

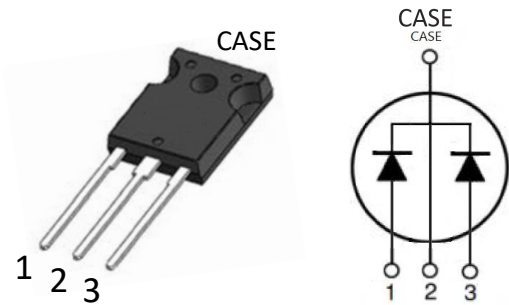
### Features

- Ease of Paralleling
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behaviour
- High temperature operation
- High frequency operation

| Key Characteristics               |       |    |
|-----------------------------------|-------|----|
| $V_{RRM}$                         | 1200  | V  |
| $I_F, T_c \leq 155^\circ\text{C}$ | 30**  | A  |
| $Q_c$                             | 168** | nC |

### Benefits

- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements



### Applications

- Switch Mode Power Supplies (SMPS)
- Boost diodes in PFC or DC/DC stages
- Motor drives
- Solar application, UPS
- Power Switching Circuits



| Part No.   | Package Type | Marking    |
|------------|--------------|------------|
| ASD30120P2 | TO-247-3     | ASD30120P2 |

\* Per Leg, \*\* Per Device

**Maximum Ratings**

| Parameter                                 | Symbol    | Test Condition  | Value                             | Unit   |
|---|-----------|---|-----------------------------------|--------|
| Repetitive Peak Reverse Voltage           | $V_{RRM}$ |   | 1200                              | V      |
| Surge Peak Reverse Voltage                | $V_{RSM}$ |   | 1200                              | V      |
| DC Blocking Voltage                       | $V_{DC}$  |   | 1200                              | V      |
| Continuous Forward Current                | $I_F$     | $T_C=25^{\circ}C$<br>$T_C=125^{\circ}C$<br>$T_C=155^{\circ}C$ | 55*/110**<br>30*/60**<br>15*/30** | A      |
| Repetitive Peak Forward Surge Current     | $I_{FRM}$ | $T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave, $D=0.3$      | 75*/150**                         | A      |
| Non-repetitive Peak Forward Surge Current | $I_{FSM}$ | $T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave               | 204*/408**                        | A      |
| Power Dissipation                         | $P_{TOT}$ | $T_C=25^{\circ}C$   | 263*                              | W      |
|   |           | $T_C=110^{\circ}C$  | 114*                              | W      |
| Operating Junction                        | $T_j$     |   | -55°C to 175°C                    | °C     |
| Storage Temperature                       | $T_{stg}$ |   | -55°C to 175°C                    | °C     |
| Mounting Torque                           |           | M3 Screw  | 1                                 | Nm     |
|   |           | 6-32 Screw  | 8.8                               | lbf-in |

**Thermal Characteristics**

| Parameter                                | Symbol     | Test Condition | Value        | Unit |
|--|------------|----------------|--------------|------|
|  |            |                | Typ.         |      |
| Thermal resistance from junction to case | $R_{thJC}$ |                | 0.57*/0.28** | °C/W |

\* Per Leg, \*\* Per Device



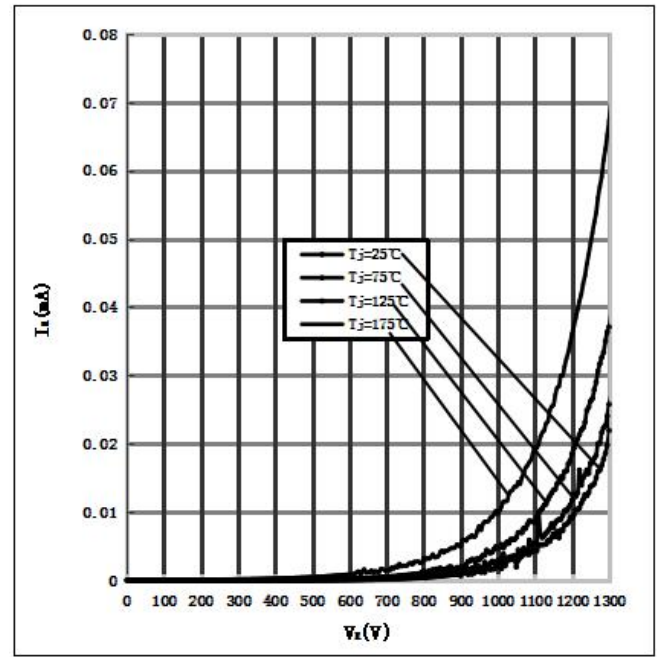
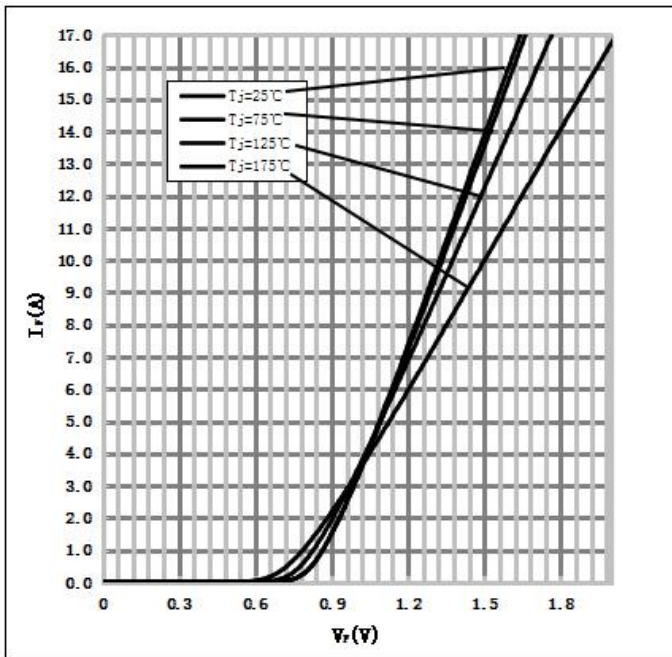
**Electrical Characteristics (Per Leg)**

