SPX116

Low Dropout Voltage Three Terminal Regulator

FEATURES
- 3.5V, 3.3V, 3.0V and AdjustableVersions Available
- Very Low Dropout Voltage
- Output Current In Excess Of 100mA
- Low Standby Current (ON, No Load)
- Short Circuit Protection
- Internal Thermal Shutdown
- Available in TO-92, SO-8 & SO-89 Packages
- Direct Replacement Pin to Pin to TK116

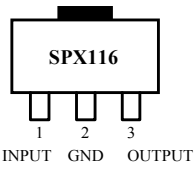
APPLICATIONS
- Battery Powered Systems
- Cordless Telephones
- Radio Control Systems
- Portable/ Palm Top / Notebook Computers
- Portable Consumer Equipment
- Portable Instrumentation
- Pager
- Low Voltage Systems
- Cellular Phone

PRODUCT DESCRIPTION
The SPX116 is a low power voltage regulators. This devices are an excellent choice for use in battery-powered applications such as cordless telephones, radio control systems, and pagers. The SPX116 features very low quiescent current in ON (400µA no load and 2mA at 60mA load) and OFF mode and very low dropout voltage of less than 200mV at 80mA load through internal PNP pass-transistor. The junction temperature of 150°C is achieved through an internal thermal shutdown. In case of short circuit, the SPX116 will shut down.

This device is available in 3.0V, 3.3V and 3.5V output voltages. This regulator is available in TO-92, SO-8 and SOT-89 packages, it can also be supplied in tape and reel. The SPX116 is a direct replacement to TK116.

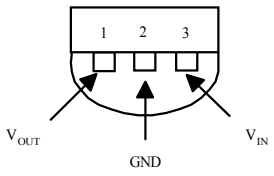
PIN CONNECTIONS

SOT-89 (M1)



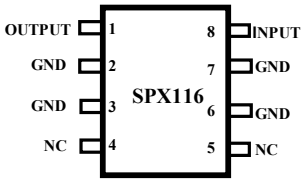
Front View

TO-92 (N)



Bottom View

8-Pin Surface Mount, Fix Output



Top View

ABSOLUTE MAXIMUM RATINGS

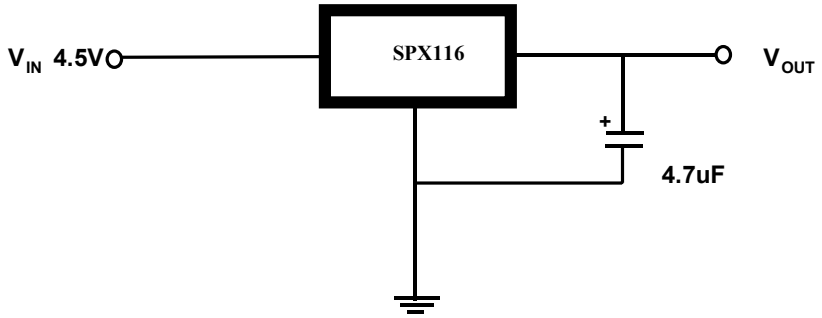
Power Dissipation.....500 mW
Lead Temp. (Soldering, 5 Seconds) ..... 240°C
Storage Temperature Range .....-65° to +150°C
Operating Junction Temperature Range
SPX116.....+150°C

Input Supply Voltage .....-20 to +60V
Feedback Input Voltage .....-1.5 to +30V
Shutdown Input Voltage.....-0.3 to +30V
Output Voltage..... V_{OUT}X1.15 V
Load Current ..... 180 mA

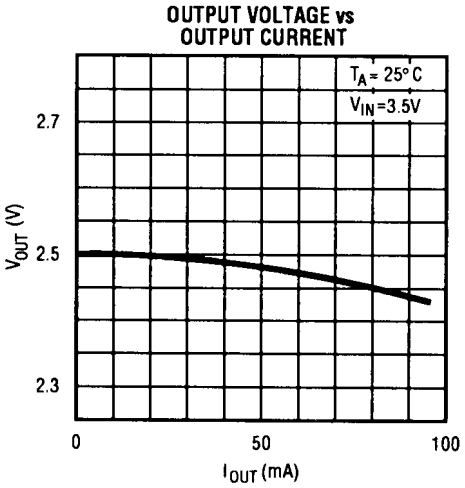
ELECTRICAL CHARACTERISTICS at Ta=25°C, unless otherwise specified.

