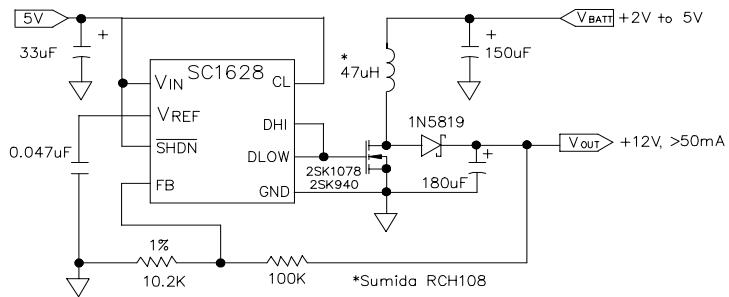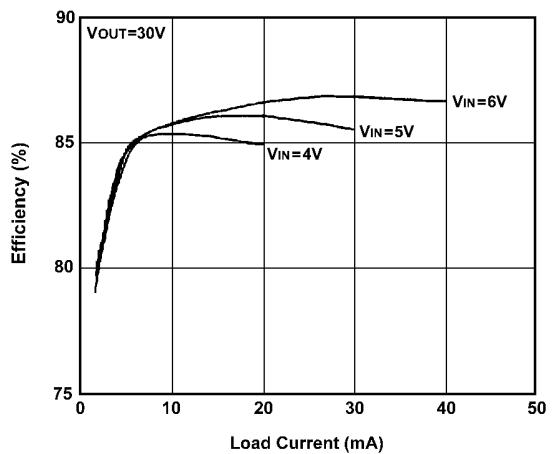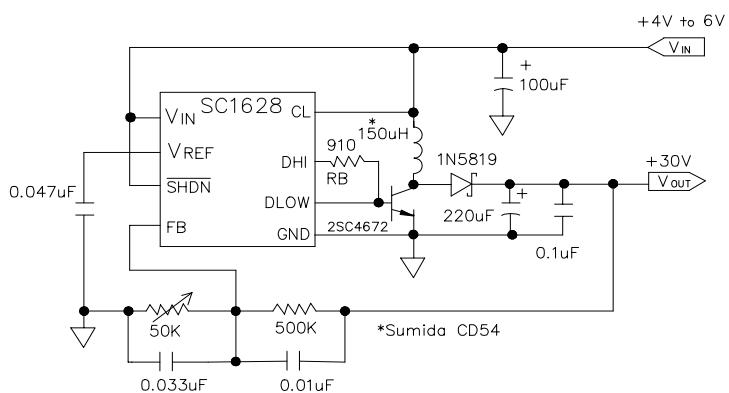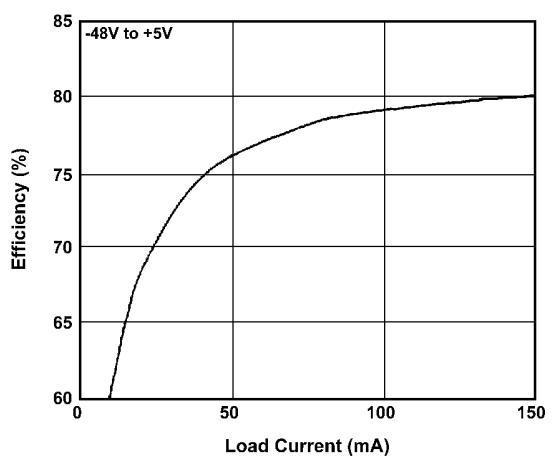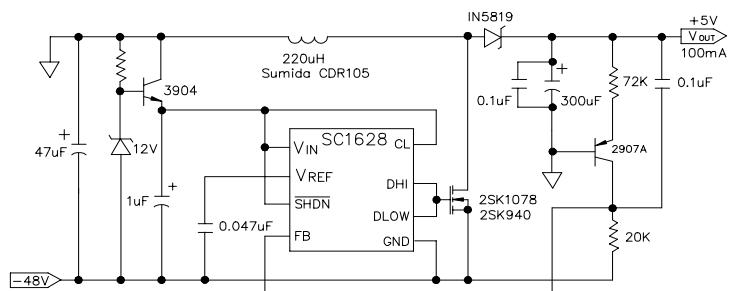
## ELECTRICAL CHARACTERISTICS