| Parameter               | Symbol         | Test Conditions  | Numerical |      | Unit |
|-------------------------|----------------|--|-----------|------|------|
|                         |                |  | Typ.      | Max. |      |
| Forward Voltage         | V <sub>F</sub> | I <sub>F</sub> =15A, T <sub>j</sub> =25°C                                  | 1.4       | 1.7  | V    |
|                         |                | I <sub>F</sub> =15A, T <sub>j</sub> =175°C                                 | 2         | 2.5  |      |
| Reverse Current         | I <sub>R</sub> | V <sub>R</sub> =1200V, T <sub>j</sub> =25°C                                | 10        | 50   | μA   |
|                         |                | V <sub>R</sub> =1200V, T <sub>j</sub> =175°C                               | 20        | 100  |      |
| Total Capacitive Charge | Q <sub>C</sub> | V <sub>R</sub> =800V, T <sub>j</sub> =150°C<br>$Q_C = \int_0^{V_R} C(V)dV$ | 84        | -    | nC   |
| Total Capacitance       | C              | V <sub>R</sub> =0V, T <sub>j</sub> =25°C, f=1MHZ                           | 1370      | 1420 | pF   |
|                         |                | V <sub>R</sub> =400V, T <sub>j</sub> =25°C, f=1MHZ                         | 73        | 78   |      |
|                         |                | V <sub>R</sub> =800V, T <sub>j</sub> =25°C, f=1MHZ                         | 61        | 63   |      |

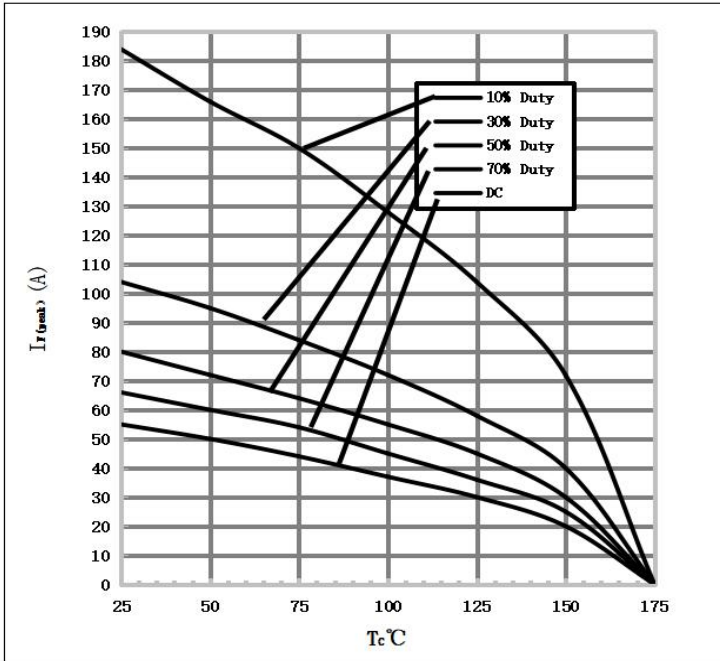
**Performance Graphs (Per Leg)**

1) Forward IV characteristics as a function of T<sub>j</sub> :

