Linear Regulator PR2101

80 V Linear Regulator PR2101

The PR2101 is a high voltage, low quiescent current, linear regulator. It has a wide operating input voltage range of 7 V to 80 V for an output voltage of 5 V.

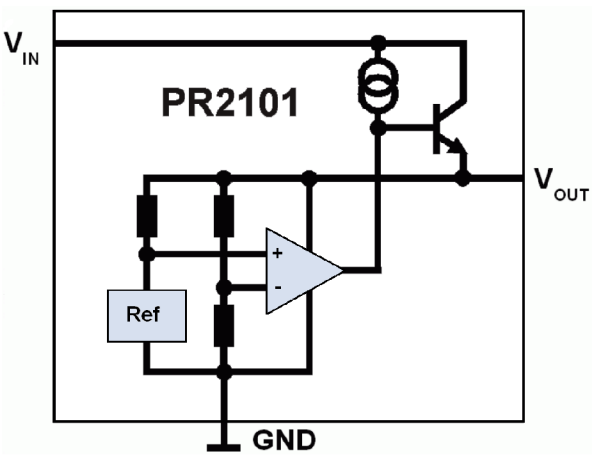
APPICATIONS

- Low current, high voltage regulators
- Battery powered systems
- Automotive applications
- Telecom applications

FEATURES

- 7 V to 80 V input voltage range
- Voltage stability 30 ppm over an input voltage range of 10...80 V
- Temperature stability +/- 0.5 % over a temperature range between -40°C and +120°C
- Low quiescent current of typ. 50 µA
- Output current up to 6 mA
- Stable operation also without capacitors

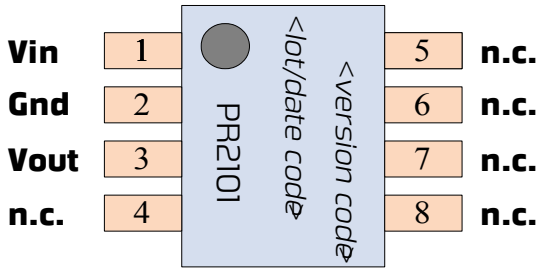
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Min	Max	Units
dV_{IN} (transients, no damage)	-0.3	90	[V]
Operating Temperature Range	-20	85	[°C]
Storage Temperature Range	-55	150	[°C]
Electrostatic Discharge (ESD) Protection	1		[kV]

PIN DESCRIPTIONS



Pin No	Pin Name	Pin Function Description
1	Vin	Input voltage
2	Gnd	Ground connection
3	Vout	Output voltage
4 - 8	n.c.	not connected

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Properties

ELECTRICAL CHARACTERISTICS

$V_{CC} - V_{EE} = 80$ V, $T_A = 25°C$, unless otherwise noted.

Electrical Characteristics

Parameter		Conditions	Min	Typ	Max	Units
Input Voltage	V_{IN}		7		80	[V]
Output Voltage	V_{OUT}	$T_A = 25°C$	4.8	5.0	5.2	[V]
Output Current	I_{OUT}	$V_{IN} \geq 7$ V			6	[mA]
Regulator voltage drop	V_{IN} - V_{OUT}		2		80	[V]
Line Regulation	ΔV_{OUT}	10 V < V_{IN} < 80 V, I_{OUT} = 1 mA		±0.003		[%]
Load Regulation	ΔV_{OUT}	V_{IN} = 80 V, 1 mA < I_{OUT} < 6 mA		±0.2		[%]
Temperature Stabilty	ΔV_{OUT}	V_{IN} = 80 V, I_{OUT} = 1 mA, -40°C < T_A < 120°C		±0.5		[%]
Quiescent Current	I_{IDLE}	V_{IN} = 80 V, I_{OUT} = 0 mA T_A = 25°C	40	50	60	[µA]
Junction Temperature	T_J				125	[°C]
Thermal Resistance	Θ_{JA}	SO-8 package, no air convection		160		[°C/W]

