



# THE DATASHEET OF MC78M05CDT-TP



## Features

- Output Current in Excess of 0.5 Ampere
- Internal Thermal Overload Protection
- Internal Short-circuit Current Limiting
- High Power Dissipation Capability
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

## Maximum Ratings

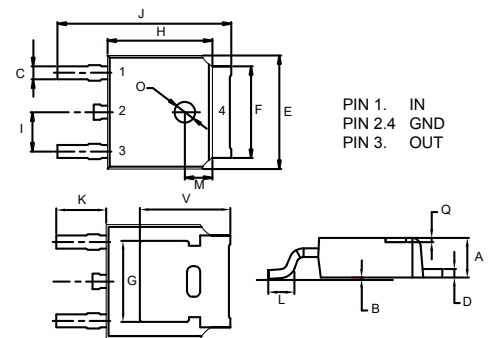
| Parameter  | Symbol          | Value   | Unit |
|--|-----------------|---------|------|
| Input Voltage                                    | $V_I$           | 35      | V    |
| Power Dissipation                                | $P_D$           | 1.25    | W    |
| Operating Junction Temperature $T_{OJ}^* \wedge$ | $T_{OPR}$       | 0~125   | °C   |
| Storage Temperature Range                        | $T_{STG}$       | -65~125 | °C   |
| Thermal Resistance junction to Ambient           | $R_{\theta JA}$ | 100     | °C/W |

Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

# Three-Terminal Positive Voltage Regulators

## DPAK(TO-252)



### DIMENSIONS

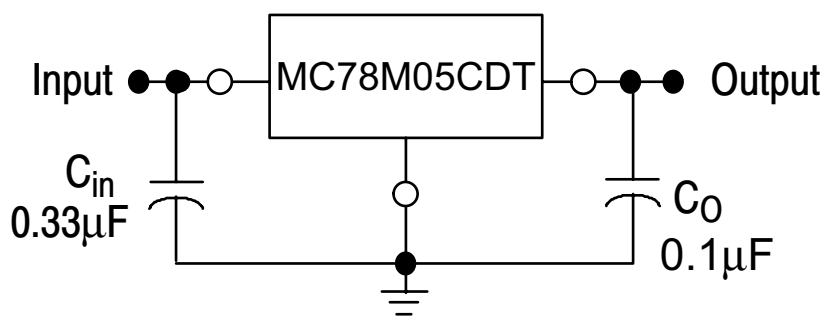
| DIM | INCHES |       | MM   |       | NOTE |
|-----|--------|-------|------|-------|------|
|     | MIN    | MAX   | MIN  | MAX   |      |
| A   | 0.087  | 0.094 | 2.20 | 2.40  |      |
| B   | 0.000  | 0.005 | 0.00 | 0.13  |      |
| C   | 0.026  | 0.034 | 0.66 | 0.86  |      |
| D   | 0.018  | 0.023 | 0.46 | 0.58  |      |
| E   | 0.256  | 0.264 | 6.50 | 6.70  |      |
| F   | 0.201  | 0.215 | 5.10 | 5.46  |      |
| G   | 0.190  |       | 4.83 |       | TYP. |
| H   | 0.236  | 0.244 | 6.00 | 6.20  |      |
| I   | 0.086  | 0.094 | 2.18 | 2.39  |      |
| J   | 0.386  | 0.409 | 9.80 | 10.40 |      |
| K   | 0.114  |       | 2.90 |       | TYP. |
| L   | 0.055  | 0.067 | 1.40 | 1.70  |      |
| M   | 0.063  |       | 1.60 |       | TYP. |
| O   | 0.043  | 0.051 | 1.10 | 1.30  |      |
| Q   | 0.000  | 0.012 | 0.00 | 0.30  |      |
| V   | 0.211  |       | 5.35 |       | TYP. |