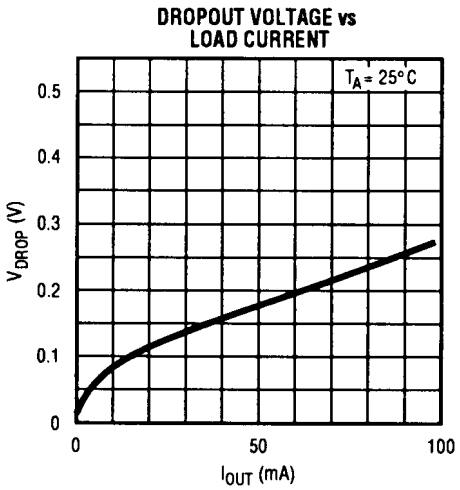
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage Range	V_{IN}		2.5		14	V
Supply Current	I_{IN1}	I_{OUT}=0mA, V_{CONT}=0, ON Mode		400		µA
Supply Current	I_{IN2}	V_{CONT} =V_{IN}, OFF Mode		800		µA
Regulated Output Voltage	V_{OUT}	V_{IN}=V_{OUT} +1 V, I_{OUT}=10mA	-3.0	V_{OUT}	+3.0	%
Dropout voltage	V_{DROP1}	I_{OUT}=10mA		50		mV
Dropout Voltage	V_{DROP2}	I_{OUT}=60mA		170		mV
Output Current	I_{OUT}		100			mA
Line Regulation	LI_{REG}	V_{OUT}+1.0V to ≤V_{IN} ≤V_{OUT} +6.0V		0.01		%/V
Load Regulation	LD_{REG}	10 mA≤I_{OUT}≤60mA, V_{IN}=V_{OUT}+1.5		0.02		%/mA
Ripple Rejection	V_{RIPPLE}	100mV_{RMS}, f=400Hz V_{IN}=V_{OUT}+1.5v, I_{OUT}=10mA		55		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T_A$	0°C≤T_A≤75°C V_{IN}=V_{OUT}+1.5V, I_{OUT}=10mA		±0.2		mV/°C
Output Noise Voltage	V_N	V_{IN}=V_{OUT} +1.5V, I_{OUT}=10mA 10Hz<f<100kHz, I_{OUT}=10mA		150		µV_{RMS}