Unless otherwise specified, T_A = 25°C, V_{IN} = 13V
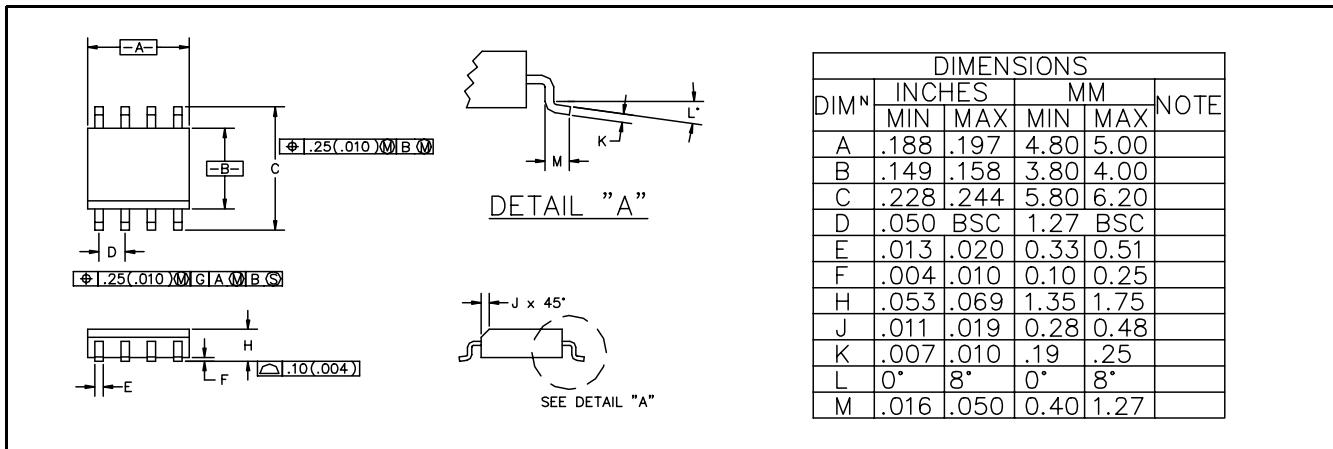
Parameter	Conditions	Min	Typ	Max	Units
Input Voltage		4		24	V
Quiescent Current	V_{FB} = 1.5V		100	200	µA
Shutdown Mode Current	$V_{\overline{SHDN}}$ = 0V		8	20	µA
V_{REF} Voltage	I_{SOURCE} = 250µA	1.16	1.22	1.28	V
V_{REF} Source Current		250			µA
DLOW "ON Resistance"			15		Ω
DHI "ON Resistance"			10		Ω
CL Threshold	V_{IN} - V_{CL}	45	60	75	mV
Shutdown Threshold		0.8	1.5	2.4	V
Shutdown Input Leakage Current	$V_{\overline{SHDN}}$ < 15V			1	µA

TYPICAL APPLICATIONS

Color LCD Contrast Bias Supply

Flash Memory Programming Supply

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TYPICAL APPLICATIONS (cont.)

2-Cells to +12V Flash Memory Programmer

4-Cells to +30V Low Power Supply

Telecom +5V Supply

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DEVICE OUTLINE - SO-8

DIM^N	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.188	.197	4.80	5.00	
B	.149	.158	3.80	4.00	
C	.228	.244	5.80	6.20	
D	.050	BSC	1.27	BSC	
E	.013	.020	0.33	0.51	
F	.004	.010	0.10	0.25	
H	.053	.069	1.35	1.75	
J	.011	.019	0.28	0.48	
K	.007	.010	.19	.25	
L	0°	8°	0°	8°	
M	.016	.050	0.40	1.27	

PIN DESCRIPTIONS

PIN 1: V_{IN} 4V to 24V input supply voltage.

PIN 2: V_{REF} 1.22V reference output. Bypass with a 0.047µF capacitor to GND. Sourcing capability is guaranteed to be greater than 250µA.

PIN 3: $\overline{SHDN}$ Logical input to shutdown the chip: >1.5V = normal operation, GND = shutdown. Cannot be floating or forced greater than 15V. In shutdown mode DLOW and DHI pins are low.

PIN 4: FB Feedback signal input to comparator. Connecting a resistance R1 to V_{OUT} and a resistance R2 to GND yields the output voltage:

$$V_{OUT} = \frac{R1+R2}{R2} \times V_{REF}$$

(refer to typical application circuit).

PIN 5: GND Power ground.

PIN 6: DLOW Driver sinking output. Connected to the gate of the external N-channel MOSFET or the base of the NPN bipolar transistor.

PIN 7: DHI Driver sourcing output. Connected to DLOW when using an external N-channel MOSFET. When using an external NPN bipolar transistor, connect a base resistance R_B from this pin to DLOW. R_B value depends upon V_{IN}, the inductor value and the NPN current gain.

PIN 8: CL Current-limit input. The threshold voltage is 60mV from V_{IN}. This pin clamps the switch peak current under abnormal conditions.

PIN CONFIGURATION

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