Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!


## Contact us

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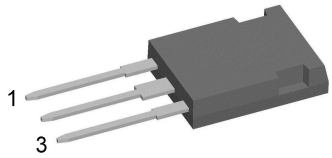
# Standard Rectifier

$V_{RRM}$ = 1600 V
$I_{FAV}$ = 2x 45 A
$V_F$ = 1.23 V

Common Cathode

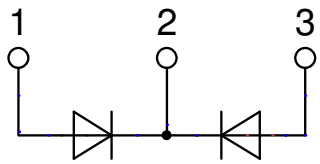
**Part number**

**DSIK45-16AR**




Backside: isolated

E72873




**Features / Advantages:**

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

**Applications:**

- Diode for main rectification

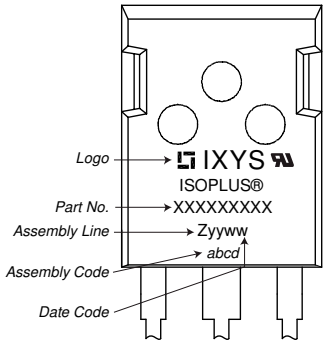
**Package:** ISOPLUS247

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

| Rectifier | | | | Ratings | | | |
|---|---|---|---|---|---|---|---|
| **Symbol** | **Definition** | **Conditions** | | **min.** | **typ.** | **max.** | **Unit** |
| $V_{RSM}$ | *max. non-repetitive reverse blocking voltage* | | $T_{VJ}$ = 25°C | | | 1700 | V |
| $V_{RRM}$ | *max. repetitive reverse blocking voltage* | | $T_{VJ}$ = 25°C | | | 1600 | V |
| $I_R$ | *reverse current* | $V_R$ = 1600 V | $T_{VJ}$ = 25°C | | | 40 | µA |
| | | $V_R$ = 1600 V | $T_{VJ}$ = 150°C | | | 1.5 | mA |
| $V_F$ | *forward voltage drop* | $I_F$ = 45 A | $T_{VJ}$ = 25°C | | | 1.26 | V |
| | | $I_F$ = 90 A | | | | 1.57 | V |
| | | $I_F$ = 45 A | $T_{VJ}$ = 150°C | | | 1.23 | V |
| | | $I_F$ = 90 A | | | | 1.66 | V |
| $I_{FAV}$ | *average forward current* | $T_C$ = 100°C | $T_{VJ}$ = 175°C | | | 45 | A |
| | | sine 180° | | | | | |
| $V_{F0}$ | *threshold voltage* } *for power loss calculation only* | | $T_{VJ}$ = 175°C | | | 0.81 | V |
| $r_F$ | *slope resistance* } | | | | | 9.1 | mΩ |
| $R_{thJC}$ | *thermal resistance junction to case* | | | | | 0.9 | K/W |
| $R_{thCH}$ | *thermal resistance case to heatsink* | | | | 0.25 | | K/W |
| $P_{tot}$ | *total power dissipation* | | $T_C$ = 25°C | | | 165 | W |
| $I_{FSM}$ | *max. forward surge current* | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 45°C | | | 480 | A |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 520 | A |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 150°C | | | 410 | A |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 440 | A |
| $I^2t$ | *value for fusing* | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 45°C | | | 1.15 | kA²s |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 1.13 | kA²s |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ}$ = 150°C | | | 840 | A²s |
| | | t = 8,3 ms; (60 Hz), sine | $V_R$ = 0 V | | | 805 | A²s |
| $C_J$ | *junction capacitance* | $V_R$ = 400 V; f = 1 MHz | $T_{VJ}$ = 25°C | | 18 | | pF |

