



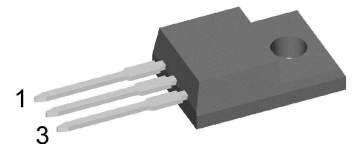
Schottky Diode

$V_{RRM} = 150\text{ V}$
 $I_{FAV} = 2 \times 10\text{ A}$
 $V_F = 0.73\text{ V}$

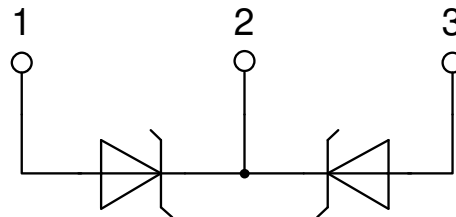
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSA20C150PN



Backside: isolated



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: TO-220FP

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

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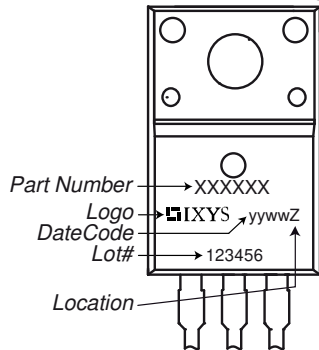


| Schottky | | | | Ratings | | | |
|------------|--|--|--------------------|------------------------------|------|------|---------------|
| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
| V_{RSM} | max. non-repetitive reverse blocking voltage | | | | | 150 | V |
| V_{RRM} | max. repetitive reverse blocking voltage | | | | | 150 | V |
| I_R | reverse current, drain current | $V_R = 150\text{ V}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 200 | μA |
| | | $V_R = 150\text{ V}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 2 | mA |
| V_F | forward voltage drop | $I_F = 10\text{ A}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 0.87 | V |
| | | $I_F = 20\text{ A}$ | | | | 0.98 | V |
| | | $I_F = 10\text{ A}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 0.73 | V |
| | | $I_F = 20\text{ A}$ | | | | 0.85 | V |
| I_{FAV} | average forward current | $T_C = 140^\circ\text{C}$ | rectangular | $T_{VJ} = 175^\circ\text{C}$ | | 10 | A |
| V_{F0} | threshold voltage | } for power loss calculation only | | | | 0.54 | V |
| r_F | slope resistance | | | | | 11.4 | m Ω |
| R_{thJC} | thermal resistance junction to case | | | | | 4.5 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | | | 0.5 | K/W |
| P_{tot} | total power dissipation | | | $T_C = 25^\circ\text{C}$ | | 35 | W |
| I_{FSM} | max. forward surge current | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | | $T_{VJ} = 45^\circ\text{C}$ | | 220 | A |
| C_J | junction capacitance | $V_R = 24\text{ V}$ | $f = 1\text{ MHz}$ | $T_{VJ} = 25^\circ\text{C}$ | | 53 | pF |



| Package TO-220FP | | Ratings | | | | |
|------------------|--|----------------------|------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal | | | 35 | A |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | °C |
| T_{op} | operation temperature | | -55 | | 150 | °C |
| T_{stg} | storage temperature | | -55 | | 150 | °C |
| Weight | | | | 2 | | g |
| M_D | mounting torque | | 0.4 | | 0.6 | Nm |
| F_C | mounting force with clip | | 20 | | 60 | N |
| $d_{Spp/App}$ | creepage distance on surface striking distance through air | terminal to terminal | 1.6 | 1.0 | | mm |
| $d_{Spb/Apb}$ | | terminal to backside | 2.5 | 2.5 | | mm |
| V_{ISOL} | isolation voltage | t = 1 second | 2500 | | | V |
| | | t = 1 minute | 2100 | | | V |

Product Marking



Part description

- D = Diode
- S = Schottky Diode
- A = low VF
- 20 = Current Rating [A]
- C = Common Cathode
- 150 = Reverse Voltage [V]
- PN = TO-220ABFP (3)

| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSA20C150PN | DSA20C150PN | Tube | 50 | 503682 |

| Similar Part | Package | Voltage class |
|--------------|--------------|---------------|
| DSA20C150PB | TO-220AB (3) | 150 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175^{\circ}C$