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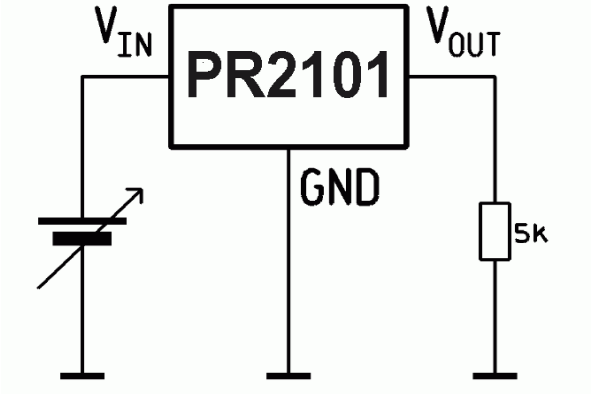
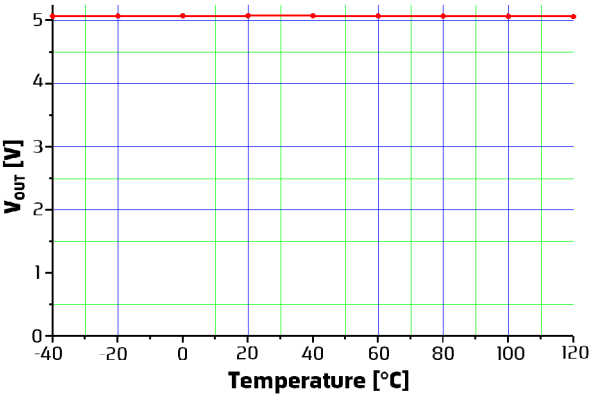
Typical Performance Characteristics

LEAST TEMPTERATURE DEPENDANCE OF THE OUTPUT VOLATAGE

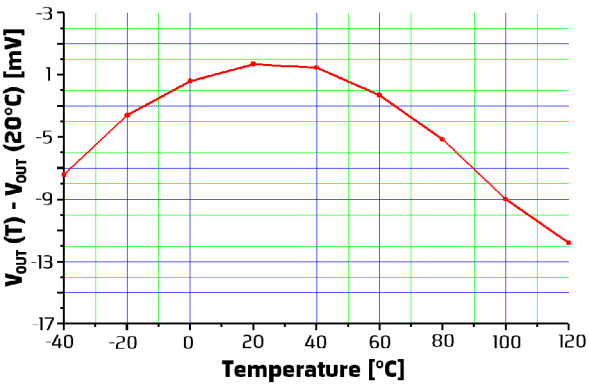
Test circuit



Wide range temperature stability (V_{IN} = 80 V)

