



APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Distributed Power Architectures
Semiconductor Equipment
Microprocessor Power Applications

FEATURES

- OUTPUT CURRENT UP TO 6A
- SMALL SIZE AND LOW PROFILE :
0.80" X 0.45" X 0.22" (SMD) ; 0.9" X 0.40" X 0.20" (SIP)
- HIGH EFFICIENCY - 94% @ 3.3V FULL LOAD
- INPUT RANGE FROM 2.4VDC TO 5.5VDC
- FIXED SWITCHING FREQUENCY (300KHZ)
- SMD & SIP PACKAGES
- OUTPUT VOLTAGE PROGRAMMABLE FROM 0.75VDC TO 3.3VDC VIA EXTERNAL RESISTOR
- INPUT UNDER-VOLTAGE LOCKOUT
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

OPTIONS

Positive Logic Remote on/off

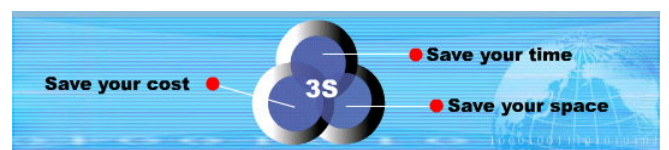
DESCRIPTION

DOS06-05T (SMD type), DOH06-05T (for Vertical Mounting SIP type) and DOH06-05TA (for Horizontal Mounting SIP type) are non-isolated DC/DC converters that can deliver up to 6A of output current with full load efficiency of 94% at 3.3V output.

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

| OUTPUT SPECIFICATIONS | |
|-----------------------------------|---|
| Output current | 6A max |
| Voltage accuracy | Full load and Vin(nom) ± 2%Vo(set) |
| Minimum load | 0% |
| Line regulation | $V_{in}=V_{o(set)}+0.5V$ to $V_{in(max)}$ at Full Load ± 0.3%Vo(set),typ |
| Load regulation | No Load to Full Load ± 0.4%Vo(set),typ |
| Ripple and noise (Note2) | 20MHz bandwidth 20mVrms,max 50mVp-p,max |
| Temperature coefficient | ±0.4%, typ |
| Dynamic load response (Note2) | $\Delta I_o / \Delta t = 2.5A/\mu S, V_{in(nom)}$ Peak deviation 130mV,typ Load change step (50% to 100% or 100% to 50% of Io(max)) Setting time (Vo<10%peak deviation) 25μS,typ |
| Dynamic load response (Note3) | $\Delta I_o / \Delta t = 2.5A/\mu S, V_{in(nom)}$ Peak deviation 50mV,typ Load change step (50% to 100% or 100% to 50% of Io(max)) Setting time (Vo<10%peak deviation) 50μS,typ |
| Output current limit | 220%,typ |
| Output short-circuit current | Hiccup, automatics recovery |
| External load capacitance | $ESR \geq 1m\Omega$ 1000μF,max $ESR \geq 10m\Omega$ 3000μF,max |
| Output voltage overshoot-startup | $V_{in}=2.4\sim 5.5V, F.L.$ 1%Vo(set) |
| Voltage adjustability (see fig.1) | (Note 4) 0.7525V ~ 3.63V |
| GENERAL SPECIFICATIONS | |
| Efficiency | See table |
| Isolation voltage | None |
| Switching frequency | 300KHz, typ |
| Approvals and standard | IEC60950-1, UL60950-1, EN60950-1 |
| Dimensions | SMD 0.80 X 0.45 X 0.22 Inch (20.3 X 11.4 X 5.5 mm) SIP 0.90 X 0.40 X 0.20 Inch (22.9 X 10.2 X 5.0 mm) |
| Weight | 2.8g(0.1oz) |
| MTBF (Note 1) | BELLCORE TR-NWT-000332 2.133 x 10 ⁷ hrs MIL-HDBK-217F 3.247 x 10 ⁶ hrs |