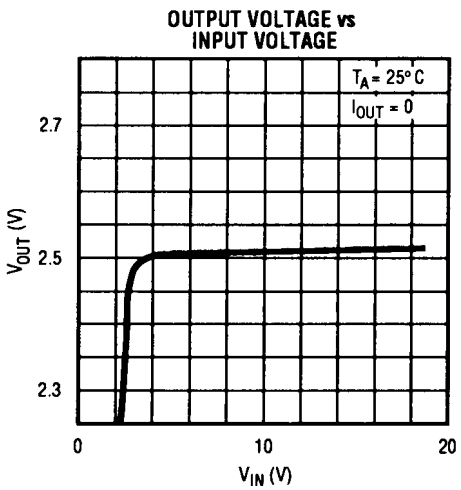
TEST CIRCUIT

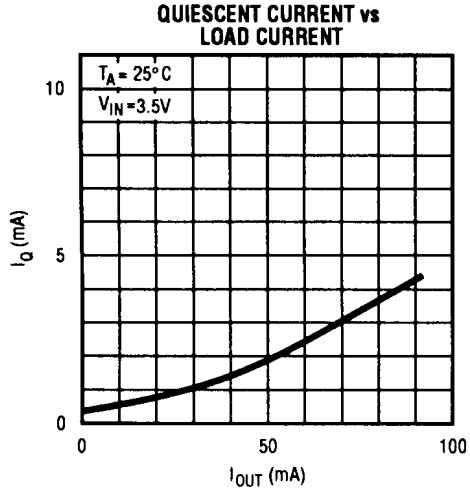


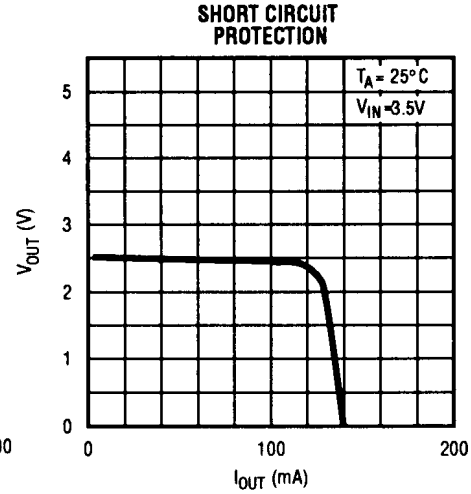
TYPICAL CHARACTERISTICS

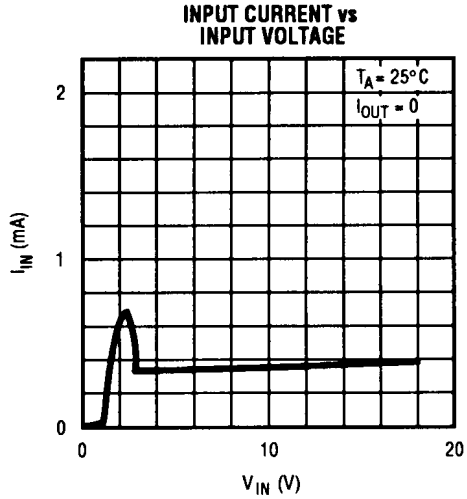


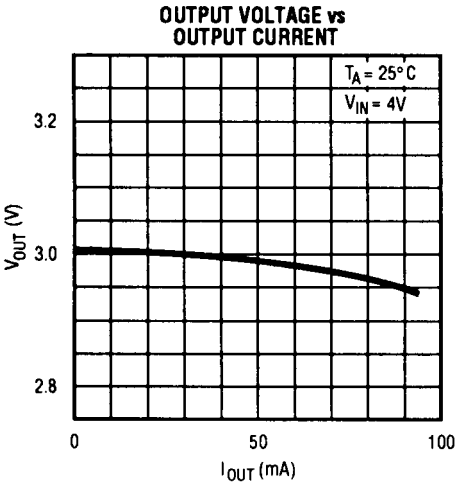


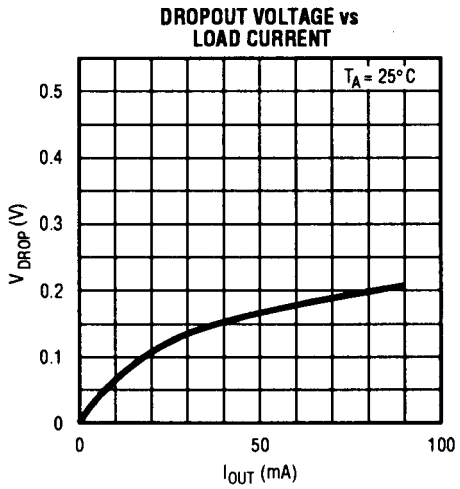


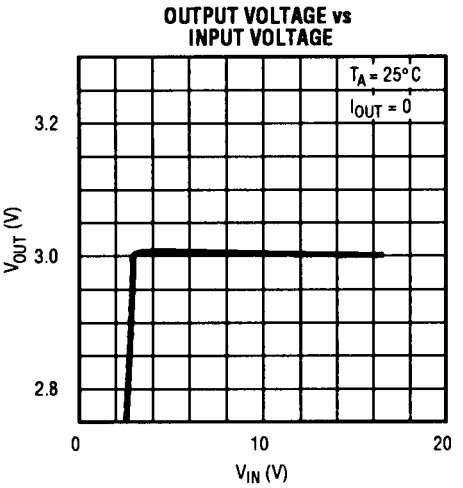






