TO-220AB

2N7000
TO-92

S
D
G

S
G
D

+12
Always ON

1 2
SW1

Alternative manual power switching
When always on Power is available

+12V
Switched (Ignition) Power

+12V Power
Always ON

D3
Schottky 3A

Schottky 3A
D4

S   D
2   3
G
Q2

MOSFET
P-Channel
FQP8P10
IRF9530

4.7K R6

+12V to Portable
Node Power Supplies

+12
Switched

R9*

200 R8

LED
2   1

Switched

Always on

+ BT1

9-12V
NIMH Battery

Trickle Charge
Resistor

Charge
Indicator

Alternative Battery
with switched input

For Baofeng 888 Radio and Pi a 9V
Rayovac NiMH PL1604-GENB works
Trickle charge current about 10-15mA.
Approximately 200 ohm resistor

For UV82 low power recommended
12V NiMH 1000-1500 mAHr battery.
Adjust trickle charge current accordingly
using parallel R9 shown above

1K R3

Source Pwr
Indicator
Optional

1
D2
2

D1
BAT43

1K R1

15K
R7

D7

R4 + C1
680K   22uf

G

D
Q1
2N7000
3

S

D6

4.7K R2

1K R5

Pi/Node
Power Indicator
Optional

NOTE - if shutdown is unreliable
replace R1 with two 1K 1/4W in
parallel or one 470 ohm 1/2W

GPIO Power
Good Signal
Pi Pin 11 Input
Low >5 seconds
starts shutdown

Adjust R4/C1 for a minimum
10-15 second Time Constant
Values shown should work
in most cases.

GPIO Power
Shutdown Signal
Pi Pin 12 Output
High = Pwr ON
Low = OFF after delay

GND (Pi Pin 9)

Sequence of Events

Start State

Ignition or Power Switch ON
GPIO Power Good Bit High
Turn ON Relay or FET with time constant
Pi boots
Energize Power Shutdown Bit - Pi now holds circuit ON
Normal Operation - Pi running

Stop State

Ignition or Power Switch OFF
GPIO Power Good Low
Pi Voices Shutdown On Radio
Pi enters shutdown state + Wait
Pi sets Shutdown Signal Low
10 second delay
De-energize relay or FET
System Powered Down

This circuit is intended for use with a Raspberry Pi and
a low power radio portable node. It gracefully shuts
the Pi down and removes power from all circuits. Both Pi
and radio are run from a single 12V supply with individual
high efficiency switching power supplies. The required
software is part of the hamvoip RPi2/3 package. See the
howto on the hamvoip.org web page.

See the auto shutdown howto at hamvoip.org for info on turning on the
shutdown_monitor.sh script on the RPI which is required for this circuit to function

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MOSFET Option only

Sheet: /
File: Pi auto shutdown.sch

Title: Simple Raspberry Pi Portable or Car shutdown system

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