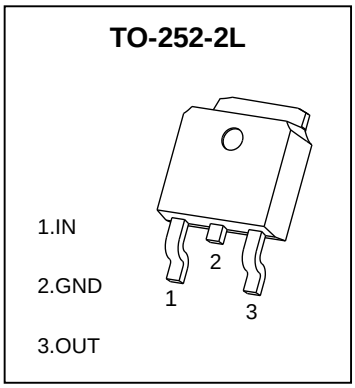
# GP78M12D

**Three-terminal positive voltage regulator**

## GP78M12D

**TO-252-2L**




### Feature

- Thermal Overload Protection
- Short Circuit Protection
- Output Voltage Of 12V
- Output Current Of 0.5A
- Output Transition Safe-Area Compensation

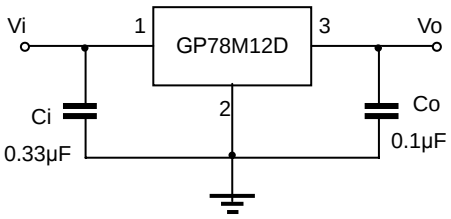
### Absolute Maximum Ratings ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 35 | V |
| Thermal Resistance from Junction to Air | $R_{\theta JA}$ | 80 | ℃/W |
| Operating Junction Temperature Range | $T_{OPR}$ | -40~+125 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -65~+150 | ℃ |
| Power Dissipation | $P_D$ | 1.65 | W |

### Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

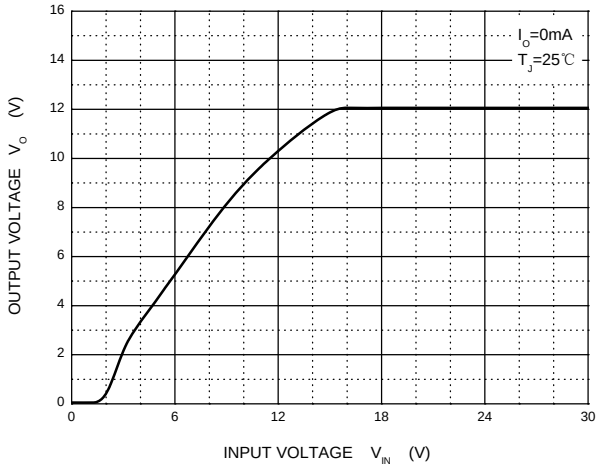
| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | $V_O$ | $V_{IN}$ = 19V, $I_O$ = 350mA | 11.5 | 12 | 12.5 | V |
| Load Regulation | $\Delta V_O$ | $V_{IN}$ = 14.5~30V,$I_O$ = 200mA | | | 100 | mV |
| | | $V_{IN}$ = 16~30V,$I_O$ = 200mA | | | 50 | mV |
| Line Regulation | $\Delta V_O$ | $V_{IN}$ = 19V, $I_O$ = 5~500mA | | | 240 | mV |
| | | $V_{IN}$ = 19V, $I_O$ = 5~200mA | | | 120 | mV |
| Quiescent Current | Iq | $V_{IN}$ = 19V,$I_O$ = 350mA | | | 5 | mA |
| Quiescent Current Change | $\Delta$Iq | $I_O$ = 5~350mA, $V_{IN}$ = 19V | | | 0.5 | mA |
| | | $V_{IN}$ = 14.5~30V, $I_O$ = 200mA | | | 0.8 | mA |
| Dropout Voltage | $V_{drop}$ | $I_O$ = 350mA | | 2 | 3 | V |
| Short Circuit Current | $I_{SC}$ | $V_{IN}$ = 19V,$I_O$ = 0mA | | 240 | | mA |

