

TK701xx

ABSOLUTE MAXIMUM RATINGS

Input Voltage	6 V	Storage Temperature Range	-50 to +150 °C
Power Dissipation	150 mW	Operating Temperature Range	0 to +80 °C
Operating Voltage Range	0.9 to 5.0 V	Lead Soldering Temp. (10 sec.)	240 °C
Junction Temperature	150 °C		

Tk70110 ELECTRICAL CHARACTERISTICS

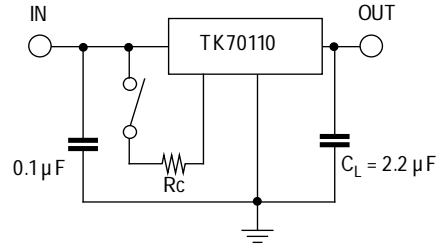
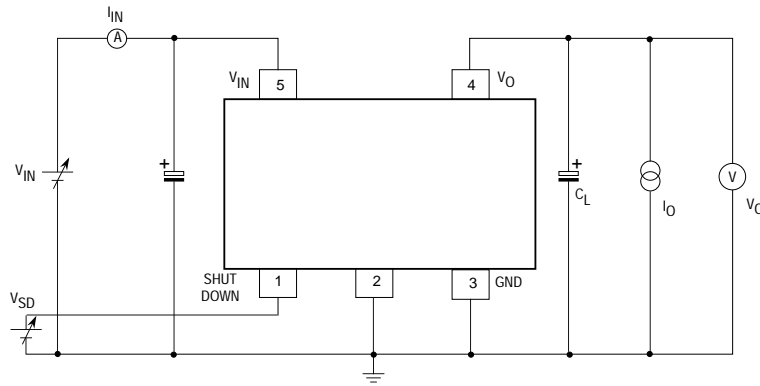
Test Conditions: $V_{IN} = 1.2 \text{ V}$, $T_A = 25 \text{ °C}$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{IN}	Supply Current	$I_O = 0 \text{ mA}$, $V_{IN} = 1.2 \text{ V}$		190		μA
I_{STBY}	Standby Current	$V_{IN} = 1.2 \text{ V}$, Output off		10		μA
V_O	Output Voltage		0.95	1.0	1.05	V
V_{DROP}	Dropout Voltage	$I_O = 2 \text{ mA}$		30		mV
I_O	Output Current		20			mA
Line Reg	Line Regulation	$V_O + 1.2 \text{ V} \leq V_{IN} \leq 2.2 \text{ V}$			50	mV
Load Reg	Load Regulation	$I_O = 0 \rightarrow 2 \text{ mA}$		2	10	mV
		$I_O = 0 \rightarrow 10 \text{ mA}$		5	25	mV
RR	Ripple Rejection	$C_L = 3.3 \mu\text{F}$, 400 Hz		36		dB
$\Delta V_O / \Delta T_A$	Output Voltage Temperature Dependency	$0 \leq T_A \leq 60 \text{ °C}$		0.05		dB
Control Terminal Specification						
I_{CONT}	Control Current	$V_{CONT} = 1.0 \text{ V}$, $R_C = 0$, Note 2		22	50	μA
V_{CONT}	Control Voltage	Output On	-0.05		0.4	V
		Output Off	1.0			V

Note 1: Must be used within the power dissipation curve. Power dissipation is 350 mW when mounted as recommended.

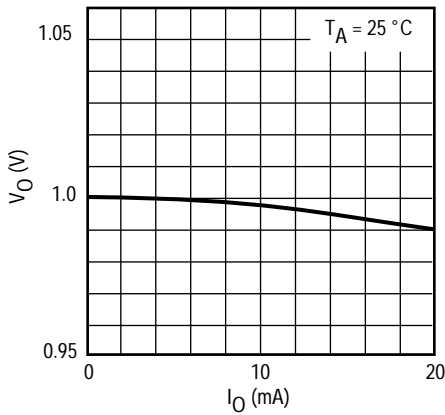
Note 2: Control current may be decreased by connecting a series resistor to control pin.

