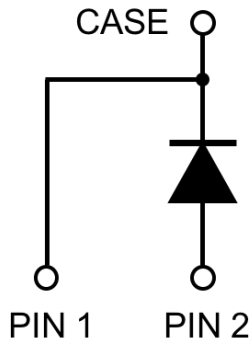


Package TO-220-2L



Inner Circuit



Product Summary

| | | |
|-------|---|---|
| V_R | 1200 V | |
| I_F | 26A ($T_c=110^\circ\text{C}$) | 20A ($T_c=133^\circ\text{C}$) |
| Q_C | 48nC | |



Features

- ◆ Low Conduction and Switching Loss
- ◆ Positive Temperature Coefficient on V_F
- ◆ Temperature Independent Switching Behavior
- ◆ Fast Reverse Recovery
- ◆ High Surge Current Capability
- ◆ Pb-free lead plating

Benefits

- ◆ Higher System Efficiency
- ◆ Parallel Device Convenience
- ◆ High Temperature Application
- ◆ High Frequency Operation
- ◆ Hard Switching & High Reliability
- ◆ Environmental Protection

Applications

- ◆ SMPS
- ◆ PFC
- ◆ Solar/ Wind Renewable Energy
- ◆ Power Inverters
- ◆ Motor Drives
- ◆ UPS

Maximum Ratings

| Parameter | Symbol | Test Conditions | Value | Unit |
|---------------------------------|-----------|---------------------------|-------|------|
| Peak Repetitive Reverse Voltage | V_{RRM} | $T_J = 25^\circ\text{C}$ | 1200 | V |
| Peak Reverse Surge Voltage | V_{RSM} | $T_J = 25^\circ\text{C}$ | 1200 | V |
| DC Blocking Voltage | V_R | $T_J = 25^\circ\text{C}$ | 1200 | V |
| Continuous Forward Current | I_F | $T_C = 25^\circ\text{C}$ | 41 | A |
| | | $T_C = 110^\circ\text{C}$ | 26 | A |
| | | $T_C = 133^\circ\text{C}$ | 20 | A |

Maximum Ratings

| Parameter | Symbol | Test Conditions | Value | Unit |
|--|------------------|---|------------|------|
| Non-Repetitive Peak Forward Surge Current | I _{FSM} | T _C = 25°C, T _P = 10 ms Half Sine Wave | 173 | A |
| | | T _C = 125°C, T _P = 10 ms Half Sine Wave | 153 | A |
| | | T _C = 25°C, T _P = 10 μs Pulse | 870 | A |
| Repetitive Peak Forward Surge Current | I _{FRM} | T _C = 25°C, T _P = 10 ms Half Sine Wave, D = 0.1 | 98 | A |
| | | T _C = 125°C, T _P = 10 ms Half Sine Wave, D = 0.1 | 74 | A |
| Power Dissipation | P _D | T _C = 25°C | 200 | W |
| | | T _C = 125°C | 67 | W |
| Operating Junction and Storage Temperature | T _J | | 175 | °C |
| | T _{stg} | | -55 to 175 | °C |
| Thermal Resistance Junction to Case | R _{θJC} | | 0.75 | °C/W |

Electrical Characteristics

| Parameter | Symbol | Test Conditions | Typ. | Max. | Unit |
|-------------------------|-----------------|--|--------|------|------|
| DC Blocking Voltage | V _{DC} | I _R = 500 μA, T _J = 25°C | > 1200 | | V |
| Forward Voltage | V _F | I _F = 20A, T _J = 25°C | 1.5 | 1.8 | V |
| | | I _F = 20A, T _J = 175°C | 2.3 | 2.6 | V |
| Reverse Current | I _R | V _R = 1200V, T _J = 25°C | 2 | 100 | μA |
| | | V _R = 1200V, T _J = 175°C | 40 | 1000 | μA |
| Total Capacitive Charge | Q _C | I _F = 20A, dI/dt=300A/μs, V _R =400V, T _J =25°C | 48 | | nC |
| Total Capacitance | C | V _R =1V, T _J =25°C, f =1 MHz | 1030 | | pF |
| | | V _R =400V, T _J =25°C, f =1 MHz | 94 | | |
| | | V _R =800V, T _J =25°C, f =1 MHz | 77 | | |