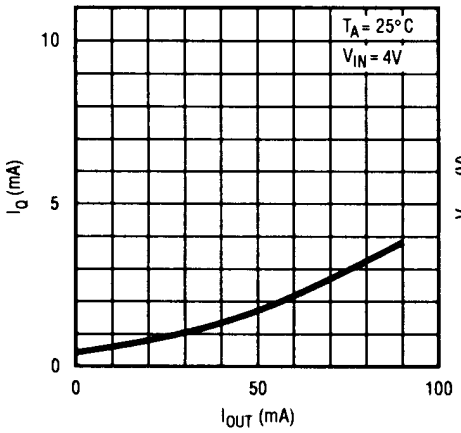




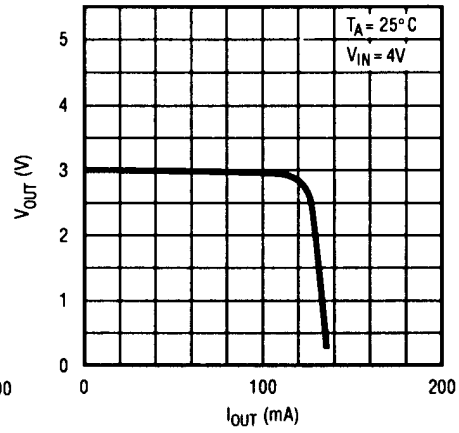


TYPICAL CHARACTERISTICS

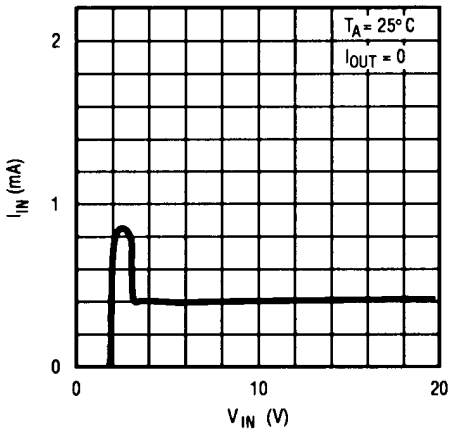
QUIESCENT CURRENT vs LOAD CURRENT



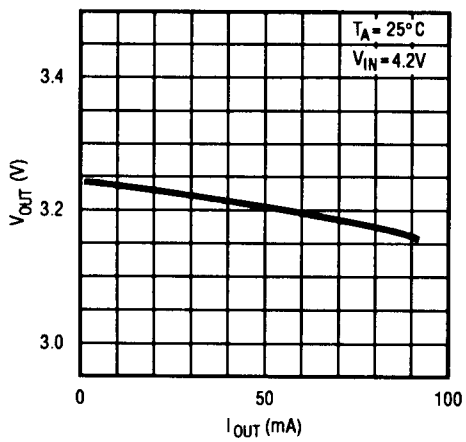
SHORT CIRCUIT PROTECTION



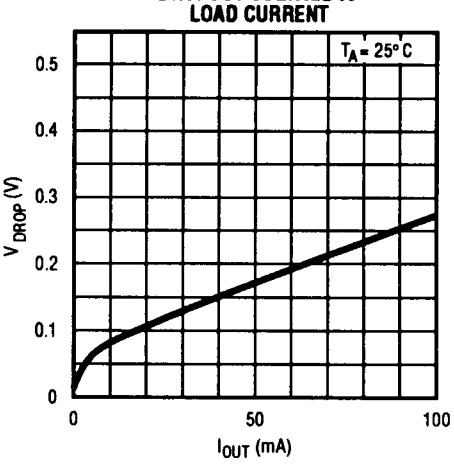
INPUT CURRENT vs INPUT VOLTAGE