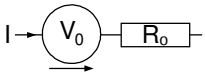
| Package ISOPLUS247 | | | | Ratings | | | |
|---|---|---|---|---|---|---|---|
| **Symbol** | **Definition** | **Conditions** | | **min.** | **typ.** | **max.** | **Unit** |
| $I_{RMS}$ | *RMS current* | per terminal 1) | | | | 70 | A |
| $T_{VJ}$ | *virtual junction temperature* | | | -40 | | 175 | °C |
| $T_{op}$ | *operation temperature* | | | -40 | | 150 | °C |
| $T_{stg}$ | *storage temperature* | | | -40 | | 150 | °C |
| **Weight** | | | | | 6 | | g |
| $F_C$ | *mounting force with clip* | | | 20 | | 120 | N |
| $d_{Spp/App}$ | *creepage distance on surface \| striking distance through air* | | *terminal to terminal* | 2.7 | | | mm |
| $d_{Spb/Apb}$ | | | *terminal to backside* | 4.1 | | | mm |
| $V_{ISOL}$ | *isolation voltage* | t = 1 second | 50/60 Hz, RMS; $I_{ISOL}$ ≤ 1 mA | 3600 | | | V |
| | | t = 1 minute | | 3000 | | | V |

Product Marking




| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|---|---|---|---|---|---|
| Standard | DSIK45-16AR | DSIK45-16AR | Tube | 30 | 496022 |

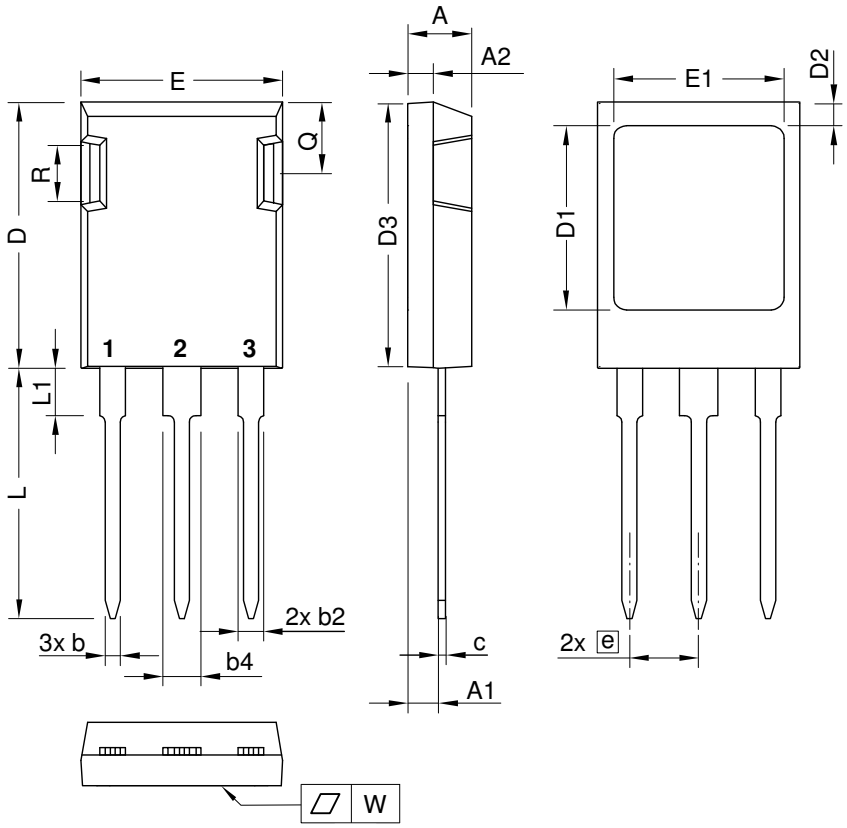
**Equivalent Circuits for Simulation** ** on die level* $T_{VJ}$ = 175 °C




**Rectifier**

| | | | |
|---|---|---|---|
| $V_{0\,max}$ | *threshold voltage* | 0.81 | V |
| $R_{0\,max}$ | *slope resistance ** | 6.5 | mΩ |

