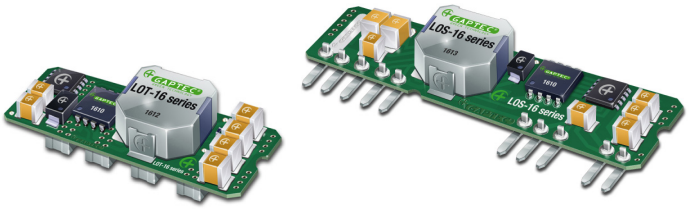
GAPTEC®
GREEN TECHNOLOGY

LOT-16 & LOS-16 Series

Wide Input Non-Isolated & Regulated, Single Positive/Negative Output



Switching Regulator

- Efficiency 92%
- Operating temperature range: -40°C ~ +85°C
- Short circuit protection (SCP)
- Input under-voltage lockout
- SIP or SMD package
- Compliant to RoHs directive 2002/95/EC

The LOT-16 and LOS-16 series are high efficiency switching regulators. The product is featured with high efficiency, low loss, short circuit protection and no heat sink requirement.

They are widely used in wireless networks, Telecom/Datacom, distributed power architectures, industry control systems, semi-conductor equipment, microprocessor power applications, etc.

SHORT CIRCUIT PROTECTED SCP

100% RoHS compliant 6/6

Common specifications

Short circuit protection:	Hiccup, automatic recovery
Temperature rise at full load:	25°C MAX, 15°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C (with derating)
Storage temperature range:	-55°C ~+125°C
Thermal shock:	MIL-STD-810F
Over temperature protection:	125°C TYP
Operating case temperature:	100°C
Storage humidity range:	< 95%RH
MTBF (+25°C MIL-HDBK-217F):	6.704x10^5 hours TYP
Weight:	6g

Input specifications

Item	Test conditions	Min	Typ	Max	Units
Voltage tolerance	• Vo set ≤ 3.63V • Vo set > 3.63V	8.3 8.3	12 12	14 13.2	VDC VDC
Input current	Vin = 8.3 to 14.0VDC; Io (max.)			10	A
Input filter*	C filter				
No Load Current	• Vo (set) = 0.75Vdc, Vin = 5 • Vo (set) = 5.0Vdc Vin = 12		40 100		mA mA
Under Voltage Lockout	• Start-up Voltage • Shutdown Voltage		7.9 7.8		V V
Input reflected ripple current	5~20MHz, 1uH source impedance		20		mAp-p

* It's necessary to equip the external input capacitors at the input of the module. The capacitors should connect as close as possible to the input terminals that ensuring module stability. The external Cin is 6×47µF ceramic capacitors at least.

Model selection:
LOX_xx-16
LO = Series; X = case type; ##= Vin**; pp =** output current

Example:
LOT_12-16
LO = Series; T = SMT; 12 = Vin (nominal); 16 = Output current: 16A

Output specifications

Item	Test conditions	Min	Typ	Max	Units
Output current				16	A
Voltage tolerance	Full load and Vin(nom.)			±2	%
Minimum load				0	%
Line regulation	Vin = Vin (min) to Vin (max) at full load		±0.3		%
Load regulation	0% to 100% load		±0.4		%
Ripple + Noise*	20MHz Bandwidth			30 75	
Temperature coefficient			±0.4		%/°C
Dynamic load response*	Load change step (50% to 100% or 100% to 50% of Io (max) Setting time (Vo<10% peak deviation)		25		mS
Peak deviation	ΔIo/Δt = 2.5A/uS, Vin(nom)		200		mV
Dynamic load response**	Load change step (50% to 100% or 100% to 50% of Io (max) Setting time (Vo<10% peak deviation)		25		mS
Peak deviation	ΔIo/Δt = 2.5A/uS, Vin (nom)		100		mV
Output current limit			200		%
External load capacitance	• ESR≥1mΩ • ESR≥10mΩ			1000 5000	uF uF
Switching frequency		300			KHz
Output voltage overshoot-startup	Vin = Vin (min) to Vin (max); F.L.		1		%
Voltage adjustability	(see fig.1)	0.7525		5	V

* External with Cout = 1µF ceramic//10µF tantalum capacitors.
** External with Cout = 2×150µF polymer capacitors.

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Feature specifications					
Item	Test conditions	Min	Typ	Max	Units
Remote ON/OFF Negative logic (standard)	ON = 0V<Vr< 0.3V@I_{IN} OFF=2.5V<Vr<Vin(Max)@I_{IN}			10 1	uA mA
Input current of remote control pin		0.01		1	mA
Remote off state input current Nominal Vin			2		mA
Remote sense strange				0.5	V
Rise time	Time for Vo to rise from 10% to 90%of Vo(set))			6	ms
Turn-on delay time	Case 1 and 2, see notes below		3		ms

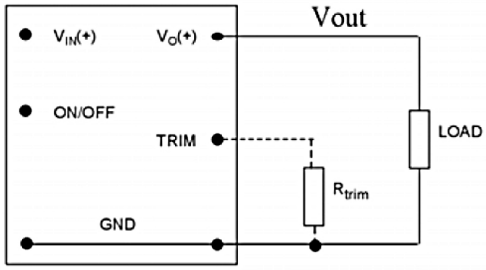


Fig. 1

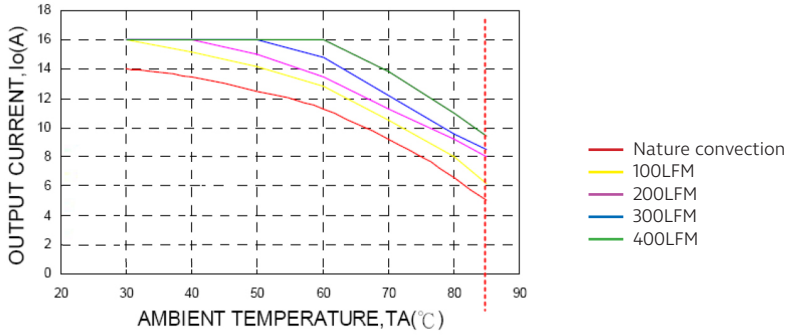
Note:
Case 1: On/Off input is set to logic low (module on) and then input power is applied (delay from instant at which Vin=Vin(min) until Vo=10% of Vo(set))
Case 2: Input power is applied for at least one second and then the On/Off input is set to logic low (delay from instant at which Von/off=0.3V until Vo=10% of Vo(set))