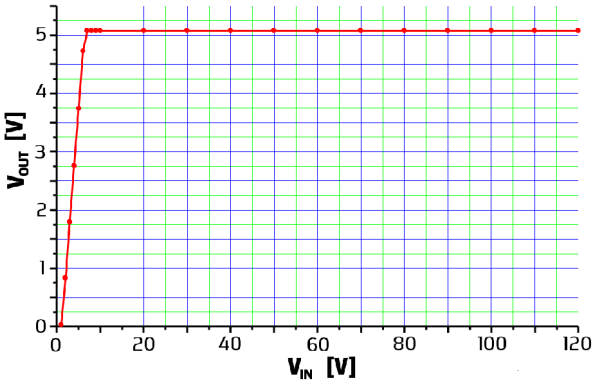


Deviating voltage with respect to RT

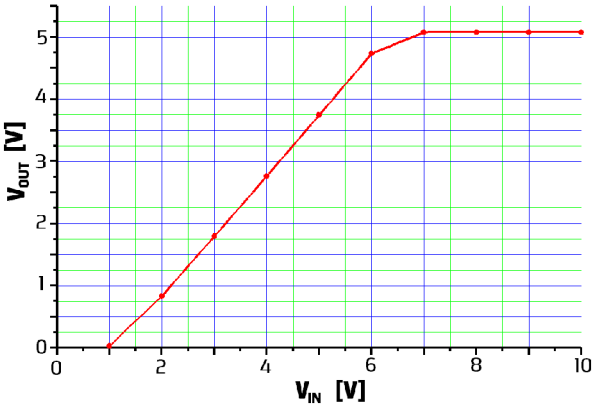


INDEPENDANCE OF THE OUTPUT VOLTAGE ON THE INPUT VOLTAGE

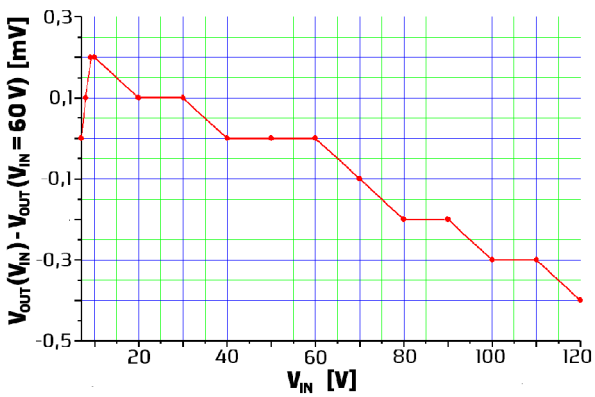
Measurements performed with an identical test circuit



Enlarged initiation of the voltage dependance



Deviating voltage with respect to V_{IN} = 60 V



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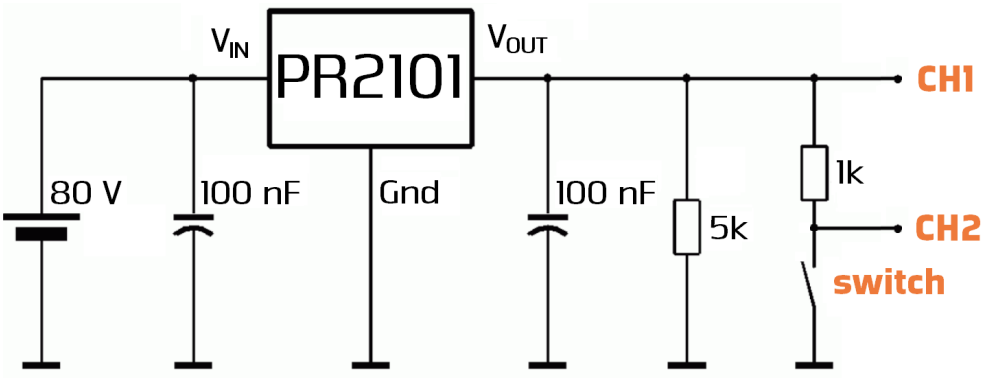
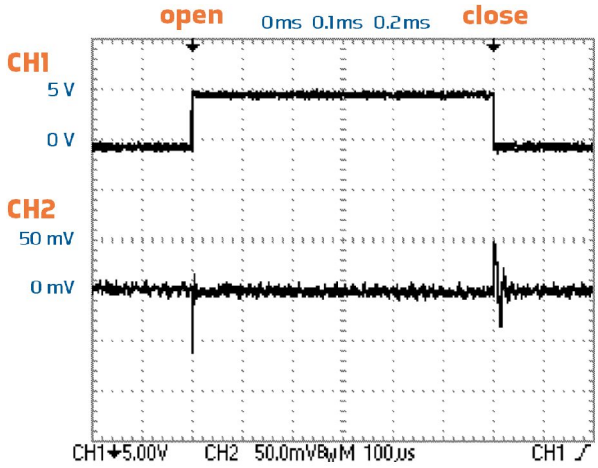
Behaviour of PR2101 caused by Load changes

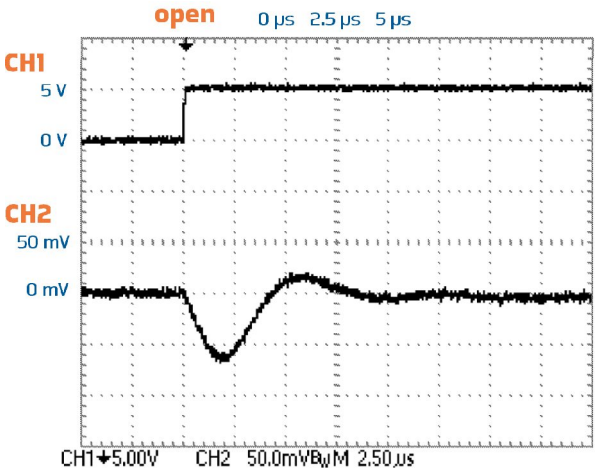
LOAD TRANSIENT RESPONSE USING A 100 nF OUPUT CAPACITOR

