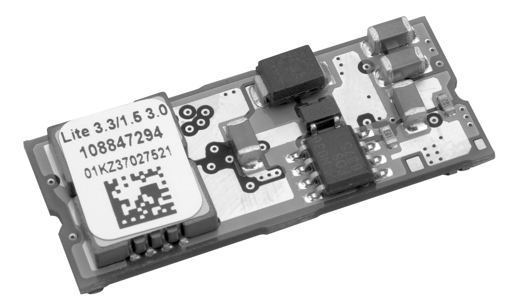
Titania ™ Power Modules

Austin Lite Non-Isolated SMT DC - DC Power Modules: 3.3 Vdc and 5.0 Vdc Input, 1.5 Vdc - 3.3 Vdc Output, 5A



The Austin Lite Power Module provides precise voltage in an industry leading small footprint while offering very high reliability and high efficiency.

Applications

- Workstations
- Servers
- Desktop computers
- DSP applications
- Distributed power architectures
- Telecommunications equipment
- Adapter cards
- LAN/WAN applications
- Data processing applications

Features

- Small size and very low profile
- Minimal space on printed circuit board
- Surface mountable
- Single output maximum dimensions:
  33 mm x 12.95 mm x 5.46 mm
  (1.3 in x 0.530 in x 0.215 in.), tolerance of +/- 0.01
- High reliability: designed to meet 200 FITs/5 million hour MTBF
- High efficiency
  5.0 V_{IN}
  87% typical @ 3.3V, 5A
  3.3 V_{IN}
  86% typical @ 2.5V, 5A
- Single control pin for output voltage margining and on/off control
- Instantaneous auto-reset overcurrent protection (non-latching)
- Overtemperature protection
- No external bias required
- Low inductance surface mount connections
- Designed to meet *UL*[†] 60950, CSA[‡] C22.2 No. 60950-00, and VDE 0805 (IEC60950)[§]

Description

The Austin Lite Power Module is designed to meet the precise voltage requirements of today's high performance DSP and microprocessor circuits and system board level applications. Advanced circuit techniques, high frequency switching, custom components, and very high density, surface mountable packaging technology deliver high quality, ultra compact, DC-DC conversion.

† *UL* is a registered trademark of Underwriters Laboratories, Inc.
‡ *CSA* is a registered trademark of Canadian Standards Association.
§ *VDE* is a trademark of Verband Deutscher Elektrotechniker e.V.

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute maximum stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability. Input voltage range of V_{IN} = 3.0V is listed as 3.3 V_{IN} and input voltage range of V_{IN} = 4.5V - 5.5V is listed as 5.0 V_{IN}..

Parameter	Device	Symbol	Min	Max	Unit
Input Voltage (continuous)	3.3 V_{IN} 5.0 V_{IN}	V_{IN} V_{IN}	-0.3 -0.3	3.6 5.5	Vdc Vdc
Imposed Output Voltage	All	V_{OIF}	-0.3	5.5	Vdc
CTRL Terminal Voltage	All	CTRL	-0.3	2.0	Vdc
Storage Temperature	All	$T_{A/STG}$	-40	125	°C

Electrical Specifications

Table 1. Input Specifications

Parameter	Device	Symbol	Min	Typ	Max	Unit
Operating Input Voltage	3.3 V_{IN} 5.0 V_{IN}	V_{IN} V_{IN}	3.0 4.5	3.3 5.0	3.6 5.5	V V
Input Ripple Rejection (120 Hz)				50		dB
Operating Input Current (0A ≤ I_{OUT} < 5A) (3.0 V < V_{IN} < 3.6V) (4.5V < V_{IN} < 5.5V)	3.3 V_{IN} 5.0 V_{IN}	I_{IN} I_{IN}	— —	— —	6 5.5	A A
Quiescent Input Current (I_{OUT} = 0) (3.0V < V_{IN} < 5.5V)	All	I_Q	—		—	mA
Input Ripple Current: 20 MHz BW, 250 nH Input Inductance (see Figure)	3.3 V_{IN} 5.0 V_{IN}	$I_{INripple}$ $I_{INripple}$		35 mAp-p		mAp-p mAp-p

Fusing Considerations

CAUTION: This power module is not internally fused. An input line fuse must always be used.

This power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of a sophisticated power architecture. To preserve maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse. The safety agencies require a normal blow fuse with a maximum rating of 10A (see Safety Specifications on page).

Output Control

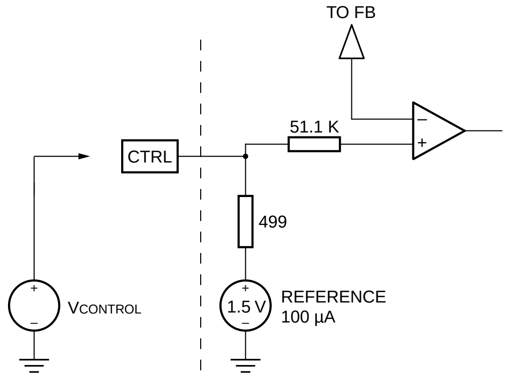
The control pin is a dual-function port that serves to enable/disable the converter or provide a means of adjusting the output voltage over a prescribed range. When the control pin is grounded, the converter is disabled. With the pin left open, the converter regulates to its specified output voltage. For any other voltage applied to the pin, the output voltage follows this relationship:

$$V_{OUT} = \left(\frac{V_{CONTROL}}{1.5}\right) \bullet V_{OUTNOM}$$

Output Control (continued)

The output voltage may be margined up or down in direct proportion to the percentage deviation of the control pin from 1.5V. The control pin may be driven by an imposed voltage to margin up or down or shunted by a resistive element to ground for margin down. The preferred margin technique employs an external control voltage to margin up or down. A resistor shunt may be used to margin down but the reference will sag due to its internal impedance.

VOUT: The value of the output voltage after margining
VCONTROL: The voltage at the CTRL pin
VOUTNOM: The ouput voltage if the control pin is left open
RMARGIN: The shunt resistor to ground for margining



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Margin Up

To margin the converter up apply a voltage to the CTRL pin that is above 1.50 volts by the same percentage as the desired margin up percentage

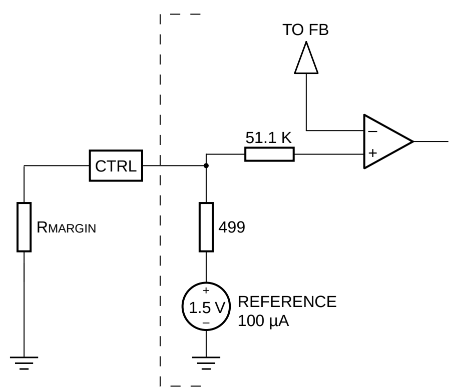
$$V_{CONTROL} = 1.5\ (1 + \text{MARGIN UP}\ \%)$$

Example:Margin up 5%: Applying 1.575 volts to the CTRL pin will increase the output voltage by 5% over its unmargined value

$$V_{CONTROL} = 1.5\ (1 + .05)$$
$$V_{CONTROL} = 1.575$$

Margin Down

Assume a percentage to margin down. Then connect a resistor RMARGIN between CTRL and GND. Use the following relations to decide the value of RMARGIN:



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Output Control (continued)

Margin Down (continued)

$$R_{MARGIN} = 499 \bullet \left(\frac{1 - margin\%}{1 - (1 - margin\%)}\right)$$

Example: To margin down 5%, then:

$$R_{MARGIN} = 499 \bullet \left(\frac{1 - .05}{1 - (1 - .05)}\right)$$

$$R_{MARGIN} = 9481$$

Because margining affects the system reference, margining beyond 10% is unacceptable and 0% - 5% is desirable. Margining the unit down beyond 5% requires derating the available current by 1% for every percent beyond 5 that the module is margined down. For example, if a module were margined down 7%, output current would have to be derated 2%.

Special Note:The 3.3/2.5V version must be operated at nominal line to achieve margin up.
The margin up available for this version is maximum 5%

Output Regulation

These modules make use of inherent output resistance to facilitate improved transient response. This means that the output voltage will decrease with increasing output current. For this reason, the total DC regulation window at any given operating temperature is comprised of a no-load setpoint and a load dependent voltage drop due to module output resistance. Regulation data provided in Table 2 includes both the initial set point and this voltage drop. Because Table 2 includes output resistance drop, the maximum column represents a no-load condition while the minimum column represents a full-load condition. Production test limits are set such that no module could pass with a full-load regulation point equal to the maximum column. This means that at any operating current, the regulation will always be better than the total window specified in Table 2.

