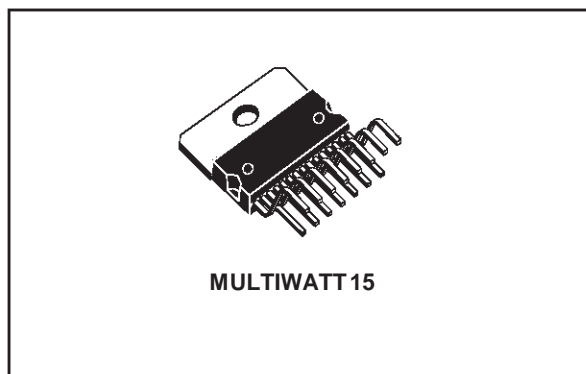


EXTERNALLY ADJUSTABLE MULTIFUNCTION REGULATOR

- 3 OUTPUTS
 - Vo1 : output voltage variable from 5 to 12 V;
limit current : 1.2 A.
 - Vo2 : output voltage variable from 5 to 12 V;
limit current : 1.2 A.
 - Vo3 : output voltage variable from 5 to 12 V;
limit current : 1.2 A.
- ENABLE INPUT FOR EACH REGULATOR
- FEEDBACK INPUT FOR EACH REGULATOR
- SHORT CIRCUIT PROTECTION TO GROUND
- OVERCURRENT WARNING
- DRIVER FOR EXTERNAL SCR (CROWBAR PROTECTION)
- THERMAL SHUTDOWN



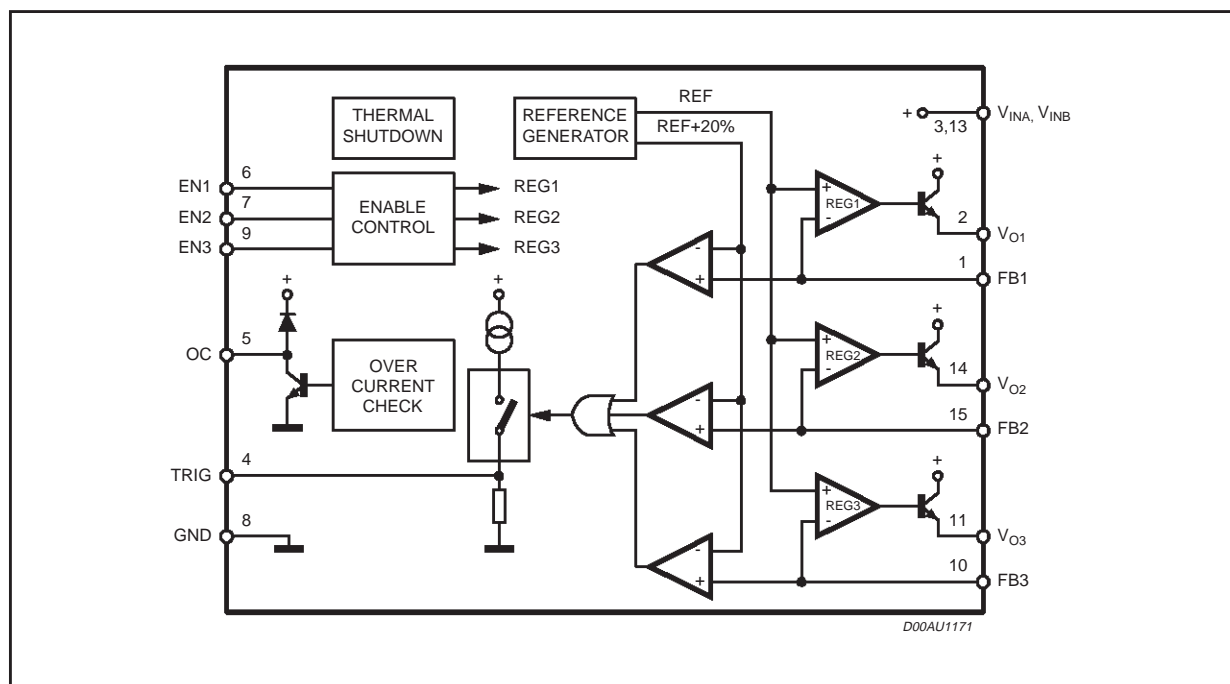
Each regulator is current limited and furthermore an OR-ed warning signal is output (open collector, active low output) when the current in a regulator goes above an over-current threshold (1 A typ for any regulator).