Part Number	ON/OFF logic	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [min/max load; A]	Efficiency [%, typ]
LOX_12-06	negative	Vo (set) ≤3.63V Vin = 8.3~14VDC	0.75 ~ 5.0	0/16	92

X = T: SMD package
X = S: SIP package

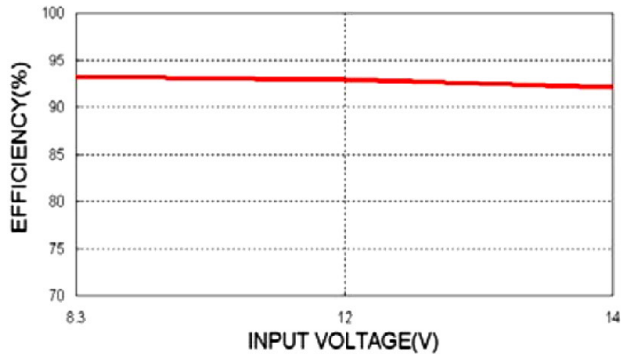
Typical characteristics

Derating Curve, LOS_12-16

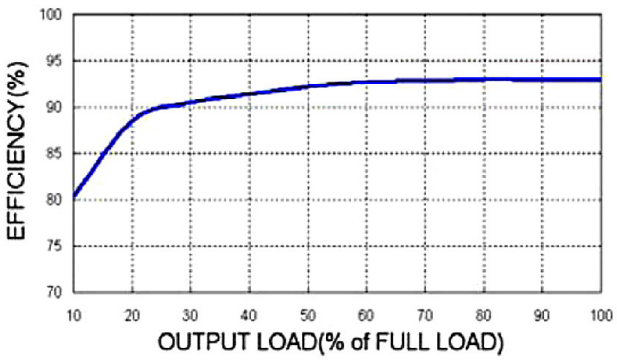


Efficiency

Efficiency vs. input voltage, Vo= 3.3V, LOS_12-16

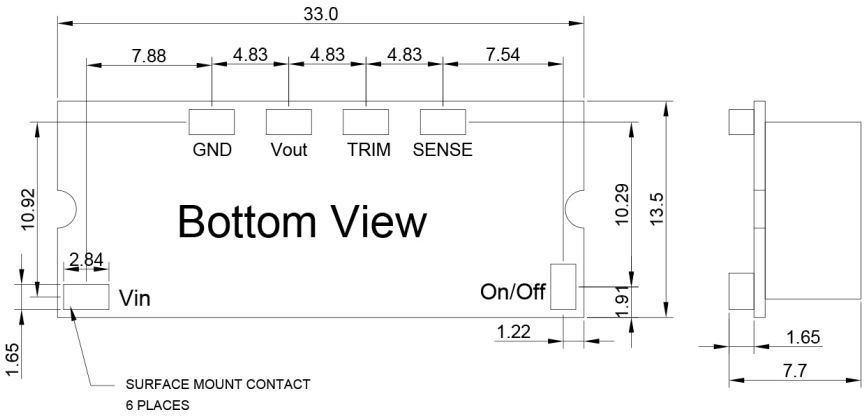


Efficiency vs. output load, Vo= 3.3V, LOS_12-16

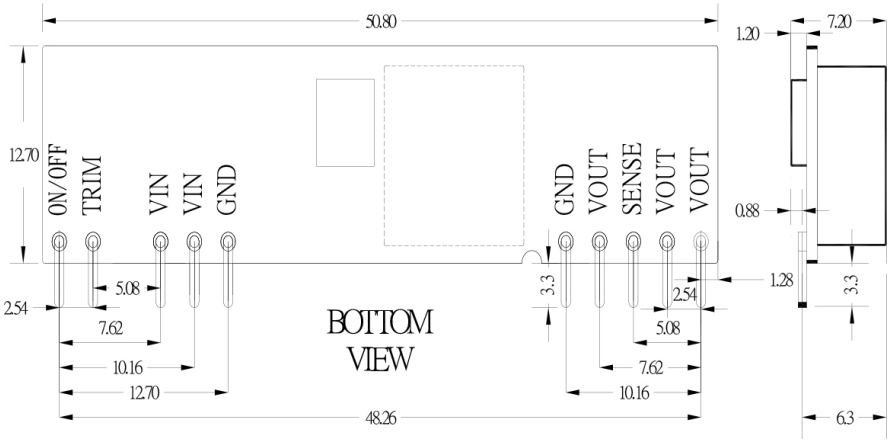


Mechanical dimensions

SMD



SIP



Note:

1. The max. capacitive load should be tested within the input voltage range and under full load conditions;
2. Without any special statement, all indexes are only specific to positive output application;
3. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°C, humidity<75% when inputting nominal voltage and outputting rated load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;
5. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact with our technician for specific information;
6. Specifications subject to change without prior notice.

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