

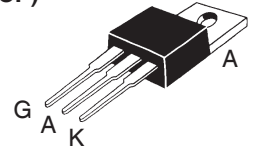
## Switchable Current Regulators

**IXCP 10M45S**  
**IXCY 10M45S**

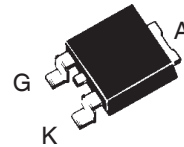
$$\begin{aligned} V_{AK} &= 450 \text{ V} \\ I_{A(P)} &= 2 - 100 \text{ mA} \\ R_{DYN} &= 9 - 900 \text{ k}\Omega \end{aligned}$$

| Symbol    | Test Condition                                                     | Maximum Ratings |                  |                  |
|-----------|--------------------------------------------------------------------|-----------------|------------------|------------------|
| $V_{AKR}$ | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$                     | 10M35S          | 450              | V                |
| $V_{AGR}$ | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$                     | 10M35S          | 450              | V                |
| $V_{GK}$  |                                                                    |                 | $\pm 20$         | V                |
| $I_D$     | $T_C = 25^\circ\text{C}$                                           |                 | -0.3             | A                |
| $P_D$     | $T_C = 25^\circ\text{C}$                                           |                 | 40               | W                |
| $T_J$     |                                                                    |                 | -55 ... +150     | $^\circ\text{C}$ |
| $T_{stg}$ |                                                                    |                 | -55 ... +150     | $^\circ\text{C}$ |
| $T_L$     | Temperature for Soldering (max. 10 s)                              |                 | 260              | $^\circ\text{C}$ |
| $M_D$     | Mounting torque with screw M3 (TO-220)<br>with screw M3.5 (TO-220) |                 | 0.45/4<br>0.55/5 | Nm/lb.in.        |

**TO-220 AB (IXCP)**



**TO-252 AA (IXCY)**



### Pin connections

1 = G, Control terminal;  
2 and 4 = A (+) Positive terminal  
3 = K (-), Negative terminal

### Features

- Minimum of 350/450 V breakdown
- Resistor programmable current source
- 40 W continuous dissipation
- International standard packages JEDEC TO-220 and TO-252
- On/Off switchable current source

### Applications

- Start-up circuits for SMPS
- Highly stable voltage sources
- Surge limiters and voltage protection
- Instantaneously reacting resettable fuses
- Soft start-up circuits

| Symbol                            | Test Condition                                                            |        | Characteristic Values<br>( $T_J = 25^\circ\text{C}$ unless otherwise specified) |      |                  |
|-----------------------------------|---------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------|------|------------------|
|                                   |                                                                           |        | min.                                                                            | typ. | max.             |
| $V_{AKR}$                         | $R_K = 300 \Omega$ , (Fig. 4)                                             | 10M35S | 450                                                                             |      | V                |
| $I_{A(P)}$                        | $V_D = 10 \text{ V}$ ; $R_K = 300 \Omega$ ; (Fig. 5)                      |        | 7                                                                               | 10   | 15 mA            |
| $V_{G(off)}$                      | $I_D = 100 \mu\text{A}$ ; $V_D = 400 \text{ V}$<br>Fig. 4                 | 10M45S | -5                                                                              |      | V                |
| $I_{AV}$                          | $V_D = 400 \text{ V}$ ; $V_{GK} = -10 \text{ V}$<br>Fig. 4                | 10M45S |                                                                                 |      | 25 $\mu\text{A}$ |
| $\Delta V_{AK} / \Delta I_{A(p)}$ | Dynamic resistance; $V_D = 10 \text{ V}$<br>$R_K = 300 \Omega$ ; (Fig. 4) |        | 160                                                                             |      | k $\Omega$       |
| $R_{thJC}$                        | Thermal Resistance junction-to-case                                       |        |                                                                                 |      | 3.1 K/W          |
| $R_{thJA}$                        | Thermal Resistance junction-to-ambient                                    | TO-220 |                                                                                 |      | 80 K/W           |
|                                   |                                                                           | TO-252 |                                                                                 |      | 100 K/W          |

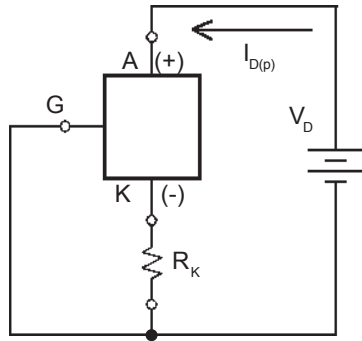


Fig. 1 Resistor  $R_K$  in series with negative pin to achieve different current levels