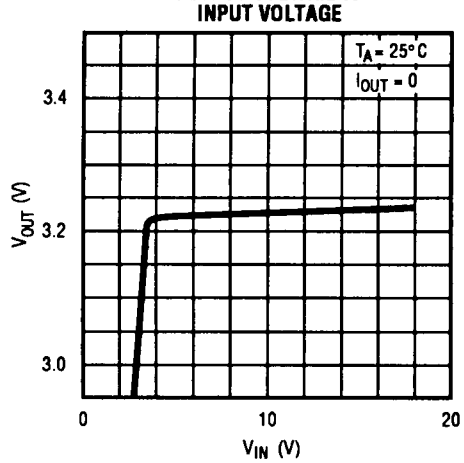
OUTPUT VOLTAGE vs OUTPUT CURRENT



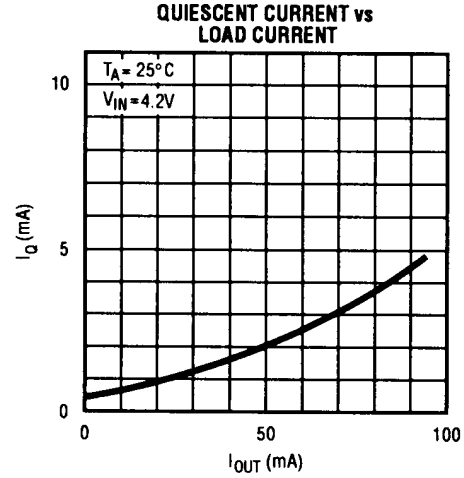
DROPOUT VOLTAGE vs LOAD CURRENT



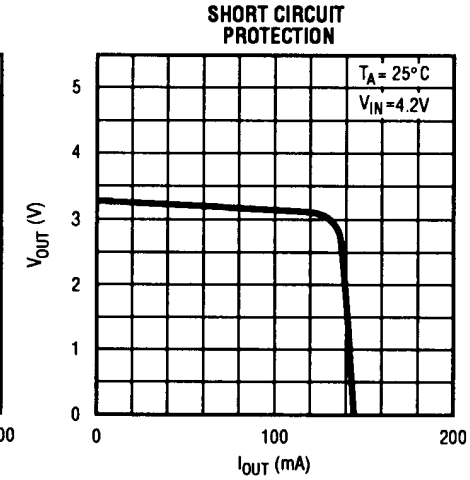
OUTPUT VOLTAGE vs INPUT VOLTAGE



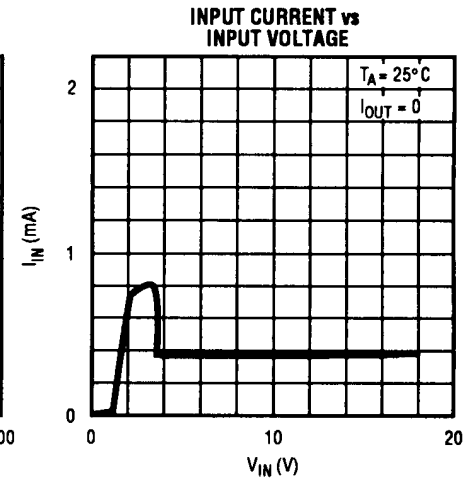
QUIESCENT CURRENT vs LOAD CURRENT



