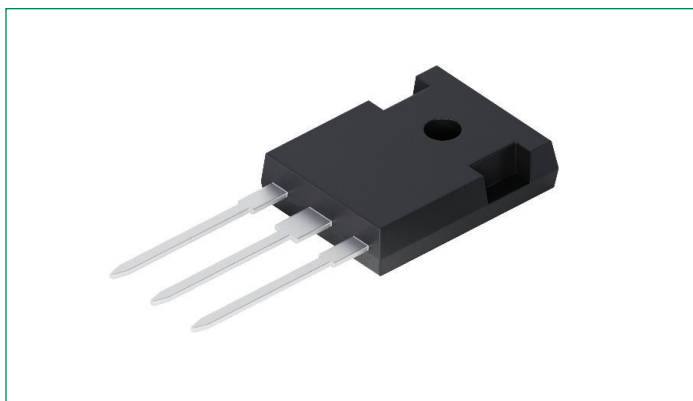


# DSA80C45HB

## 45 V, 2 x 40 A High-Performance Schottky Diode

Low Loss and Soft Recovery Common Cathode

RoHS



### Features

- Extremely low switching losses
- Very low  $V_F$

### Benefits

- Low voltage peaks for reduced protection circuits
- Low-noise switching
- High reliability circuit operation
- Improved thermal behavior
- Longer lifetime of the system

### Applications

- Rectifiers in Switch Mode Power Supplies (SMPS)
- Free wheeling diode in low voltage converters

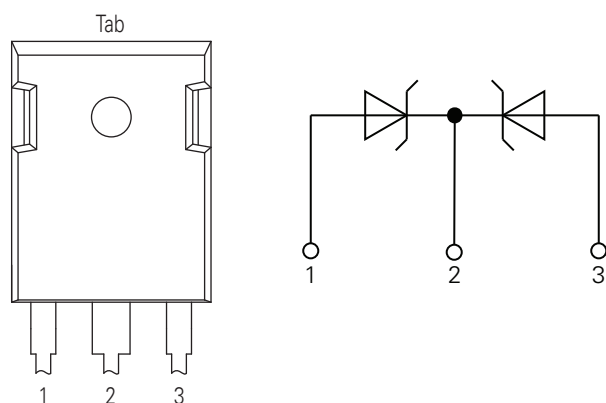
### Package

- RoHS compliant
- Industry standard outline
- Epoxy meets UL 94V-0

### Product Summary

| Characteristic | Value  | Unit |
|----------------|--------|------|
| $V_{RRM}$      | 45     | V    |
| $I_{F(AV)}$    | 2 x 40 | A    |
| $V_F$          | 0.61   | V    |

### Pinout Diagram (TO-247)



**1:** Anode; **2:** Cathode ; **3:** Anode; **Tab:** Cathode

Maximum Ratings

| Symbol      | Characteristics                         | Condition                                                                                               | Value       | Units              |
|-------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|--------------------|
| $V_{RSM}$   | Non-repetitive Reverse Blocking Voltage | $T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                   | 45          | V                  |
| $V_{RRM}$   | Repetitive Reverse Blocking Voltage     | $T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                   | 45          | V                  |
| $I_{F(AV)}$ | Average Forward Current                 | $T_c = 152\text{ }^{\circ}\text{C}$ , $T_{vj} = 175\text{ }^{\circ}\text{C}$ ,<br>Rectangular $d = 0.5$ | 40          | A                  |
| $I_{FSM}$   | Non-repetitive Forward Surge Current    | $t = 10\text{ ms}$ , (50 Hz), half sine, $T_{vj} = 45\text{ }^{\circ}\text{C}$                          | 540         | A                  |
| $V_{(FO)}$  | Threshold Voltage                       | $T_{vj} = 175\text{ }^{\circ}\text{C}$                                                                  | 0.43        | V                  |
| $r_F$       | Slope Resistance                        |                                                                                                         | 3.3         | m $\Omega$         |
| $P_{tot}$   | Total Power Dissipation                 | $T_c = 25\text{ }^{\circ}\text{C}$                                                                      | 375         | W                  |
| $T_{stg}$   | Storage Temperature Range               | –                                                                                                       | -55 to +150 | $^{\circ}\text{C}$ |
| $T_{vj}$    | Virtual Junction Temperature Range      | –                                                                                                       | -55 to +175 | $^{\circ}\text{C}$ |
| $T_{op}$    | Operating Temperature Range             | –                                                                                                       | -55 to +150 | $^{\circ}\text{C}$ |

