

6/19/02

From: Sudha Durvasula

MAX1917

Input: +2.25V to +2.75V; 12V available for V+ supply to chip

Output: 1.25V (+/-3%); Maximum load=7A

Bill of Materials:

| DESIGNATION | QTY | DESCRIPTION |
|----------------|-----|---|
| C1, C2, C3 | 3 | 10 uF 25V ceramic capacitor Taiyo Yuden TMK432BJ106KM |
| C6, C7, C8, C9 | 4 | 270 µF 2V 15 mΩ Al electrolytic capacitors Panasonic EEFUE0E271R |
| C10, C11 | 2 | 10 uF 6.3V ceramic capacitors Taiyo Yuden JMK212BJ106MG |
| C12 | 1 | 0.47 µF, 25V ceramic capacitor Taiyo Yuden TMK316BJ474ML |
| C13, C14 | 2 | 0.47µF, 6.3V ceramic capacitors (0603) Taiyo Yuden JMK107BJ475MG |
| C15 | 1 | 4.7 µF 6.3V ceramic capacitor TAIYO YUDEN JMK212BJ475MG |
| C16, C17 | 2 | 1 µF 6.3V ceramic capacitor TAIYO YUDEN JMK107BJ105MA |
| D1 | 1 | 100 mA 30V Schottky diode Central Semiconductor CMPSH-3 |
| L1 | 1 | 0.8µH (16A) Inductor Sumida CDEP105L-0R8 |
| N1, N2 | 2 | N-channel MOSFETs, 30V ($R_{DS(ON)} = 9m\Omega$ @ $V_{GS}=4.5V$) International Rectifier IRF7811W |
| Q1 | 1 | N-channel MOSFET (SOT23) Central Semiconductor 2N7002 |
| R1 | 1 | 54.9 kΩ, 1% resistor (0805) |
| R2 | 1 | 5.1 kΩ, 5% resistor (0805) |
| R3 | 1 | 100 kΩ, 5% resistor (0805) |
| R4, R9 | 2 | Short |
| R6 | 1 | 10 kΩ, 5% resistor (0805) |
| R7 | 1 | 10 kΩ, 1% resistor (0805) |
| R8 | 1 | 2.49 kΩ, 1% resistor (0805) |
| R10 | 1 | 20 kΩ, 1% resistor (0805) |
| JU2 | 1 | 2 pin header |
| J1 | 1 | Scope probe connector |
| U1 | 1 | MAX1917EEE (16 pin QSOP) |

EFFICIENCY MEASUREMENTS:

| Vbias V | Ibias A | Vin V | Iin A | Vout V | Iout A | Eff. % |
|------------------------------------|---------|--------|-------|--------|--------|--------|
| JU2 not installed (freq. = 300kHz) | | | | | | |
| 12 | 0.015 | 2.2471 | 4.266 | 1.2344 | 7 | 88.48 |
| 12 | 0.016 | 2.4963 | 3.849 | 1.2354 | 7 | 88.24 |
| 12 | 0.015 | 2.7589 | 3.489 | 1.2364 | 7 | 88.26 |
| JU2 installed (freq. = 550kHz) | | | | | | |
| 12 | 0.028 | 2.2457 | 4.319 | 1.2266 | 7 | 85.56 |
| 12 | 0.028 | 2.5012 | 3.884 | 1.2271 | 7 | 85.46 |
| 12 | 0.028 | 2.7463 | 3.537 | 1.2278 | 7 | 85.52 |

Output Ripple: 10 mV max.

Foldback Current Limit: Peak inductor current is limited to maximum of 2.05A in the event of a short at output.

Schematics:

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+2.25V - +2.75V to 1.25V @7A. This uses the MAX1917. It also has foldback current limiting.