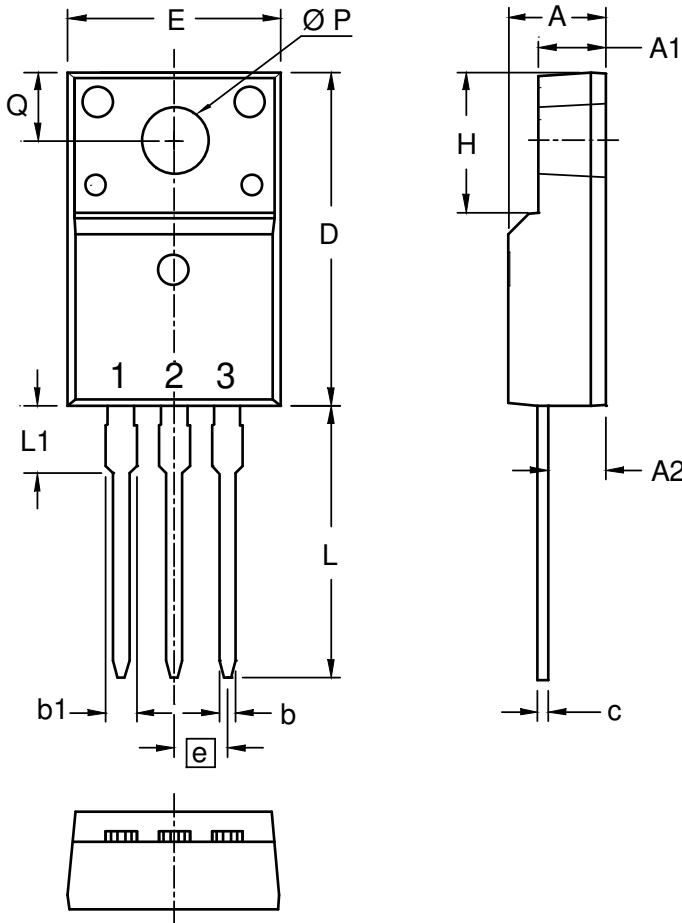


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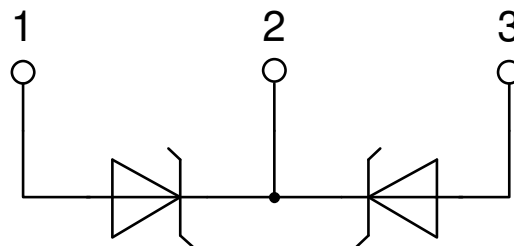
| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 0.54 | V |
| $R_{0\ max}$ | slope resistance * | 8.2 | mΩ |



Outlines TO-220FP



| Dim. | Millimeters | | Inches | |
|------|-------------|-------|-----------|-------|
| | min | max | min | max |
| A | 4.50 | 4.90 | 0.177 | 0.193 |
| A1 | 2.34 | 2.74 | 0.092 | 0.108 |
| A2 | 2.56 | 2.96 | 0.101 | 0.117 |
| b | 0.70 | 0.90 | 0.028 | 0.035 |
| c | 0.45 | 0.60 | 0.018 | 0.024 |
| D | 15.67 | 16.07 | 0.617 | 0.633 |
| E | 9.96 | 10.36 | 0.392 | 0.408 |
| e | 2.54 BSC | | 0.100 BSC | |
| H | 6.48 | 6.88 | 0.255 | 0.271 |
| L | 12.68 | 13.28 | 0.499 | 0.523 |
| L1 | 3.03 | 3.43 | 0.119 | 0.135 |
| ØP | 3.08 | 3.28 | 0.121 | 0.129 |
| Q | 3.20 | 3.40 | 0.126 | 0.134 |



