2.7A, 1.2V L.D.O. VOLTAGE REGULATOR LM1589

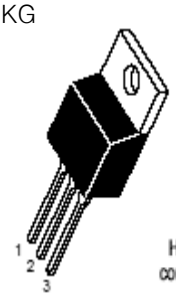
FEATURES

- Low Dropout Voltage 1.3V at 2.7A Output Current
- Fast Transient Response
- 0.2% Line Regulation
- Load Regulation : 0.15% typical
- Internal Thermal and Current Limiting
- Surface Mount Package TO-220 & TO-263 (D2 Package)
- On-chip thermal Limiting
- Moisture Sensitivity Level 3

APPLICATIONS

- Battery Charger
- Low voltage logic supplies
- Constant Current Regulators
- Portable Instrumentation
- High Efficiency Linear Power Supplies
- High Efficiency "Green" Computer Systems
- SMPS Post-Regulator
- Power PC Supplies
- Powering VGA & Sound Card

TO-220 PKG



TO-263 PKG

1. Adj/Gnd 2. Output 3. Input

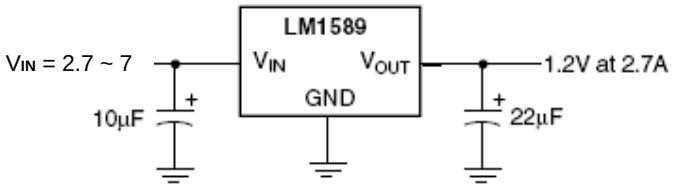
ORDERING INFORMATION

Device Name	Package
LM1589T-X.X	TO-220
LM1589R-X.X	TO263 (D2)

DESCRIPTION

The LM1589 is a low dropout three-terminal regulator with 2.7A output current capability.
This device has been optimized for V TT bus termination, where transient response and mini-mum input voltage are critical.
The LM1589 offers fixed 1.2V with 2.7A current capability for a GTL+ bus V TT termination.
Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal limiting pro-vides protection against any combination of overload and ambient temperature that would create excessive junction temperatures.
The LM1589 is available in the industry-standard TO-220, TO-263 power packages.

TEST & TYPICAL APPLICATION CIRCUIT



ABSOULTE MAXIMUM RATINS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Supply Voltage	Vin	7	V
Operating Junction Temperature Range	Topr	-10~125	℃
Storage Temperature Range	Tstg	-65~150	℃
Thermal Resistance Junction to Case TO-263	Tjc	3	C/W
Thermal Resistance Junction to Ambient TO-263	Tja	60	C/W
Lead Temperature (Soldering) 10 sec.	Tsol	300	℃
Maximum Output Current	Imax	2.7	A

ELECTRICAL CHARACTERISTICS

Typicals and limits appearing in normal type apply for Tj= +25°C.

The * denotes specifications which apply over the specified operating temperature range.

Parameter	Conditions		Min.	Typ.	Max	Units
Output Voltage	3.3V ≤ V_{IN} ≤ 7V 10mA ≤ I_{OUT} ≤ 2.7A	*	1.176	1.200	1.224	V
Line Regulation[1, 2]	(V_{OUT} + 1.5V) ≤ V_{IN} ≤ 7V, I_{OUT} = 10mA	*		0.01	0.2	%
Load Regulation[1, 2]	(V_{IN} – V_{OUT}) = 3V 10mA ≤ I_{OUT} ≤ 2.7A	*		0.15	1.5	%
Dropout Voltage	ΔV_{REF} = 1%, I_{OUT} = 2.7A	*		1.150	1.300	V
Current Limit	(V_{IN} – V_{OUT}) = 2V	*		4.5		A
Minimum Load Current	1.5V ≤ (V_{IN} – V_{OUT}) ≤ 5.75V	*	10			mA
Quiescent Current	V_{IN} = 5V	*		4		mA
Ripple Rejection	f = 120Hz, C_{OUT} = 22μF Tantalum, (V_{IN} – V_{OUT}) = 3V, I_{OUT} = 2.7A		60	72		dB
Thermal Regulation	T_A = 25°C, 30ms pulse			0.04	0.02	%/W
Temperature Stability		*		0.5		%
Long-Term Stability	T_A = 125°C, 1000 hrs.			0.03	1.0	%
RMS Output Noise (% of V_{OUT})	T_A = 25°C, 10Hz ≤ f ≤ 10kHz			0.05		%
Thermal Resistance, Junction to Case	TO-220			3		°C/W
	TO-263, TO-252			3		°C/W
Thermal Shutdown				150		°C

Notes:

1.See thermal regulation specifications for changes in output voltage due to heating effects.

Load and line regulation aremeasured at a constant junction temperature by low duty cycle pulse testing.

2.Line and load regulation are guaranteed up to the maximum power dissipation (18W).

Power dissipation is determined byinput/output differential and the output currrent.

Guaranteed maximum output power will not be available over the full input/output voltage range.