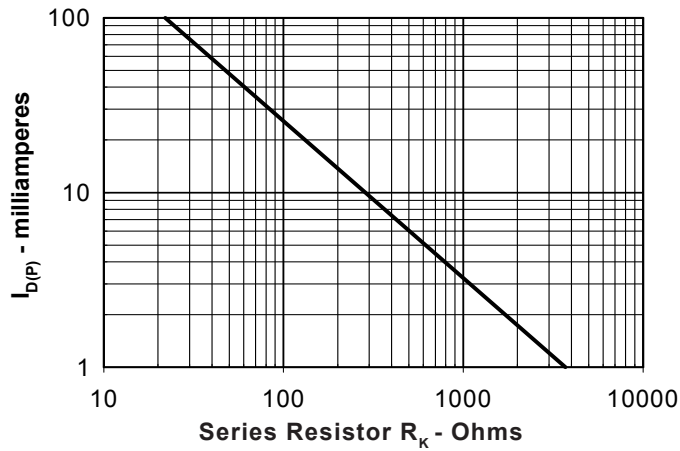


Fig. 2. Plateau current versus external resistance

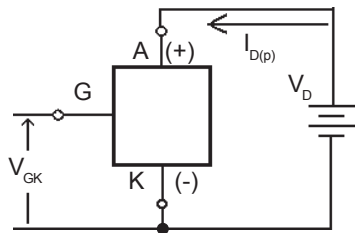


Fig. 3. Current regulator controlled by  $V_G$

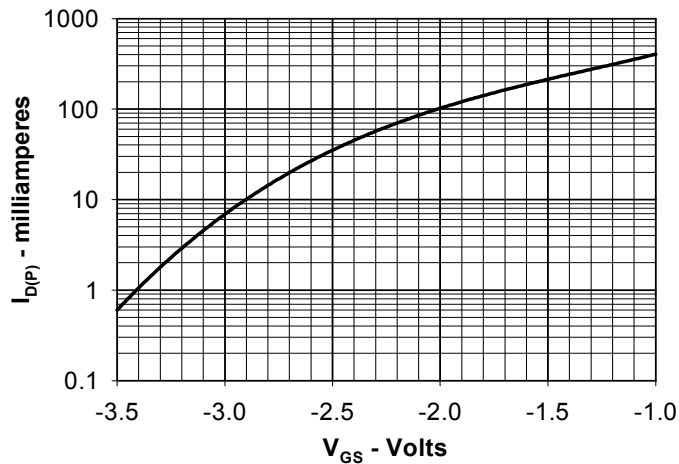
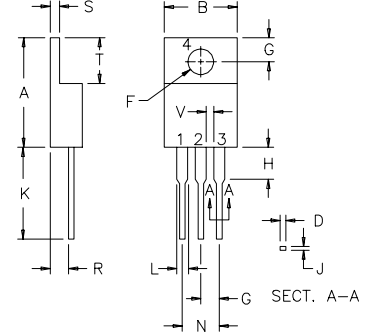


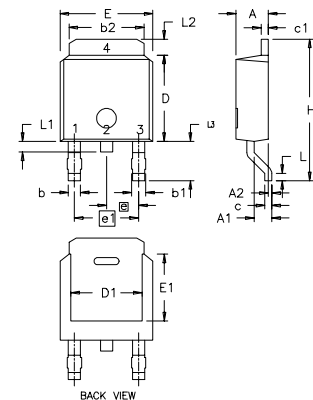
Fig. 4. Plateau current versus applied input voltage

### TO-220 AB Outline



| Dim. | Millimeter | Min.  | Max. | Inches | Min. | Max. |
|------|------------|-------|------|--------|------|------|
| A    | 14.23      | 16.51 | .560 | .650   |      |      |
| B    | 9.66       | 10.66 | .380 | .420   |      |      |
| C    | 3.56       | 4.82  | .140 | .190   |      |      |
| D    | 0.64       | 0.89  | .025 | .035   |      |      |
| F    | 3.54       | 4.06  | .139 | .161   |      |      |
| G    | 2.29       | 2.79  | .090 | .110   |      |      |
| H    | —          | 6.35  | —    | .250   |      |      |
| J    | 0.51       | 0.76  | .020 | .030   |      |      |
| K    | 12.70      | 14.73 | .500 | .580   |      |      |
| L    | 1.15       | 1.77  | .045 | .070   |      |      |
| N    | 4.83       | 5.33  | .190 | .210   |      |      |
| Q    | 2.54       | 3.42  | .100 | .135   |      |      |
| R    | 2.04       | 2.49  | .080 | .115   |      |      |
| S    | 0.64       | 1.39  | .025 | .055   |      |      |
| T    | 5.85       | 6.85  | 2.30 | 2.70   |      |      |
| V    | 1.15       | —     | .045 | —      |      |      |

### TO-252 AA Outline



| Dim. | Millimeter | Min.  | Max.  | Inches | Min. | Max. |
|------|------------|-------|-------|--------|------|------|
| A    | 2.19       | 2.38  | 0.086 | 0.094  |      |      |
| A1   | 0.89       | 1.14  | 0.035 | 0.045  |      |      |
| A2   | 0          | 0.13  | 0     | 0.005  |      |      |
| b    | 0.64       | 0.89  | 0.025 | 0.035  |      |      |
| b1   | 0.76       | 1.14  | 0.030 | 0.045  |      |      |
| b2   | 5.21       | 5.46  | 0.205 | 0.215  |      |      |
| c    | 0.46       | 0.58  | 0.018 | 0.023  |      |      |
| c1   | 0.46       | 0.58  | 0.018 | 0.023  |      |      |
| D    | 5.97       | 6.22  | 0.235 | 0.245  |      |      |
| D1   | 4.32       | 5.21  | 0.170 | 0.205  |      |      |
| E    | 6.35       | 6.73  | 0.250 | 0.265  |      |      |
| E1   | 4.32       | 5.21  | 0.170 | 0.205  |      |      |
| e    | 2.28       | BSC   | 0.090 | BSC    |      |      |
| e1   | 4.57       | BSC   | 0.180 | BSC    |      |      |
| H    | 9.40       | 10.42 | 0.370 | 0.410  |      |      |
| L    | 0.51       | 1.02  | 0.020 | 0.040  |      |      |
| L1   | 0.64       | 1.02  | 0.025 | 0.040  |      |      |
| L2   | 0.89       | 1.27  | 0.035 | 0.050  |      |      |
| L3   | 2.54       | 2.92  | 0.100 | 0.115  |      |      |

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

|           |           |           |           |              |              |              |           |
|-----------|-----------|-----------|-----------|--------------|--------------|--------------|-----------|
| 4,835,592 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665    | 6,404,065 B1 | 6,683,344    | 6,727,585 |
| 4,850,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123 B1 | 6,534,343    | 6,710,405 B2 |           |
| 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728 B1 | 6,583,505    | 6,710,463    |           |