| INPUT SPECIFICATIONS | |
|--|--|
| Input voltage range | $V_o(set) < V_{in} - 0.5V$ 2.4 – 5.5VDC |
| Maximum input current | $V_{in}=V_{in(min)}$; $V_o(set)=3.3V$; $I_o=I_o(max)$ 6A |
| Input filter (Note 5) | C filter |
| Input no load current (Vin=5V, Io=0, module enabled) | $V_o(set) = 0.75Vdc$ 20mA,typ $V_o(set) = 3.3Vdc$ 45mA,typ |
| Input under voltage lockout | Start-up voltage 2.2V,typ Shutdown voltage 2.0V,typ |
| Input reflected ripple current | 5~20MHz, 1μH source impedance 35mA _{p-p} |
| ENVIRONMENTAL SPECIFICATIONS | |
| Operating ambient temperature | -40°C ~ +85°C(with derating) |
| Storage temperature range | -55°C ~ +125°C |
| Thermal shock | MIL-STD-810F |
| Over temperature protection | 135 °C, typ |
| FEATURE SPECIFICATIONS | |
| Remote ON/OFF(Note 6) (Negative logic)(standard) | $ON = 0V < V_r < 0.3V$ $I_{IN}=10\mu A, max$ $OFF = 1.5V < V_r < V_{in(max)}$ $I_{IN}=1mA, max$ |
| (Positive logic)(option) | $ON = V_{in(max)}$ $I_{IN}=10\mu A, max$ $OFF=0V < V_r < 0.3V$ $I_{IN}=1mA, max$ |
| Input current of Remote control pin | 10μA~1.0mA |
| Remote off state input current | Nominal Vin 0.6mA,typ |
| Rise time | Time for Vo to rise from 10% to 90%of Vo(set) 6ms,max. |
| Turn-on delay time | Case 1 (Note 7) 1ms, typ Case 2 (Note 8) 1ms, typ |





| Model Name | ON/OFF Logic | Package | Input Voltage | Output Voltage | Output Current | | Efficiency (%) 5.0Vin, 3.3Vdc@6A |
|--------------|--------------|---------------------|---------------------------------------|----------------|----------------|-----------|-------------------------------------|
| | | | | | Min. Load | Max. Load | |
| DOS06-05T | Negative | SMD | 2.4 ~ 5.5Vdc Vin(min)=Vo(set)+0.5V | 0.75 ~ 3.3Vdc | 0A | 6A | 94% |
| DOS06-05T-P | Positive | | | | | | |
| DOH06-05T | Negative | Vertical Mounting | | | | | |
| DOH06-05T-P | Positive | SIP | | | | | |
| DOH06-05TA | Negative | Horizontal Mounting | | | | | |
| DOH06-05TA-P | Positive | SIP | | | | | |

Note

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- External with C_{out} = 1µF ceramic//10µF tantalum capacitors.
- External with C_{out} = 2x150uF polymer capacitors.
- Output voltage programmable from 0.75V to 3.3V by connecting a single resistor (shown as R_{trim} in Table 1) between the TRIM and GND pins of the module. To calculate the value of the resistor **R_{trim}** for a particular output voltage **V_o**, use the following equation:

$$R_{trim} = \left[\frac{21070}{V_o - 0.7525} - 5110 \right] \Omega$$

- 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 C_{in} is 2x150µF low-ESR polymer capacitors // 2x47µF ceramic capacitors at least.
- Device code with suffix "-P" – Positive logic(On/Off is open collector/drain logic input; Signal referenced to GND)
Device code with no suffix – Negative logic (On/Off pin is open collector/drain logic input with external pull –up resistor; signal referenced to GND)
- 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 form instant at which Von/off=0.3V until Vo=10% of Vo(set))

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

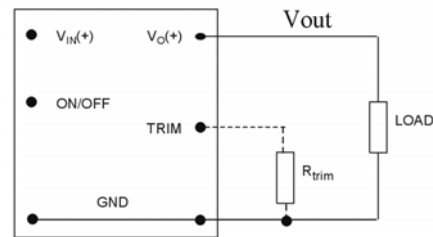
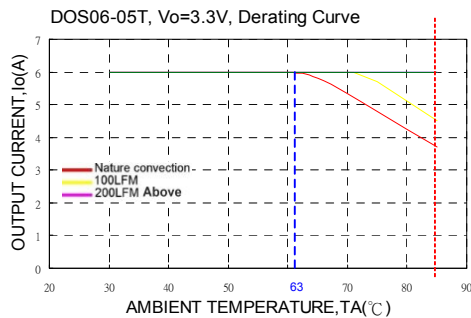
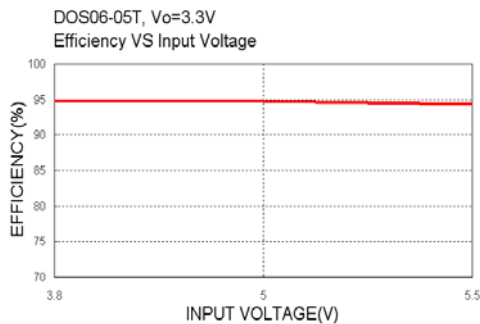
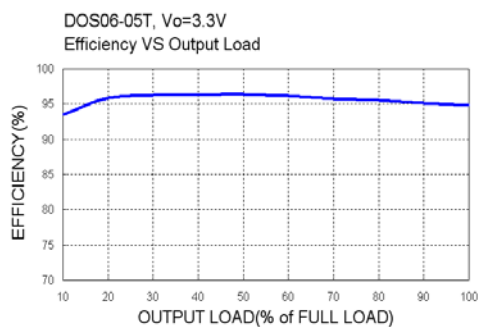