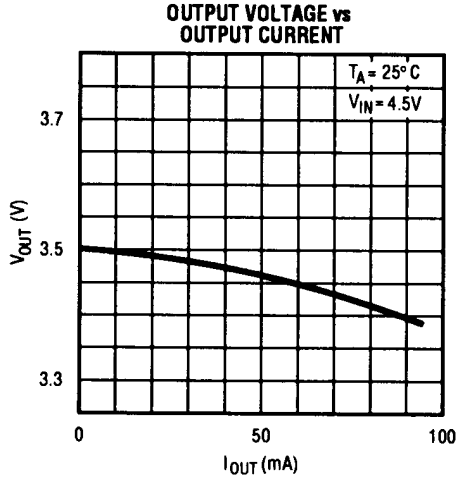
SHORT CIRCUIT PROTECTION

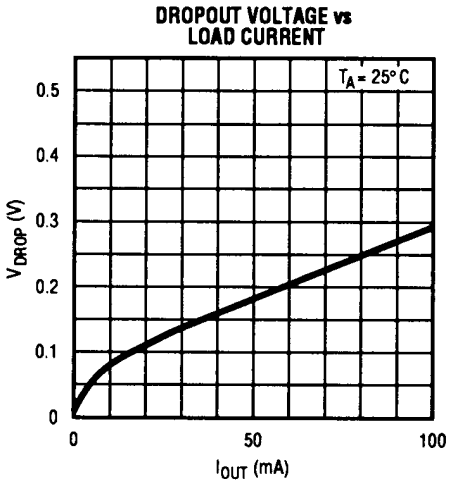


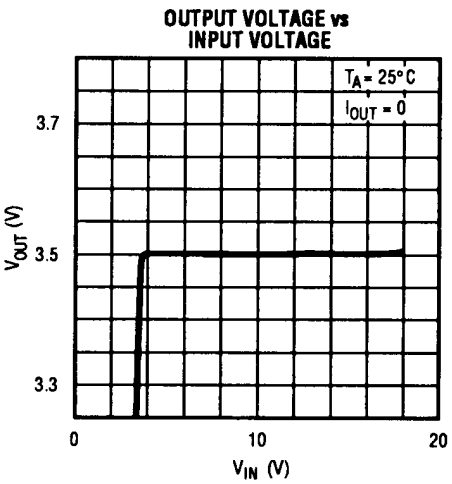
INPUT CURRENT vs INPUT VOLTAGE

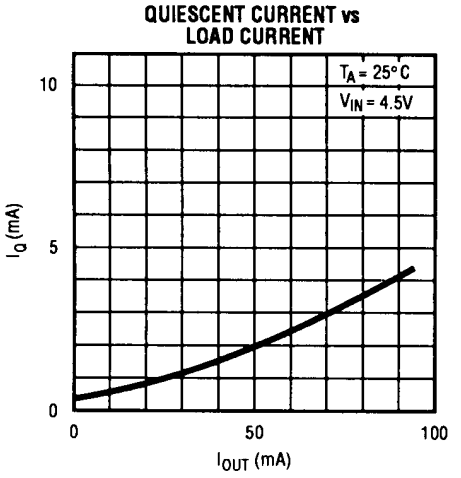


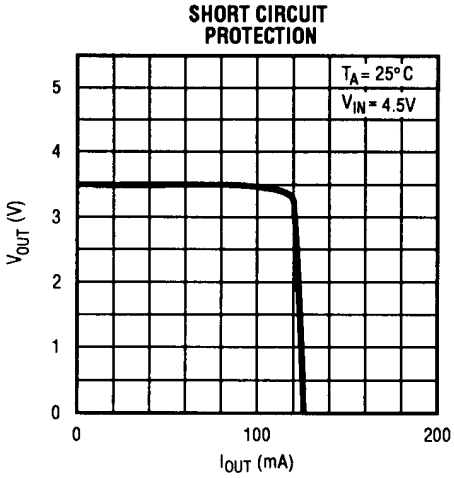
TYPICAL CHARACTERISTICS

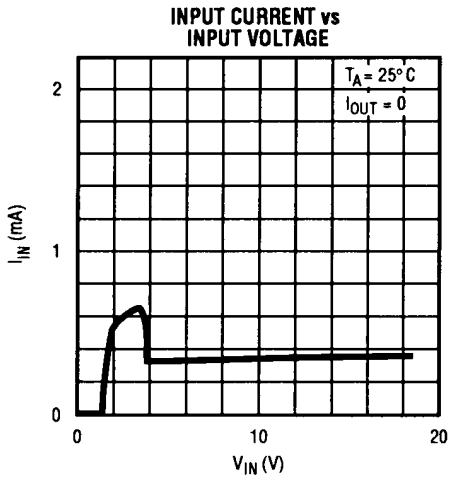


