

400KHz 60V 3A Switching Current Boost / Buck-Boost / Inverting DC/DC Converter**Features**

Wide 3.6V to 32V Input Voltage Range
Positive or Negative Output Voltage
Programming with a Single Feedback Pin
Current Mode Control Provides Excellent Transient Response
1.25V reference adjustable version
Fixed 400KHz Switching Frequency
Maximum 3A Switching Current
SW PIN Built in Over Voltage Protection
Excellent line and load regulation
EN PIN TTL shutdown capability
Internal Optimize Power MOSFET
High efficiency up to 92%
Built in Frequency Compensation
Built in Soft-Start Function
Built in Thermal Shutdown Function
Built in Current Limit Function
Available in TO252-5L package

General Description

The JTMX6008 regulator is a wide input range, current mode, DC/DC converter which is capable of generating either positive or negative output voltages. It can be configured as either a boost, flyback, SEPIC or inverting converter. The JTMX6008 built in N-channel power MOSFET and fixed frequency oscillator, current-mode architecture results in stable operation over a wide range of supply and output voltages.

The JTMX6008 regulator is special design for portable electronic equipment.

Applications

Automotive and Industrial Boost /
Buck-Boost / Inverting Converters
Portable Electronic Equipment

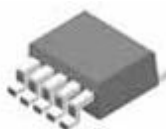


Figure1. Package Type of JTMX6008

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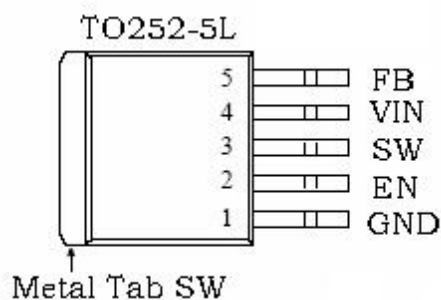
Pin Configurations

Figure2. Pin Configuration of JTMX6008 (Top View)

Table 1 Pin Description

Pin Number	Pin Name	Description
1	GND	Ground Pin.
2	EN	Enable Pin. Drive EN pin low to turn off the device, drive it high to turn it on. Floating is default high.
3	SW	Power Switch Output Pin (SW).
4	VIN	Supply Voltage Input Pin. JTMX6008 operates from a 3.6V to 32V DC voltage. Bypass Vin to GND with a suitably large capacitor to eliminate noise on the input.
5	FB	Feedback Pin (FB). The feedback threshold voltage is 1.25V.