Fig. 1

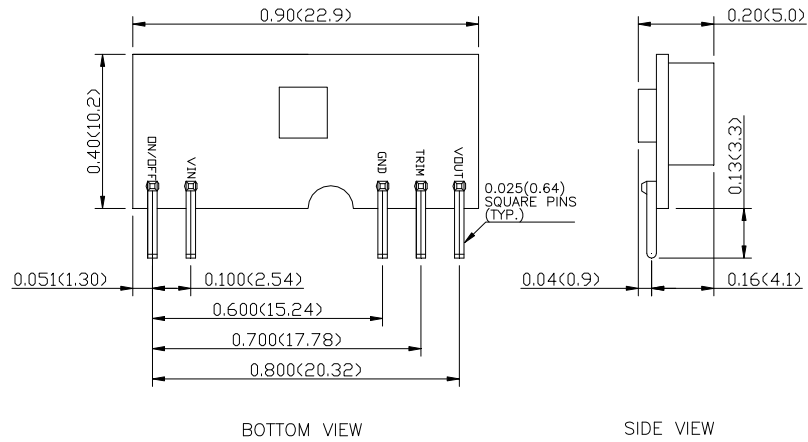


| Vo(set) (V) | Rtrim (KΩ) |
|-------------|------------|
| 0.7525 | Open |
| 1.2 | 41.973 |
| 1.5 | 23.077 |
| 1.8 | 15.004 |
| 2.5 | 6.974 |
| 3.3 | 3.160 |

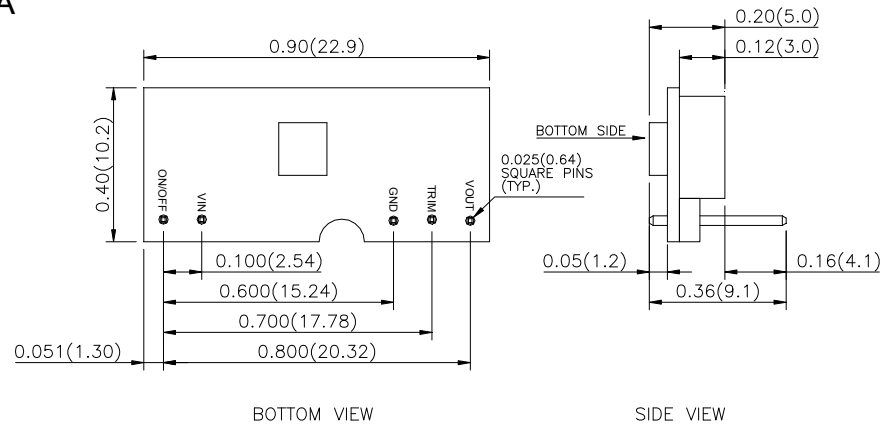




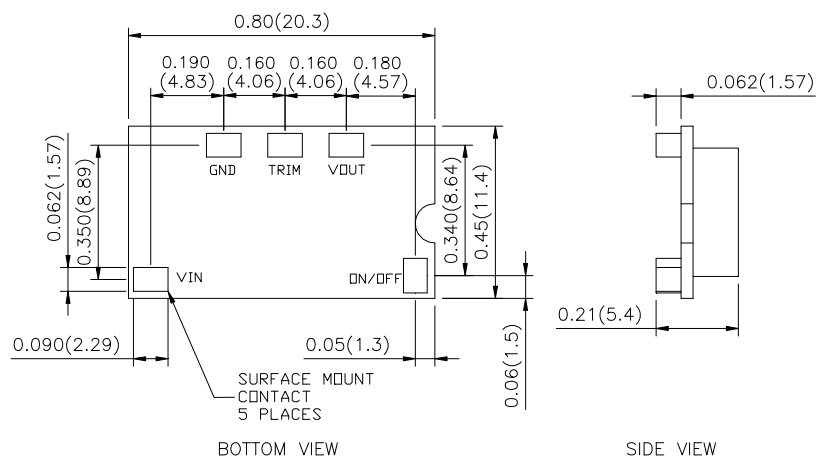
DOH06-05T



DOH06-05TA



DOS06-05T



1. All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

