

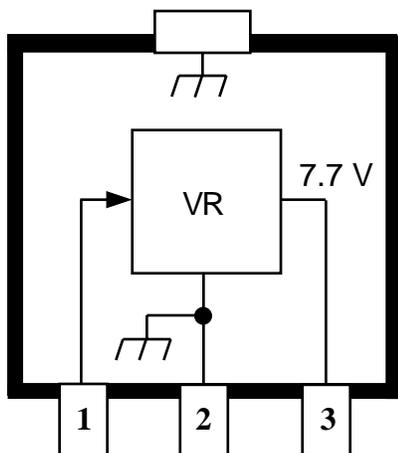
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PRODUCT PREVIEW

(Subject to change without notice)

October 9, 2001

LOW-DROPOUT, 7.7 V PREREGULATOR



Dwg. PD-0xx

Designed specifically to meet the stringent requirements of automotive applications, the A8178LLT provides an output voltage of 7.7 V $\pm 15\%$ for supply voltages greater than 6.9 V. This device also provides a low-dropout tracking output for supply voltages down to 2.5 V. This regulator is intended to be used with sensitive automotive electronics systems that do not have the capability of low dropout operation and cannot withstand the high-voltage transients typical of automotive applications. This 7.7 V preregulator will withstand all ISO pulses (ignition coil disconnect requires an external diode) and will continue to operate during positive power supply transients (noise).

This device is supplied in a small-outline plastic transistor package for surface-mount applications. The A8178LLT is furnished in the SOT-89/TO-243AA for increased allowable package power dissipation.

ABSOLUTE MAXIMUM RATINGS

Input Voltage, V_I 30 V

Reverse Input Voltage, V_{RI} -120 V

Output Current, I_O TBD*

Operating Temperature Range,

T_A -40°C to +150°C

Junction Temperature, T_J +150°C

Storage Temperature Range,

T_S -40°C to +170°C

* Output current rating is limited by input voltage, duty cycle, and ambient temperature. Under any set of conditions, do not exceed a junction temperature of +150°C. See next page.

This document contains information on a product under development. Allegro MicroSystems, Inc. reserves the right to change or discontinue this product without notice.

Always order by complete part number: **A8178LLT**

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ELECTRICAL CHARACTERISTICS over operating temperature range.

Characteristic	Symbol	Test Conditions	Limits			Units
			Min.	Typ.	Max.	
Output Voltage	V_O	$6.9\text{ V} \leq V_I \leq 24\text{ V}$	6.5	7.7	8.8	V
		$2.5\text{ V} \leq V_I \leq 6.9\text{ V}$	$V_I - 0.4$	—	—	V
		$V_I = 120\text{ V}$, pulse test	—	—	11	V
Output Volt. Temp. Coeff.	α_{V_O}		—	—	TBD	mV/°C
Line Regulation	$\Delta V_{O(\Delta V_I)}$		—	—	TBD	mV
Load Regulation	$\Delta V_{O(\Delta I_O)}$		—	—	TBD	mV
Quiescent Current	I_Q	$V_I = 13.5\text{ V}$, $I_O = 0$	—	—	2.5	mA
		$2.5\text{ V} \leq V_I \leq 8\text{ V}$, $I_O = 0$	—	—	5.6	mA
Power Dissipation	P_d	$V_I = 13.5\text{ V}$, $I_O = 15\text{ mA}$	—	—	130	mW
Thermal Resistance*	$R_{\theta JA}$		—	200	—	°C/W

Typical values are at $T_A = +25^\circ\text{C}$ and are given for circuit design information only.

*Mounted on 2.24" x 2.24" solder-coated copper-clad board in still air.