Output Regulation (continued)

Table 2. Output Specifications

Unless otherwise noted, all specifications are defined at nominal line, full load, $T_{AMBIENT}$ – 25 °C

Parameter	Device	Symbol	Min	Typ	Max	Unit
Output Voltage These specifications are under all specified input voltage, load current, and temperature conditions. They do not include ripple or transient.	3.3V 2.5V 2.0V 1.8V 1.5V	V_{OUT} V_{OUT} V_{OUT} V_{OUT} V_{OUT}	3.20 2.42 1.94 1.74 1.45	3.3 2.5 2.0 1.8 1.5	3.400 2.58 2.06 1.86 1.55	V V V V V
Output Current *(see Figures 17 – 22 for derating)	—	I_{OUT}	0	—	5	A
Output Ripple (See Figures 4 — 9)	3.3 V_{IN} 5.0 V_{IN}	V_{RIPPLE} V_{RIPPLE}	— —	— —	80 100	mVpp mVpp
External Load Capacitance*	All	—	—	5000*	—	µF
Output Current Limit Inception	All	I_{OUT}		7		A
Efficiency V_{IN} = Nominal, I_{OUT} = Maximum	5.0 – 3.3 5.0 – 2.5 3.3 – 2.5 3.3 – 2.0 3.3 – 1.8 3.3 – 1.5	η η η η η η	— — — — — —	87 82 86 82 80 75	— — — — — —	% % % % % %
Switching Frequency	All	F_{OP}	—	900	—	kHz
V_{OUT} Dynamic Response to Transient Load ($T_{TRANSITION}$ = 50 µs)	All					
Nominal Load 50% to 100% Peak Deviation measured as a maximum percentage deviation from nominal V_O at full load		—	—	< 10	—	%
Nominal Load 50% to 100% Settling Time to V_{OUT} < 10% of $V_{OUT\ STEADY\ STATE}$ See Figures 10 – 15		—	—	< 25	—	µS

* units will start into 5000 µF, 5A load at nominal line; units will start into 10,000 µF with no load

Static Voltage Regulation

The ouput voltage measured at the converter output pins on the system board will be within the range shown in Table 3, except during turn-on and turn-off. Static voltage regulation includes:

- DC Output initial voltage
- Input voltage range
- 3.0V – 3.6V
- 4.5V – 5.5V
- Load regulation from 0A – 5A

Output Ripple and Noise

Output ripple and noise is defined as periodic or random deviation from the nominal voltage at the output pins while under constant load and input line. Typical full load output ripple and noise waveforms are shown in Figures 4 – 10.

Output Overcurrent Protection/Overtemperature Protection

The module is equipped with internal current limiting circuitry for momentary overloads and short circuits. A sustained overload may cause the internal thermal shutdown circuit to activate. The current limit inception is nominally 7 amperes with the module power semiconductors at rated temperature in a 25 °C ambient environment. Additionally, the module is equipped with the thermal circuitry to safeguard against thermal damage. The thermal circuit shuts down the module when the case temperature of the top surface of the power semiconductors rises to a maximum of 135 °C. Figure 25 provides details on the temperature measuring location for the top surface of the power semiconductor case. The module will be restored to normal operation when the top surface temperature of the power semiconductor is taken below 105 °C.

Input/Output Decoupling

An input capacitance of 100 µF with an ESR of less than 100 milliohms and at least 1 µF ceramic or equivalent is recommended for the input to the modules. This 100 µF capacitor should always be used unless the buss bulk capacitors are located close to the module. This capacitor provides decoupling in the event of a fault to the module output. Input voltage should never go below 2.5V or internal protection circuitry may fail to act. To achieve noise levels shown in Figures – 10, one 100 µF tantalum capacitor and one 1 µF ceramic capacitor are used. 0.75 inches of 0.14 inch wide track (with no ground beneath) is used as an inductor between the input pin of the module and the decoupling capacitors.

Output decoupling used to achieve noise levels shown in Figures –10 is 1 µF. Care should be taken that selected output decoupling capacitors do not form troublesome L-C resonant networks with track inductance.

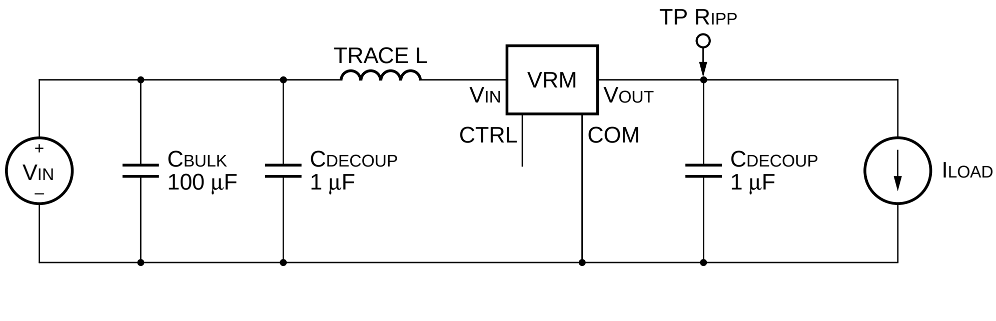

Figure 1. Input/Output Decoupling Circuit

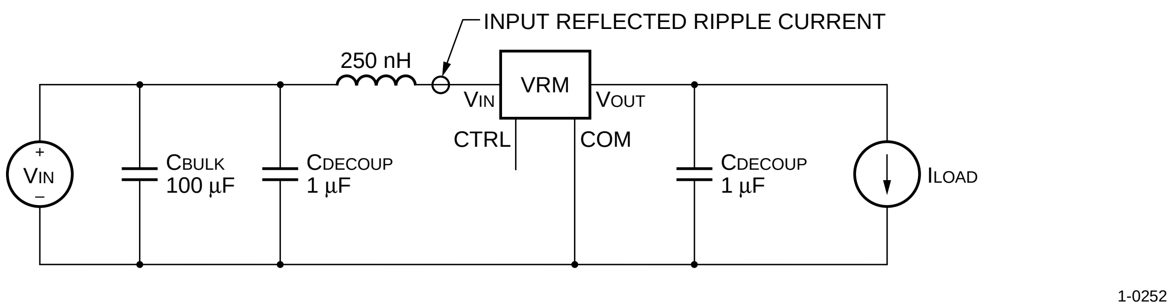

Figure 2. Input Reflected Repple Current Measuring Circuit Measured with AC Current Probe

Input/Output Decoupling (continued)

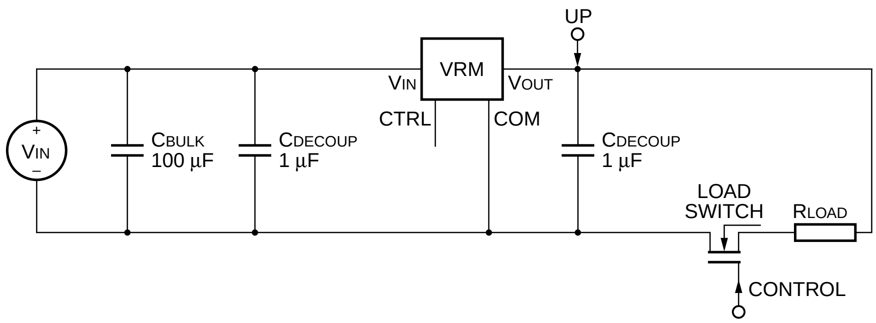

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Figure 3. Load Transient Response Measuring Circuit

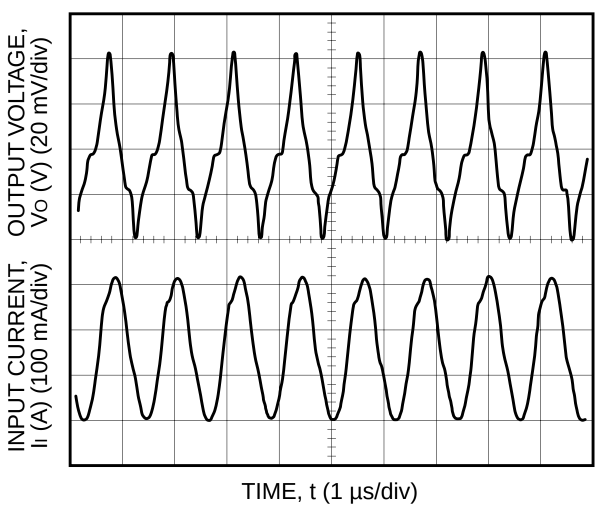

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Figure 4. Ripple & Noise Characteristic with 6.2 amps resistive load @ 3.3 V_{IN}/1.5 V_{OUT}

Input/Output Ripple Performance

Figures –10 represent typical input and output ripple noise levels obtained using the circuit shown in Figure . Nominal input and output voltages and a constant ouput current were used during testing. All measurements taken with setup shown in Figures and . the output ripple voltage (top trace) is measured across the output pins using a Lecroy AP 033 differential probe.

The input reflected ripple current (Bottom trace) is measured with a Lecroy AP 015 current probe. The BW limit is set to 25 MHz. The time base and amplitude dividers settings are shown in their respective figures

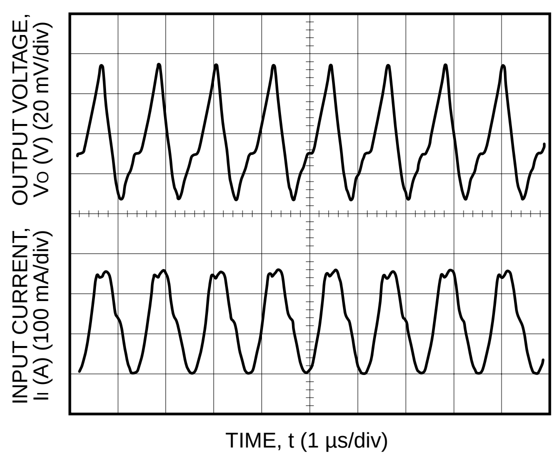

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Figure 5. Ripple & Noise Characteristic with 6.2 amps resistive load @ 3.3 V_{IN}/1.8 V_{OUT}

Input/Output Ripple Performance (continued)

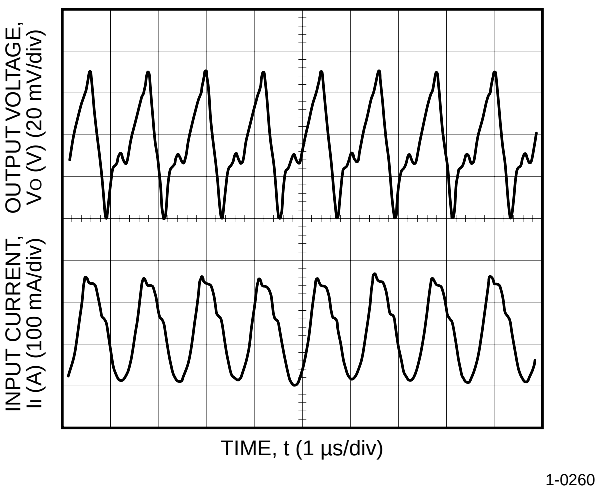

Figure 6. Ripple & Noise Characteristic with 6.2 amps resistive load @ 3.3 V_{IN}/2.0 V_{OUT}

