

UTC UNISONIC TECHNOLOGIES CO., LTD

UL9480

Advance

LINEAR INTEGRATED CIRCUIT

1

TO-220

A VOLTAGE REGULATOR FOR CAR ALTERNATOR

DESCRIPTION

The UTC UL9480 is a specially designed voltage regulator for car alternator. The regulator voltage is precise with "single function" self-oscillation. These devices have a maximum output current of 5.5 A. The chip is integrated both the control section and the out power stage. So the devices require no external components, reducing the cost of the system and increasing reliability.



- * No external components
- * Precise regulated voltage
- * High output current
- * Very low start voltage
- * Precise temperature coefficient
- * Short circuit protection
- * Output current limit
- * Reverse battery protection
- * +80V Load dump protection
- * Low energy spike protection
- * Over temperature protection

ORDERING INFORMATION

| Ordering Number | | | Daakaga | Pin Assignment | | | Deaking | |
|------------------------------|---------------|-----------|---------|----------------|---|---|---------|--|
| Lead Free | Halogen Free | | гаскауе | 1 | 2 | 3 | Facking | |
| UL9480L-TA3-T | UL9480G-TA3-T | | TO-220 | VS | G | 0 | Tube | |
| Note: Pin Assignment: VS: VS | G: Ground | O: Output | | | | | | |
| | | | | | | | | |

| UL9480L-TA3-T | | |
|---------------|------------------|---|
| | (1)Packing Type | (1) T: Tube |
| | (2)Package Type | (2) TA3: TO-220 |
| | (3)Green Package | (3) L: Lead Free, G: Halogen Free and Lead Free |
| | | |

MARKING





PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---------|----------|----------------|
| 1 | Vs | Voltage supply |
| 2 | OUTPUT | Output |
| 3 | GND | Ground |

BLOCK DIAGRAM





■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|--|------------------|----------|------|
| Transient Overvoltage : Load Dump : 5ms ≤T _{rise} | | | |
| ≤10ms, тf Fall Time Constant ≤100ms, | Vs | 80 | V |
| R _{source} ≥0.5Ω | | | |
| Current into Low Energy Clamping Zener | 1 | 100 | m۸ |
| (T _{rise} =5µs; T _{decay} ≤2ms; duty cycle≤5%) | ICLAMP | 100 | IIIA |
| Maximum Output Current | Ι _{ουτ} | 5.5 | А |
| Junction Temperature Range | TJ | -55~+150 | °C |
| Storage Temperature Range | T _{STG} | -55~+150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL RESISTANCES CHARACTERISTICS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|------------------|-----------------|---------|------|
| Junction to Case | θ _{JC} | 3 | °C/W |

■ ELECTRICAL CHARACTERISTICS (-40°C≤TJ≤125°C unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|----------------------|---|-------|-------|-------|-------|
| | V _R | T_=-40°C | 14 75 | 15.05 | 15.35 | V |
| Regulation Voltage | | T_=25°C | 14.10 | 14.40 | 14.70 | V |
| 5 5 | | T _J =125°C | 13.10 | 13.40 | 13.70 | V |
| Temperature Coeff. of the Regulation Voltage | Ст | | | -10 | | mV/°C |
| Error on Nominal Temperature Coeff. | eC⊤ | | | ±30 | | % |
| Load Regulation | V _R | 0.1I _n <i<sub>alt<0.9I_n (Note 1)</i<sub> | | 250 | | mV |
| Control Circuit Minimum Start up Voltage | V _{SU} | Measured at Supply Pin | | 2 | 3 | V |
| Shutdown Voltage (Dump Protection Threshold) | V _{sd} | | | 22 | | V |
| Output Saturation Voltage | V _{SAT 1} | I _{field} =4A _p | | 1.2 | 2 | V |
| Start Up Saturation Voltage | V _{SAT 2} | I _{field} =200mA | | 0.7 | 1 | V |
| Quiescent Current | lq | Field Off | | 20 | | mA |
| Supply Current | Is | I _{field} =4A _p | | 50 | | mA |
| Field Pin Sink Current | I _{fs} | Field Off Field Pin @ 16V | | | 5 | mA |
| Low Energy Clamping Zener Voltage | V _{1_CLAMP} | I _{clamp} =50mA | | 120 | | V |
| Switching Frequency | F _{sw} | 0.1I _n <i<sub>alt<0.9I_n</i<sub> | 30 | | 1000 | Hz |

Note: Measured on an alternator with the following characteristics: $I_n = <90A$; $I_{alt}/I_{field} > =23$.



UL9480

TYPICAL APPLICATION CIRCUIT



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