

advanced

Schottky Diode Gen <sup>2</sup>

$$V_{RRM} = 45 \text{ V}$$

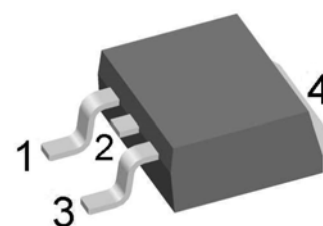
$$I_{FAV} = 2 \times 15 \text{ A}$$

$$V_F = 0.63 \text{ V}$$

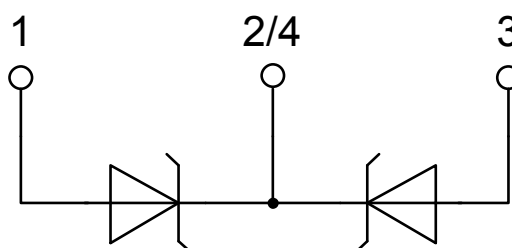
High Performance Schottky Diode  
Low Loss and Soft Recovery  
Common Cathode

Part number

DSA30C45PC



Backside: cathode

**Features / Advantages:**

- Very low  $V_f$
- Extremely low switching losses
- low  $I_{rm}$  values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching

**Applications:**

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

**Package:**

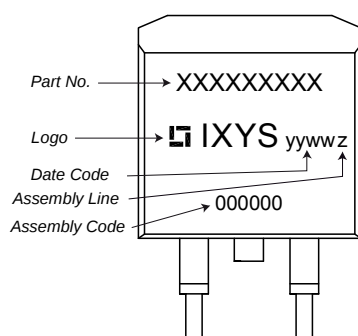
- Housing: TO-263 (D2Pak)
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

| Schottky   |                                              |                                                                    |                                | Ratings                        |      |      |               |
|------------|----------------------------------------------|--------------------------------------------------------------------|--------------------------------|--------------------------------|------|------|---------------|
| Symbol     | Definition                                   | Conditions                                                         |                                | min.                           | typ. | max. | Unit          |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 45   | V             |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 45   | V             |
| $I_R$      | reverse current, drain current               | $V_R = 45\text{ V}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 250  | $\mu\text{A}$ |
|            |                                              | $V_R = 45\text{ V}$                                                | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 2.5  | mA            |
| $V_F$      | forward voltage drop                         | $I_F = 15\text{ A}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 0.75 | V             |
|            |                                              | $I_F = 30\text{ A}$                                                |                                |                                |      | 0.91 | V             |
|            |                                              | $I_F = 15\text{ A}$                                                | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 0.63 | V             |
|            |                                              | $I_F = 30\text{ A}$                                                |                                |                                |      | 0.79 | V             |
| $I_{FAV}$  | average forward current                      | $T_C = 155^{\circ}\text{C}$<br>rectangular $d = 0.5$               | $T_{VJ} = 175^{\circ}\text{C}$ |                                |      | 15   | A             |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                                | $T_{VJ} = 175^{\circ}\text{C}$ |      | 0.42 | V             |
| $r_F$      | slope resistance                             |                                                                    |                                |                                |      | 9.9  | m $\Omega$    |
| $R_{thJC}$ | thermal resistance junction to case          |                                                                    |                                |                                |      | 1.75 | K/W           |
| $R_{thCH}$ | thermal resistance case to heatsink          |                                                                    |                                |                                | 0.25 |      | K/W           |
| $P_{tot}$  | total power dissipation                      | $T_C = 25^{\circ}\text{C}$                                         |                                |                                |      | 85   | W             |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | $T_{VJ} = 45^{\circ}\text{C}$  |                                |      | 140  | A             |
| $C_J$      | junction capacitance                         | $V_R = 5\text{ V}$ $f = 1\text{ MHz}$                              | $T_{VJ} = 25^{\circ}\text{C}$  |                                | 497  |      | pF            |

advanced

| Package TO-263 (D2Pak) |                              |              | Ratings |      |      |      |
|------------------------|------------------------------|--------------|---------|------|------|------|
| Symbol                 | Definition                   | Conditions   | min.    | typ. | max. | Unit |
| $I_{RMS}$              | RMS current                  | per terminal |         |      | 35   | A    |
| $T_{stg}$              | storage temperature          |              | -55     |      | 150  | °C   |
| $T_{vj}$               | virtual junction temperature |              | -55     |      | 175  | °C   |
| Weight                 |                              |              |         | 2    |      | g    |
| $F_c$                  | mounting force with clip     |              | 20      |      | 60   | N    |

## Product Marking



## Part number

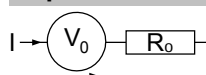
D = Diode  
 S = Schottky Diode  
 A = low VF  
 30 = Current Rating [A]  
 C = Common Cathode  
 45 = Reverse Voltage [V]  
 PC = TO-263AB (D2Pak) (2)

| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSA30C45PC  | DSA30C45PC         | Tape & Reel   | 800      | 512243   |

| Similar Part | Package      | Voltage class |
|--------------|--------------|---------------|
| DSA30C45PB   | TO-220AB (3) | 45            |
| DSA30C45HB   | TO-247AD (3) | 45            |

