# Chipsmall

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

## HiPerFRED

| | | |
|---|---|---|
| $V_{RRM}$ = | | 600 V |
| $I_{FAV}$ = 2x | | 15 A |
| $t_{rr}$ = | | 35 ns |

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
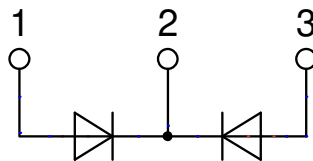Common Cathode

**Part number**

**DSEC29-06AC**
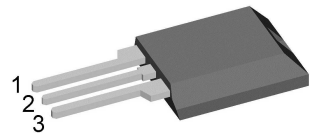
Backside: isolated

E72873

**Features / Advantages:**
- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

**Applications:**
- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

**Package:** ISOPLUS220
- 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

**Terms ₋Conditions of usage:**

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.
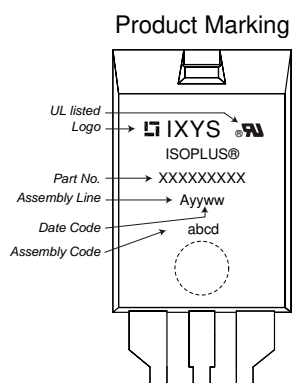Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.
Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend
- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

**Fast Diode**                                                                                                     Ratings

| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
|--------|-----------|------------|--|------|------|------|------|
| $V_{RSM}$ | max. non-repetitive reverse blocking voltage | | $T_{VJ}$ = 25°C | | | 600 | V |
| $V_{RRM}$ | max. repetitive reverse blocking voltage | | $T_{VJ}$ = 25°C | | | 600 | V |
| $I_R$ | reverse current, drain current | $V_R$ = 600 V | $T_{VJ}$ = 25°C | | | 100 | µA |
| | | $V_R$ = 600 V | $T_{VJ}$ = 150°C | | | 0.5 | mA |
| $V_F$ | forward voltage drop | $I_F$ = 15 A | $T_{VJ}$ = 25°C | | | 2.04 | V |
| | | $I_F$ = 30 A | | | | 2.25 | V |
| | | $I_F$ = 15 A | $T_{VJ}$ = 150°C | | | 1.34 | V |
| | | $I_F$ = 30 A | | | | 1.59 | V |
| $I_{FAV}$ | average forward current | $T_C$ = 140°C | $T_{VJ}$ = 175°C | | | 15 | A |
| | | rectangular     d = 0.5 | | | | | |
| $V_{F0}$ | threshold voltage | } for power loss calculation only | $T_{VJ}$ = 175°C | | | 0.99 | V |
| $r_F$ | slope resistance | | | | | 15 | mΩ |
| $R_{thJC}$ | thermal resistance junction to case | | | | | 1.6 | K/W |
| $R_{thCH}$ | thermal resistance case to heatsink | | | | 0.50 | | K/W |
| $P_{tot}$ | total power dissipation | | $T_C$ = 25°C | | | 95 | W |
| $I_{FSM}$ | max. forward surge current | t = 10 ms; (50 Hz), sine; $V_R$ = 0 V | $T_{VJ}$ = 45°C | | | 110 | A |
| $C_J$ | junction capacitance | $V_R$ = 400 V   f = 1 MHz | $T_{VJ}$ = 25°C | | 12 | | pF |
| $I_{RM}$ | max. reverse recovery current | | $T_{VJ}$ = 25°C | | 5 | | A |
| | | $I_F$ = 15 A; $V_R$ = 300 V | $T_{VJ}$ = 100°C | | 7 | | A |
| $t_{rr}$ | reverse recovery time | $-di_F/dt$ = 200 A/µs | $T_{VJ}$ = 25°C | | 35 | | ns |
| | | | $T_{VJ}$ = 100°C | | 95 | | ns |