Electrical Characteristics – Static

| Symbol | Characteristics      | Conditions                                                                      | Value |      |      | Units |
|--------|----------------------|---------------------------------------------------------------------------------|-------|------|------|-------|
|        |                      |                                                                                 | Min.  | Typ. | Max. |       |
| $I_R$  | Reverse Current      | $V_R = 45\text{ V}$ , $T_{vj} = 25\text{ }^{\circ}\text{C}$                     | –     | –    | 1.2  | mA    |
|        |                      | $V_R = 45\text{ V}$ , $T_{vj} = 125\text{ }^{\circ}\text{C}$                    | –     | –    | 45   |       |
| $V_F$  | Forward Voltage      | $I_F = 40\text{ A}$ ; Pulse, $T_{vj} = 25\text{ }^{\circ}\text{C}$              | –     | –    | 0.67 | V     |
|        |                      | $I_F = 80\text{ A}$ ; Pulse, $T_{vj} = 25\text{ }^{\circ}\text{C}$              | –     | –    | 0.84 |       |
|        |                      | $I_F = 40\text{ A}$ ; Pulse, $T_{vj} = 125\text{ }^{\circ}\text{C}$             | –     | –    | 0.61 |       |
|        |                      | $I_F = 80\text{ A}$ ; Pulse, $T_{vj} = 125\text{ }^{\circ}\text{C}$             | –     | –    | 0.81 |       |
| $C_j$  | Junction Capacitance | $V_R = 5\text{ V}$ , $f = 1\text{ MHz}$ , $T_{vj} = 25\text{ }^{\circ}\text{C}$ | –     | 2255 | –    | pF    |

Thermal Specifications

| Symbol        | Characteristics                      | Value |      |      | Units |
|---------------|--------------------------------------|-------|------|------|-------|
|               |                                      | Min.  | Typ. | Max. |       |
| $R_{th(j-c)}$ | Thermal Resistance, Junction to Case | –     | –    | 0.4  | K/W   |
| $R_{th(c-h)}$ | Thermal Resistance, Case to Heatsink | –     | 0.3  | –    | K/W   |

Package (TO-247)

| Symbol     | Characteristics                       | Conditionss  | Value |      |      | Units |
|------------|---------------------------------------|--------------|-------|------|------|-------|
|            |                                       |              | Min.  | Typ. | Max. |       |
| $I_{tRMS}$ | RMS Current                           | per terminal | –     | –    | 70   | A     |
| $M_s$      | Mounting Torque for Screw to Heatsink | –            | 0.8   | –    | 1.2  | Nm    |
| $F_C$      | Mounting Force with Clip              | –            | 20    | –    | 120  | N     |
| G          | Weight                                | –            | –     | 6    | –    | g     |