**Electrical Characteristics**

( $V_i=10V$ ,  $I_o=350mA$ ,  $0^\circ C < T_j < 125^\circ C$ ,  $C_i=0.33\mu F$ ,  $C_o=0.1\mu F$ , Unless Otherwise Specified)

| Parameter                    | Symbol       | Test Conditions  | Min  | Typ | Max  | Unit    |
|------------------------------|--------------|--|------|-----|------|---------|
| Output Voltage               | $V_o$        | $T_j=25^\circ C$   | 4.8  | 5.0 | 5.2  | V       |
|                              |              | $7V \leq V_i \leq 20V$ , $5mA \leq I_o \leq 350mA$ , $P_D=15W$     | 4.75 | 5.0 | 5.25 | V       |
| Load Regulation              | $\Delta V_o$ | $5mA \leq I_o \leq 500mA$ , $T_j=25^\circ C$                       | -    | 15  | 100  | mV      |
|                              |              | $5mA \leq I_o \leq 200mA$ , $T_j=25^\circ C$                       | -    | 5.0 | 50   | mV      |
| Line Regulation              | $\Delta V_o$ | $7.0V \leq V_i \leq 25V$ , $I_o=0.5A$                              | -    | 3.0 | 100  | mV      |
|                              |              | $8.0V \leq V_i \leq 25V$ , $I_o=0.5A$                              | -    | 1.0 | 50   | mV      |
| Quiescent Current            | $I_q$        | $T_j=25^\circ C$   | -    | 4.2 | 6.0  | mA      |
| Quiescent Current Change     | $\Delta I_q$ | $8V \leq V_i \leq 25V$ , $I_o=200mA$ , $5mA \leq I_o \leq 350mA$   | -    | -   | 0.8  | mA      |
|                              |              |  | -    | -   | 0.5  | mA      |
| Output Noise Voltage         | $V_N$        | $10Hz \leq f \leq 120Hz$   | -    | 40  | 200  | $\mu V$ |
| Ripple Rejection             | RR           | $8V \leq V_i \leq 18V$ , $f=120Hz$ , $I_o=0.3A$ , $T_j=25^\circ C$ | 62   | 80  | -    | dB      |
| Dropout Voltage              | $V_d$        | $I_o=0.35A$ , $T_j=25^\circ C$                                     | -    | 2.0 | 2.5  | V       |
| Output Short Circuit Current | $I_{sc}$     | $V_i=10V$ , $T_j=25^\circ C$                                       | -    | 300 | -    | mA      |
| Peak Output Current          | $I_{PK}$     | $T_j=25^\circ C$   | -    | 0.7 | -    | A       |