# IXYS

# DSEC29-06AC

| Package | ISOPLUS220 | | | Ratings | | | |
|---------|------------|------------|------|------|------|------|
| **Symbol** | **Definition** | **Conditions** | min. | typ. | max. | Unit |
| $I_{RMS}$ | *RMS current* | per terminal [1] | | | 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 |
| $F_C$ | *mounting force with clip* | | 20 | | 60 | N |
| $d_{Spp/App}$ | *creepage distance on surface \| striking distance through air* | terminal to terminal | 1.0 | | | mm |
| $d_{Spb/Apb}$ | | terminal to backside | 3.0 | | | mm |
| $V_{ISOL}$ | *isolation voltage* | t = 1 second | 3600 | | | V |
| | | t = 1 minute, 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA | 3000 | | | V |

Product Marking

UL listed Logo → IXYS ®U
ISOPLUS®
Part No. → XXXXXXXXX
Assembly Line → Ayyww
Date Code → abcd
Assembly Code

| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSEC29-06AC | DSEC29-06AC | Tube | 50 | 500810 |

| Similar Part | Package | Voltage class |
|--------------|---------|---------------|
| DSEC30-06A | TO-247AD (3) | 600 |
| DSEC30-06B | TO-247AD (3) | 600 |

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

I → $V_0$ — $R_0$ →

| | | **Fast Diode** | |
|---|---|---|---|
| $V_{0\ max}$ | *threshold voltage* | 0.99 | V |
| $R_{0\ max}$ | *slope resistance* * | 12 | mΩ |