When one output voltage is higher than 20% typ of its nominal value (for instance in case of input-to-output short circuit), the crowbar output pin is activated, triggering an external SCR (connected between input and ground) that blows the input line fuse.

DESCRIPTION

It is a monolithic Multifunction Voltage Regulator; it contains 3 regulators, (REG1, REG2, REG3) each one with an enable input and a feedback input, to allow the voltage setting via external resistive divider.

BLOCK DIAGRAM



PIN CONNECTION

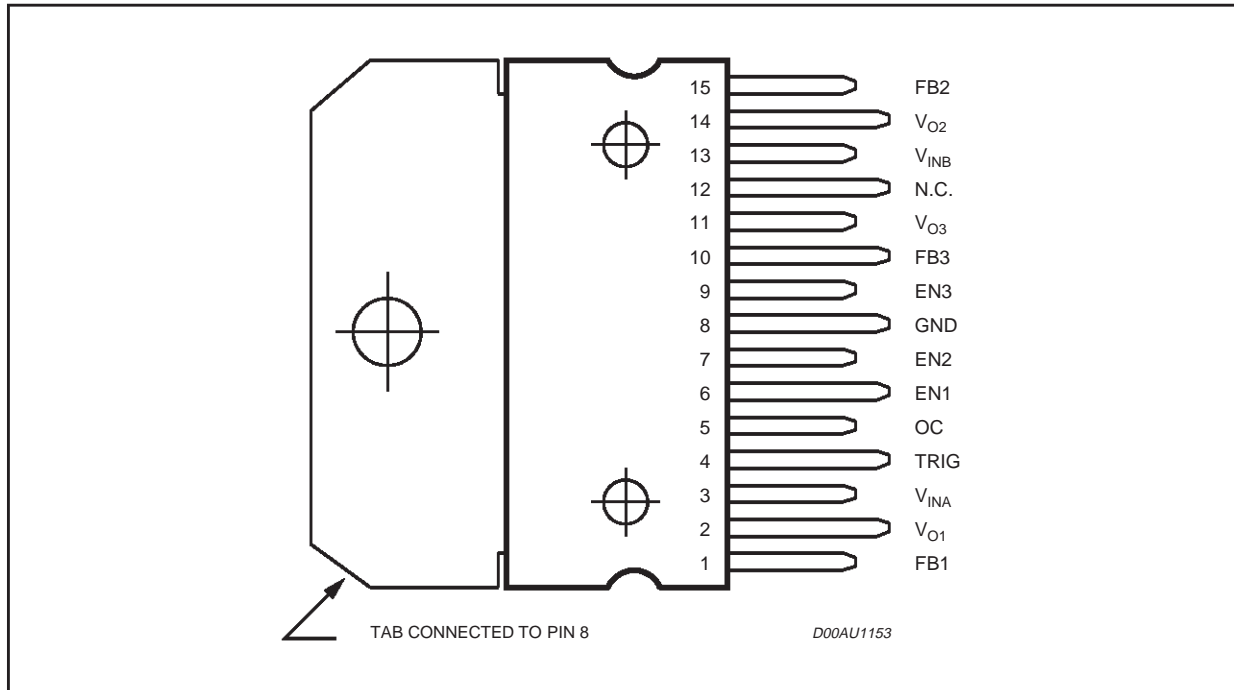


Table 1. Pin Description

| No. Pin | Name | Function |
|---------|------|-----------------------------------------------|
| 1 | FB1 | REG1 feedback voltage input |
| 2 | Vo1 | REG1 output voltage |
| 3 | VinA | Input DC supply voltage |
| 4 | TRIG | Trigger for external SCR (crowbar protection) |
| 5 | OC | Over current warning output |
| 6 | EN1 | REG1 enable input |
| 7 | EN2 | REG2 enable input |
| 8 | GND | Analog ground |
| 9 | EN3 | REG3 enable input |
| 10 | FB3 | REG3 feedback voltage input |
| 11 | Vo3 | REG3 output voltage |
| 12 | N.C. | Not Connected |
| 13 | VinB | Input DC supply voltage |
| 14 | Vo2 | REG2 output voltage |
| 15 | FB2 | REG2 feedback voltage input |