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Function Block

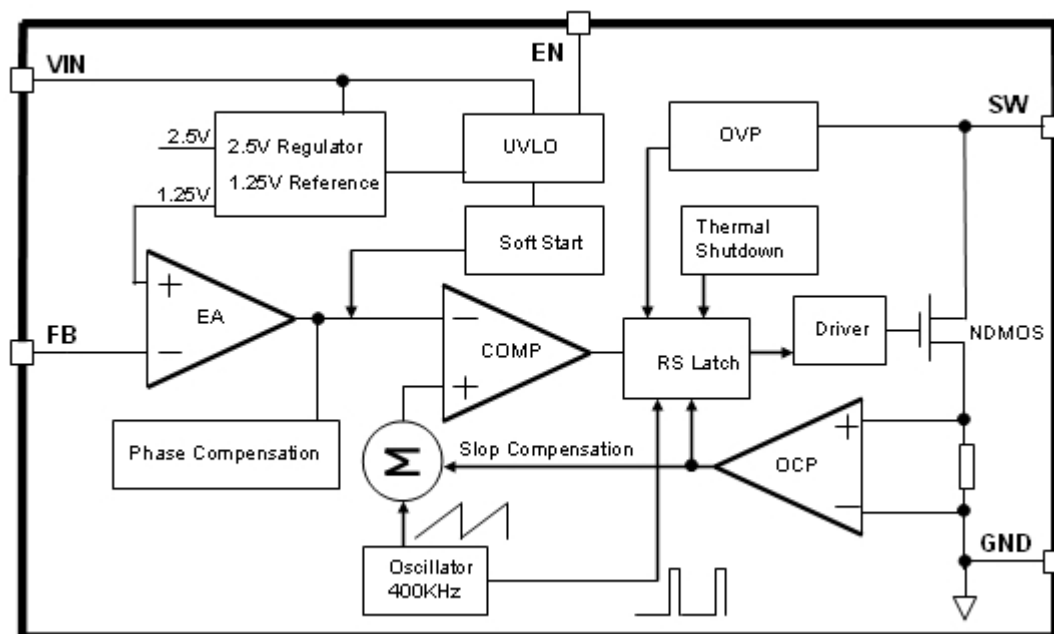


Figure3. Function Block Diagram of JTMX6008

Typical Application Circuit

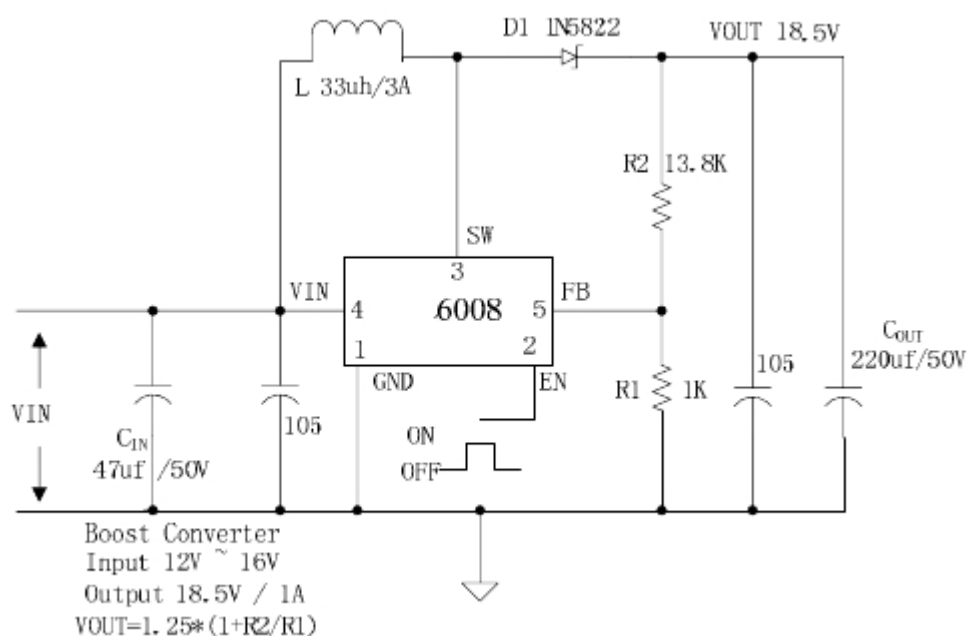


Figure4. JTMX6008 Typical Application Circuit (Boost Converter)

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Ordering Information

Order Information	Marking ID	Package Type	Packing Type Supplied As
JTMX6008E1	JTMX6008E1	TO252-5L	2500 Units on Tape & Reel

JIATAIMU Pb-free products, as designated with “E1” suffix in the par number, are RoHS compliant.

Absolute Maximum Ratings (Note1)

Parameter	Symbol	Value	Unit
Input Voltage	V_{in}	-0.3 to 36	V
Feedback Pin Voltage	V_{FB}	-0.3 to V_{in}	V
EN Pin Voltage	V_{EN}	-0.3 to V_{in}	V
Output Switch Pin Voltage	V_{Output}	-0.3 to 60	V
Power Dissipation	P_D	Internally limited	mW
Thermal Resistance (TO252-5L) (Junction to Ambient, No Heatsink, Free Air)	R_{JA}	50	°C/W
Operating Junction Temperature	T_J	-40 to 125	°C
Storage Temperature	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 sec)	T_{LEAD}	260	°C
ESD (HBM)		>2000	V

Note1: Stresses greater than those listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

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JTMX6008 Electrical Characteristics

$T_a = 25^\circ\text{C}$; unless otherwise specified.

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<i>System parameters test circuit figure4</i>						
VFB	Feedback Voltage	$V_{in} = 12\text{V to } 16\text{V}, V_{out}=18\text{V}$ $I_{load}=0.1\text{A to } 1\text{A}$	1.213	1.25	1.287	V
Efficiency	η	$V_{in}=12\text{V}, V_{out}=18.5\text{V}$ $I_{out}=1\text{A}$	-	92	-	%

Electrical Characteristics (DC Parameters)

$V_{in} = 12\text{V}$, $GND=0\text{V}$, V_{in} & GND parallel connect a 220uf/50V capacitor; $I_{out}=0.5\text{A}$, $T_a = 25^\circ\text{C}$; the others floating unless otherwise specified.

