

ADVANCED INFORMATION

CMOS SWITCHED CAPACITOR VOLTAGE CONVERTER WITH REGULATOR

FEATURES

- Regulated Output to 2 %
- 5 mA Output Current
- Operating Range 1.8 to 8 V
- Enable Pin
- Miniature Package (SOT-23L-6)
- Standby Current (2 μ A)

APPLICATIONS

- Voltage Inverter
- Negative Voltage Doubler
- Voltage Regulator
- Positive Voltage Doubler

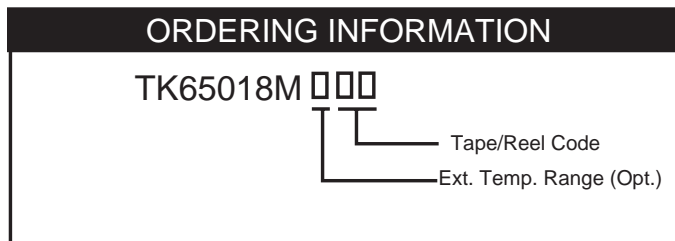
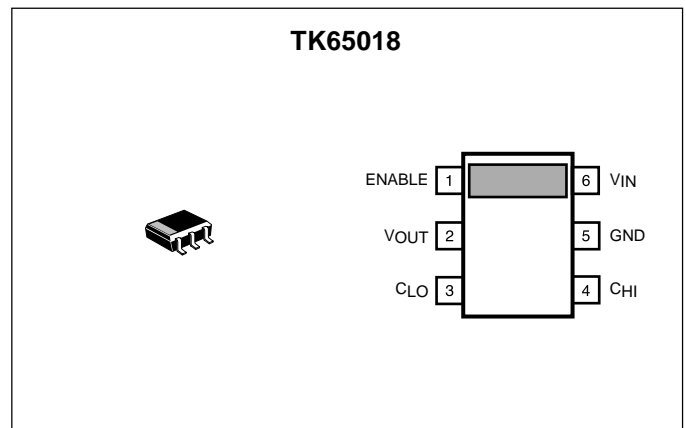
DESCRIPTION

The TK65018 is a monolithic switched capacitor converter with regulation. With just two capacitors, the TK65018 can create a negative voltage supply with regulation.

With no external timing elements, the converter will self-oscillate at 166 kHz, nominal.

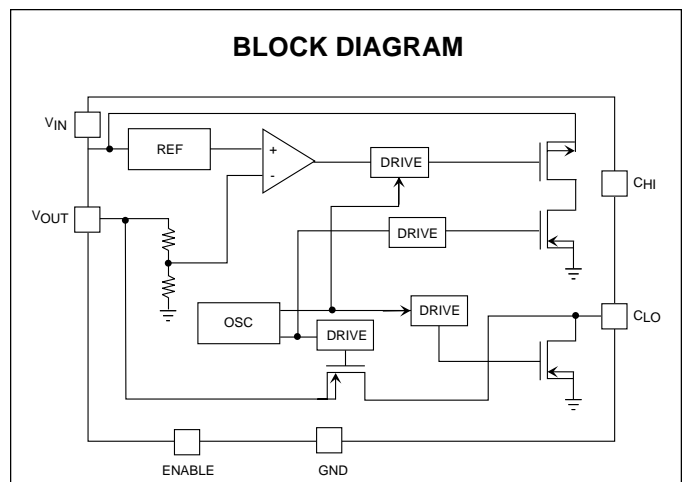
Quiescent current is typically 50 μ A. Standby current is guaranteed less than 2 μ A over the full operating temperature and input voltage ranges.

The TK65018 is available in miniature SOT-23L-6 surface mount package. Customized levels of output voltages are available. The TK65018 is available with the following output voltages: -5.0 V, -4.1 V, -3.5 V, -3.0 V, -2.1 V, -1.5, -0.5 V.



EXT. TEMPERATURE RANGE (OPT.)
I: -40 TO +85 °C

TAPE/REEL CODE
TL: Tape Left



ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{IN} For Doubler Conf.	8 V	Operating Temperature Range	0 to 70 °C
Power Dissipation (Note 1)	400 mW	Junction Temperature	125 °C
Storage Temperature Range	-55 to +150 °C	Lead Soldering Temperature (10 s)	300 °C

TK65018 ELECTRICAL CHARACTERISTICS

Test conditions: $V_{IN} = 3.1$ V, T_A = Operating Temperature Range, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CC}	Supply Current	$I_{LOAD} = 0$ mA, $V_{IN} = 1.8$ V		50	75	μ A
		$I_{LOAD} = 0$ mA, $V_{IN} = 5.0$ V		100	125	μ A
V_{CC}	Supply Voltage Range	$V_{CC} + V_{OUT} \leq 9$	1.8		8	V
V_{LOSS}	Voltage Loss ($V_{IN} - V_{OUT}$)			TBD		V
				TBD		V
f_{OSC}	Oscillator Frequency	2 V $\leq V_{IN} \leq 8$ V		166		kHz
V_{OUT}	Regulated Voltage			V_{OUT}		V
Line Reg	Line Regulation			5	35	mV
LoadReg	Load Regulation			60	150	mV
$I_{SW(MAX)}$	Maximum Switch Current			5	10	mA
I_{STBY}	Standby Current			1	2	μ A

Note 1: Power dissipation is 400 mW when mounted as recommended (200 mW in Free Air). Derated at 1.6 mW/°C for operation above 25 °C.