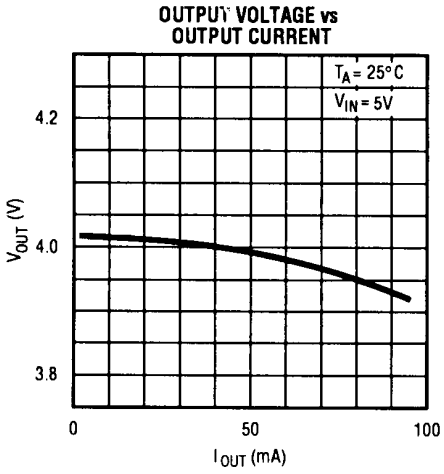


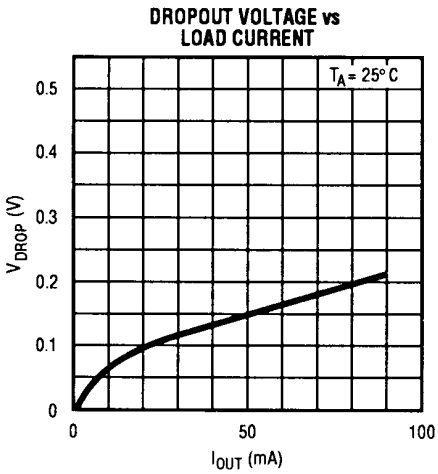


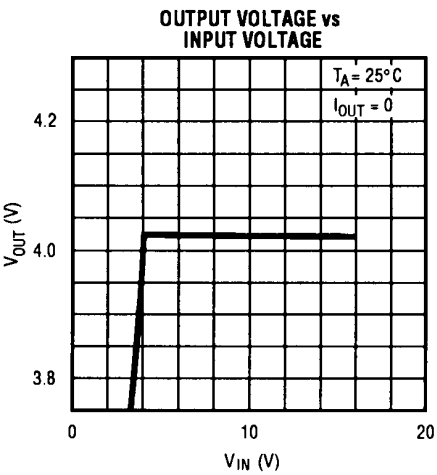












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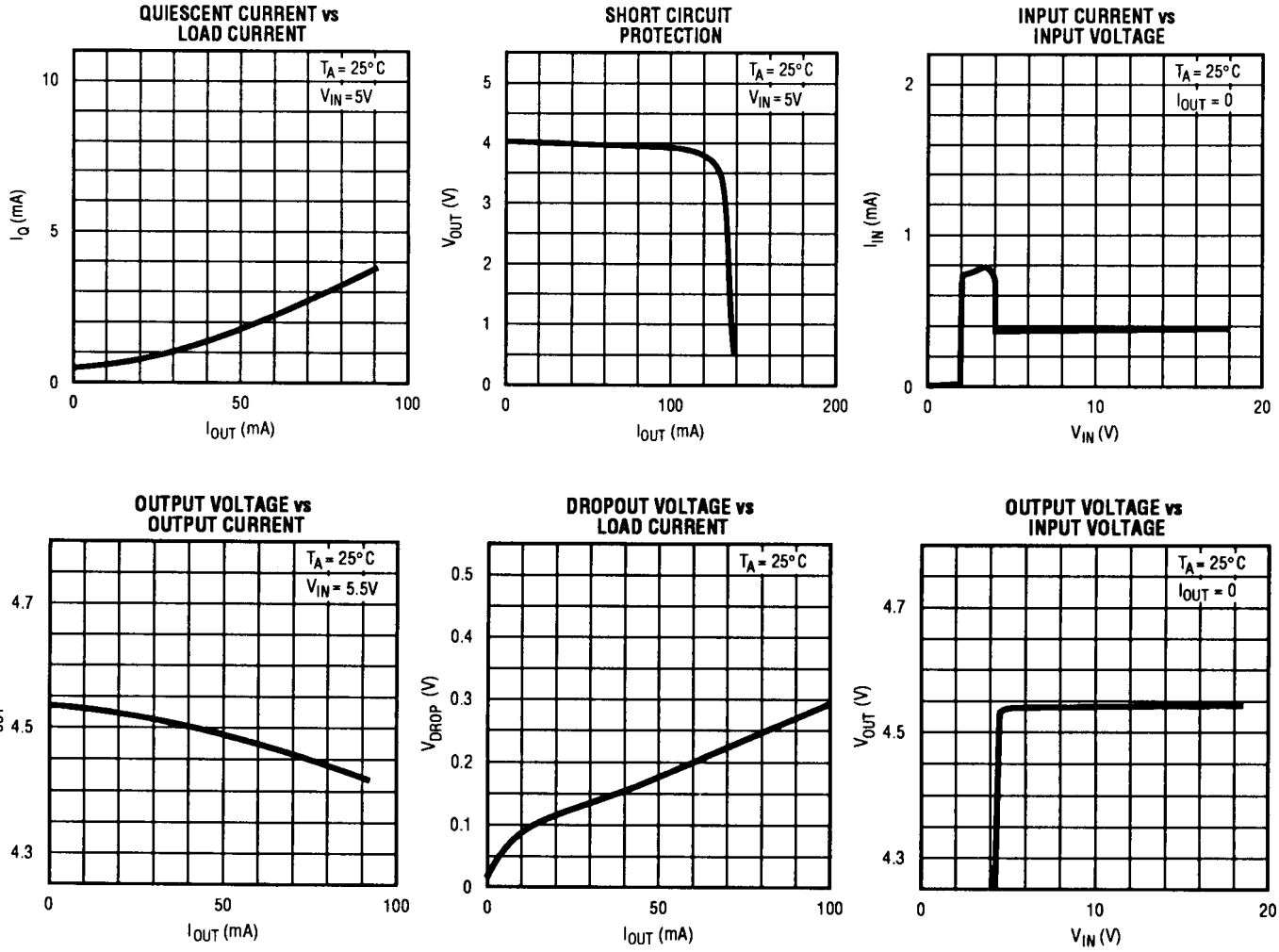

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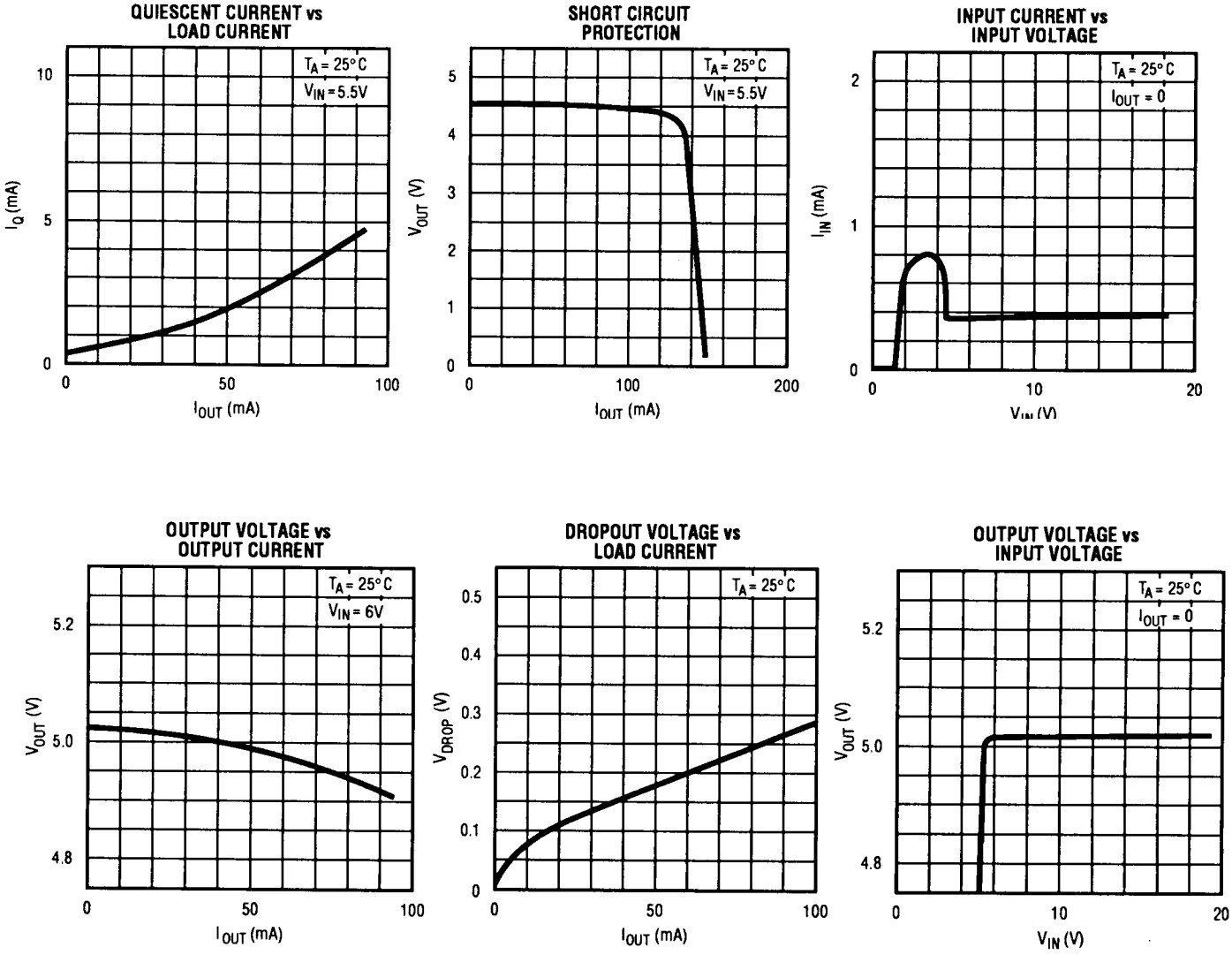