### Typical Application

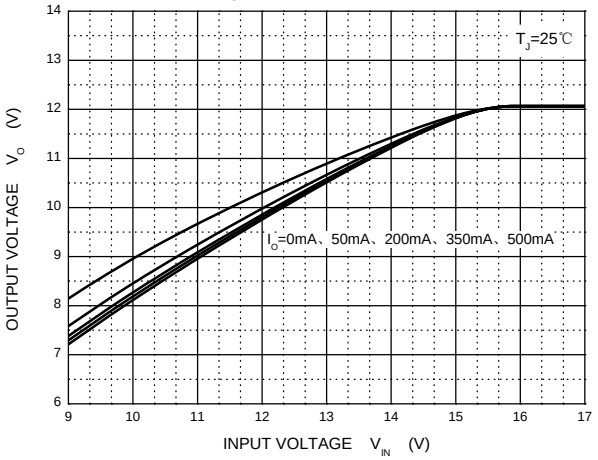


## Typical Characteristics

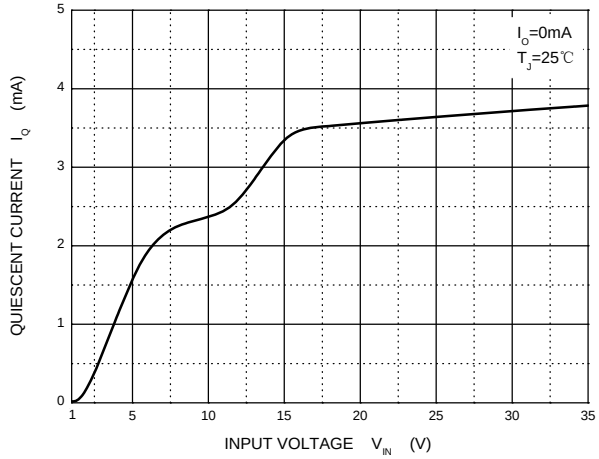
**Output Characteristics**



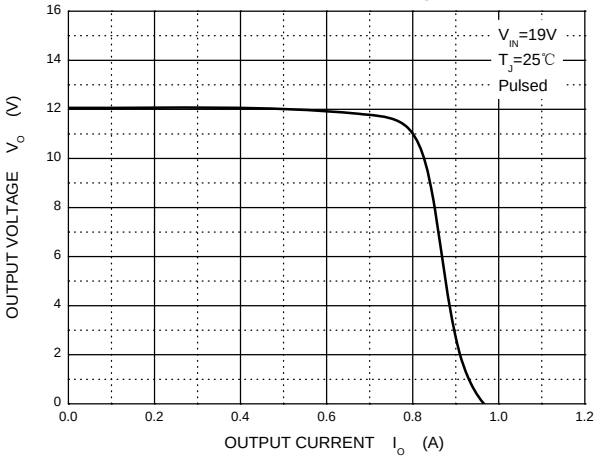

**Dropout Characteristics**



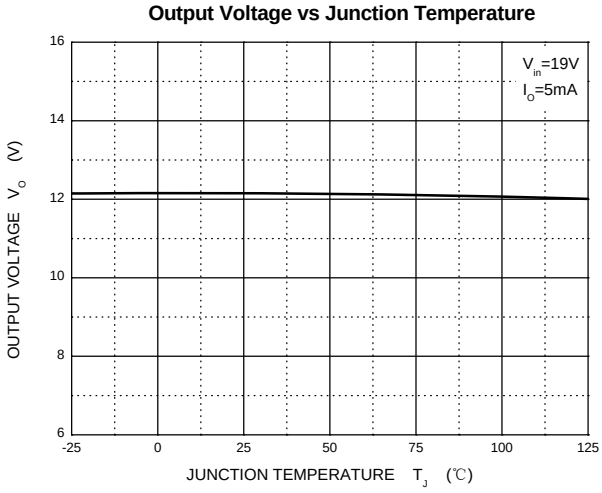

**Quiescent Current vs Input Voltage**



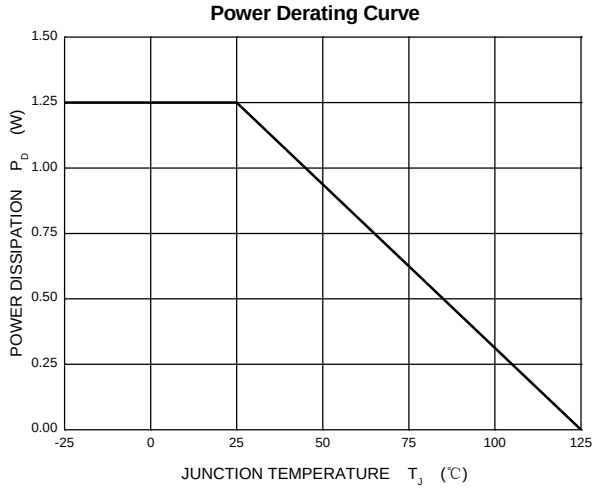

**Current Cut-off Grid Voltage**



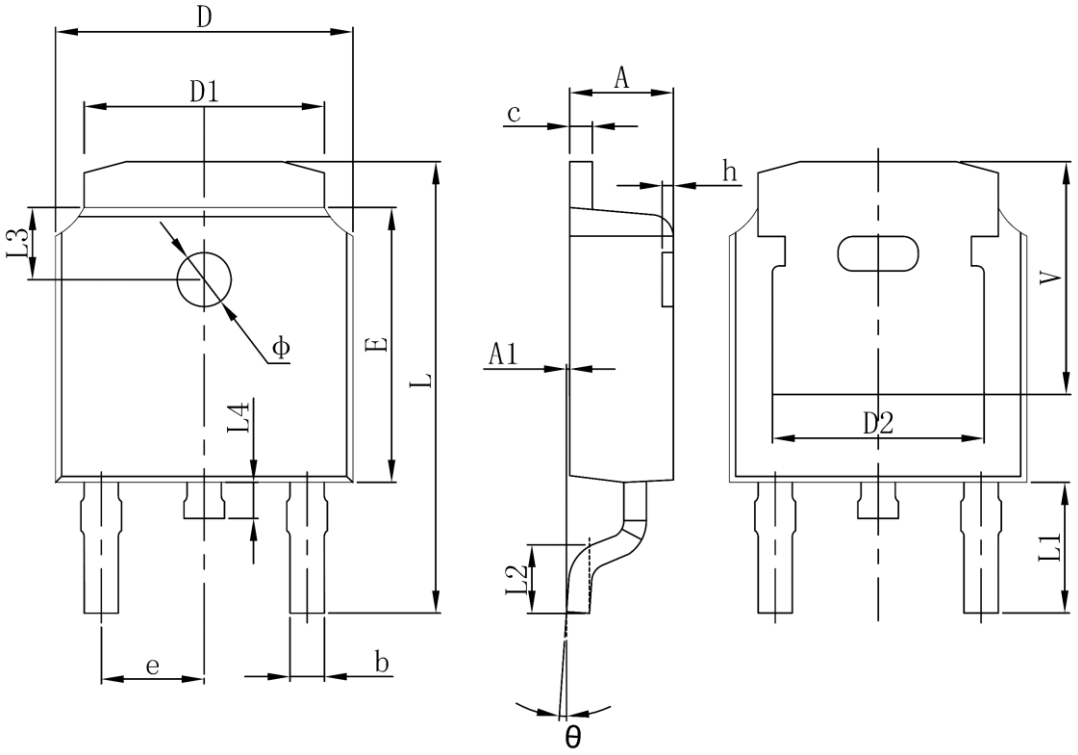

**Output Voltage vs Junction Temperature**




**Power Derating Curve**



## TO-252-2L Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.635 | 0.860 | 0.025 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.830REF | | 0.190REF | |
| E | 6.000 | 6.300 | 0.236 | 0.248 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.712 | 10.312 | 0.382 | 0.406 |
| L1 | 2.900REF | | 0.114REF | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600REF | | 0.063REF | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.250REF | | 0.207REF | |

**Attention：**

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.