## Characteristic Curves

Figure 1. Maximum Forward Characteristics

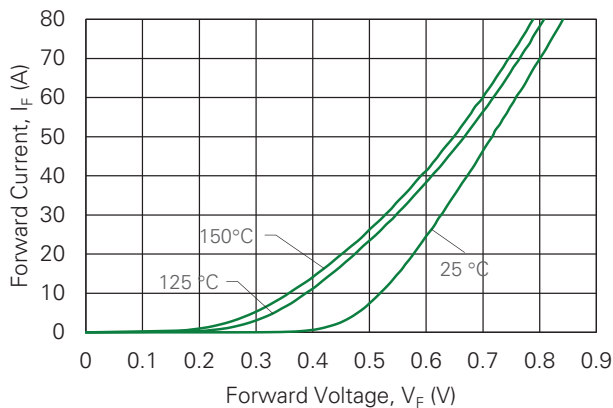


Figure 2. Typical Reverse Current vs. Reverse Voltage

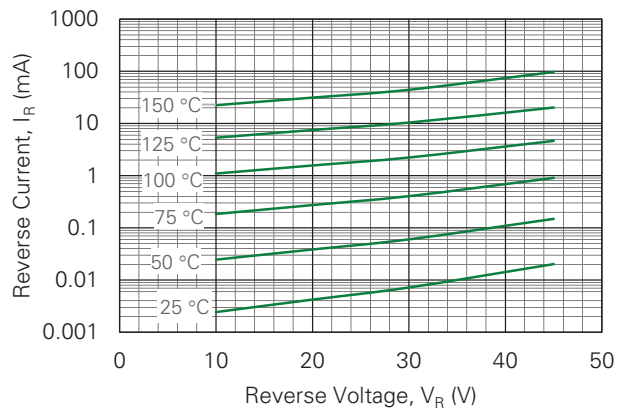


Figure 3. Typical Junction Capacitance vs. Reverse Voltage

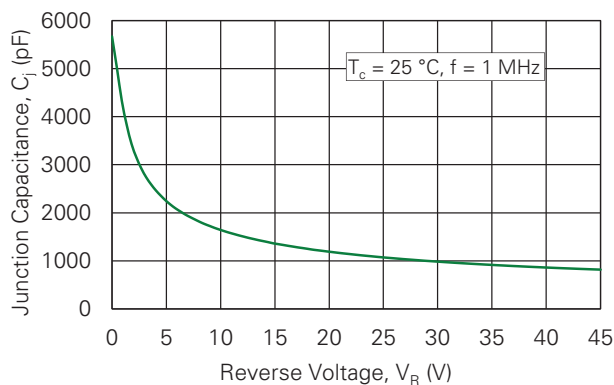


Figure 4. Average Forward Current vs. Case Temperature

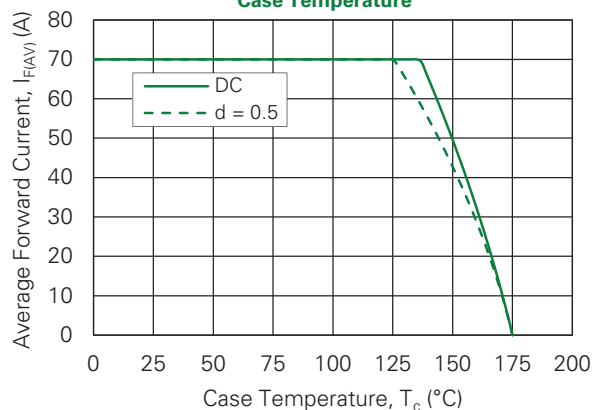


Figure 5. Forward Power Loss Characteristics

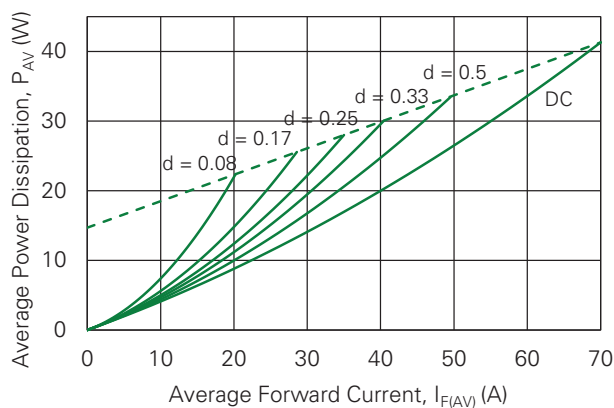
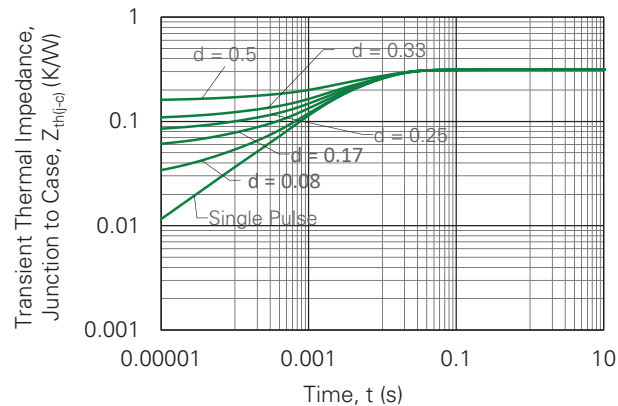
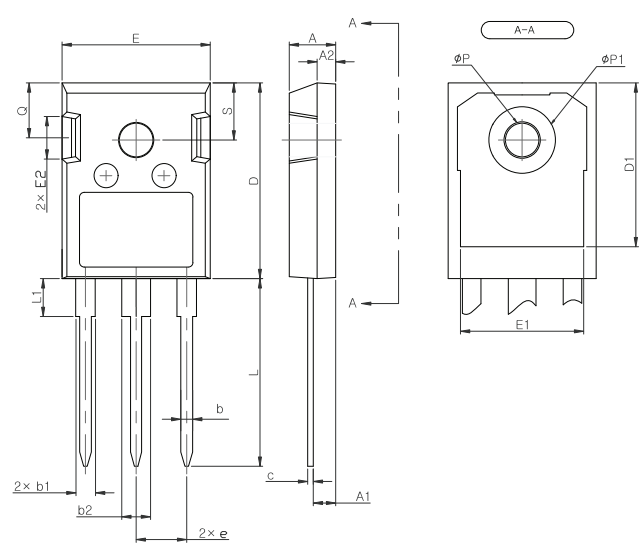


Figure 6. Transient Thermal Impedance

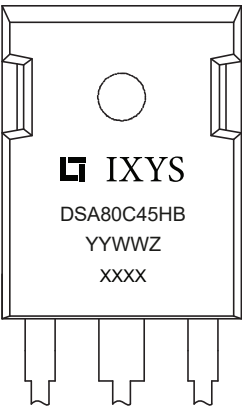


Part Outline Drawing (TO-247)



| Symbol | Inches    |       | Millimeters |       |
|--------|-----------|-------|-------------|-------|
|        | Min.      | Max.  | Min.        | Max.  |
| A      | 0.189     | 0.205 | 4.80        | 5.20  |
| A1     | 0.090     | 0.10  | 2.29        | 2.54  |
| A2     | 0.075     | 0.083 | 1.90        | 2.10  |
| b      | 0.043     | 0.051 | 1.10        | 1.30  |
| b1     | 0.075     | 0.087 | 1.91        | 2.20  |
| b2     | 0.115     | 0.126 | 2.92        | 3.20  |