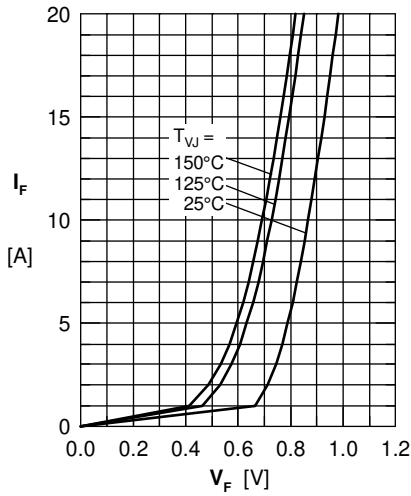
Schottky


Fig. 1 Maximum forward voltage drop characteristics

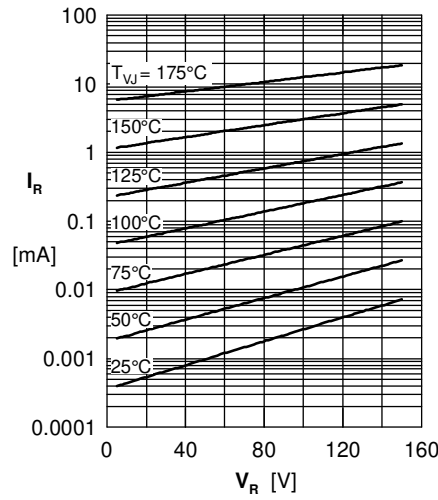
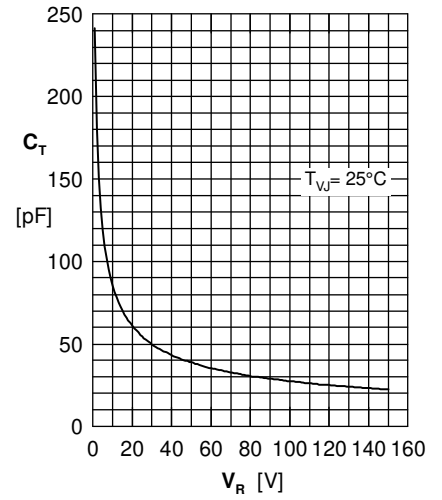
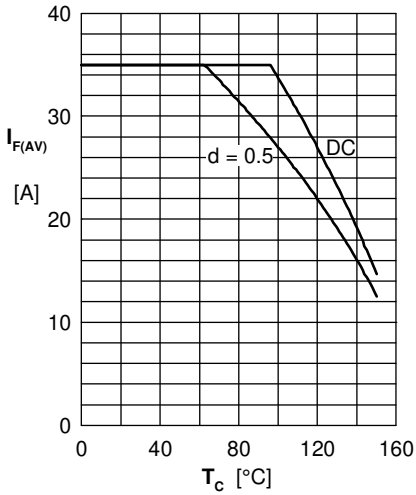
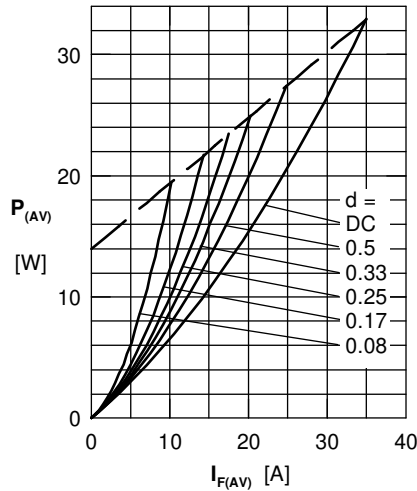

 Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

 Fig. 3 Typ. junction capacitance C_T versus reverse voltage V_R

 Fig. 4 Avg: forward current $I_{F(AV)}$ vs. case temperature T_C


Fig. 5 Forward power loss characteristics

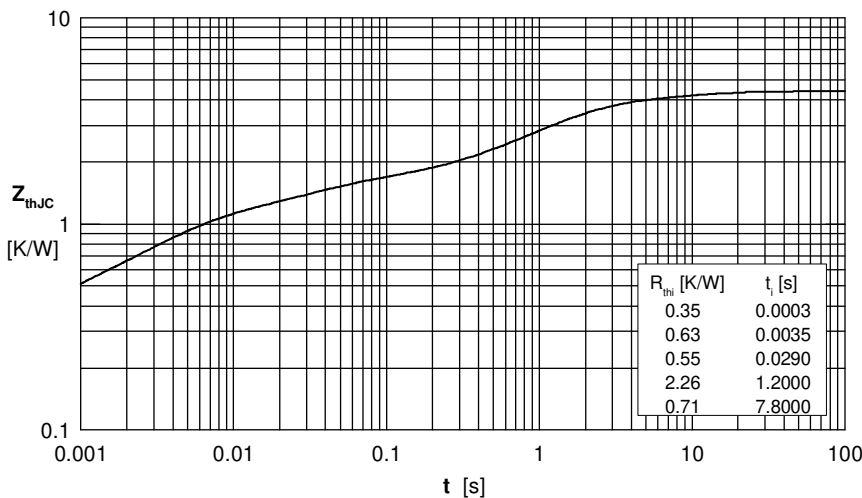


Fig. 6 Transient thermal impedance junction to case

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