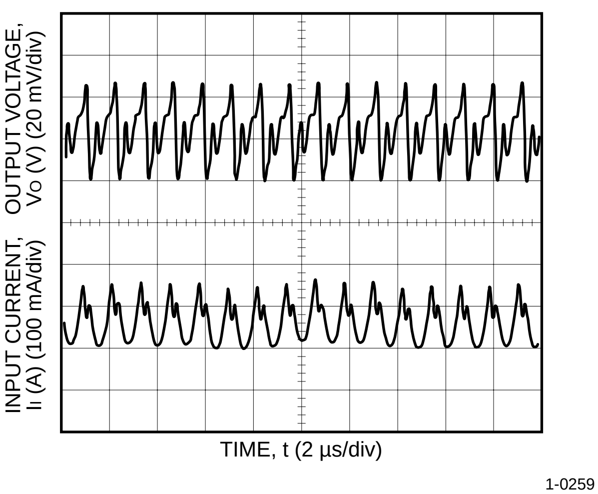

Figure 7. Ripple & Noise Characteristic with 6.2 amps resistive load @ 3.3 V_{IN}/2.5 V_{OUT}

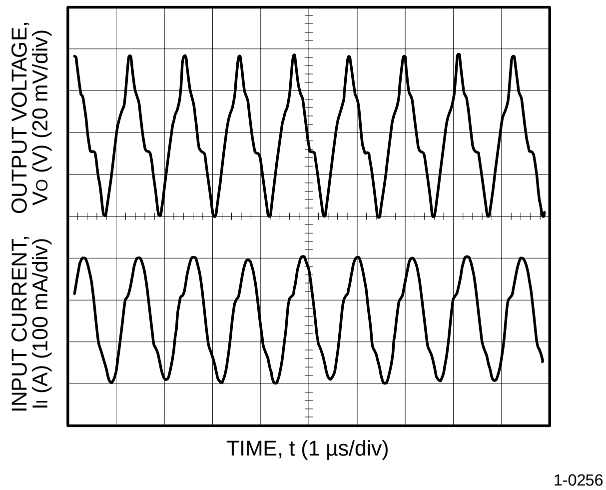

Figure 8. Ripple & noise Characteristic with 5.8 amps resistive load @ 5.0V_{IN}/1.8V_{OUT}

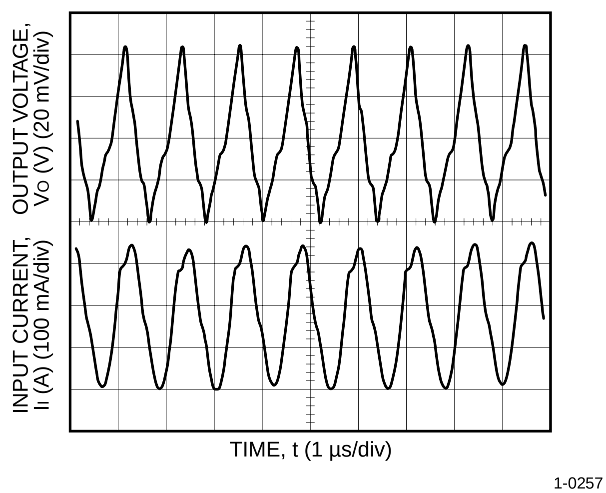

Figure 9. Ripple & Noise Characteristic with 6.3 amps resistive load @ 5.0 V_{IN}/2.5 V_{OUT}

Input/Output Ripple Performance (continued)

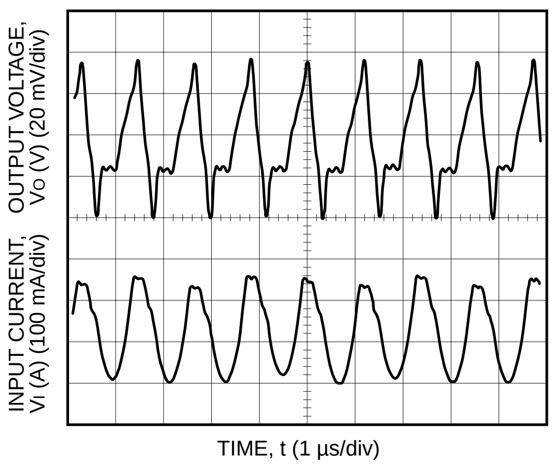

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Figure 10.Ripple & Noise Characteristic with 6.3 amps resistive load @ 5.0 V_{IN}/3.3 V_{OUT}

Transient Response Performance

Figures 11–24 depict typical transient responses obtained using the circuit shown in Figure .

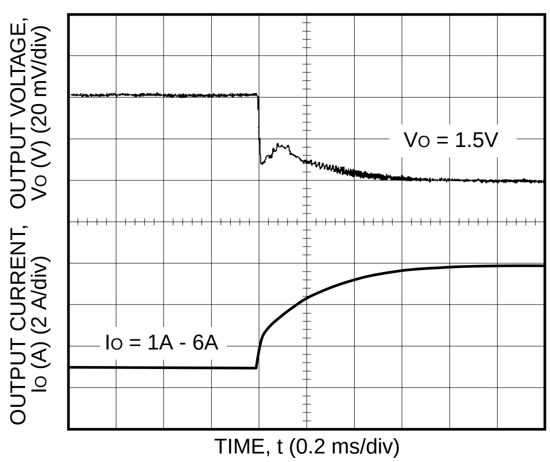

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Figure 11.Transient Respond Characteristic of 3.3V_{IN}/1.5V_{OUT} with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

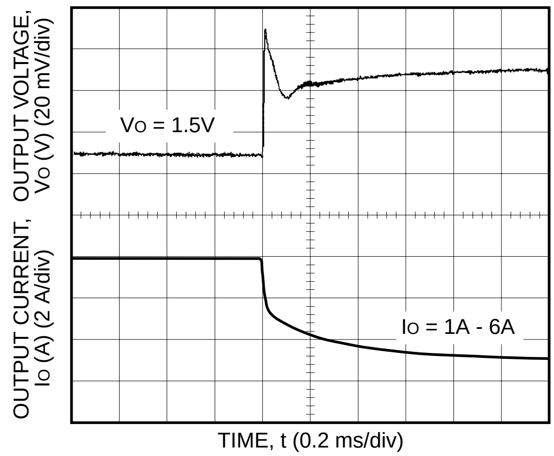

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Figure 12.Transient Respond Characteristic of 3.3V_{IN}/1.5V_{OUT} with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Fall time Condition

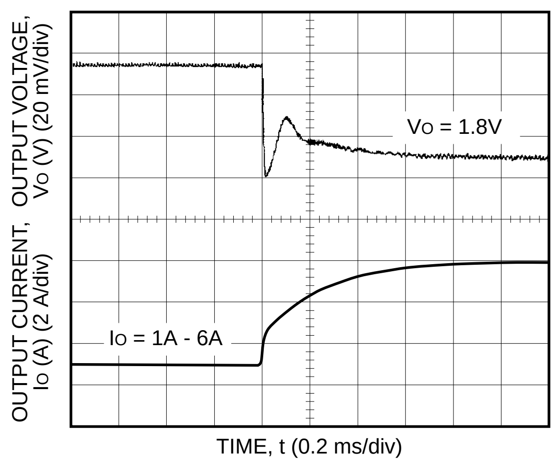

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Figure 13.Transient Respond Characteristic of 3.3V_{IN}/1.8V_{OUT} with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

Transient Response Performance (continued)

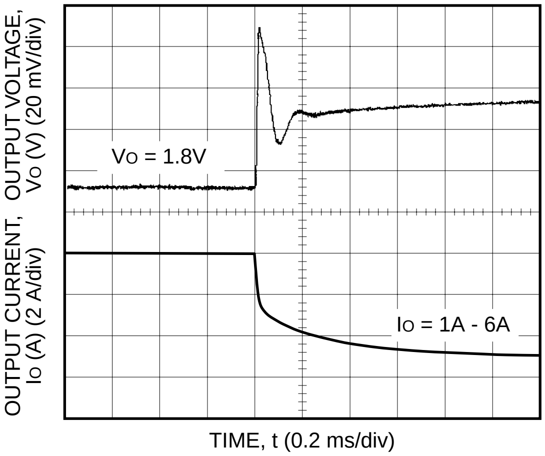

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Figure 14.Transient Respond Characteristic of $3.3V_{IN}/1.8V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Fall time Condition

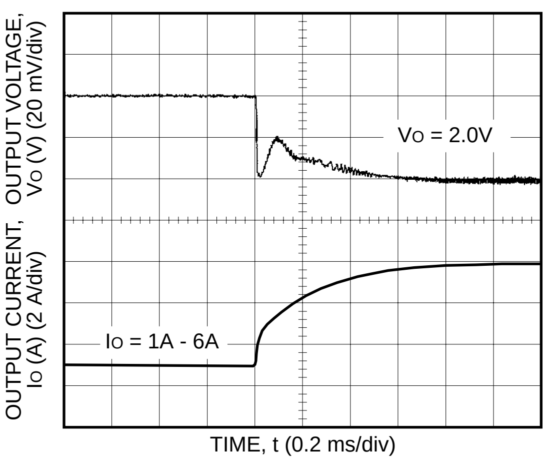

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Figure 15.Transient Respond Characteristic of $3.3V_{IN}/2.0V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