**Typical Application**



Curve Characteristics

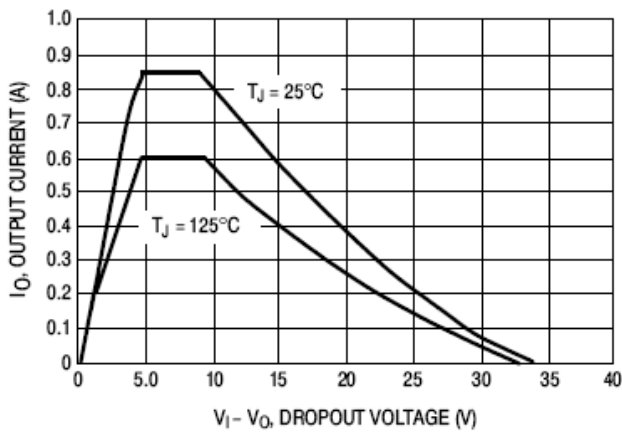


Figure 1. Peak Output Current versus Dropout Voltage

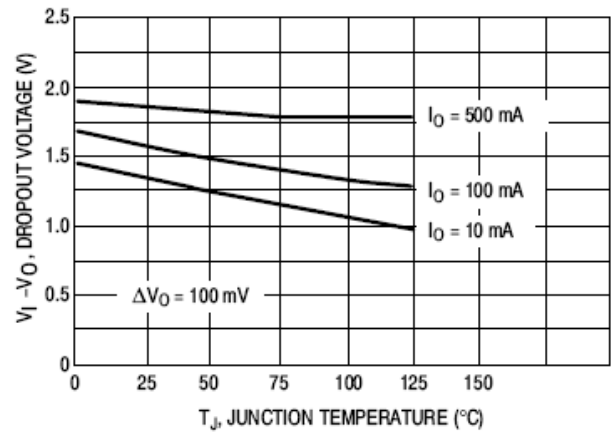


Figure 2. Dropout Voltage versus Junction Temperature

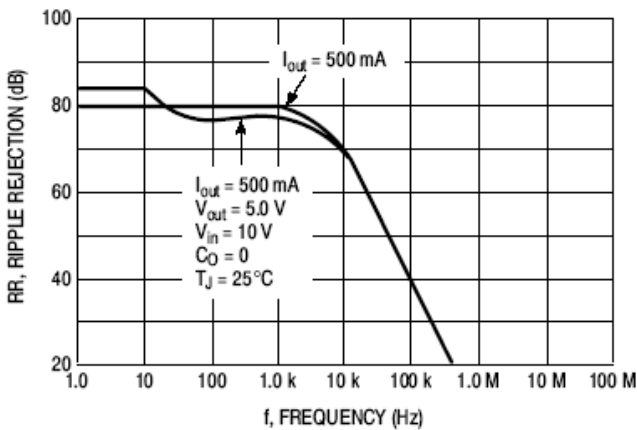


Figure 3. Ripple Rejection versus Frequency

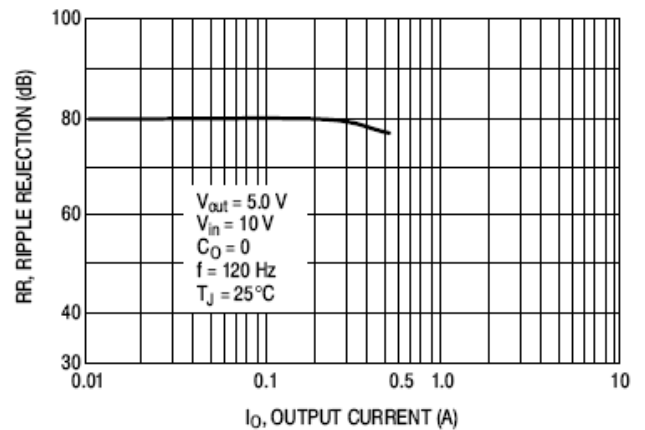


Figure 4. Ripple Rejection versus Output Current

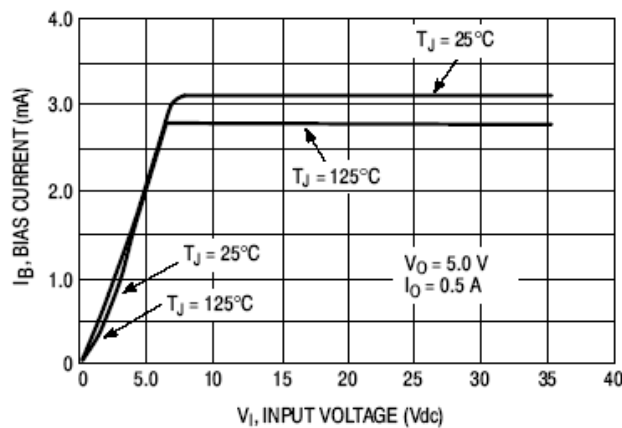


Figure 5. Bias Current versus Input Voltage

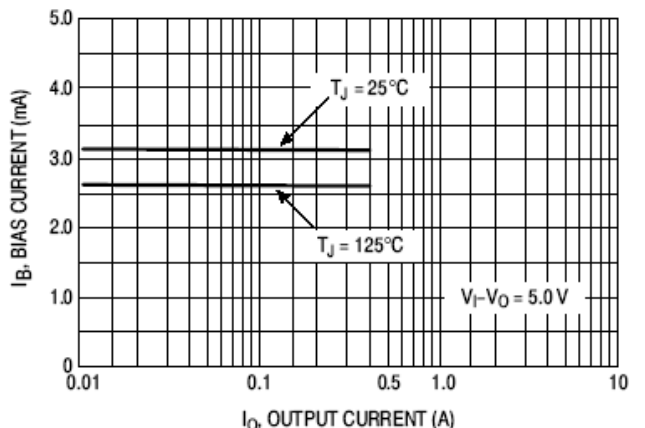


Figure 6. Bias Current versus Output Current

## Ordering Information

| Device         | Packing                |
|----------------|------------------------|
| Part Number-TP | Tape&Reel:2.5Kpcs/Reel |

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