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input operation voltage	V_{in}		3.6		32	V
Shutdown Supply Current	I_{STBY}	$V_{EN}=0\text{V}$		70	100	μA
Quiescent Supply Current	I_q	$V_{EN}=2\text{V}$, $V_{FB}=V_{in}$		2.5	5	mA
Oscillator Frequency	F_{osc}		320	400	480	KHz
Switch Current Limit	I_L	$V_{FB}=0$		3		A
Output Power NMOS	R_{dson}	$V_{in}=12\text{V}$, $I_{sw}=3\text{A}$		110	120	mohm
EN Pin Threshold	V_{EN}	High (Regulator ON) Low (Regulator OFF)		1.4 0.8		V
EN Pin Input Leakage Current	I_H	$V_{EN}=2\text{V (ON)}$		3	10	μA
	I_L	$V_{EN}=0\text{V (OFF)}$		3	10	μA
Max. Duty Cycle	D_{MAX}	$V_{FB}=0\text{V}$		90		%

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Schottky Diode Selection Table

Current	Surface Mount	Through Hole	VR (The same as system maximum input voltage)				
			20V	30V	40V	50V	60V
1A		√	1N5817	1N5818	1N5819		
3A		√	1N5820	1N5821	1N5822		
		√	MBR320	MBR330	MBR340	MBR350	MBR360
	√		SK32	SK33	SK34	SK35	SK36
	√			30WQ03	30WQ04	30WQ05	
		√		31DQ03	31DQ04	31DQ05	
		√	SR302	SR303	SR304	SR305	SR306

Typical System Application – Boost (Output 18.5V/1A)

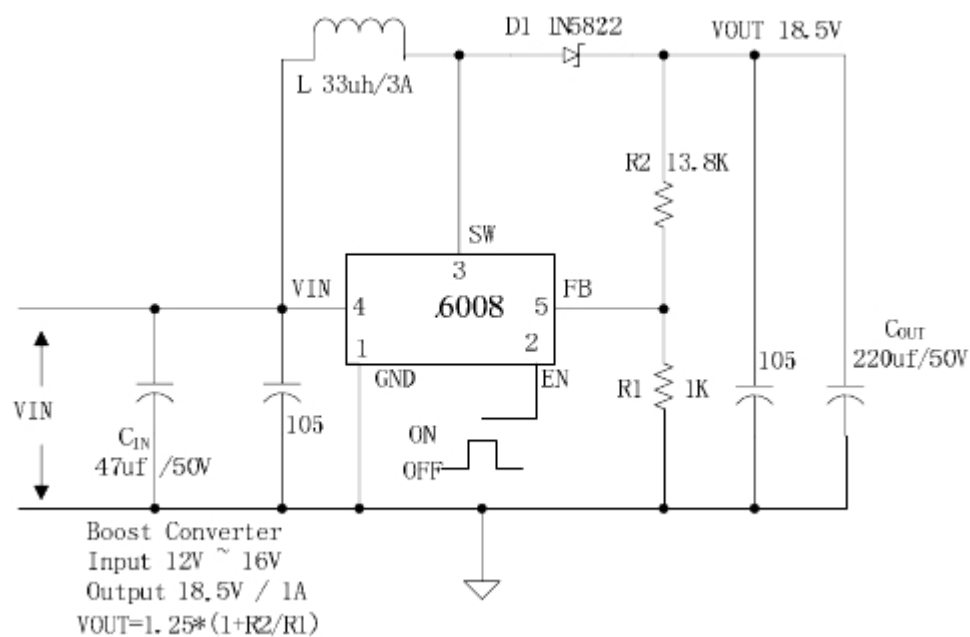
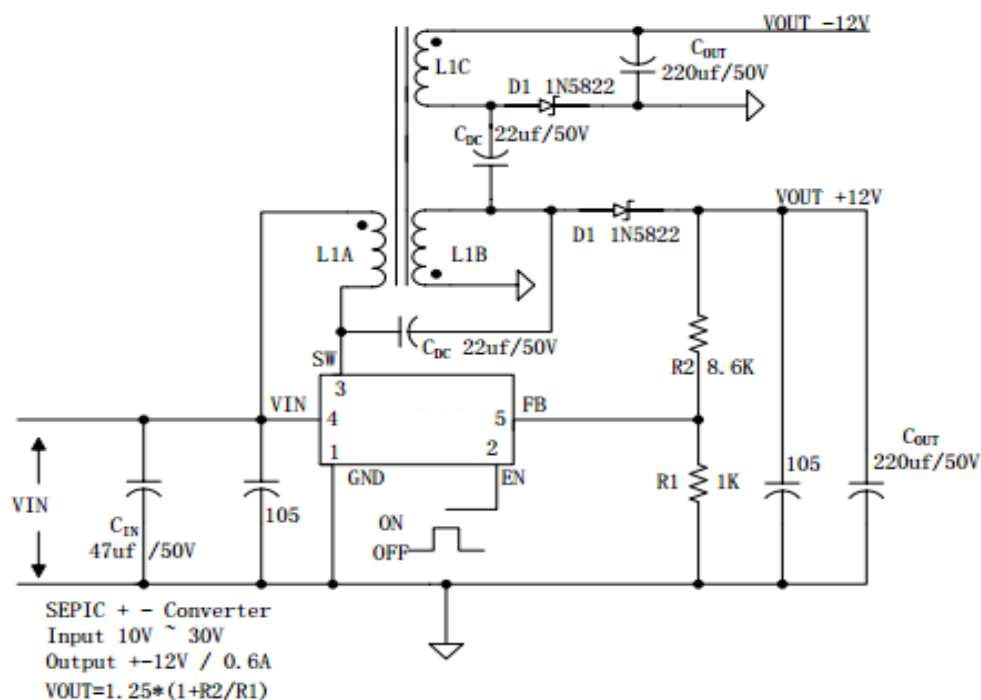