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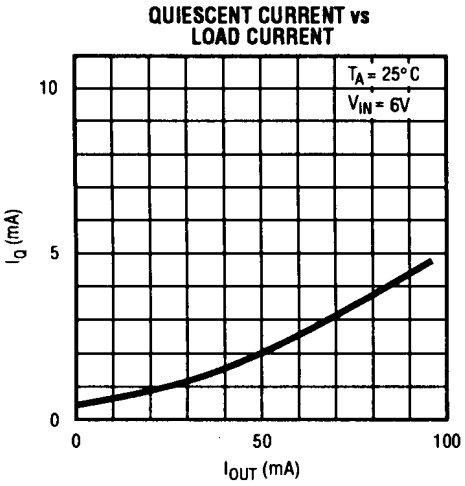

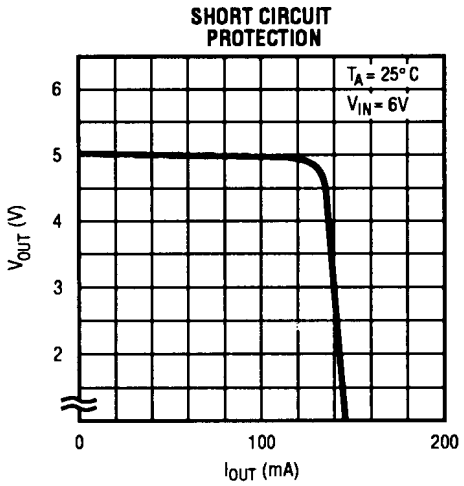

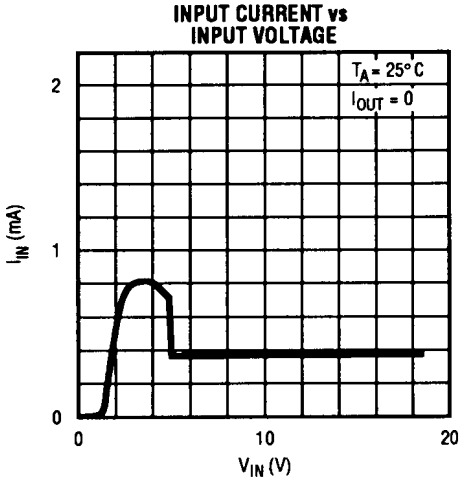

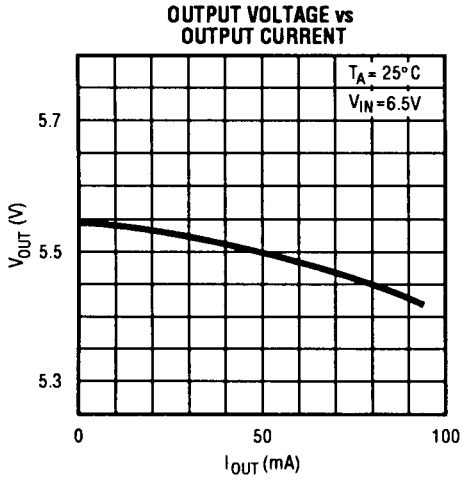

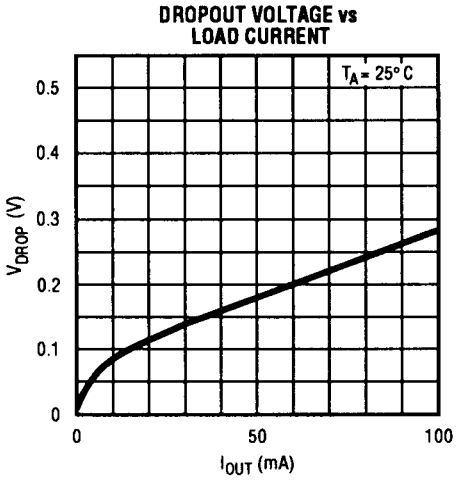

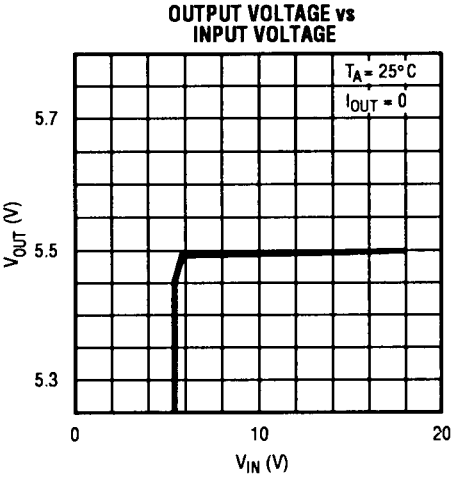

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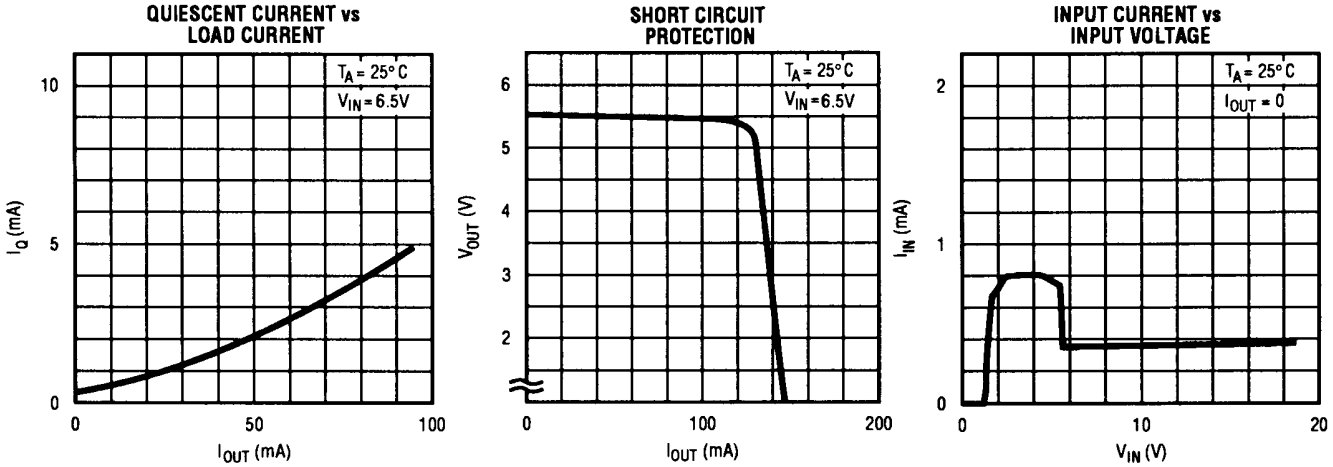
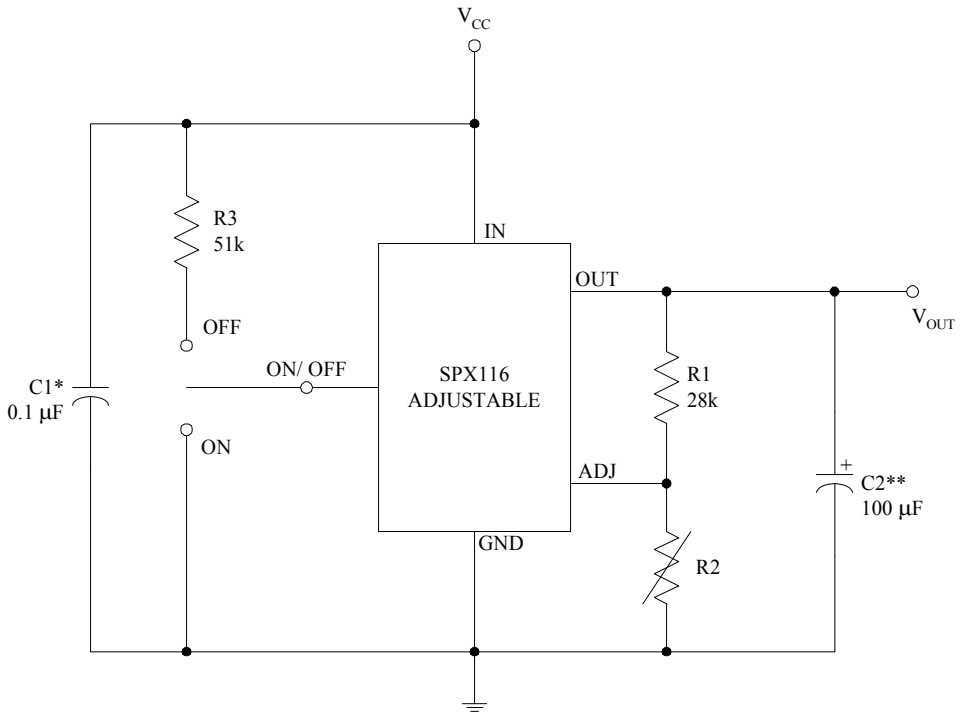


SPX116 Adjustable Output



$$V_{OUT} = \text{Reference Voltage X } \frac{R1 + R2}{R1}$$

Note: Using 27K for R1 will automatically compensate for errors in V_{OUT} due to the input bias current of te ADJ pin (approximately lµA).

ORDERING INFORMATION

Ordering No.	Precision	Output Voltage	Packages
SPX116N	3%	Adj	3 Lead TO-92
SPX116N-3.0	3%	3.0V	3 Lead TO-92
SPX116N-3.3	3%	3.3V	3 Lead TO-92
SPX116N-3.5	3%	3.5V	3 Lead TO-92
SPX116S	3%	Adj	8 Lead SOIC
SPX116S-3.0	3%	3.0V	8 Lead SOIC
SPX116S-3.3	3%	3.3V	8 Lead SOIC
SPX116S-3.5	3%	3.3V	8 Lead SOIC
SPX116M1	3%	Adj	3 Lead SOT-89
SPX116M1-3.0	3%	3.0V	3 Lead SOT-89
SPX116M1-3.3	3%	3.3V	3 Lead SOT-89
SPX116M1-5.0	3%	5.0V	3 Lead SOT-89

Sipex Corporation

SIGNAL PROCESSING EXCELLENCE

Sipex Corporation

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