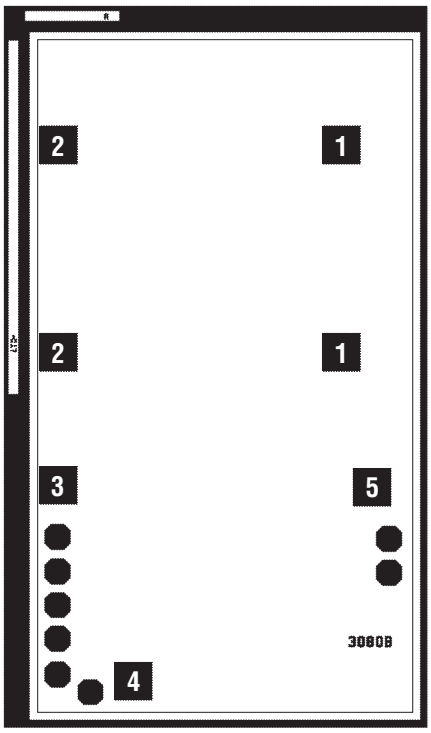
DICE/DWF SPECIFICATION

RH3080MK
Adjustable 0.9A Single Resistor Low Dropout Regulator



44mils × 75mils,
Backside metal: Alloyed gold layer
Backside potential: OUT
Tie SENSE to OUT

PAD FUNCTION

1. IN
2. OUT
3. SENSE
4. SET
5. $V_{CONTROL}$

DIE CROSS REFERENCE

LTC Finished Part Number	Order Part Number
RH3080MK	RH3080MKDICE
RH3080MK	RH3080MKDWF*

Please refer to LTC standard product data sheet for other applicable product information.
***DWF = DICE in wafer form.**

DESCRIPTION

The RH3080 is a 0.9A low dropout linear regulator with a unique architecture featuring a precision current source and voltage follower which allows the output to be programmed to any voltage between zero and 36V. Multiple regulators can be paralleled to increase total output current and spread heat over a system PC board with no need for heat sinking. The pass transistor collector can be brought out independently of the circuit supply voltage to allow dropout voltage to approach the saturation limit of the pass transistor. A small 2.2µF capacitor on the output with an ESR of less than 0.5Ω is adequate to insure stability. Applications with large output load transients require a larger output capacitor value to minimize output voltage change. Input circuitry insures output safe operating area current limiting and thermal shutdown protection. The rated output current of an RH3080-based part is fixed by internal wire length/resistance. Linear Technology dice element evaluations are based on parts rated for 0.9A output current.

DICE/DWF ELECTRICAL TEST LIMITS T_A = 25°C. All voltages are relative to OUT.

PARAMETER	CONDITIONS	MIN	MAX	UNITS
SET Pin Current (Note 6)	V_{IN} = 1V, $V_{CONTROL}$ = 2V, I_{LOAD} = 1mA	9.9	10.1	µA
Output Offset Voltage ($V_{OUT} – V_{SET}$)	V_{IN} = 1V, $V_{CONTROL}$ = 2V, I_{LOAD} = 1mA	–5	5	mV
Load Regulation, I_{SET}	I_{LOAD} = 1mA to 100mA	–15	15	nA
Load Regulation, V_{OS}	I_{LOAD} = 1mA to 100mA	–1.0	1.0	mV
Line Regulation, I_{SET}	V_{IN} = 1V to 26V, $V_{CONTROL}$ = 2V to 26V, I_{LOAD} = 1mA	–0.45	0.45	nA/V
Line Regulation, V_{OS}	V_{IN} = 1V to 26V, $V_{CONTROL}$ = 2V to 26V, I_{LOAD} = 1mA	–0.05	0.05	mV/V
Minimum Load Current (Note 3)	V_{IN} = 10V, $V_{CONTROL}$ = 10V, V_{OUT} = 0.1V V_{IN} = 26V, $V_{CONTROL}$ = 26V, V_{OUT} = 0.1V		0.4 0.9	mA mA
$V_{CONTROL}$ Dropout Voltage (Note 4)	V_{IN} = 1V, I_{LOAD} = 0.1A		1.4	V
V_{IN} Dropout Voltage (Note 4)	$V_{CONTROL}$ = 2V, I_{LOAD} = 0.1A		0.17	V
$V_{CONTROL}$ Pin Current (Note 5)	V_{IN} = 1V, $V_{CONTROL}$ = 2V, I_{LOAD} = 0.1A		5.3	mA

Note 1: Dice are probe tested at 25°C to the limits shown except for high current tests. Dice are tested under low current conditions which assure full load current specifications when assembled in packaging systems approved by Linear Technology.

Note 2: Unless otherwise specified, all voltages are with respect to V_{OUT}. The RH3080MKDICE is tested at die sort under pulse load conditions such that $T_A \cong T_J$.

Note 3: Minimum load current is equivalent to the quiescent current of the part. Since all quiescent and drive current is delivered to the output of the part, the minimum load current is the minimum current required to maintain regulation.

Note 4: Dropout results from either of minimum control voltage, $V_{CONTROL}$, or minimum input voltage, V_{IN}, both specified with respect to V_{OUT}. These specifications represent the minimum input-to-output differential voltage required to maintain regulation.

Note 5: The $V_{CONTROL}$ pin current is the drive current required for the output transistor. This current tracks output current with roughly a 1:60 ratio. The minimum value is equal to the quiescent current of the device.

Note 6: SET pin is clamped to the output with diodes. These diodes only carry current under transient overloads.

Wafer level testing is performed per the indicated specifications for dice. Considerable differences in performance can often be observed for dice versus packaged units due to the influences of packaging and assembly on certain devices and/or parameters. Please consult factory for more information on dice performance and lot qualifications via lot sampling test procedures.

Dice data sheet subject to change. Please consult factory for current revision in production.

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