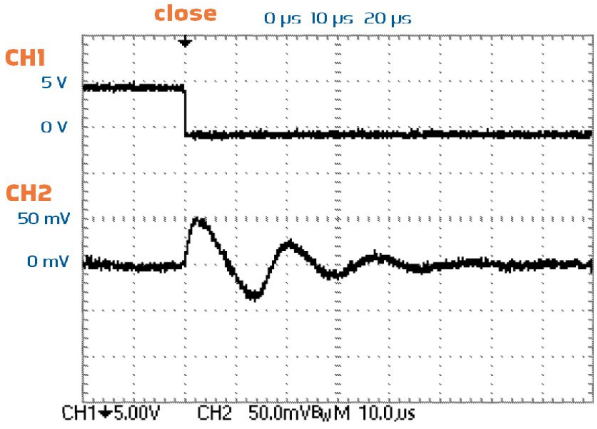


VOLTAGE AT CH1 AND CH2 WHILE OPENING AND CLOSING THE SWITCH



ENLARGED SECTIONS FOR RESOLVING THE SIGNALS ABOVE





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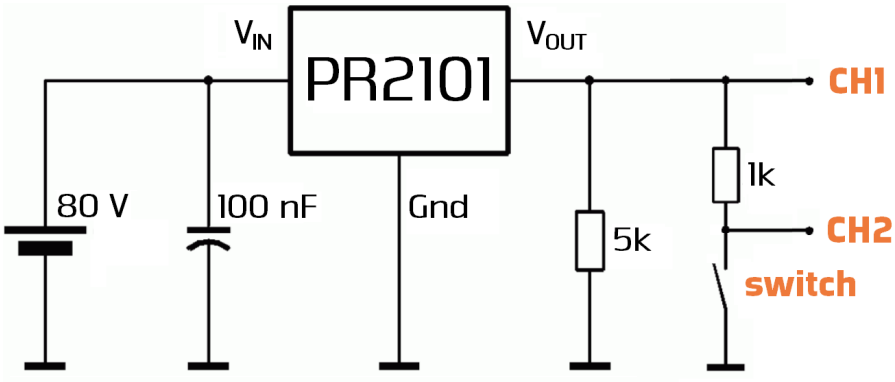
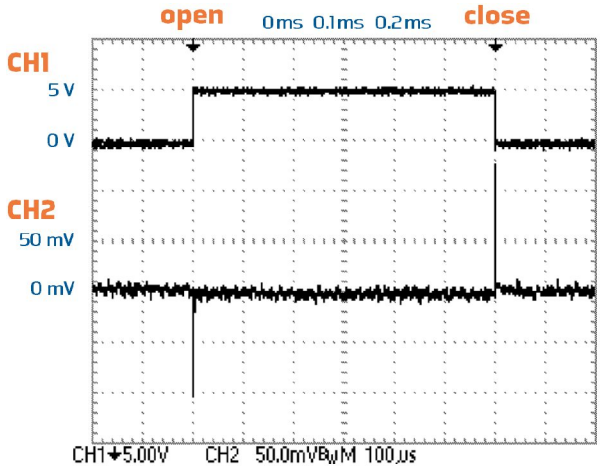
Behaviour of PR2101 caused by Load changes

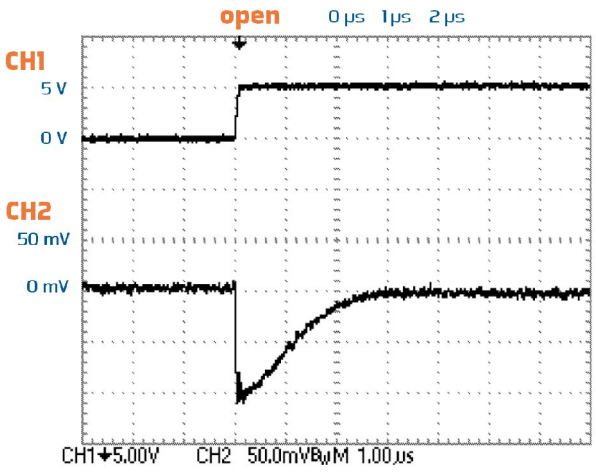
LOAD TRANSIENT RESPONSE WITHOUT AN OUTPUT CAPACITOR

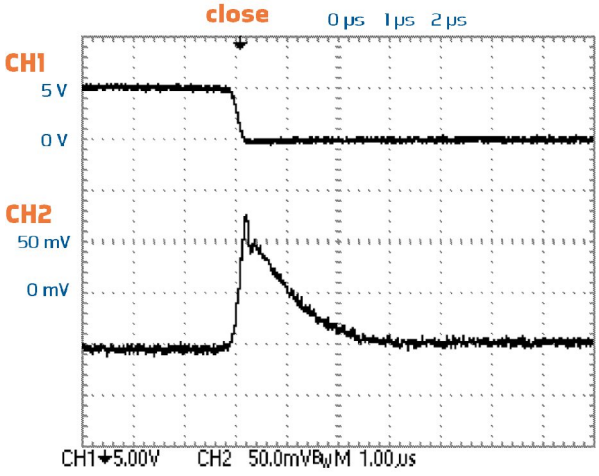


VOLTAGE AT CH1 AND CH2 WHILE OPENING AND CLOSING THE SWITCH



ENLARGED SECTIONS FOR RESOLVING THE SIGNALS ABOVE (FASTER RESPONSE; HIGHER PEAK VOLTAGE)





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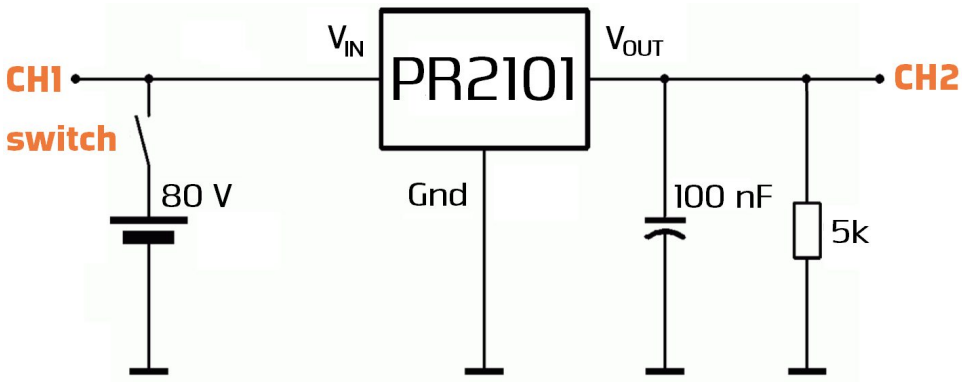
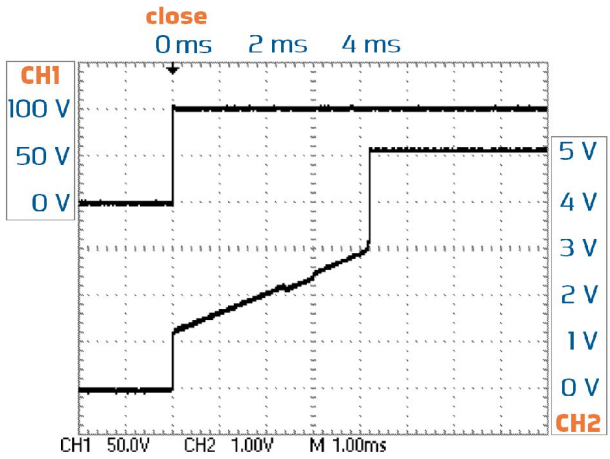
Starting Behaviour of PR2101