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|------------------|------------------------------------|----------------------------|------|
| V _{in} | VinA, VinB input DC supply voltage | 40 | V |
| I _o | Vo1, Vo2, Vo3 output currents | internally limited | |
| V _{oc} | OC output voltage | min (15, V _{in}) | V |
| V _{ENx} | ENx input voltage | 15 | V |
| T _{op} | Operating temperature range | 0 to 70 | °C |
| T _{stg} | Storage temperature | - 40 to 150 | °C |

THERMAL DATA

| Symbol | Parameter | Value | Unit |
|------------------------|-------------------------------------|-------|------|
| R _{TH j-case} | Thermal Resistance Junction to Case | 1.8 | °C/W |

ELECTRICAL CHARACTERISTICS (C_{out} = 100nF; V_{in} -V_o = 5V; I_o = 10mA; T_{case} = 25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------|------------|------|------|
| V _{o1} | REG1 output voltage range | | 5 | | 12 | V |
| V(FB1) | REG1 feedback voltage | EN1=ON; | 1.22 | 1.27 | 1.32 | V |
| I _{lim1} | REG1 output current limit | EN1=ON; V _{in} -V _{o1} <12V | 1.20 | 1.70 | | A |
| $\frac{\Delta V_{o1}}{V_{o1}}$ | line regulation | I _{o1} =10mA; V _{in} -V _{o1} =3 to 25 V I _{o1} =10mA; V _{in} -V _{o1} =3 to 12 V | | 0.6 0.1 | 2 | % |
| $\frac{\Delta V_{o1}}{V_{o1}}$ | load regulation | I _{o1} =10 mA to 1.2A I _{o1} =10 mA to 0.5A | | 0.5 0.1 | 2 | % |
| V _{d1} | REG1 drop out | I _{o1} =500mA | | | 2.20 | V |
| SVR1 | REG1 supply voltage rejec. | freq=120 Hz to 1KHz | 60 | | | dB |
| V _{o2} | REG2 output voltage range | | 5 | | 12 | V |
| V(FB2) | REG2 feedback voltage | EN2 = ON; | 1.22 | 1.27 | 1.32 | V |
| I _{lim2} | REG2 output current limit | EN2=ON; V _{in} -V _{o2} <12V | 1.20 | 1.70 | | A |
| $\frac{\Delta V_{o2}}{V_{o2}}$ | line regulation | I _{o2} =10mA; V _{in} -V _{o2} =3 to 25 V I _{o2} =10mA; V _{in} -V _{o2} =3 to 12 V | | 0.6 0.1 | 2 | % |
| $\frac{\Delta V_{o2}}{V_{o2}}$ | load regulation | I _{o2} =10 mA to 1.2A I _{o2} =10 mA to 0.5A | | 0.5 0.1 | 2 | % |
| V _{d2} | REG2 drop out | I _{o2} =500mA | | | 2.2 | V |