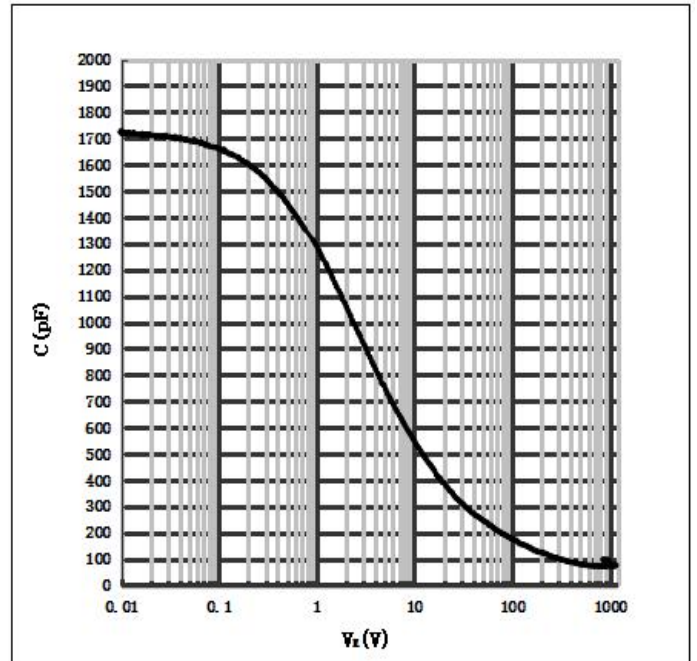
2) Reverse IV characteristics as a function of T<sub>j</sub> :



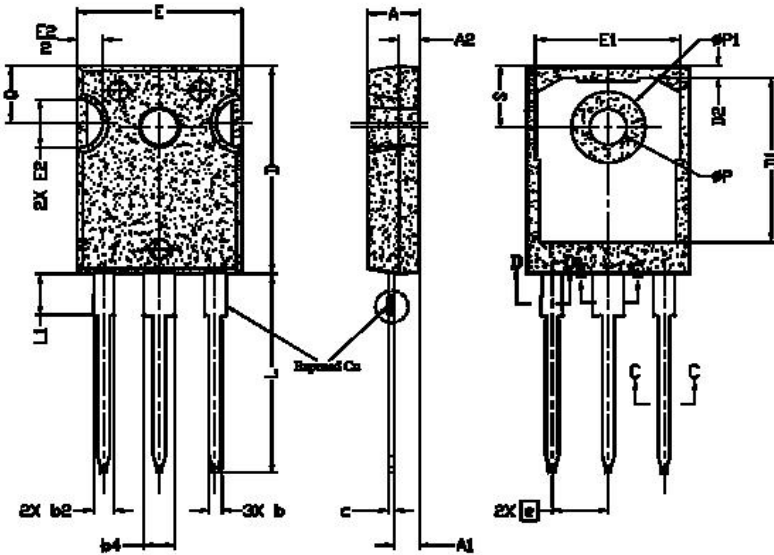
3) Current Derating



4) Capacitance vs. reverse voltage :



Package TO-247-3



| SYMBOL | DIMENSIONS |       |       | NOTES |
|--------|------------|-------|-------|-------|
|        | MIN        | NOM   | MAX   |       |
| A      | 4.83       | 5.02  | 5.21  |       |
| A1     | 2.29       | 2.41  | 2.55  |       |
| A2     | 1.50       | 2.00  | 2.49  |       |
| b      | 1.12       | 1.20  | 1.33  |       |
| b1     | 1.12       | 1.20  | 1.28  |       |
| b2     | 1.91       | 2.00  | 2.39  | 6     |
| b3     | 1.91       | 2.00  | 2.34  |       |
| b4     | 2.87       | 3.00  | 3.22  | 6, 8  |
| b5     | 2.87       | 3.00  | 3.18  |       |
| c      | 0.55       | 0.60  | 0.69  | 6     |
| c1     | 0.55       | 6.00  | 0.65  |       |
| D      | 20.80      | 20.95 | 21.10 | 4     |
| D1     | 16.25      | 16.55 | 17.65 | 5     |
| D2     | 0.51       | 1.19  | 1.35  |       |
| E      | 15.75      | 15.94 | 16.13 | 4     |
| E1     | 13.46      | 14.02 | 14.16 | 5     |
| E2     | 4.32       | 4.91  | 5.49  | 3     |
| e      | 5.44 BSC   |       |       |       |
| L      | 19.81      | 20.07 | 20.32 |       |
| L1     | 4.10       | 4.19  | 4.40  | 6     |
| ΦP     | 3.56       | 3.61  | 3.65  | 7     |
| ΦP1    | 7.19 REF   |       |       |       |
| Q      | 5.39       | 5.79  | 6.20  |       |
| S      | 6.04       | 6.17  | 6.30  |       |

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