TYPICAL PERFORMANCE CHARACTERISTICS

TYPICAL APPLICATIONS

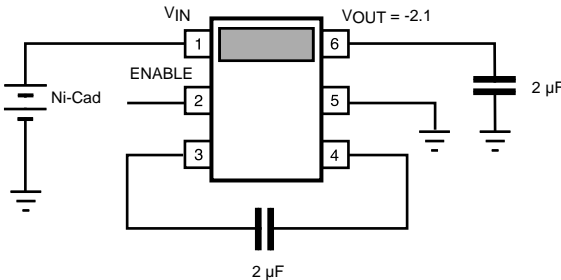


FIGURE 1: REGULATING INVERTER

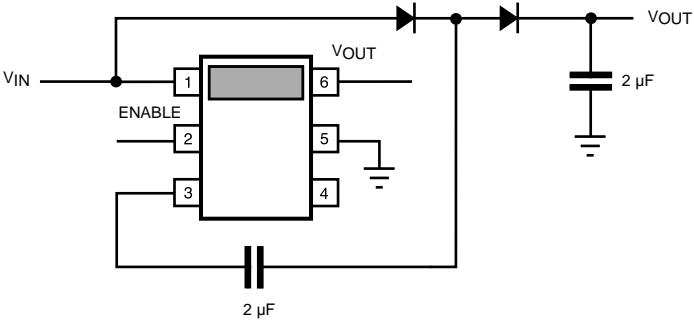
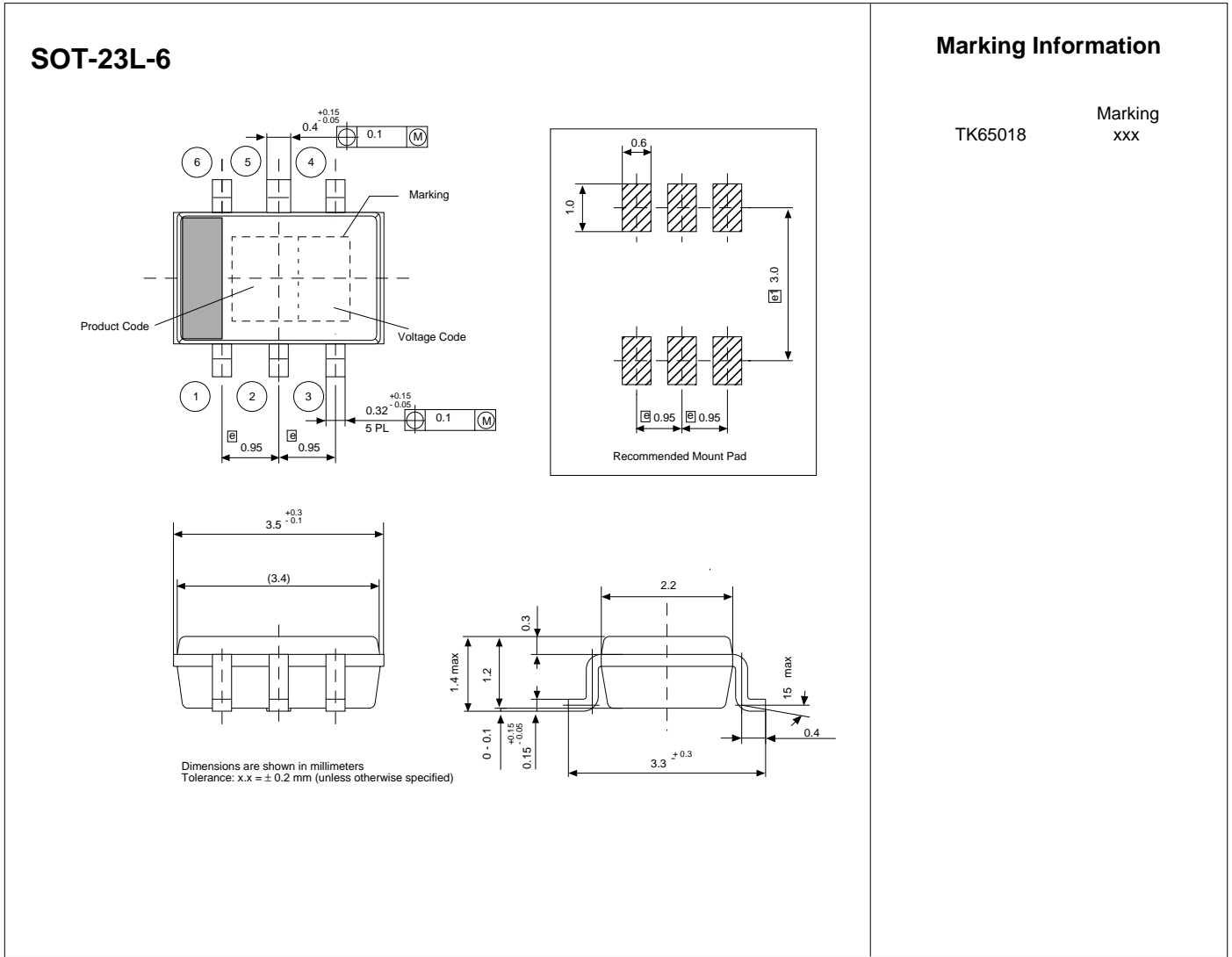


FIGURE 2: DEREGULATING DOUBLER

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