Device Performances

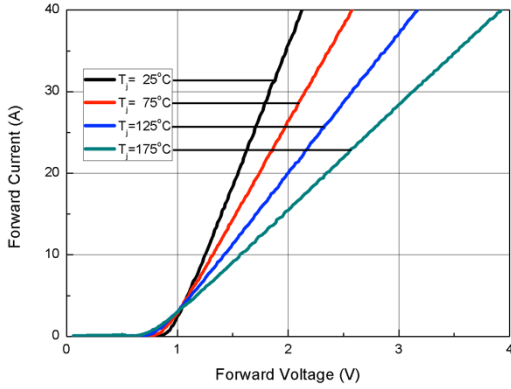


Fig. 1 Forward Characteristics

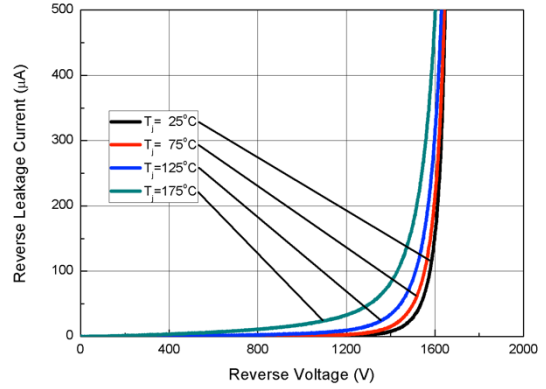


Fig. 2 Reverse Characteristics

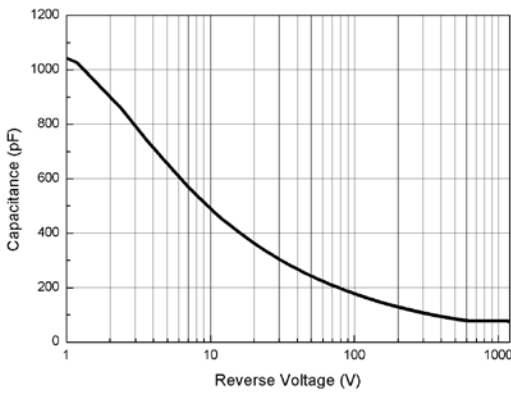


Fig. 3 Capacitance vs. Reverse Voltage

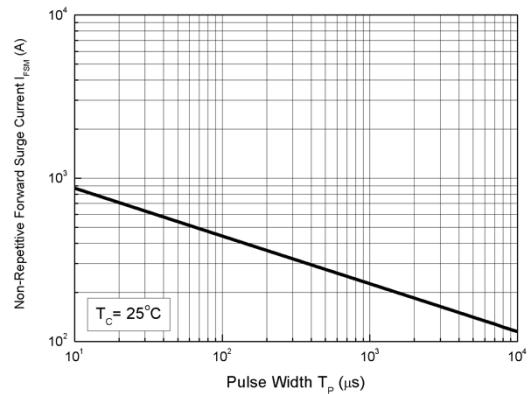


Fig. 4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

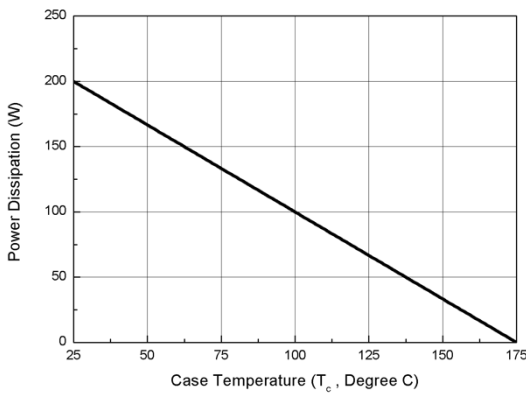


Fig. 5 Power Derating

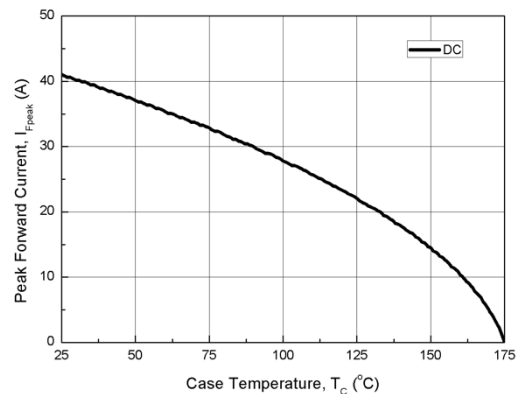
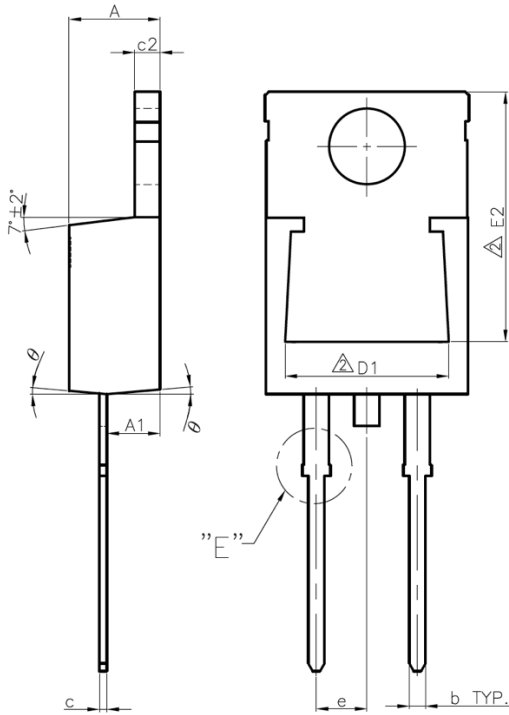
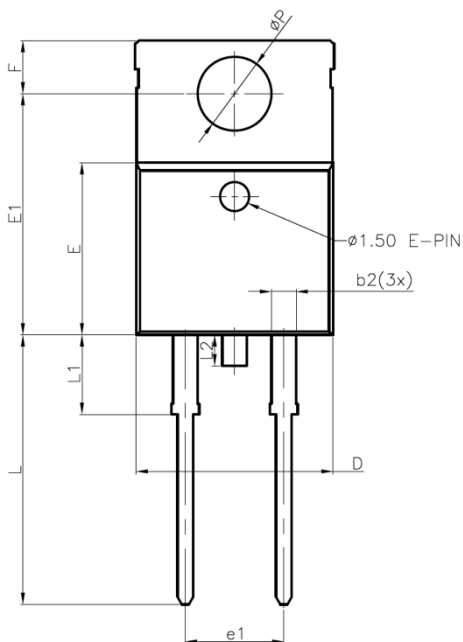


Fig. 6 Current Derating

Package Dimensions TO-220-2L



| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|--------|--------|----------------------|-------|-------|
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | 4.470 | --- | 4.670 | 0.176 | --- | 0.184 |
| A1 | 2.520 | --- | 2.820 | 0.099 | --- | 0.111 |
| b | 0.711 | 0.813 | 0.910 | 0.028 | 0.032 | 0.036 |
| b1 | 0.711 | --- | 0.914 | 0.028 | --- | 0.036 |
| b2 | 1.170 | 1.270 | 1.370 | 0.046 | 0.050 | 0.054 |