ELECTRICAL CHARACTERISTICS (continued)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------|----------------|------|--------|
| SVR2 | REG2 supply voltage rejec. | freq=120 Hz to 1KHz | 60 | | | dB |
| Vo3 | REG3 output voltage range | | 5 | | 12 | V |
| V(FB3) | REG3 feedback voltage | EN3=ON; | 1.22 | 1.27 | 1.32 | V |
| Ilim3 | REG3 output current limit | EN3=ON; Vin-Vo3<12V | 1.20 | 1.70 | | A |
| $\frac{\Delta V_{o3}}{V_{o3}}$ | line regulation | Io3=10mA; Vin-Vo3=3 to 25 V Io3=10mA; Vin-Vo3=3 to 12 V | | 0.6 0.1 | 2 | % |
| $\frac{\Delta V_{o3}}{V_{o3}}$ | load regulation | Io3=10 mA to 1.2A Io3=10 mA to 0.5A | | 0.5 0.1 | 2 | % |
| Vd3 | REG3 drop out | Io3=500mA | | | 2.20 | V |
| SVR3 | REG3 supply voltage rejec. | freq=120 Hz to 1KHz | 60 | | | dB |
| ENx | enable input voltage (active high) | STAND_BY ON | 3.5 | | 0.8 | V V |
| Istby | current consumption in stand_by | EN1=EN2=EN3≤0.5 V | | | 20 | μA |
| ITRIG | current at TRIG output | SCR trigger circuit in ON state; V(TRIG) = 2V | 25 | | | mA |
| ZTRIG | TRIG to GND impedance | SCR trigger circuit in OFF state | | 0.2 | | KΩ |
| V(FB)_TR | FBx voltage for trigger SCR on | any regulator | | 1.52 | | V |
| I(FB) | Feedback's input current | any regulator | | 2 | | μA |
| I(EN) | EN's input current | V(EN) = 5V | | 160 | | μA |
| Ion | current consumption in ON state (current in the external feedback resistors not included) | one regulator ON; Vo = 12V two regulators ON; Vo = 12V three regulators ON; Vo = 12V | | 11 20 29 | | mA |
| V_OC_L | current_warning output voltage | warning conditions Isink < 3 mA | | | 0.40 | V |
| I_OC_H | current_warning leakage | no warning conditions V(OC) = 15V | | | 1 | μA |
| I_oc/Ilim | warning threshold current / limit current | any regulator Vin - Vout < 12V | | 0.6 | | |

The current protection is a function of the V_{ce} , i.e. the drop between input and output voltages ($V_{in}-V_o$). The shape of that relationship is shown in following figure 1.

Figure 1.

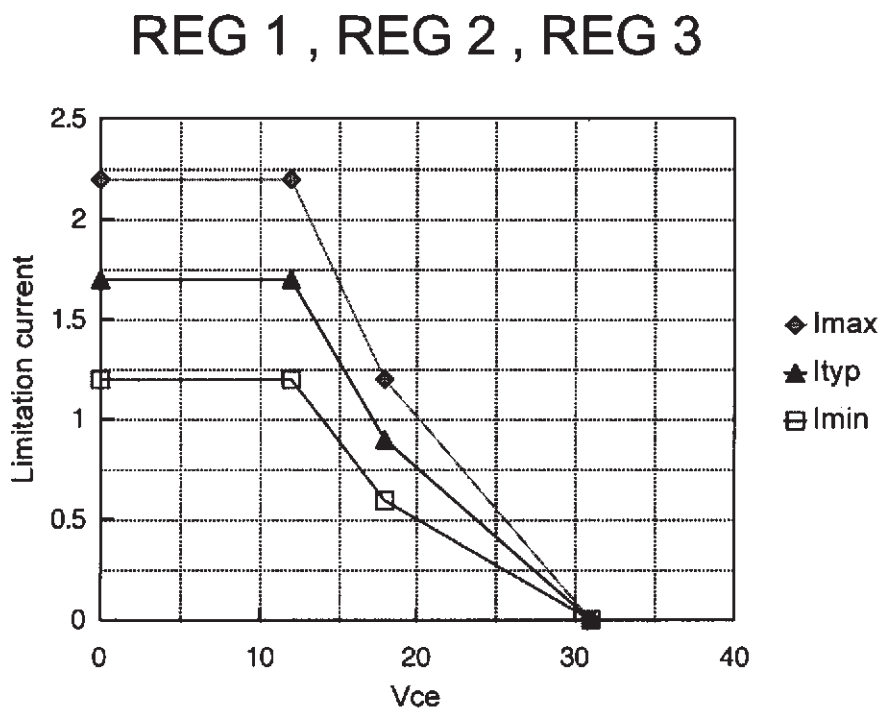
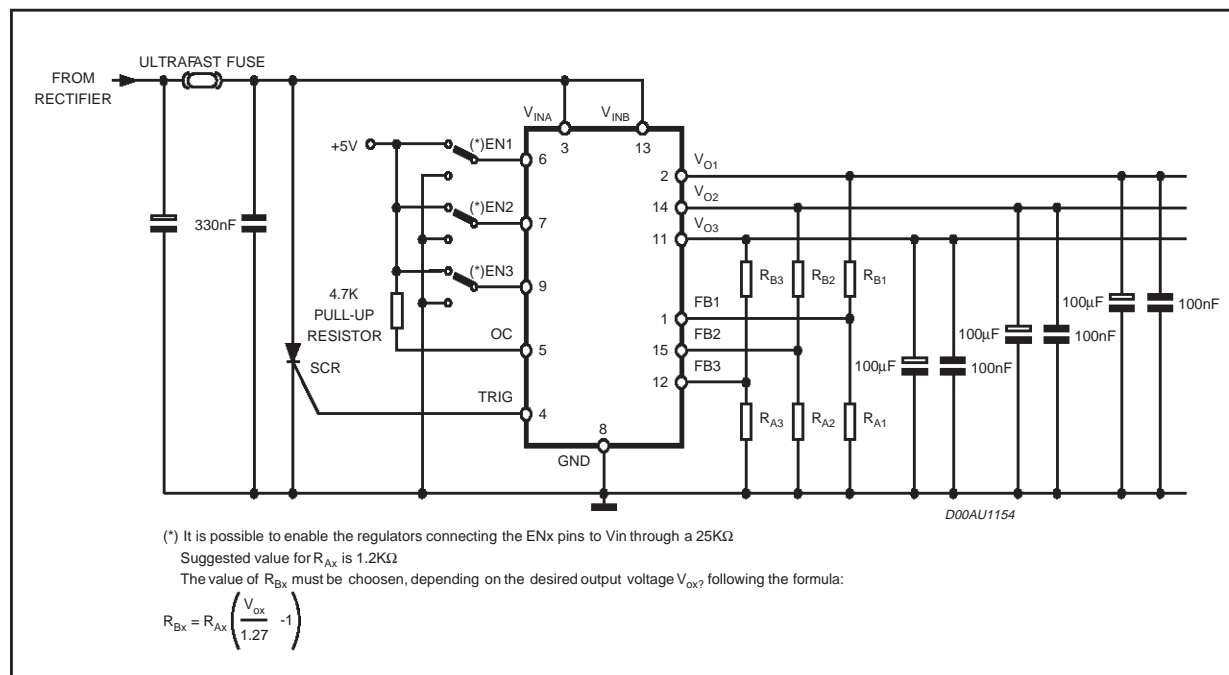
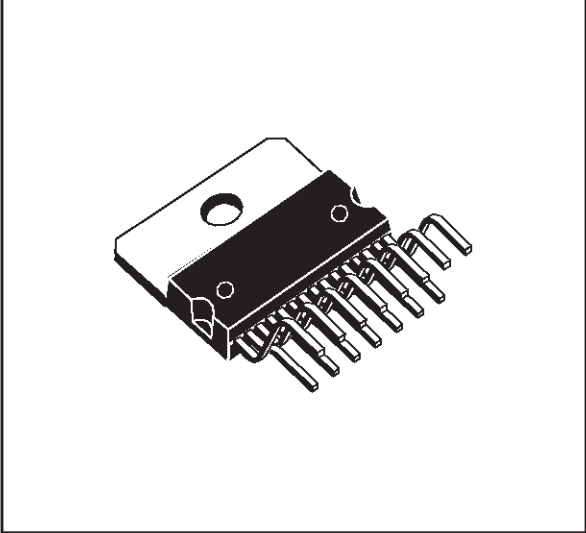