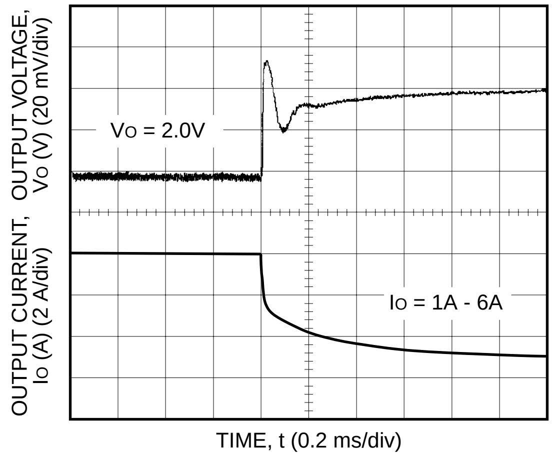

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Figure 16.Transient Respond Characteristic of $3.3V_{IN}/2.0V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Fall time Condition

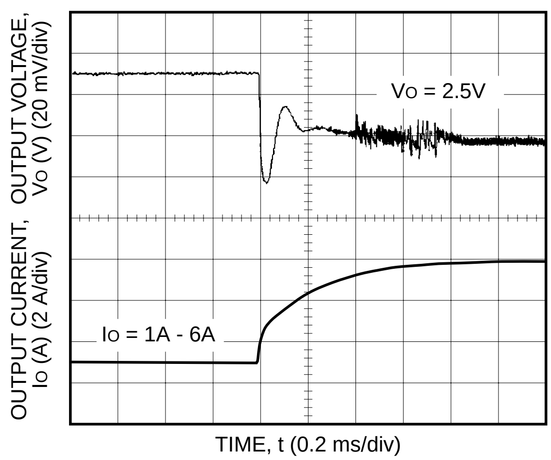

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Figure 17.Transient Respond Characteristic of $3.3V_{IN}/2.5V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

Transient Response Performance (continued)

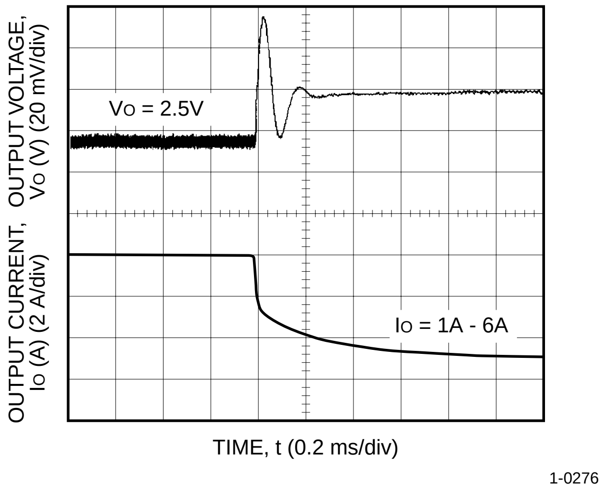

Figure 18. Transient Respond Characteristic of $3.3V_{IN}/2.5V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Fall time Condition

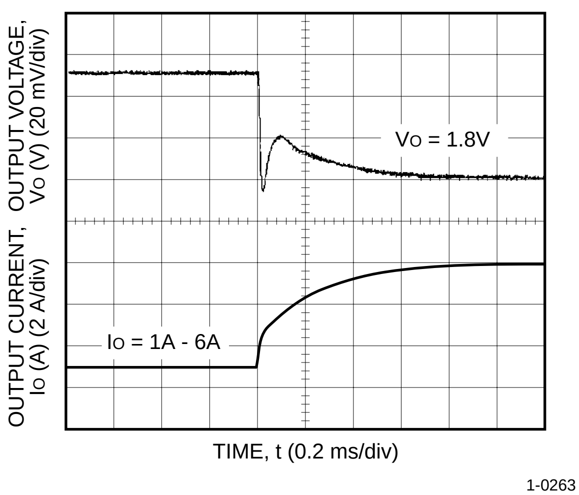

Figure 19. Transient Respond Characteristic of $5.0V_{IN}/1.8V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

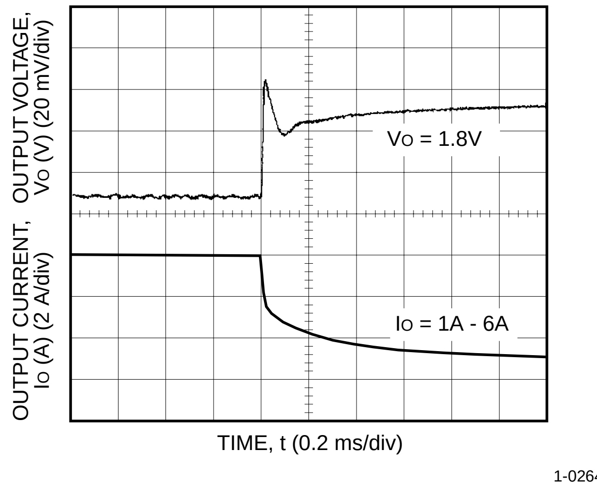

Figure 20. Transient Respond Characteristic of $5.0V_{IN}/1.8V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Fall time Condition

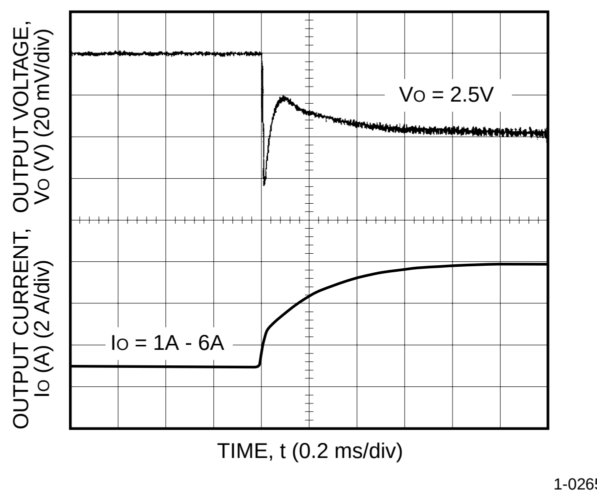

Figure 21. Transient Respond Characteristic of $5.0V_{IN}/2.5V_{OUT}$ with I_{OUT} step up =1A-6A Static load, Dt=50µs, V_{OUT}=20mV/DIV @ Rise time Condition

Transient Response Performance (continued)

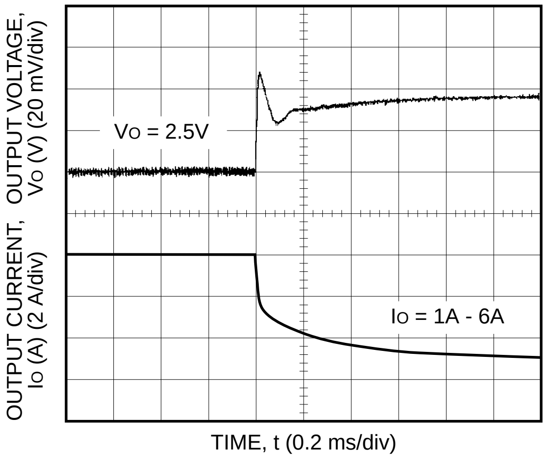

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Figure 22.Transient Respond Characteristic of 5.0V$_{IN}$/2.5V$_{OUT}$ with I$_{OUT}$ step up =1A-6A Static load, DT=50µs, V$_{OUT}$=20V$_{/DIV}$ @ Fall time Condition

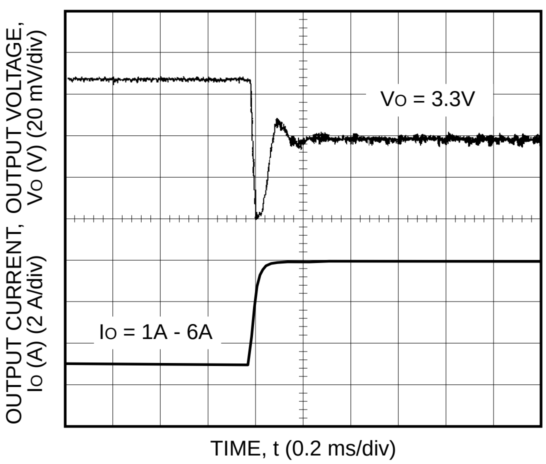

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Figure 23.Transient Respond Characteristic of 5.0V$_{IN}$/3.3V$_{OUT}$ with I$_{OUT}$ step up =1A-6A Static load, Dt=50µs, V$_{OUT}$=20mV$_{/DIV}$ @ Rise time Condition

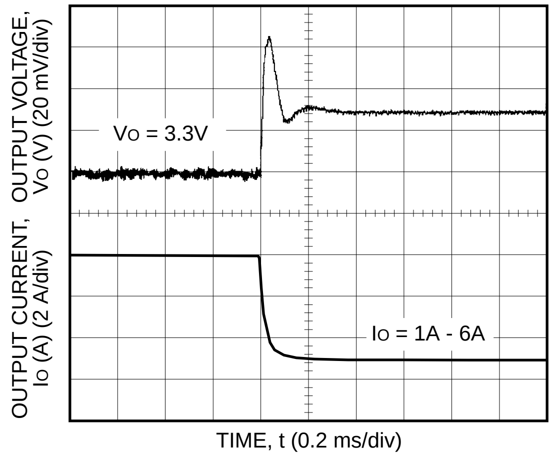

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Figure 24.Transient Respond Characteristic of 5.0V$_{IN}$/3.3V$_{OUT}$ with I$_{OUT}$ step up =1A-6A Static load, Dt=50µs, V$_{OUT}$=20mV$_{/DIV}$ @ Fall time Condition

Thermal Ratings

Austin Lite Power Modules are rated to operate in ambient temperatures from -40 °C to 85 °C. The derating curves below are provided as design aids for proper application of the power modules. To insure adequate cooling, the module temperature should be measured in the system configuration. Ideally, temperature will be measured using an infrared temperature probe (such as the FLUKE 80T-IR) or imaging system under the maximum ambient temperature and the minimum air flow conditions. Diode and FET case temperatures measured on the top surface's hottest spot should not exceed 105 °C. An alternative method of measuring temperature is the use of thermocouples. For best results, a small thermocouple should be attached to the leads of each FET and diode using a small amount of thermal epoxy.