**Outlines   ISOPLUS220**
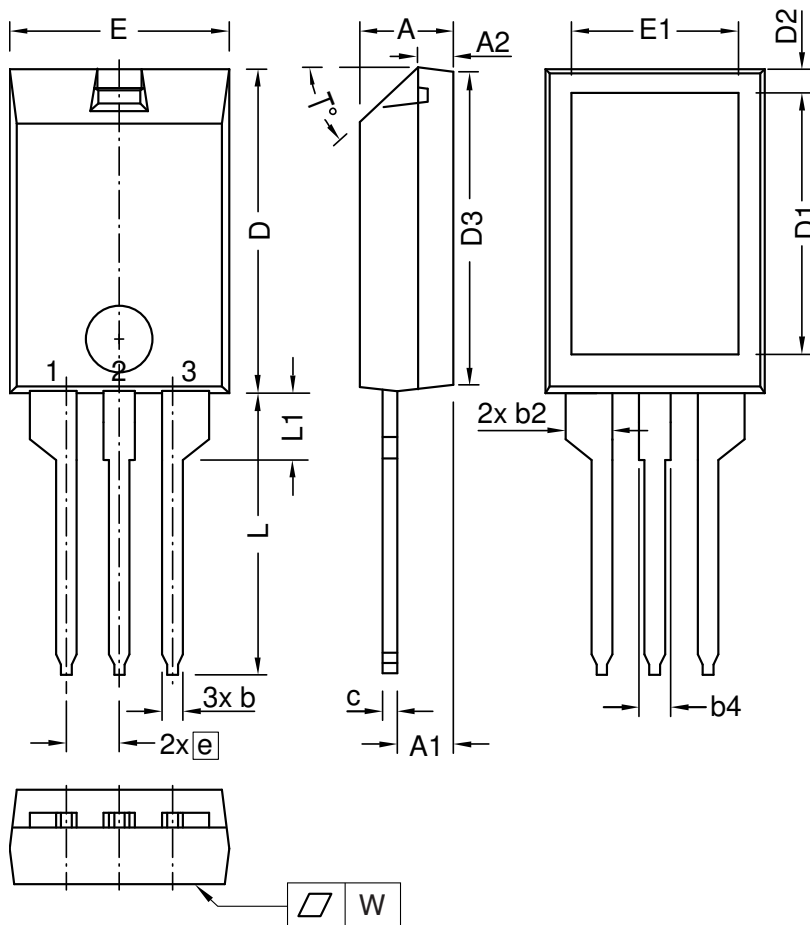


| Dim. | Millimeters | | Inches | |
|------|------|------|------|------|
| | min | max | min | max |
| A | 4.00 | 5.00 | 0.157 | 0.197 |
| A1 | 2.50 | 3.00 | 0.098 | 0.118 |
| A2 | 1.60 | 1.80 | 0.063 | 0.071 |
| b | 0.90 | 1.30 | 0.035 | 0.051 |
| b2 | 2.35 | 2.55 | 0.093 | 0.100 |
| b4 | 1.25 | 1.65 | 0.049 | 0.065 |
| c | 0.70 | 1.00 | 0.028 | 0.039 |
| D | 15.00 | 16.00 | 0.591 | 0.630 |
| D1 | 12.00 | 13.00 | 0.472 | 0.512 |
| D2 | 1.10 | 1.50 | 0.043 | 0.059 |
| D3 | 14.90 | 15.50 | 0.587 | 0.610 |
| E | 10.00 | 11.00 | 0.394 | 0.433 |
| E1 | 7.50 | 8.50 | 0.295 | 0.335 |
| e | 2.54 BSC | | 0.100 BSC | |
| L | 13.00 | 14.50 | 0.512 | 0.571 |
| L1 | 3.00 | 3.50 | 0.118 | 0.138 |
| T° | 42.5 | 47.5 | | |
| W | - | 0.1 | - | 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-273 gemäß JEDEC außer D und D1.
*This drawing will meet all dimensions requiarement of JEDEC outline TO-273 except D and D1.*

Data according to IEC 60747and per semiconductor unless otherwise specified
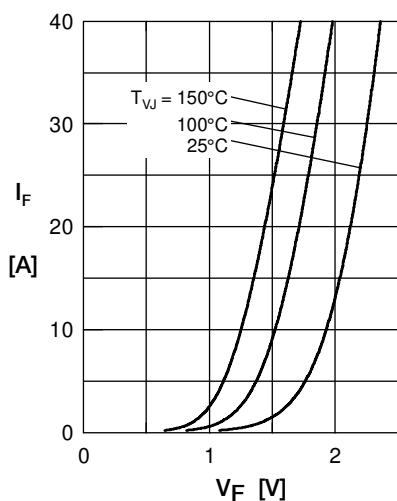
20131024b
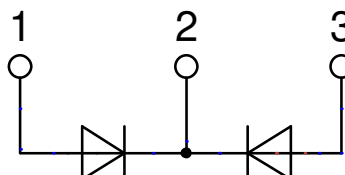
**Fast Diode**
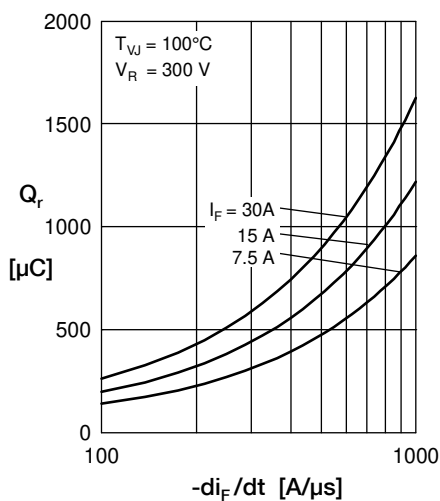


Fig. 1 Forward current
$I_F$ versus $V_F$



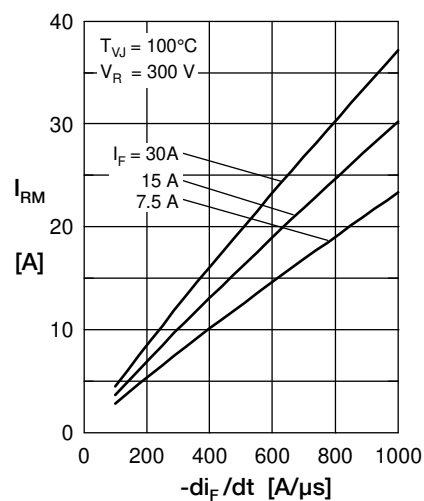Fig. 2 Typ. reverse recov. charge
$Q_r$ versus $-di_F/dt$