## Equivalent Circuits for Simulation

\* on die level

 $T_{vj} = 175^{\circ}\text{C}$ 

Schottky

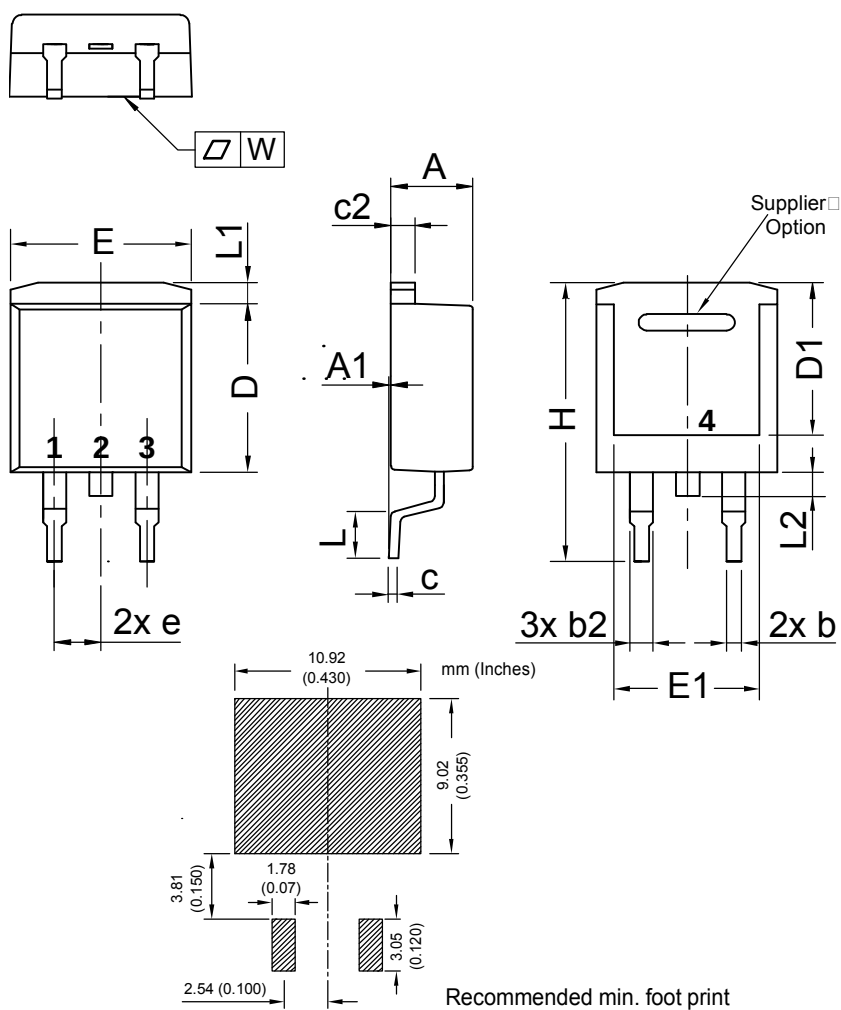
 $V_{0\max}$  threshold voltage 0.42

V

 $R_{0\max}$  slope resistance \* 6.8

mΩ

## Outlines TO-263 (D2Pak)



| Dim. | Millimeter |       | Inches      |       |
|------|------------|-------|-------------|-------|
|      | min        | max   | min         | max   |
| A    | 4.06       | 4.83  | 0.160       | 0.190 |
| A1   | typ. 0.10  |       | typ. 0.004  |       |
| A2   | 2.41       |       | 0.095       |       |
| b    | 0.51       | 0.99  | 0.020       | 0.039 |
| b2   | 1.14       | 1.40  | 0.045       | 0.055 |
| c    | 0.40       | 0.74  | 0.016       | 0.029 |
| c2   | 1.14       | 1.40  | 0.045       | 0.055 |
| D    | 8.38       | 9.40  | 0.330       | 0.370 |
| D1   | 8.00       | 8.89  | 0.315       | 0.350 |
| D2   | 2.5        |       | 0.098       |       |
| E    | 9.65       | 10.41 | 0.380       | 0.410 |
| E1   | 6.22       | 8.50  | 0.245       | 0.335 |
| e    | 2.54 BSC   |       | 0.100 BSC   |       |
| e1   | 4.28       |       | 0.169       |       |
| H    | 14.61      | 15.88 | 0.575       | 0.625 |
| L    | 1.78       | 2.79  | 0.070       | 0.110 |
| L1   | 1.02       | 1.68  | 0.040       | 0.066 |
| W    | typ. 0.02  | 0.040 | typ. 0.0008 | 0.002 |

All dimensions conform with and/or within JEDEC standard.