Figure 2. REGULATOR TYPICAL APPLICATION

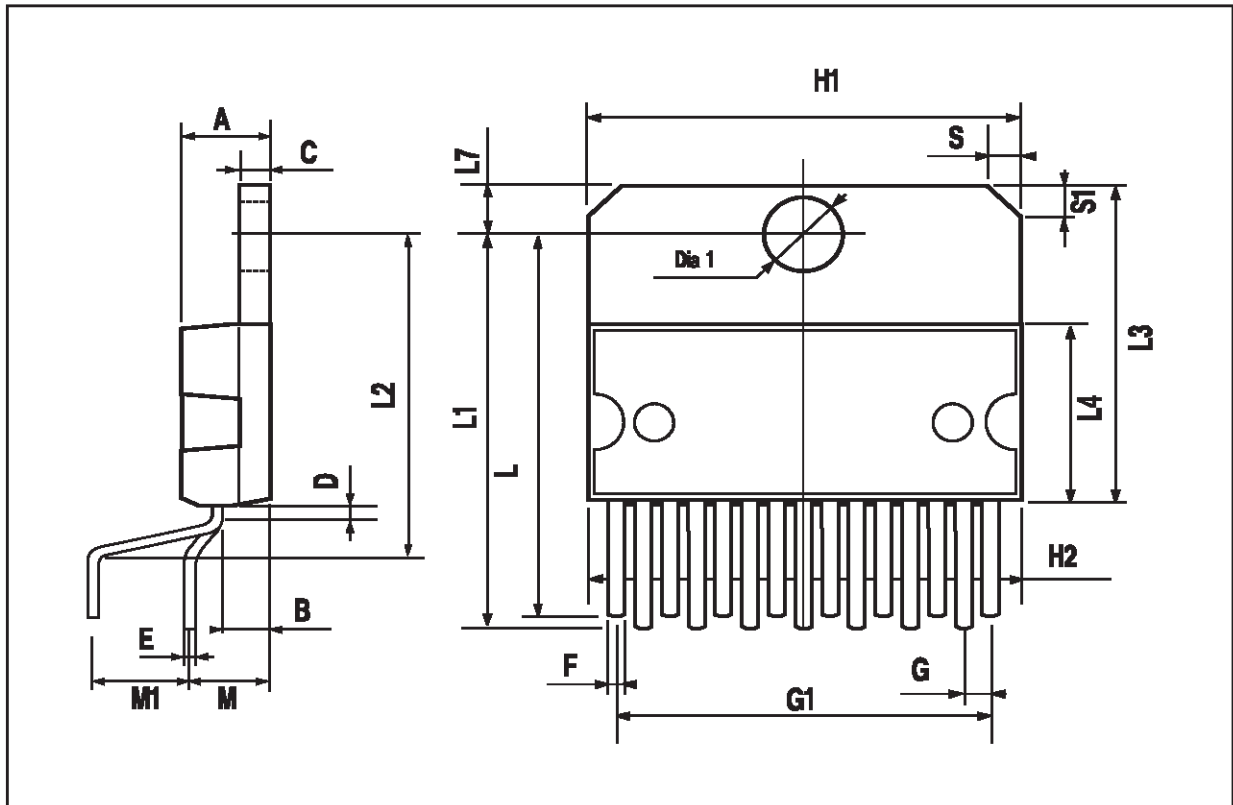


| DIM. | mm | | | inch | | |
|------|-------|-------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | | 5 | | | 0.197 |
| B | | | 2.65 | | | 0.104 |
| C | | | 1.6 | | | 0.063 |
| D | | 1 | | | 0.039 | |
| E | 0.49 | | 0.55 | 0.019 | | 0.022 |
| F | 0.66 | | 0.75 | 0.026 | | 0.030 |
| G | 1.02 | 1.27 | 1.52 | 0.040 | 0.050 | 0.060 |
| G1 | 17.53 | 17.78 | 18.03 | 0.690 | 0.700 | 0.710 |
| H1 | 19.6 | | | 0.772 | | |
| H2 | | | 20.2 | | | 0.795 |
| L | 21.9 | 22.2 | 22.5 | 0.862 | 0.874 | 0.886 |
| L1 | 21.7 | 22.1 | 22.5 | 0.854 | 0.870 | 0.886 |
| L2 | 17.65 | | 18.1 | 0.695 | | 0.713 |
| L3 | 17.25 | 17.5 | 17.75 | 0.679 | 0.689 | 0.699 |
| L4 | 10.3 | 10.7 | 10.9 | 0.406 | 0.421 | 0.429 |
| L7 | 2.65 | | 2.9 | 0.104 | | 0.114 |
| M | 4.25 | 4.55 | 4.85 | 0.167 | 0.179 | 0.191 |
| M1 | 4.63 | 5.08 | 5.53 | 0.182 | 0.200 | 0.218 |
| S | 1.9 | | 2.6 | 0.075 | | 0.102 |
| S1 | 1.9 | | 2.6 | 0.075 | | 0.102 |
| Dia1 | 3.65 | | 3.85 | 0.144 | | 0.152 |

OUTLINE AND MECHANICAL DATA



Multiwatt15 V



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