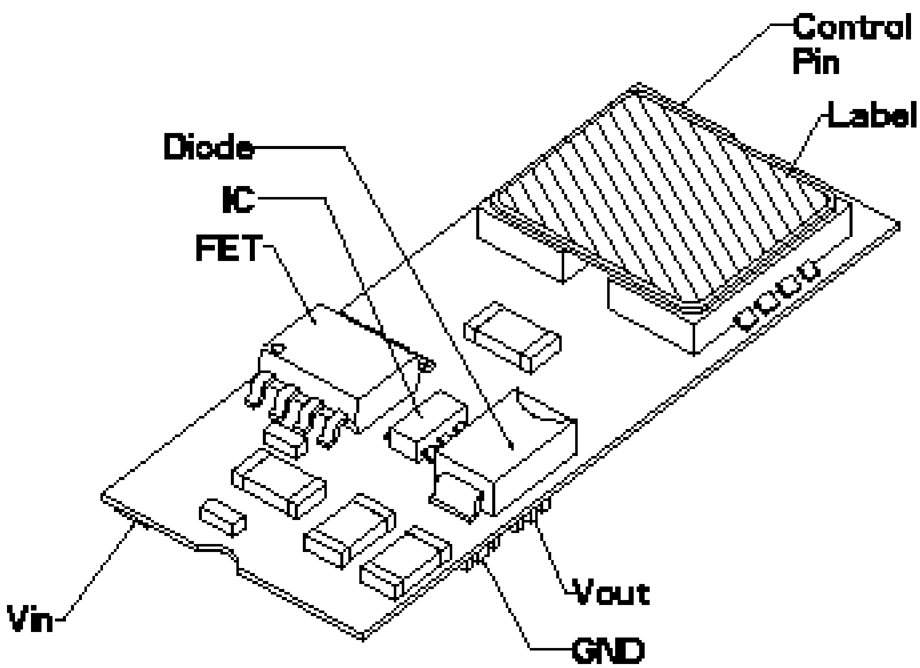

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Figure 25. Thermocouple Location

Thermal Ratings (continued)

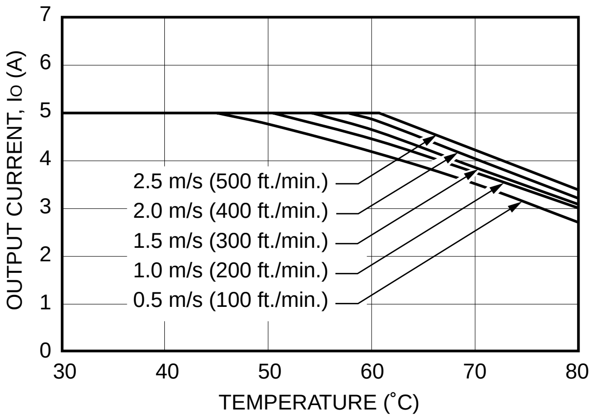


Figure 26.Thermal Derating 3.3 V_{IN}, 1.5 V_{OUT}

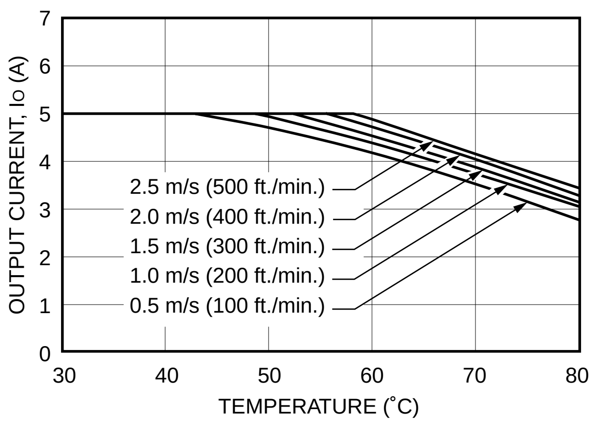


Figure 27.Thermal Derating 3.3 VIN, 1.8 V_{OUT}

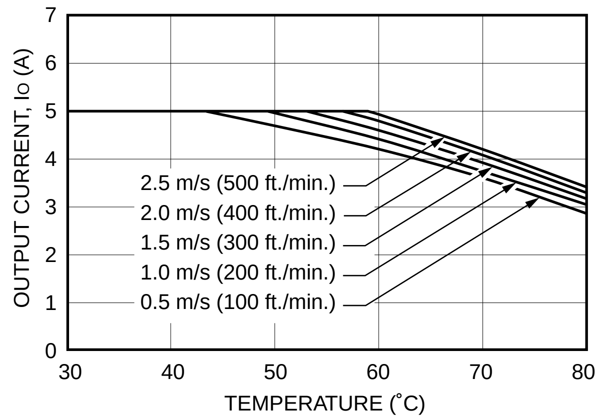


Figure 28.Thermal Derating 3.3 V_{IN}, 2.0 V_{OUT}

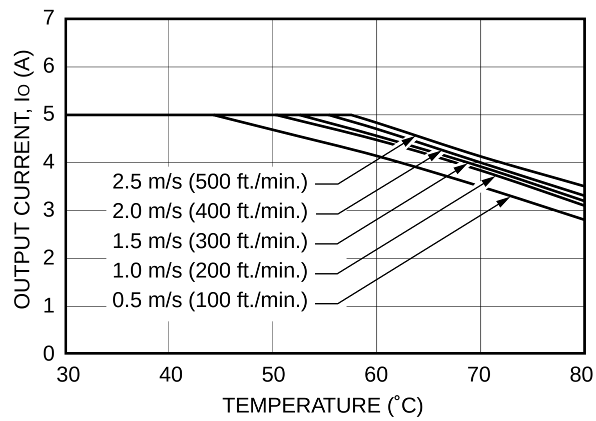
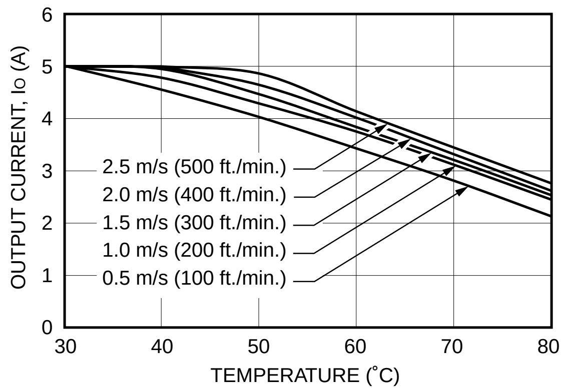


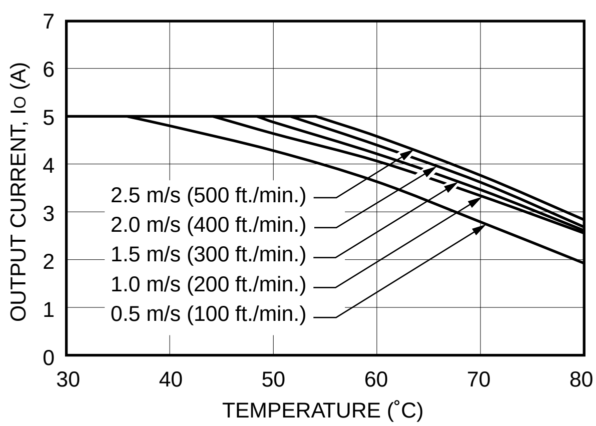
Figure 29.Thermal Derating 3.3 V_{IN}, 2.5 V_{OUT}

Thermal Ratings (continued)