CIRCUIT DIAGRAM



VOLTAGE EVOLUTION WHILE CLOSING THE SWITCH



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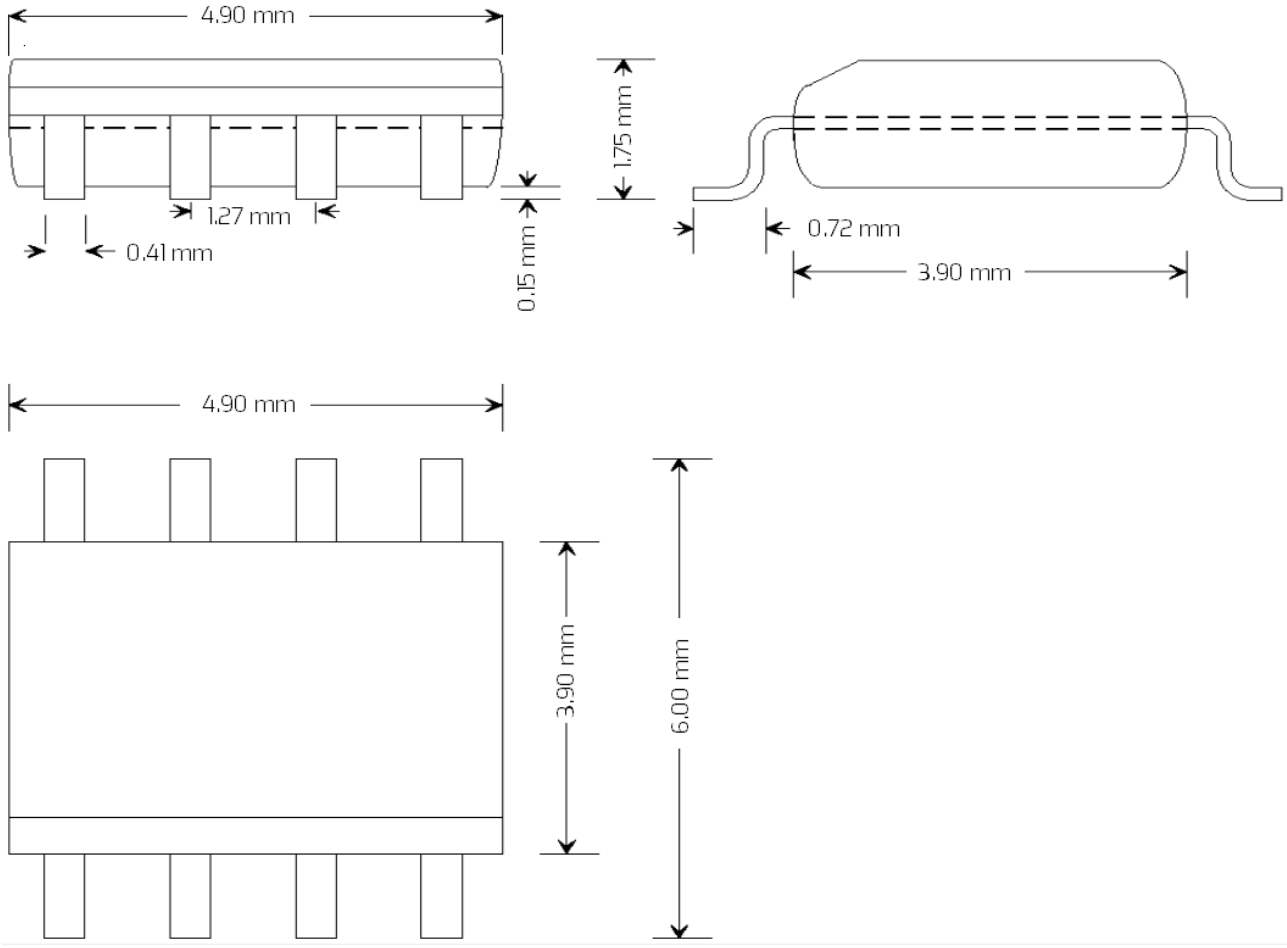
Available Package

TECHNICAL DRAWING



Package type: 8L SOIC (150 mils)
PR2101 SOIC package in plastic tube or tape and reel
Packing unit: 100 ICs per tube or 3500 ICs per reel

ALL PARTS DELIVERED, COMPLY WITH RoHS. FINISH IS PURE TIN.

Pb-free

pure tin

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PREMA Semiconductor GmbH
Robert-Bosch-Str. 6
55129 Mainz Germany
Phone: +49-6131-5062-0
Fax: +49-6131-5062-220
Email: prema@prema.com Web site: www.prema.com