TEST CIRCUIT



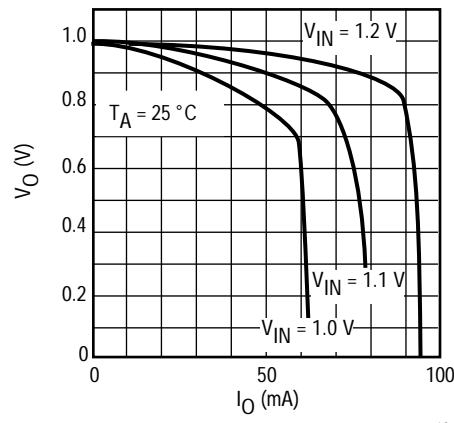
TYPICAL PERFORMANCE CHARACTERISTICS

OUTPUT VOLTAGE vs. OUTPUT CURRENT



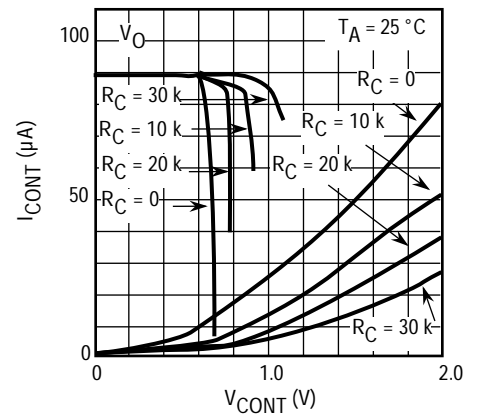
1

SHORT CIRCUIT CURRENT



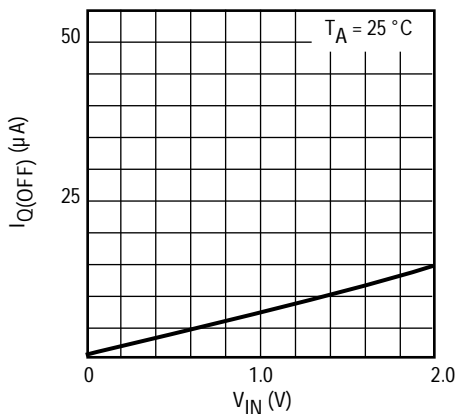
12

ON/OFF CONTROL TERMINAL (SERIES RESISTOR R_C)



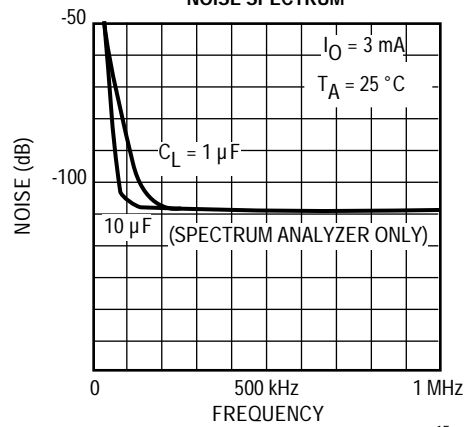
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QUIESCENT CURRENT vs. INPUT VOLTAGE



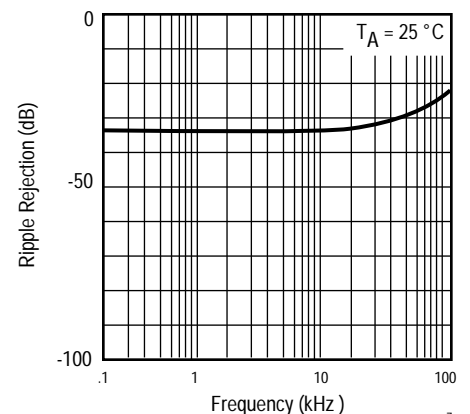
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NOISE SPECTRUM



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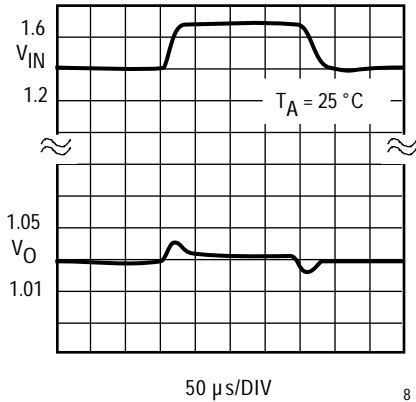
RIPPLE REJECTION



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TYPICAL PERFORMANCE CHARACTERISTICS (CONT.)