TYPICAL PERFORMANCE CHARACTERISTICS

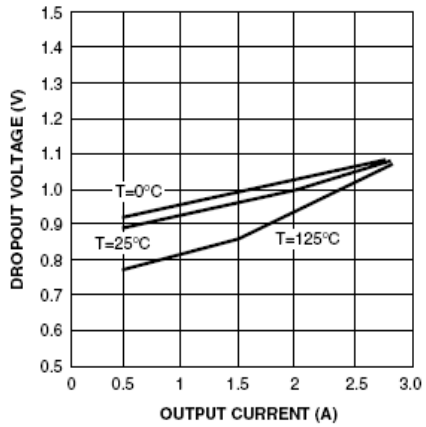


Figure 1. Dropout Voltage vs. Output Current

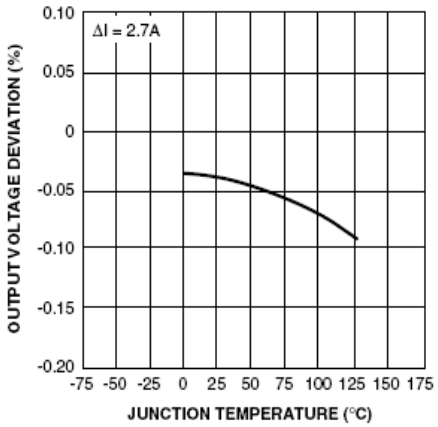


Figure 2. Load Regulation vs. Temperature

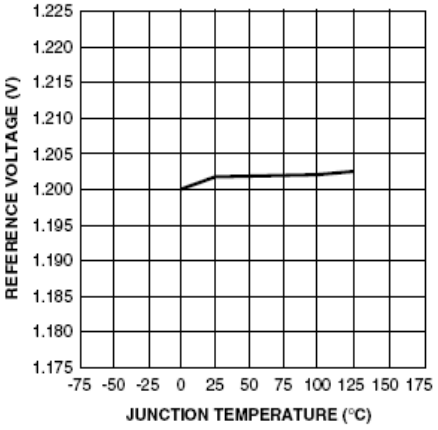


Figure 3. Reference Voltage vs. Temperature

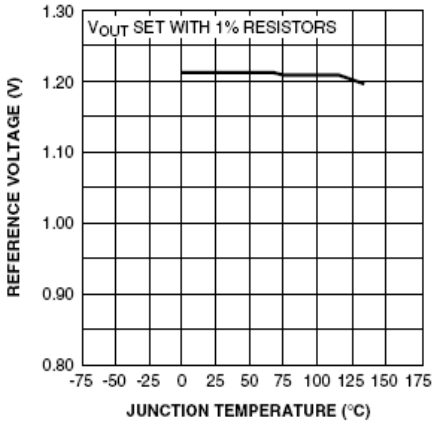


Figure 4. Output Voltage vs. Temperature

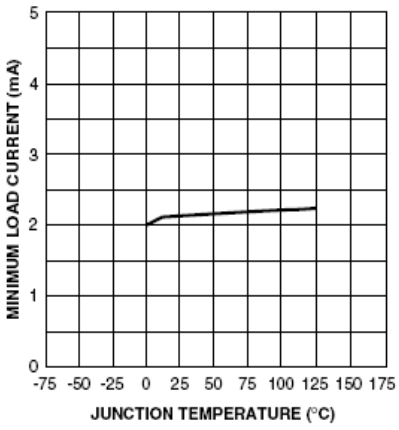


Figure 5. Minimum Load Current vs. Temperature

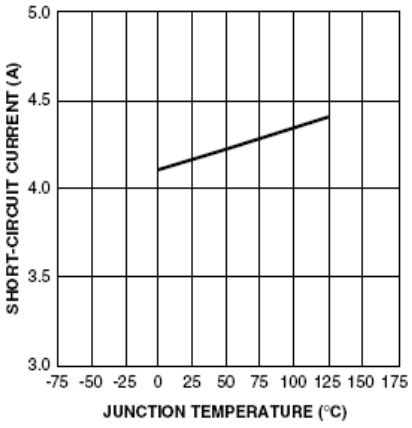


Figure 6. Short-Circuit Current vs. Temperature

TYPICAL PERFORMANCE CHARACTERISTICS

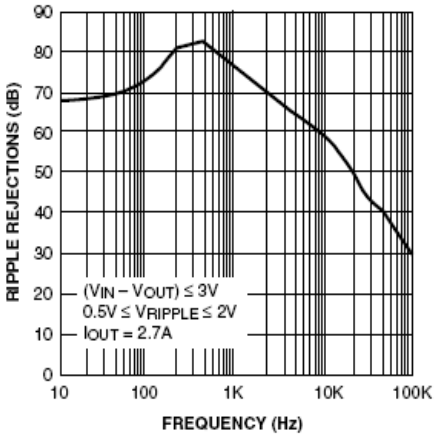


Figure 7. Ripple Rejection vs. Frequency

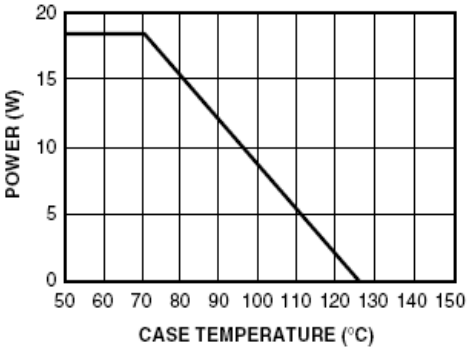


Figure 8. Maximum Power Dissipation