Figure5. JTMX6008 Typical System Application (Boost Converter)

Buck-Boost Converter
Input 10V ~ 30V
Output 12V / 2A
 $V_{OUT} = 1.25 * (1 + R_2/R_1)$

– **SEPIC Inverting Topology (Input 10V~30V, Output + -12V/0.6A)**

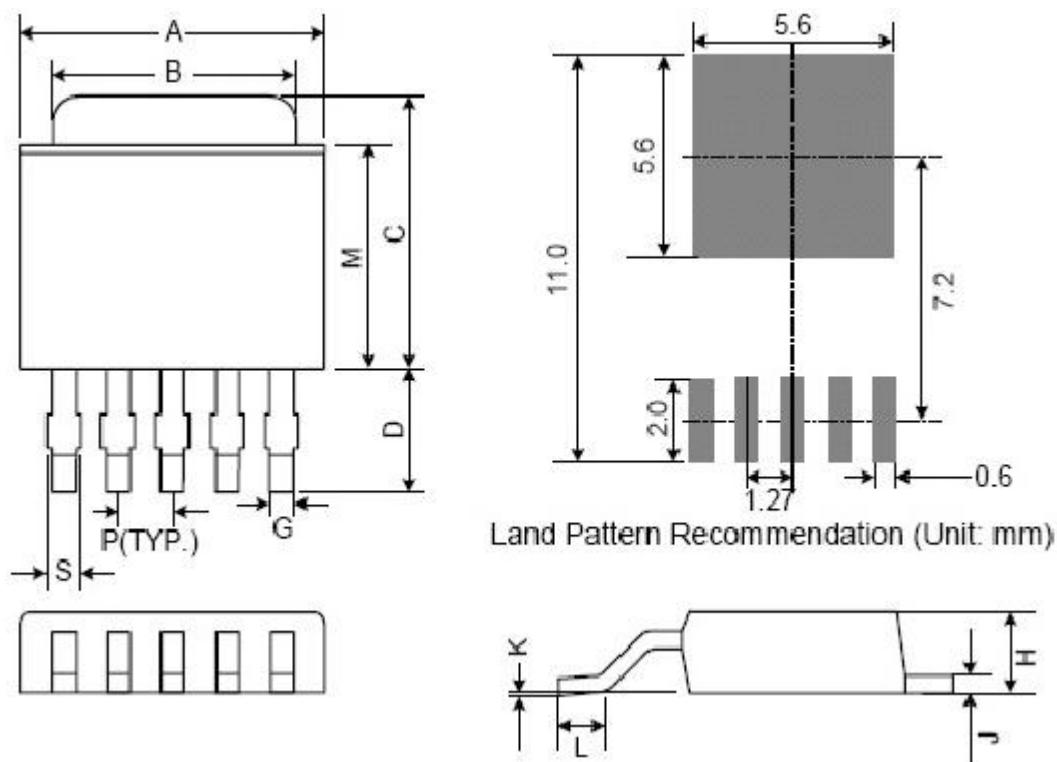


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Package Information

TO252-5L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	6.35	6.60	6.85	0.250	0.260	0.270
B	5.20	5.35	5.50	0.205	0.211	0.217
C	6.80	7.00	7.30	0.268	0.276	0.287
D	2.40	2.80	3.20	0.094	0.110	0.126
P	1.27 REF.			0.050 REF.		
S	0.50	0.65	0.80	0.020	0.026	0.031
G	0.40	0.50	0.63	0.016	0.020	0.025
H	2.20	2.30	2.40	0.087	0.091	0.094
J	0.45	0.52	0.58	0.018	0.020	0.023
K	0.00	0.08	0.15	0.000	0.003	0.006
L	0.90	1.20	1.63	0.035	0.047	0.064
M	5.40	5.80	6.20	0.213	0.228	0.244