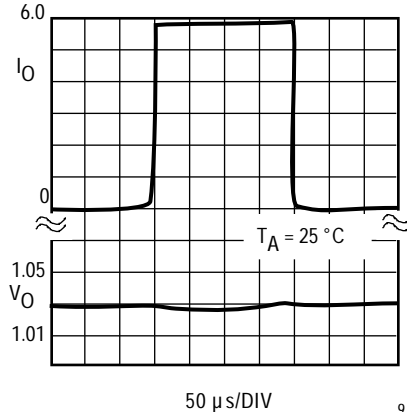
LINE TRANSIENT RESPONSE



50 $\mu\text{s}/\text{DIV}$

8

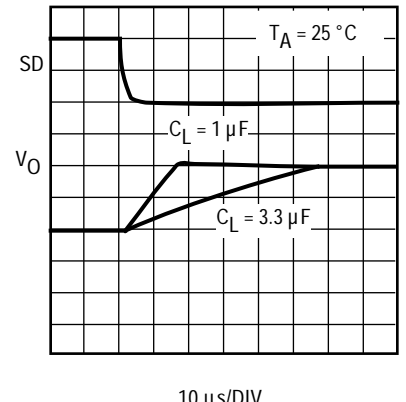
LOAD TRANSIENT RESPONSE



50 $\mu\text{s}/\text{DIV}$

9

OUTPUT (ON/OFF) CONTROL RESPONSE

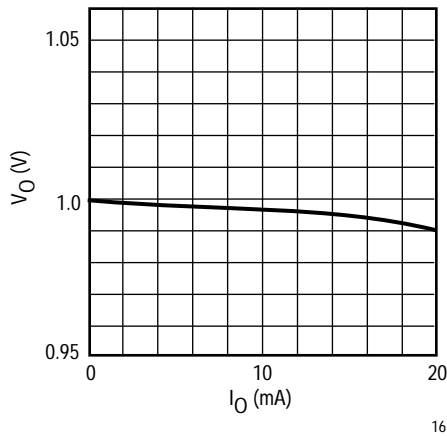


10 $\mu\text{s}/\text{DIV}$

10

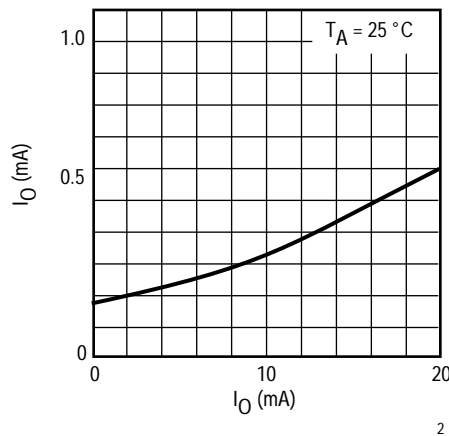
TK70110

OUTPUT VOLTAGE vs. OUTPUT CURRENT



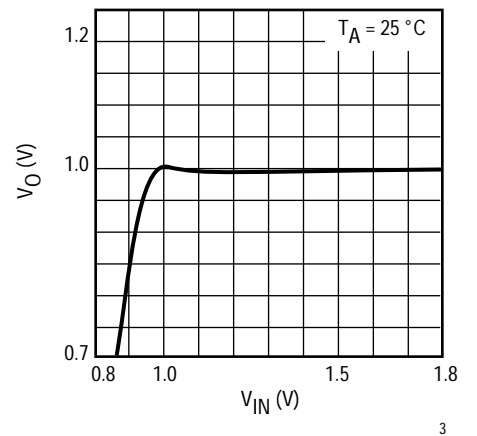
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QUIESCENT CURRENT vs. OUTPUT CURRENT