| b3 | 1.168 | --- | 1.372 | 0.046 | --- | 0.054 |
| c | 0.279 | 0.381 | 0.483 | 0.011 | 0.015 | 0.019 |
| c1 | 0.279 | --- | 0.432 | 0.011 | --- | 0.017 |
| c2 | 1.168 | 1.270 | 1.370 | 0.046 | 0.050 | 0.054 |
| D | 10.010 | --- | 10.310 | 0.394 | --- | 0.406 |
| D1 | 7.595 | --- | 8.230 | 0.299 | --- | 0.324 |
| E | 8.763 | 8.890 | 9.017 | 0.345 | 0.350 | 0.355 |
| E1 | 12.294 | 12.446 | 12.586 | 0.484 | 0.490 | 0.496 |
| E2 | 11.913 | --- | 12.548 | 0.469 | --- | 0.494 |
| e | --- | 2.540 | --- | --- | 0.100 | --- |
| e1 | 4.980 | --- | 5.180 | 0.196 | --- | 0.204 |
| F | 2.642 | 2.743 | 2.946 | 0.104 | 0.108 | 0.116 |
| G | 0.000 | --- | 0.152 | 0.000 | --- | 0.006 |
| L | 13.700 | --- | 14.100 | 0.539 | --- | 0.555 |
| L1 | 3.980 | 4.107 | 4.230 | 0.157 | 0.162 | 0.167 |
| L2 | --- | --- | 1.600 | --- | --- | 0.063 |
| φP | 3.770 | --- | 3.890 | 0.148 | --- | 0.153 |
| θ | 1° | --- | 5° | 1° | --- | 5° |



NOTES:

- All dimension are in mm[inch].
- Tolerance : ±0.004inch.