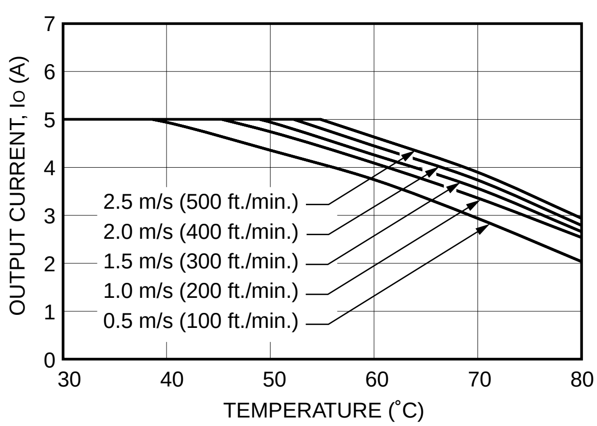
1-0279

Figure 30.Thermal Derating of 5.0V$_{IN}$/1.8V$_{OUT}$



1-0278

Figure 31.Thermal Derating 5.0 V$_{IN}$, 2.5 V$_{OUT}$

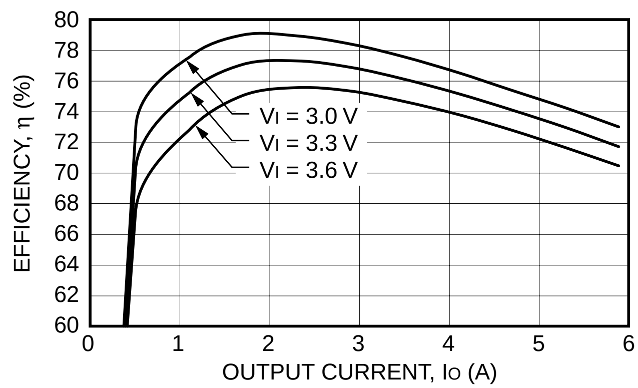


1-0277

Figure 32.Thermal Derating 5.0 V$_{IN}$, 3.3 V$_{OUT}$

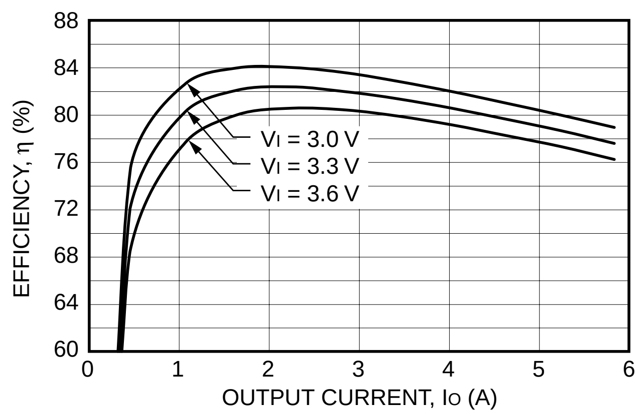
Efficiency

Figures 33—39 show typical efficiency charts for Austin Lite Power Modules at different input voltages. The data reflects a 25 °C ambient temperature. Efficiencies will decrease approximately 2% at maximum temperatures. Efficiency is measured in production at 25 °C and full load.



1-0290

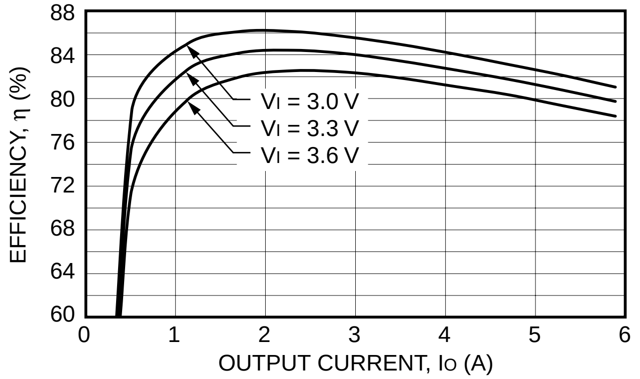
Figure 33. Efficiency: 3.3 V$_{IN}$, 1.5 V$_{OUT}$



1-0289

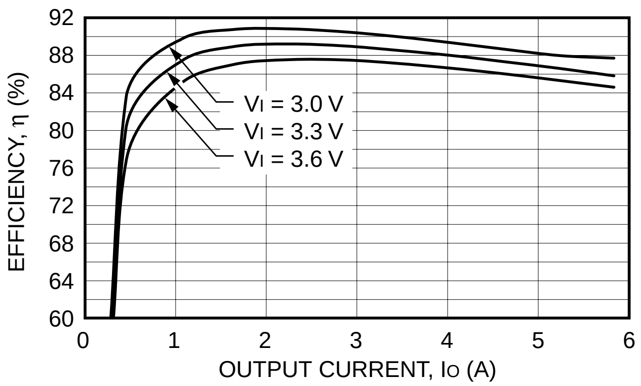
Figure 34. Efficiency: 3.3 V$_{IN}$, 1.8 V$_{OUT}$

Efficiency (continued)



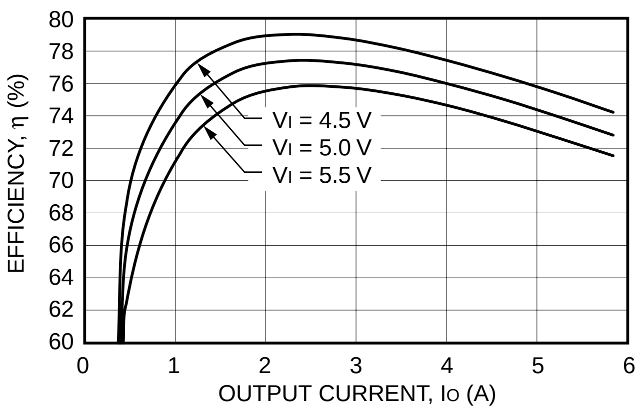
1-0288

Figure 35. Efficiency: 3.3 VIN, 2.0 VOUT



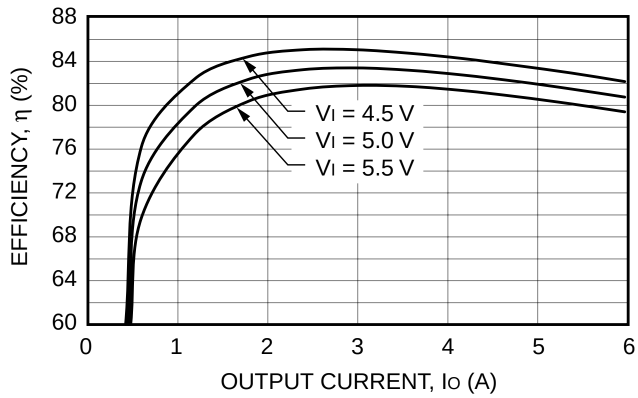
1-0287

Figure 36. Efficiency: 3.3 VIN, 2.5 VOUT



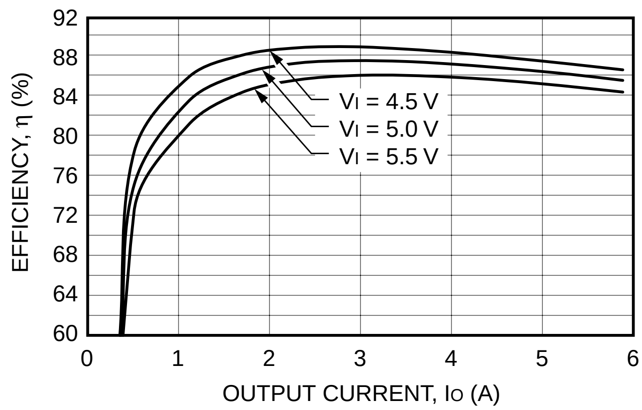
1-0286

Figure 37. Efficiency: 5.0 VIN, 1.8 VOUT



1-0285

Figure 38. Efficiency: 5.0 VIN, 2.5 VOUT



1-0284

Figure 39. Efficiency: 5.0 VIN, 3.3 VOUT

Static Regulation

Figures 40—46 show typical static regulation for Austin Lite Power Modules at different input voltages. The data reflects a 25 °C ambient temperature.