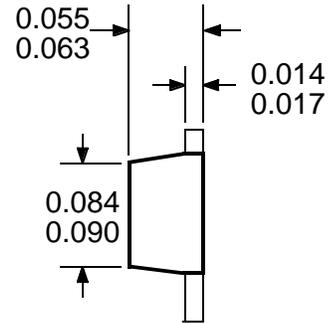
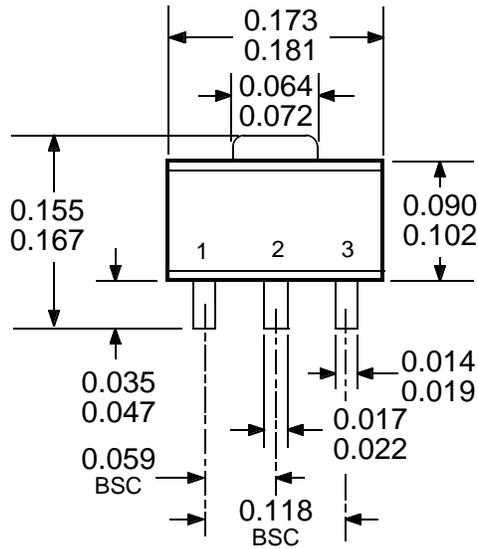
INTERNAL PROTECTIVE FEATURES

ISO Pulse No.	Test	Test Conditions (at $T_A = +25^\circ\text{C}$)
1	Inductive Turn Off (Negative)	$V_S = -100\text{ V}$, $R_S = 10\ \Omega$, $t_r = 1\ \mu\text{s}$, $t_d = 2\text{ ms}$
2	Inductive Turn Off (Positive)	$V_S = 100\text{ V}$, $R_S = 10\ \Omega$, $t_r = 1\ \mu\text{s}$, $t_d = 50\ \mu\text{s}$, non-operating
3a	Capacitive/Inductive Coupling (Neg)	$V_S = -150\text{ V}$, $R_S = 50\ \Omega$, $t_r = 50\text{ ns}$, $t_d = 100\text{ ns}$
3b	Capacitive/Inductive Coupling (Pos)	$V_S = 100\text{ V}$, $R_S = 50\ \Omega$, $t_r = 50\text{ ns}$, $t_d = 100\text{ ns}$
4	Reverse Battery	$V_S = -14\text{ V}$, $t_d = 20\text{ s}$, non-operating
5	Load Dump	$V_S = 86.5\text{ V}$, $R_S = 0.5\ \Omega$, $t_r = 5\text{ ms}$, $t_d = 400\text{ ms}$
6	Ignition Coil Disconnect EXTERNAL PROTECTION REQ'D	$V_S = -300\text{ V}$, $R_S = 30\ \Omega$, $t_r = 60\ \mu\text{s}$, $t_d = 300\ \mu\text{s}$
7	Field Decay (Negative)	$V_S = -80\text{ V}$, $R_S = 10\ \Omega$, $t_r = 5\text{ ms}$, $t_d = 100\text{ ms}$



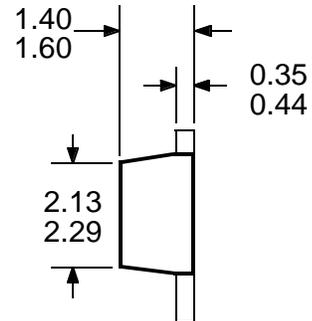
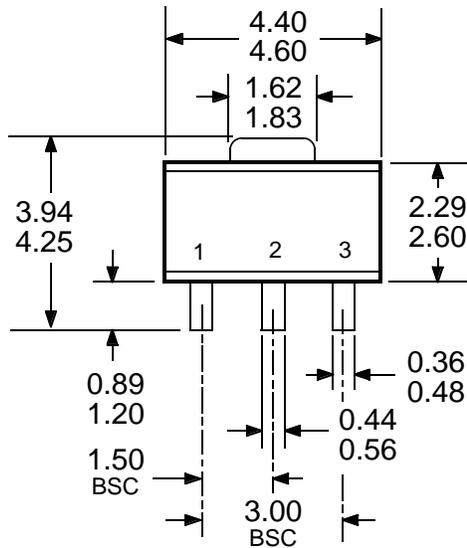
A8178LLT

Dimensions in Inches
(for reference only)



Dwg. MA-009-3 in

Dimensions in Millimeters
(controlling dimensions)



Dwg. MA-009-3 mm

- NOTES: 1. Lead spacing tolerance is non-cumulative.
2. Exact body and lead configuration at vendor's option within limits shown.

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