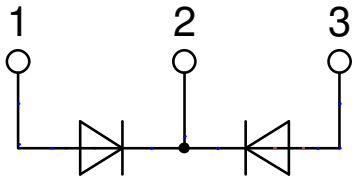
## Outlines ISOPLUS247




| Dim. | Millimeter | | Inches | |
|---|---|---|---|---|
| | min | max | min | max |
| A | 4.83 | 5.21 | 0.190 | 0.205 |
| A1 | 2.29 | 2.54 | 0.090 | 0.100 |
| A2 | 1.91 | 2.16 | 0.075 | 0.085 |
| b | 1.14 | 1.40 | 0.045 | 0.055 |
| b2 | 1.91 | 2.20 | 0.075 | 0.087 |
| b4 | 2.92 | 3.24 | 0.115 | 0.128 |
| c | 0.61 | 0.83 | 0.024 | 0.033 |
| D | 20.80 | 21.34 | 0.819 | 0.840 |
| D1 | 15.75 | 16.26 | 0.620 | 0.640 |
| D2 | 1.65 | 2.15 | 0.065 | 0.085 |
| D3 | 20.30 | 20.70 | 0.799 | 0.815 |
| E | 15.75 | 16.13 | 0.620 | 0.635 |
| E1 | 13.21 | 13.72 | 0.520 | 0.540 |
| e | 5.45 BSC | | 0.215 BSC | |
| L | 19.81 | 20.60 | 0.780 | 0.811 |
| L1 | 3.81 | 4.38 | 0.150 | 0.172 |
| Q | 5.59 | 6.20 | 0.220 | 0.244 |
| R | 4.25 | 5.50 | 0.167 | 0.217 |
| W | - | 0.10 | - | 0.004 |

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite
*The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side*

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und $L_{max.}$
*This drawing will meet all dimensions requiarement of JEDEC outline TO-247 AD except screw hole and except $L_{max.}$*



## Rectifier

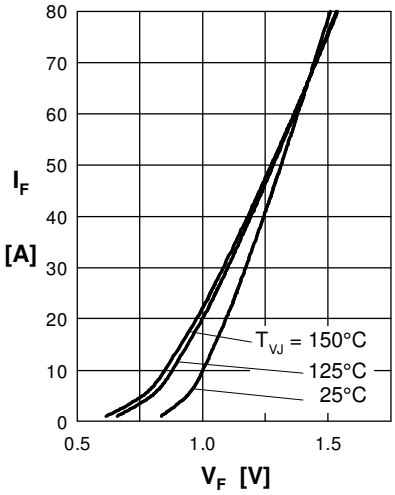



Fig. 1 Forward current versus voltage drop per diode

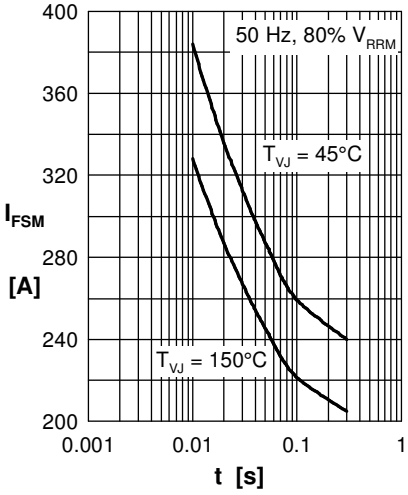



Fig. 2 Surge overload current

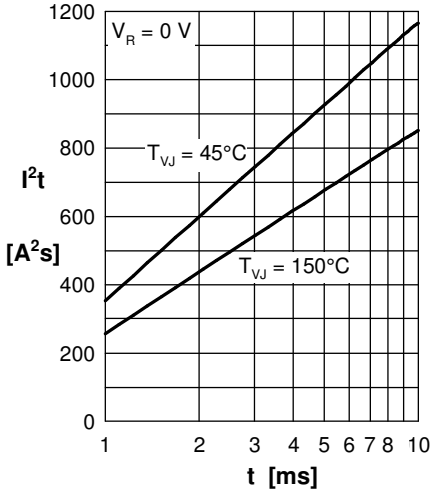



Fig. 3 $I^2t$ versus time per diode

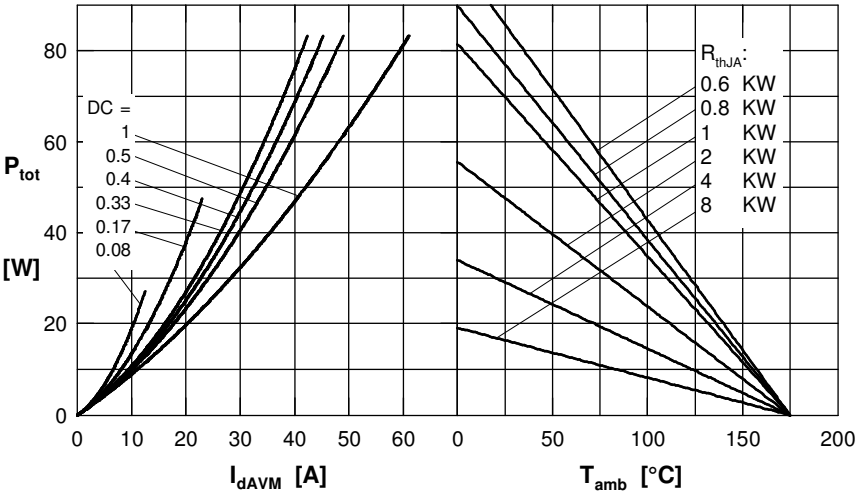



Fig. 4 Power dissipation vs. direct output current & ambient temperature

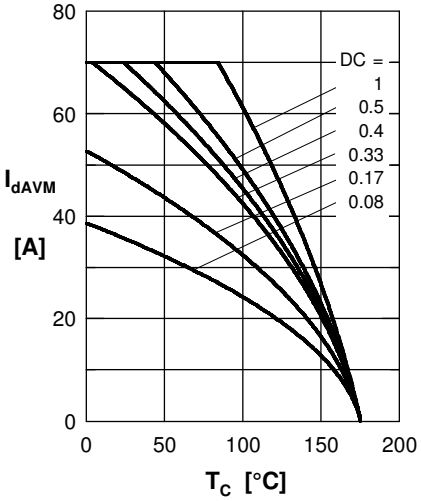



Fig. 5 Max. forward current vs. case temperature

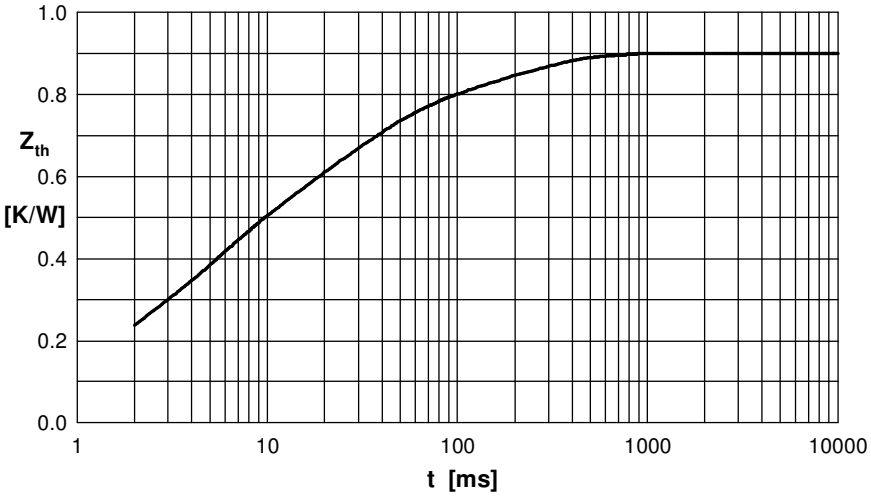



Fig. 6 Transient thermal impedance junction to case

| i | $R_i$ | $t_i$ |
|---|---|---|
| 1 | 0.0607 | 0.0004 |
| 2 | 0.123 | 0.00256 |
| 3 | 0.2305 | 0.045 |
| 4 | 0.323 | 0.0242 |
| 5 | 0.1628 | 0.18 |