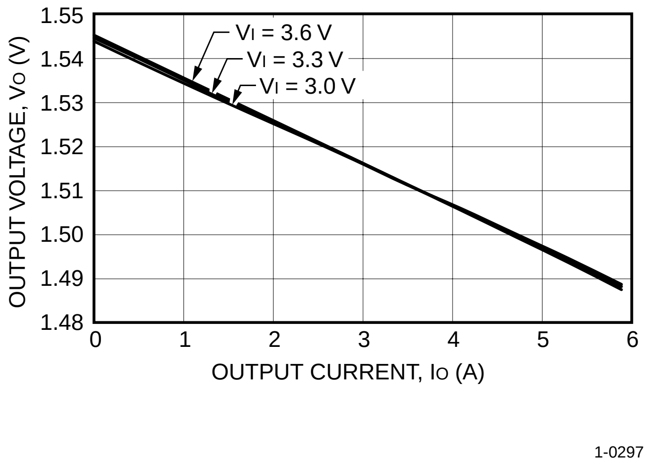


Figure 40. Static Regulation 3.3 V_{IN}, 1.5 V_{OUT}

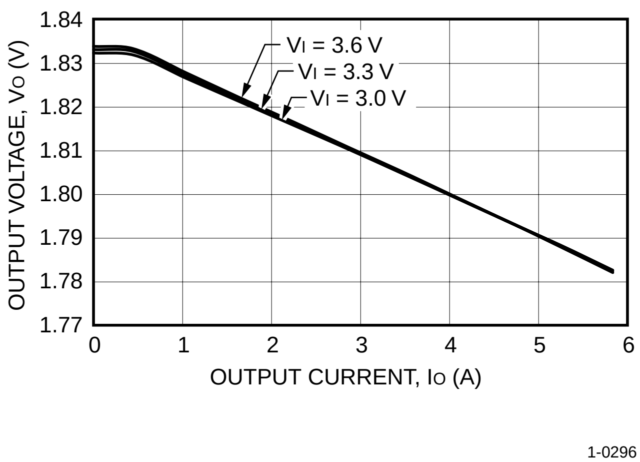


Figure 41. Static Regulation 3.3 V_{IN}, 1.8 V_{OUT}

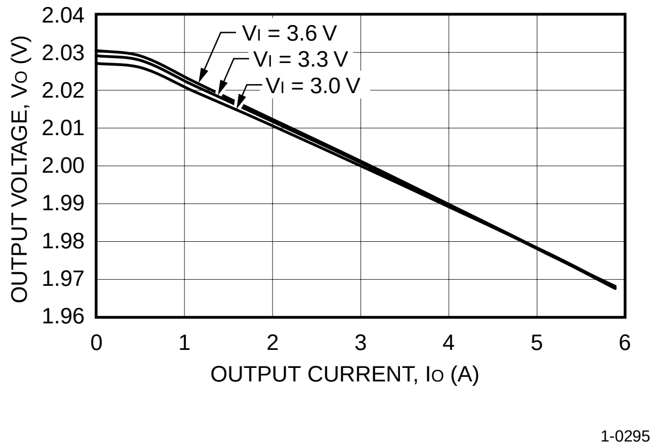


Figure 42. Static Regulation 3.3 V_{IN}, 2.0 V_{OUT}

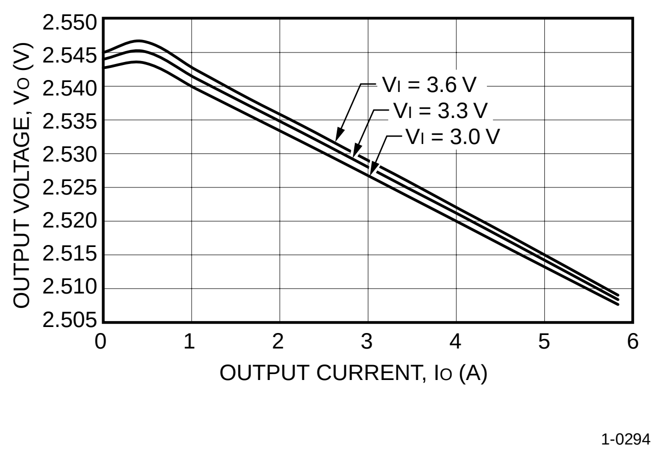


Figure 43. Static Regulation 3.3 V_{IN}, 2.5 V_{OUT}

Static Regulation (continued)

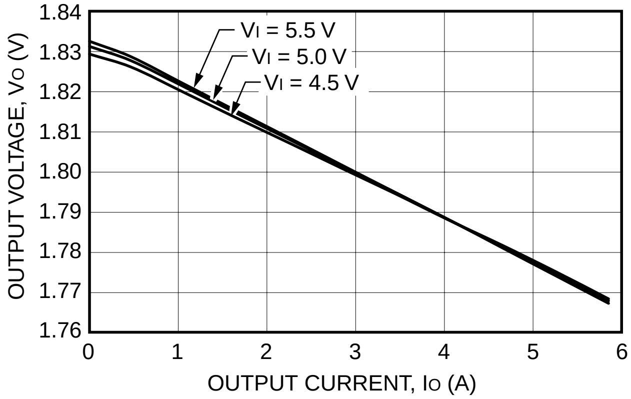


Figure 44. Static Regulation 5.0 V_{IN}, 1.8 V_{OUT}

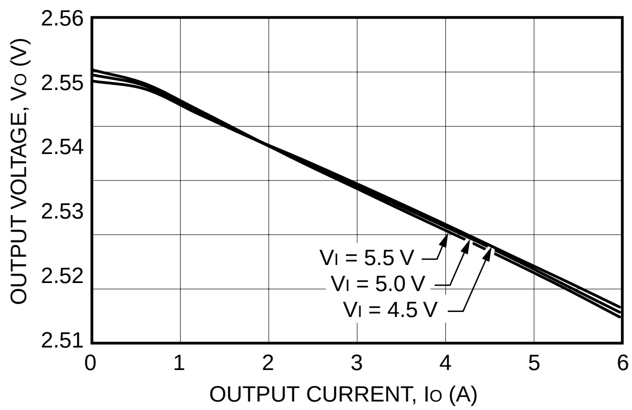


Figure 45. Static Regulation 5.0 V_{IN}, 2.5 V_{OUT}

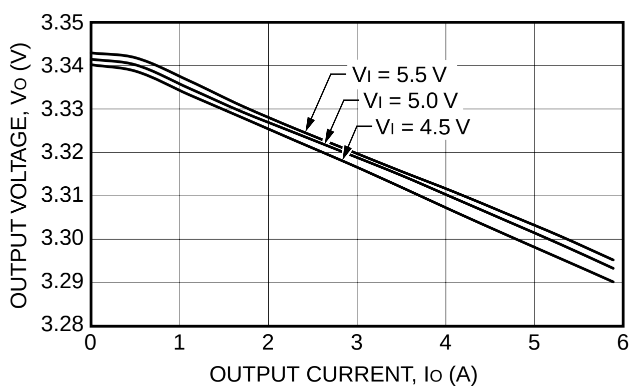


Figure 46. Static Regulation 5.0 V_{IN}, 3.3 V_{OUT}

Reflow Profile

An example of a reflow profile (using the 63/37 solder) for the Austin Lite Power Module is:

- Pre-heating zone: room temperature to 183 °C (2.0 to 4.0 minutes maximum)
- Initial ramp rate: < 2.5 °C per second
- Soaking zone: 155 °C to 183 °C – 60 to 90 seconds typical (2.0 minutes maximum)
- Reflow zone ramp rate: 1.3 °C to 1.6 °C per second
- Reflow zone: 210 °C to 235 °C peak temperature – 30 to 60 seconds typical (90 seconds maximum)

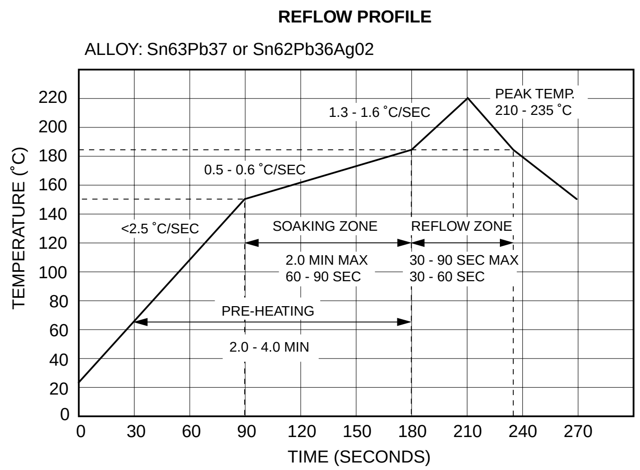


Figure 47. Reflow Profile — Source: Kester

Recommendation for Power Module Pick and Place

Placement of the Austin Lite can be achieved by choosing one of the below points.

Recommended Location

- *Pick Point 1:* The Product ID label, which is attaced over the surface mount inductors, provides the largest and most versatile pick point. This label is 0.340" x 0.440". Up to an 8-mm outside diameter nozzle can be utilized to obtain maximum vacuum pick-up. Smaller diameter nozzles can also be utilized. For all nozzle sizes, travel and rotation speeds may need to be reduced. this off center pick point may pose some challenges for some vision recognition systems.

Alternate Locations

- *Pick Points 2 and 3:* These points provide a location that is closest to the center of gravity on the x-axis centerline. A nozzle size of 2.5mm to 3.7mm can be utilized in these locations. Care is needed to avoid nozzle contact with adjacent components. Placement system accuracy needs to be verified. Travel and rotations speeds will need to be reduced. It is possible that a custom nozzle can be designed to utilize both of these points simultaneously.
- *Pick Point 4:* This point is only available to machines that can move off of the x-axis centerline. It provides a larger surface area and is close to the center of gravity. A 4-mm outside diameter nozzle can be utilized. Travel and rotations speeds will need to be reduced.

If rotational slipping occurs, rubber tipped nozzles can be utilized to prevent slippage.

These recommendations are general and apply only to machines that use vacuum nozzles to place components. Machines with the capability of adding mechanical gripping to the sides of assembly can also be utilized.

Testing with a specific placement machine is recommended to determine optimal placement procedures.

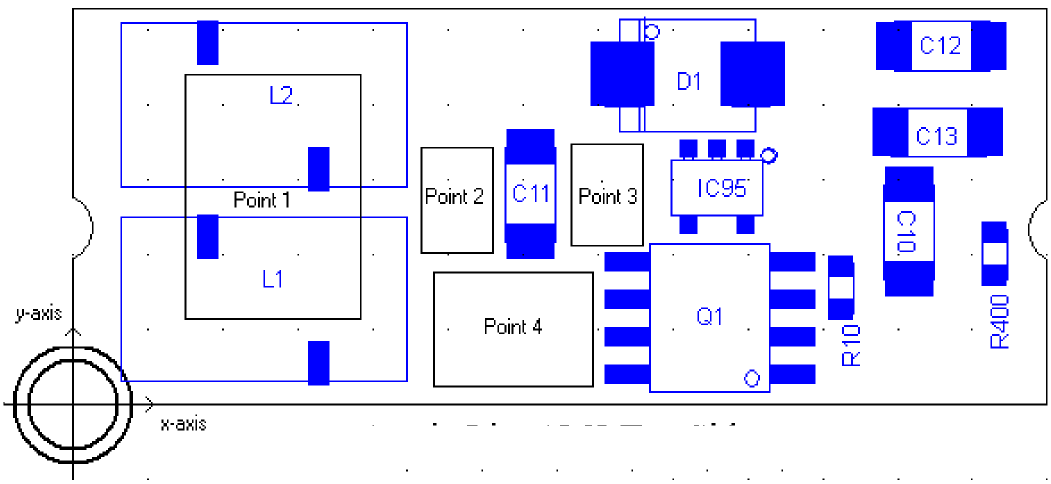


Figure 48. Austin Lite Top Side

Pad Size

Recommended surface mount pad size is a minimum of 0.12 in. x 0.075 in. and a maximum of 0.140 in. x 0.095 in.

Solder Paste Height

The recommended solder paste height as applied via standard SMT processes is 0.006" or higher.