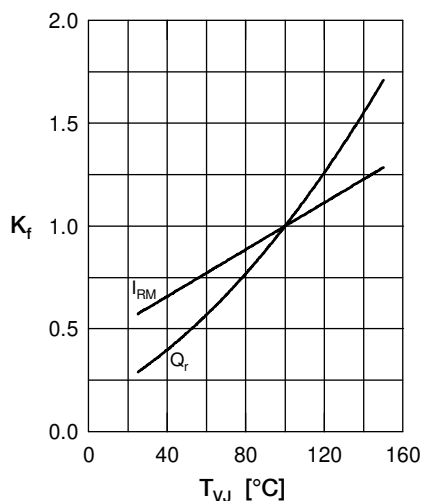Fig. 3 Typ. peak reverse current
$I_{RM}$ versus $-di_F/dt$

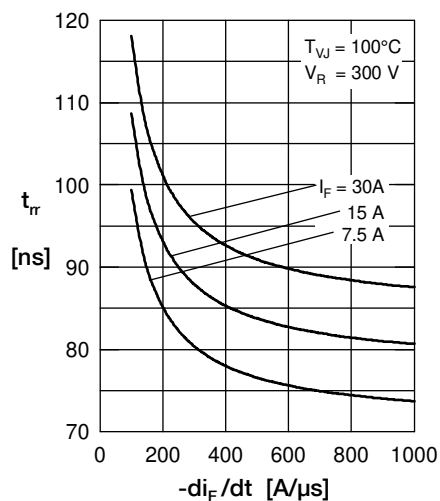

Fig. 4 Dynamic parameters
$Q_r$, $I_{RM}$ versus $T_{VJ}$
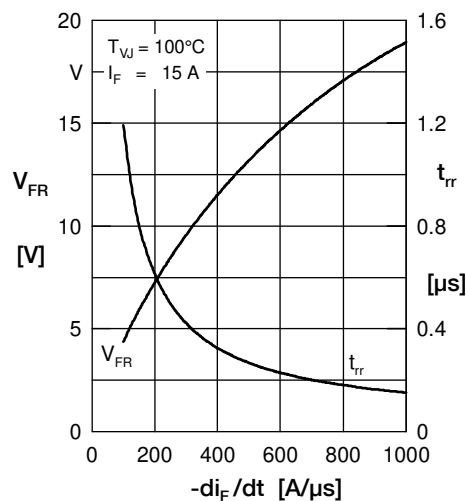


Fig. 5 Typ. recovery time
$t_{rr}$ versus $-di_F/dt$



Fig. 6 Typ. peak forward voltage
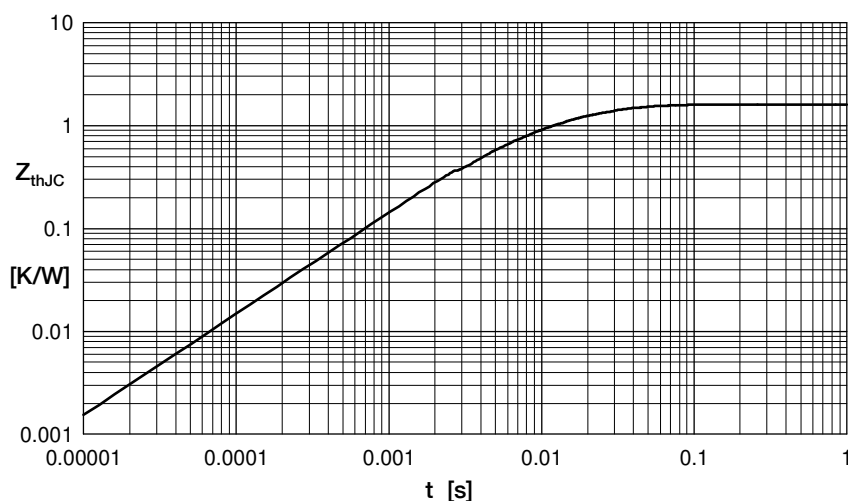$V_{FR}$ and $t_{fr}$ versus $di_F/dt$



Fig. 7 Transient thermal impedance junction to case

Constants for $Z_{thJC}$ calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|---|---|
| 1 | 0.908 | 0.0052 |
| 2 | 0.350 | 0.0003 |
| 3 | 0.342 | 0.017 |

IXYS reserves the right to change limits, conditions and dimensions.    Data according to IEC 60747 and per semiconductor unless otherwise specified    20131024b