| c      | 0.020     | 0.027 | 0.50        | 0.70  |
| D      | 0.819     | 0.840 | 20.80       | 21.34 |
| D1     | 0.686     | 0.702 | 17.43       | 17.83 |
| E      | 0.620     | 0.635 | 15.75       | 16.13 |
| E1     | 0.514     | 0.530 | 13.06       | 13.46 |
| E2     | 0.170     | 0.190 | 4.32        | 4.83  |
| e      | 0.215 BSC |       | 5.45 BSC    |       |
| L      | 0.781     | 0.797 | 19.85       | 20.25 |
| L1     | —         | 0.177 | —           | 4.49  |
| Ø P    | 0.140     | 0.144 | 3.55        | 3.65  |
| Ø P1   | 0.281-    | 0.285 | 7.14        | 7.24  |
| Q      | 0.220     | 0.244 | 5.59        | 6.19  |
| S      | 0.242 BSC |       | 6.15 BSC    |       |

Part Number and Marking



- D = Diode
- S = Schottky Diode
- A = Low  $V_F$
- 80 = Current (2 x 40 A)
- C = Common Cathode
- 45 = Voltage (45 V)
- HB = Package (TO-247)
- YY = Year
- WW = Work Week
- Z = Plant Location Code
- xxxx = Lot Number

Ordering Information

| Part Number | Marking    | Packing Mode | Quantity     |
|-------------|------------|--------------|--------------|
| DSA80C45HB  | DSA80C45HB | Tube         | 30 pcs/ tube |

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Part of:

