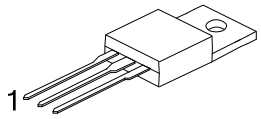
A VOLTAGE REGULATOR FOR CAR ALTERNATOR



TO-220

■ 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.

■ FEATURES

* 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

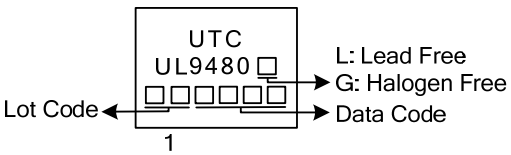
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UL9480L-TA3-T	UL9480G-TA3-T	TO-220	VS	G	O	Tube

Note: Pin Assignment: VS: VS G: Ground O: Output

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

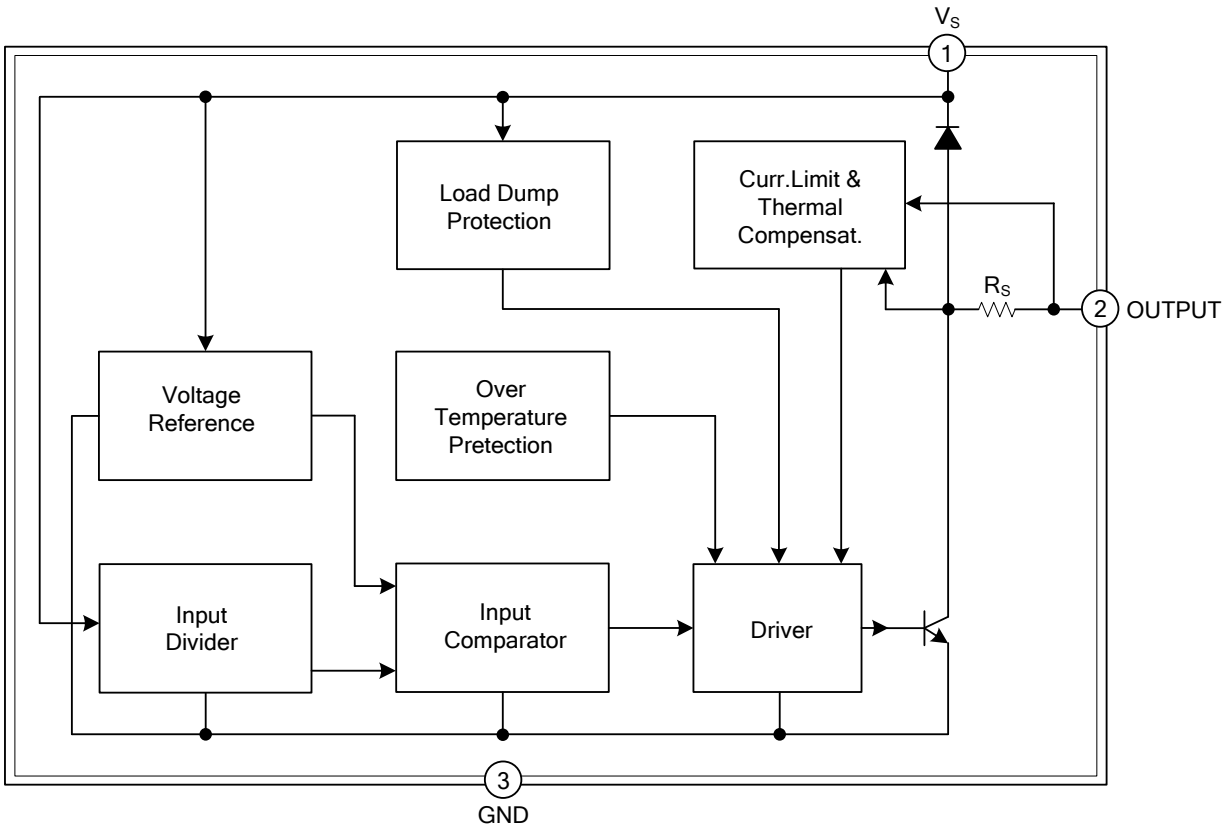
■ MARKING



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_S	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, τf Fall Time Constant ≤100ms, R_{source}≥0.5Ω	V_S	80	V
Current into Low Energy Clamping Zener (T_{rise}=5μs; T_{decay}≤2ms; duty cycle≤5%)	I_{CLAMP}	100	mA
Maximum Output Current	I_{OUT}	5.5	A
Junction Temperature Range	T_J	-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≤T_J≤125°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Regulation Voltage	V_R	T_J=-40°C	14.75	15.05	15.35	V
		T_J=25°C	14.10	14.40	14.70	V
		T_J=125°C	13.10	13.40	13.70	V
Temperature Coeff. of the Regulation Voltage	C_T			-10		mV/°C
Error on Nominal Temperature Coeff.	eC_T			±30		%
Load Regulation	V_R	0.1I_n<I_{alt} <0.9I_n (Note 1)		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	I_Q	Field Off		20		mA
Supply Current	I_S	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_{alt} <0.9I_n	30		1000	Hz

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

■ TYPICAL APPLICATION CIRCUIT