Solder Paste Coverage

The recommended solder paste coverage over surface mount pads in 90%

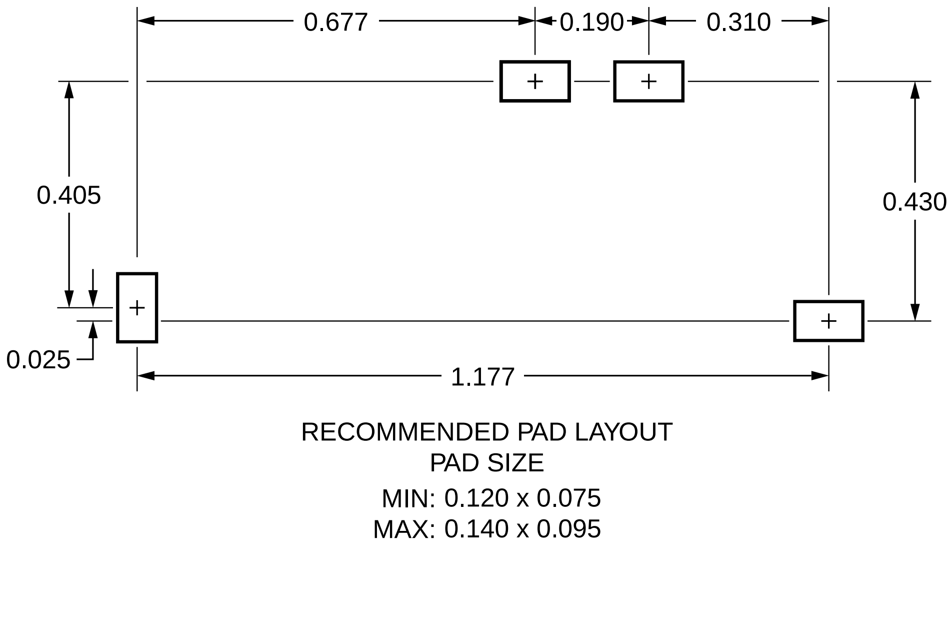
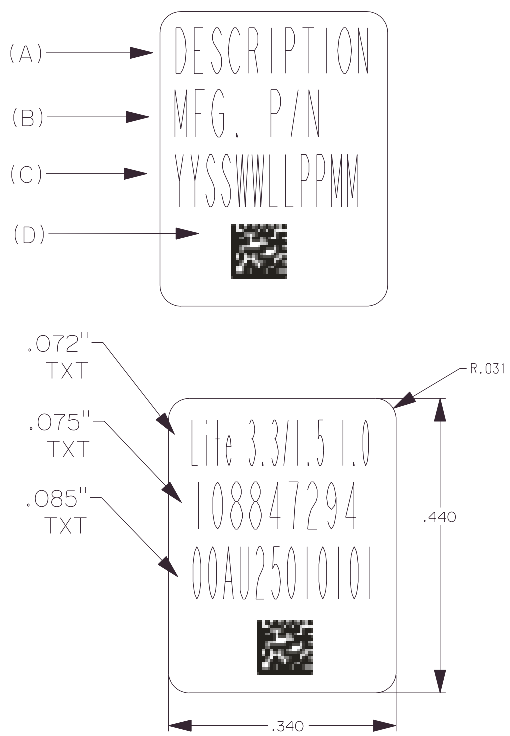


Figure 49. Pad Locations

Mechanical Specifications

Table 3.

Parameter	Symbol	Min	Typical	Max	Unit
Physical Size	L	—	*33 (1.3)	—	mm (in.)
* Dimensions listed are typical, with a tolerance	W	—	13.46 (0.53)	—	mm (in.)
of +/- 0.01 inches	H	—	5.46 (0.215)	—	mm (in.)
Weight	—	—	3.1	—	grams (oz.)
Module I/O Connectors Coplanarity	—	—	—	4 (0.158)	mm (in.)
Interconnecting	Low-inductance surface-mount connector				
Labeling	The label spans the magnetic component and contains the following: ■ Line 1: V_{IN} and V_{OUT}, version number ■ Line 2: Tyco Comcode ■ Line3: Lot number (year manufactured; manufacturing site, work week built, lot number within work week, panel number; circuit serial number within panel) ■ Line 4: Barcode				



GENERAL NOTES

(A) PART DESCRIPTION: V_{IN}/V_{OUT} A

V_{IN}/V_{OUT}	MFG. P/N
3.3 V_{IN}/1.5 V_{OUT}	108847294
3.3 V_{IN}/1.8 V_{OUT}	108847237
3.3 V_{IN}/2.0 V_{OUT}	108847245
3.3 V_{IN}/2.5 V_{OUT}	108834961
5.0 V_{IN}/1.8 V_{OUT}	108892464
5.0 V_{IN}/2.5 V_{OUT}	108834979
5.0 V_{IN}/3.3 V_{OUT}	108847252

A = REVISION NUMBER

(B) MANUFACTURING P/N: SEE TABLE ABOVE

(C) PART S/N: YSSWWLLPPMM

Y = YEAR CODE
S = SITE (EX. DJ-MESQUITE, KZ-MATAMOROS...)
W = BUILD WEEK
L = LOT NUMBER
M = PANEL NUMBER (01-20)
M = MODULE NUMBER (01-78)

(D) CODE 128 BAR CODE => WWLLPPMM
CODE: AUTO SELECTION
NARROW BAR WIDTHS (DOTS) = 2 : 003"/27.27 CPI

A AUSTIN LITE PRODUCT LABEL ILLUSTRATING A 3.3V/1.5V AUSTIN LITE, REVISION 1, LOT #1, PANEL #1, MODULE #1, BUILT IN AUSTIN DURING THE 25TH WEEK OF 2000

1-0299

Figure 50. Austin Lite Power Module Label

Safety Specifications

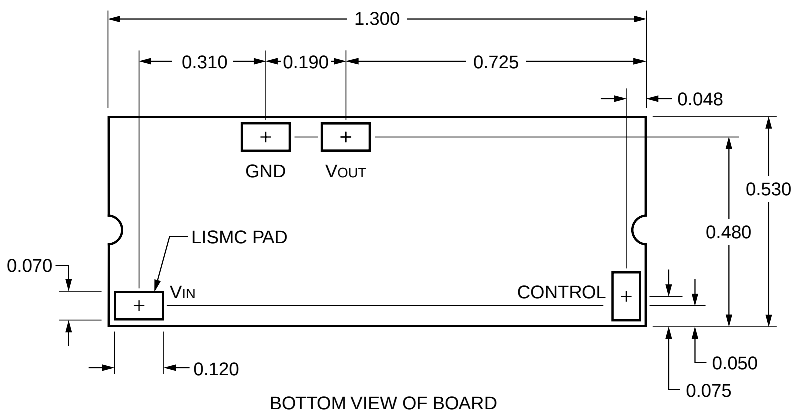
EMI: FCC Class B and EN55022 Class B Radiated Emissions
Safety: Designed to meet UL 60950, CSA C22.2 No. 60950-00, and VDE 0805 (IEC 60950)

For safety agency approval of the system in which the Austin Lite Power Module is used, the power module must be installed in compliance with the spacing and separation requirements of the end use safety agency standard.

For the converter output to meet the requirements of safety extra low voltage (SELV), the input must meet SELV requirements.

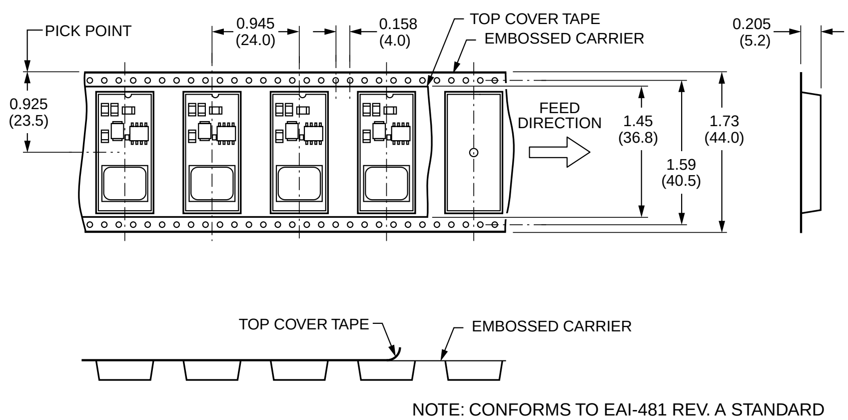
The Austin Lite Power Module has extra low voltage (ELV) outputs when all inputs are ELV.

The input to these units is to be provided with a maximum 10A normal blow fuse in the ungrounded lead.



1-0300

Figure 51. Bottom View of Board
Note:Measurement is in inches



1-0301

Figure 52. Tape Dimensions
Note:Austin Lite Power Modules are shipped in quantities of 250 modules per tape and reel.

Ordering Information

Please contact your Tyco Electronics' Account Manager or Field Application Engineer for pricing and availability.

Table 4. Coding Scheme for Ordering

Product Code	Comcode	Expanded Product Description
Austin Lite 3.3V 1.5V 5A T	108847294	3.3 V_{IN}; 1.5 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 3.3V 1.8V 5A T	108847237	3.3 V_{IN}; 1.8 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 3.3V 2.0V 5A T	108847245	3.3 V_{IN}; 2.0 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 3.3V 2.5V 5A T	108834961	3.3 V_{IN}; 2.5 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 5.0V 1.8V 5A T	108892464	5 V_{IN}; 1.8 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 5.0V 2.5V 5A T	108834979	5 V_{IN}; 2.5 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package
Austin Lite 5.0V 3.3V 5A T	108847252	5 V_{IN}; 3.3 V_{OUT}; 4 terminal surface mount; 5A I_{OUT}; Tape & Reel package

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+1-800-526-7819 FAX: +1-888-315-5182
(Outside U.S.A.: **+1-972-284-2626**, FAX: +1-972-284-2900)
http://power.tycoelectronics.com

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