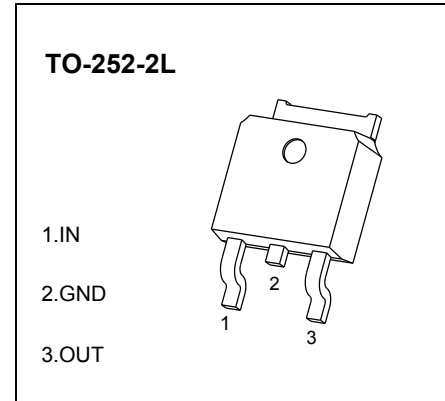


VC78M12 Three-terminal positive voltage regulator

FEATURES

- Maximum output current
 $I_{OM}: 0.5\text{ A}$
- Output voltage
 $V_O: 12\text{ V}$
- Continuous total dissipation
 $P_D: 1.25\text{ W}$ ($T_a = 25\text{ }^\circ\text{C}$)



ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

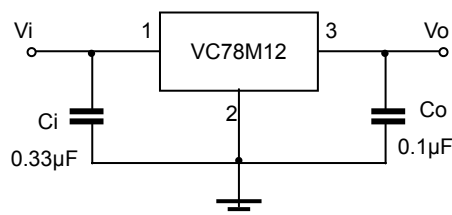
| Parameter | Symbol | Value | Unit |
|---|-----------------|----------|--------------------|
| Input Voltage | V_i | 35 | V |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 80 | $^\circ\text{C/W}$ |
| Operating Junction Temperature Range | T_{OPR} | -25~+125 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -65~+150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($V_i=19\text{V}$, $I_o=350\text{mA}$, $C_i=0.33\mu\text{F}$, $C_o=0.1\mu\text{F}$, unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit | |
|--------------------------|--------------|---|--------------------------|------|-----|------|-------------------|
| Output Voltage | V_o | | 25 $^\circ\text{C}$ | 11.5 | 12 | 12.5 | V |
| | | $14.5\leq V_i\leq 27\text{V}$, $I_o=5\text{mA}-350\text{mA}$ | -25-125 $^\circ\text{C}$ | 11.4 | 12 | 12.6 | V |
| Load Regulation | ΔV_o | $I_o=5\text{mA}-500\text{mA}$ | 25 $^\circ\text{C}$ | | 25 | 240 | mV |
| | | $I_o=5\text{mA}-200\text{mA}$ | 25 $^\circ\text{C}$ | | 10 | 120 | mV |
| Line Regulation | ΔV_o | $14.5\text{V}\leq V_i\leq 30\text{V}$, $I_o=200\text{mA}$ | 25 $^\circ\text{C}$ | | 10 | 100 | mV |
| | | $16\text{V}\leq V_i\leq 30\text{V}$, $I_o=200\text{mA}$ | 25 $^\circ\text{C}$ | | 3 | 50 | mV |
| Quiescent Current | I_q | | 25 $^\circ\text{C}$ | | 4.6 | 6 | mA |
| Quiescent Current Change | ΔI_q | $14.5\text{V}\leq V_i\leq 30\text{V}$, $I_o=200\text{mA}$ | -25-125 $^\circ\text{C}$ | | | 0.8 | mA |
| | | $5\text{mA}\leq I_o\leq 350\text{mA}$ | -25-125 $^\circ\text{C}$ | | | 0.5 | mA |
| Output Noise Voltage | V_N | $10\text{Hz}\leq f\leq 100\text{KHz}$ | 25 $^\circ\text{C}$ | | 75 | | $\mu\text{V}/V_o$ |
| Ripple Rejection | RR | $15\leq V_i\leq 25\text{V}$, $f=120\text{Hz}$, $I_o=300\text{mA}$ | -25-125 $^\circ\text{C}$ | 55 | 80 | | dB |
| Dropout Voltage | V_d | $I_o=350\text{mA}$ | 25 $^\circ\text{C}$ | | 2 | | V |
| Short Circuit Current | I_{sc} | $V_i=19\text{V}$ | 25 $^\circ\text{C}$ | | 240 | | mA |
| Peak Current | I_{pk} | | 25 $^\circ\text{C}$ | | 0.7 | | A |

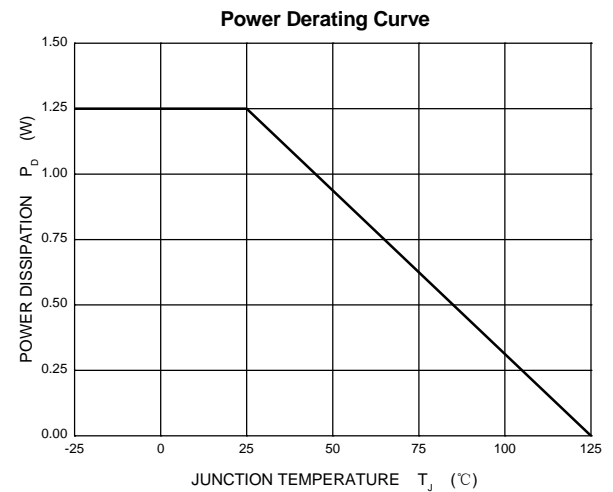
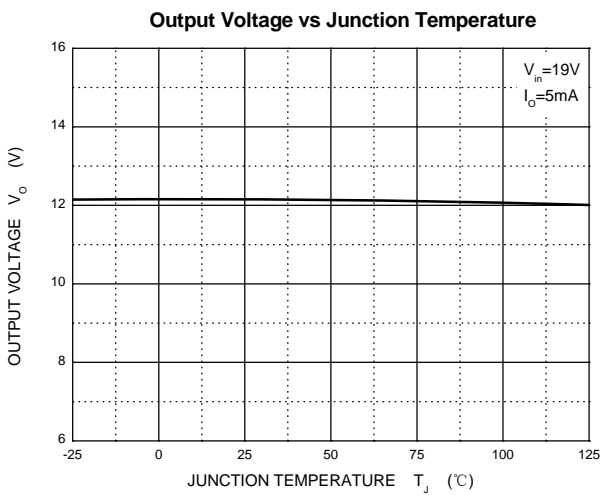
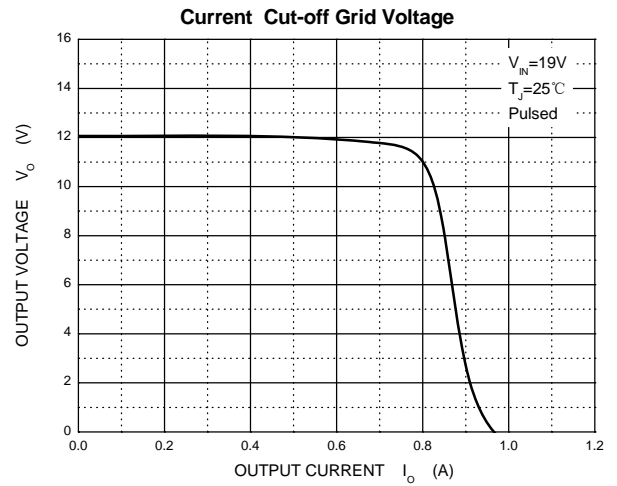
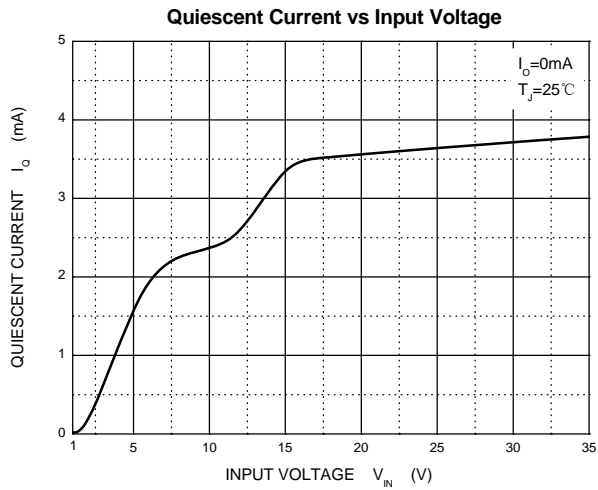
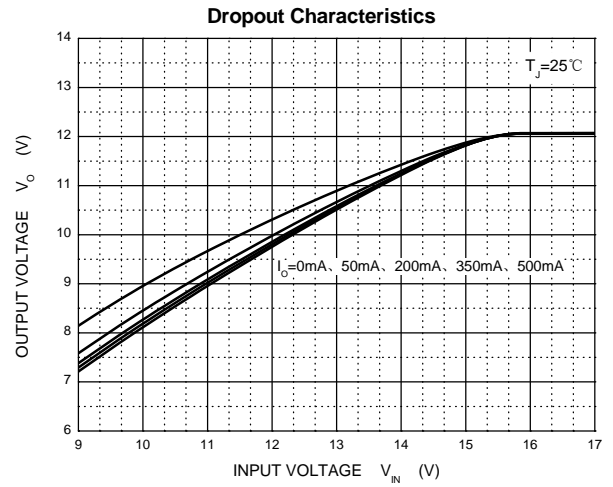
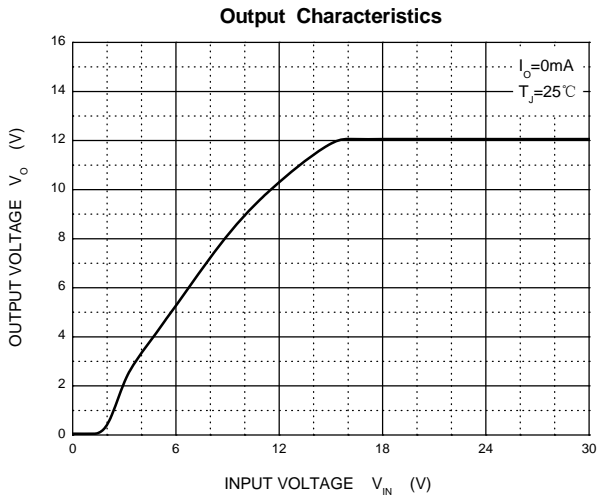
* Pulse test.

TYPICAL APPLICATION

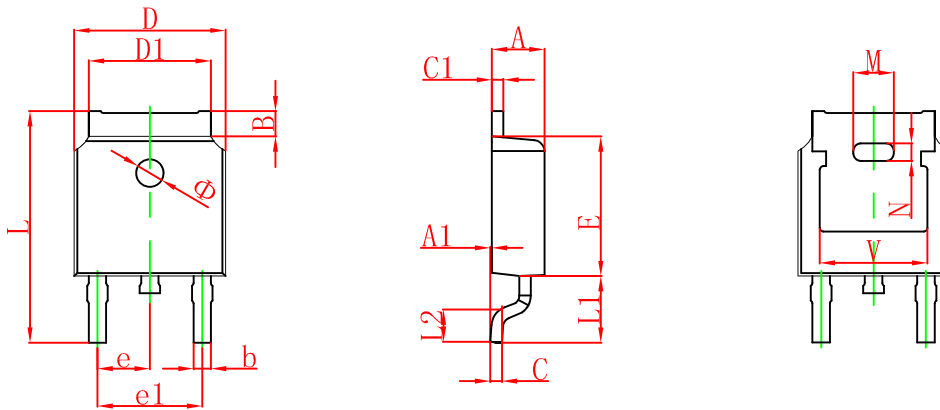


Note: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

Typical Characteristics

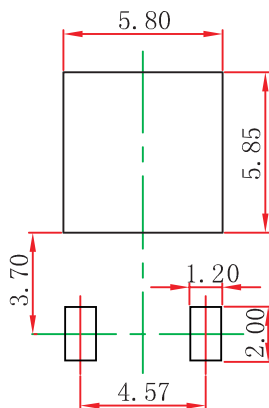


TO-252(4R)-2L Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.380 | 0.087 | 0.094 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| B | 0.800 | 1.400 | 0.031 | 0.055 |
| b | 0.710 | 0.810 | 0.028 | 0.032 |
| c | 0.460 | 0.560 | 0.018 | 0.022 |
| c1 | 0.460 | 0.560 | 0.018 | 0.022 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.130 | 5.460 | 0.202 | 0.215 |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.286 TYP. | | 0.090 TYP. | |
| e1 | 4.327 | 4.727 | 0.170 | 0.186 |
| M | 1.778REF. | | 0.070REF. | |
| N | 0.762REF. | | 0.018REF. | |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.9REF. | | 0.114REF. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| V | 4.830 REF. | | 0.190 REF. | |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |

TO-252(4R)-2L Suggested Pad Layout

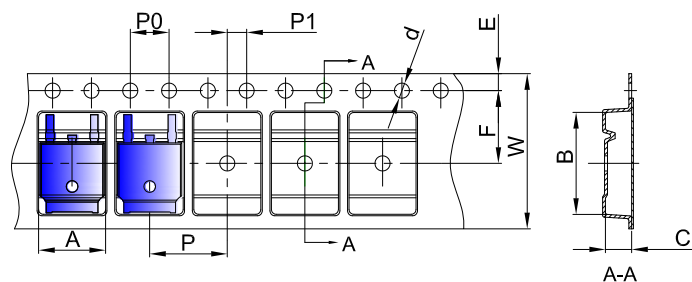


Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

To-252(4R)-2L Tape and Reel

TO-252 Embossed Carrier Tape

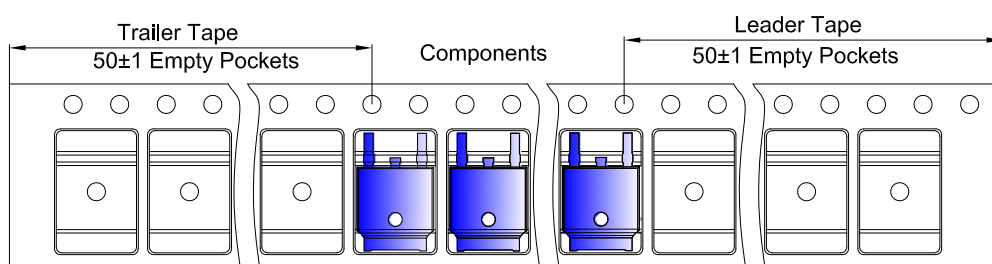


Packaging Description:

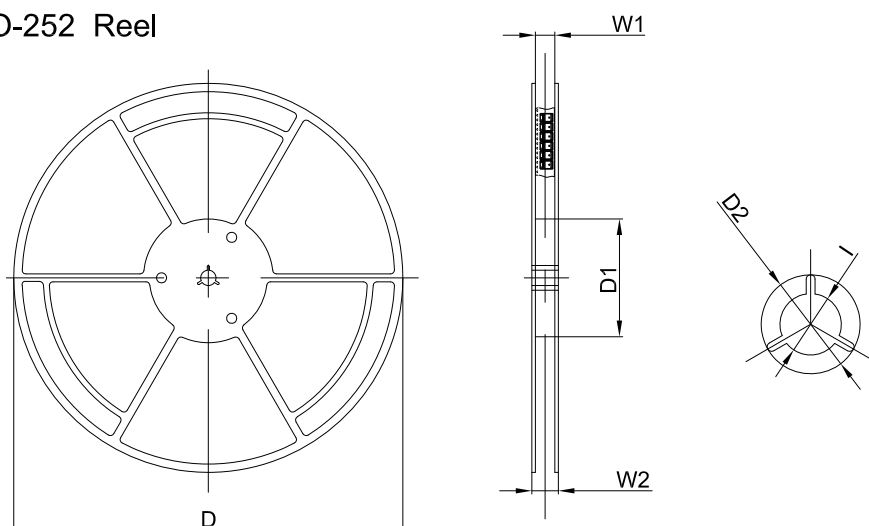
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|------|-------|------|-------|------|------|------|------|------|-------|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| TO-252 | 6.90 | 10.50 | 2.70 | Ø1.55 | 1.75 | 7.50 | 4.00 | 8.00 | 2.00 | 16.00 |

TO-252 Tape Leader and Trailer



TO-252 Reel



| Dimensions are in millimeter | | | | | | |
|------------------------------|--------|--------|--------|-------|-------|--------|
| Reel Option | D | D1 | D2 | W1 | W2 | I |
| 13" Dia | 330.00 | 100.00 | Ø21.00 | 16.40 | 21.00 | Ø13.00 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|-----------|-----------|-----------|--------------|------------|-----------------|----------|
| 2,500 pcs | 13inch | 2,500 pcs | 340×336×29 | 25,000 pcs | 353×346×365 | |