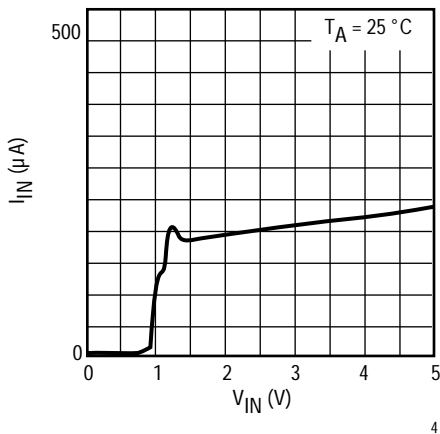
2

OUTPUT VOLTAGE vs. SUPPLY VOLTAGE



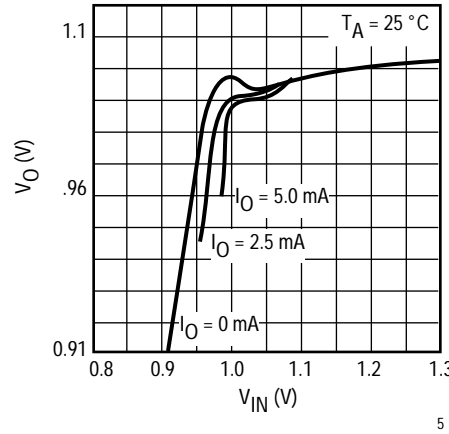
3

INPUT CURRENT (NO LOAD) vs. INPUT VOLTAGE



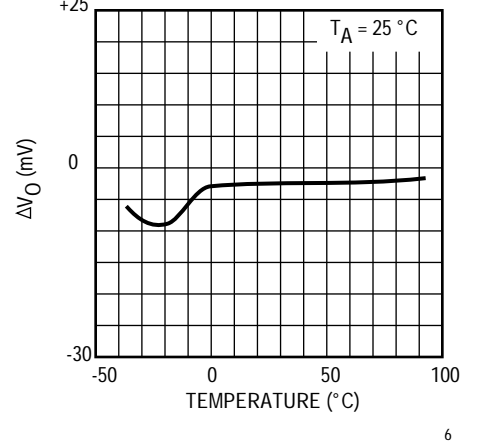
4

OUTPUT VOLTAGE vs. SUPPLY VOLTAGE



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OUTPUT VOLTAGE DRIFT vs. TEMPERATURE

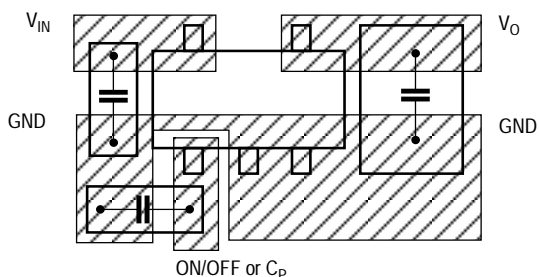


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APPLICATION NOTES

RECOMMENDED MOUNTING

Optimum performance can only be achieved when the IC is mounted on a PC board according to the diagram below. This is because of the extremely small package and limited power dissipation. Shape the metal portion of the PCB as shown in the following drawing.



Use a large bypass capacitor and connect it in a place near GND of the IC. Pay attention to temperature characteristics of the capacitor, especially the increase of ESR and decrease of capacitance in low temperatures. Oscillation, reduction of ripple rejection and increased noise may occur in some cases if the proper capacitor is not used. An output capacitor more than $1.0 \mu\text{F}$ is required to maintain stability. The standard test condition is $3.3 \mu\text{F}$ ($T_A = 25 \text{ }^\circ\text{C}$).

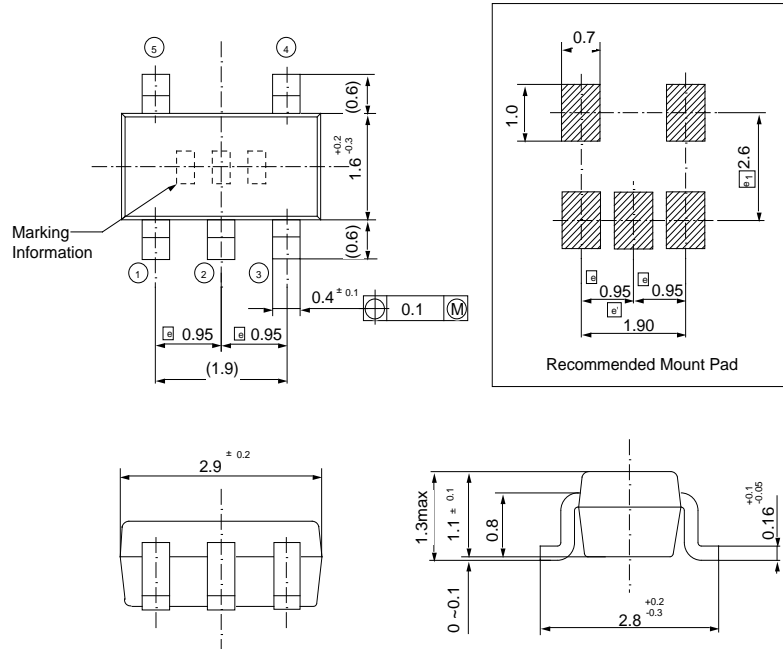
DROPOUT VOLTAGE

Dropout voltage is the voltage difference between the input voltage and the output voltage where the output voltage decreases to 100 mV below the nominal output voltage as the input voltage is decreased.

To measure dropout voltage, set the input voltage to the nominal output voltage +1 V and measure the output voltage. Reduce the input voltage to the point where the output is 100 mV below the previously measured value. The dropout voltage is the difference between the input and output voltage at this point. This voltage depends on the load current and ambient temperature.

PACKAGE OUTLINE

SOT-25



Unit:mm

Marking Information

TK70110 K10

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YOUR LOCAL REPRESENTATIVE IS:



TOKO America, Inc.
 1250 Feehanville Dr.
 Mt. Prospect, IL 60056
 Tel: 1(800) PIK-TOKO
 Fax: 1(847) 699-1194