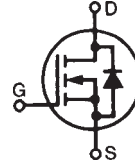


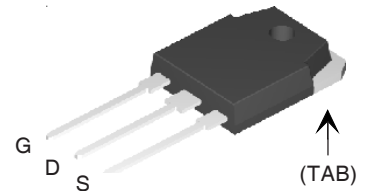
**PolarHT™  
Power MOSFET**
**IXTQ 36N30P  
IXTA 36N30P  
IXTP 36N30P**
 $V_{DSS} = 300 \text{ V}$   
 $I_{D25} = 36 \text{ A}$   
 $R_{DS(on)} = 110 \text{ m}\Omega$ 

N-Channel Enhancement Mode

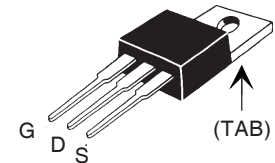


| Symbol    | Test Conditions  | Maximum Ratings |                                      |
|-----------|--|-----------------|--------------------------------------|
| $V_{DSS}$ | $T_J = 25^\circ\text{C to } 150^\circ\text{C}$   | 300             | V                                    |
| $V_{DGR}$ | $T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GS} = 1 \text{ M}\Omega$   | 300             | V                                    |
| $V_{GSM}$ |  | $\pm 20$        | V                                    |
| $I_{D25}$ | $T_C = 25^\circ\text{C}$   | 36              | A                                    |
| $I_{DM}$  | $T_C = 25^\circ\text{C}$ , pulse width limited by $T_{JM}$   | 90              | A                                    |
| $I_{AR}$  | $T_C = 25^\circ\text{C}$   | 36              | A                                    |
| $E_{AR}$  | $T_C = 25^\circ\text{C}$   | 30              | mJ                                   |
| $E_{AS}$  | $T_C = 25^\circ\text{C}$   | 1.0             | J                                    |
| $dv/dt$   | $I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ ,<br>$T_J \leq 150^\circ\text{C}$ , $R_G = 10 \Omega$ | 10              | V/ns                                 |
| $P_D$     | $T_C = 25^\circ\text{C}$   | 300             | W                                    |
| $T_J$     |  | -55 ... +150    | $^\circ\text{C}$                     |
| $T_{JM}$  |  | 150             | $^\circ\text{C}$                     |
| $T_{stg}$ |  | -55 ... +150    | $^\circ\text{C}$                     |
| $T_L$     | 1.6 mm (0.062 in.) from case for 10 s<br>Maximum tab temperature for soldering<br>TO-263 package for 10s                                 | 300<br>260      | $^\circ\text{C}$<br>$^\circ\text{C}$ |
| $M_d$     | Mounting torque (TO-3P / TO-220)   | 1.13/10         | Nm/lb.in.                            |
| Weight    | TO-3P  | 5.5             | g                                    |
|           | TO-220   | 4               | g                                    |
|           | TO-263   | 3               | g                                    |

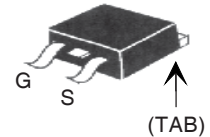
TO-3P (IXTQ)



TO-220 (IXTP)



TO-263 (IXTA)


 G = Gate      D = Drain  
 S = Source      TAB = Drain

**Features**

- International standard packages
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect

**Advantages**

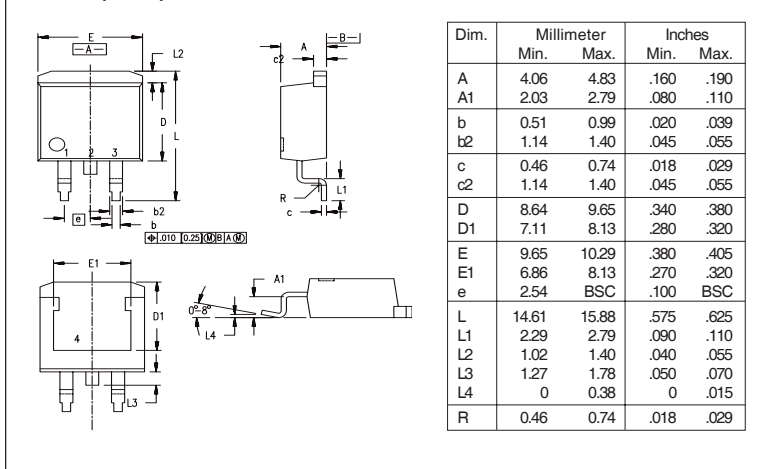
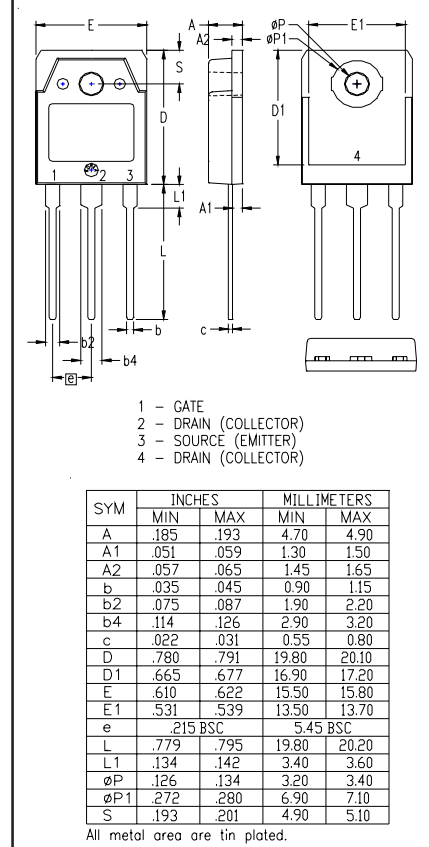
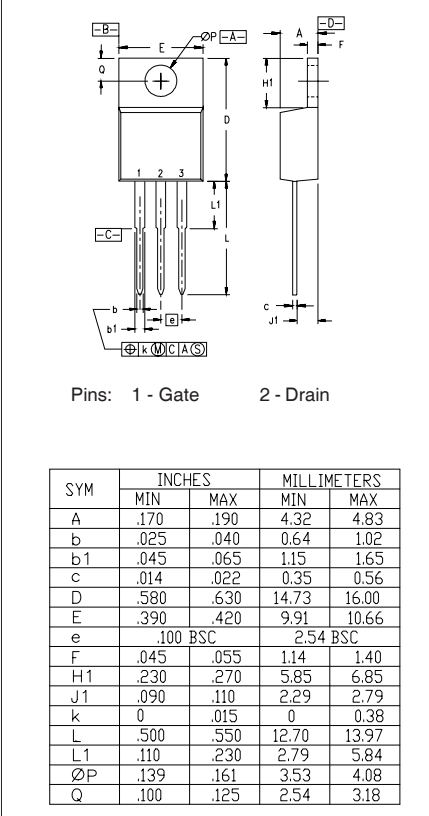
- Easy to mount
- Space savings
- High power density

**PolarHT™ DMOS transistors utilize proprietary designs and process. US patent is pending.**

| Symbol       | Test Conditions<br>( $T_J = 25^\circ\text{C}$ , unless otherwise specified)                                      | Characteristic Values |      |                      |
|--------------|--|-----------------------|------|----------------------|
|              |  | Min.                  | Typ. | Max.                 |
| $V_{DSS}$    | $V_{GS} = 0 \text{ V}$ , $I_D = 250 \mu\text{A}$   | 300                   |      | V                    |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$ , $I_D = 250 \mu\text{A}$  | 2.5                   |      | 5.0 V                |
| $I_{GSS}$    | $V_{GS} = \pm 20 \text{ V}_{DC}$ , $V_{DS} = 0$  |                       |      | $\pm 100 \text{ nA}$ |
| $I_{DSS}$    | $V_{DS} = V_{DSS}$<br>$V_{GS} = 0 \text{ V}$<br>$T_J = 125^\circ\text{C}$  |                       |      | 25 $\mu\text{A}$     |
|              |  |                       |      | 250 $\mu\text{A}$    |
| $R_{DS(on)}$ | $V_{GS} = 10 \text{ V}$ , $I_D = 0.5 I_{D25}$<br>Pulse test, $t \leq 300 \mu\text{s}$ , duty cycle $d \leq 2 \%$ | 92                    |      | 110 $\text{m}\Omega$ |

| Symbol       | Test Conditions  | Characteristic Values  |      |          |
|--------------|--|--|------|----------|
|              |  | $(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$ |      |          |
|              |  | Min.   | Typ. | Max.     |
| $g_{fs}$     | $V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}, \text{ pulse test}$  | 12   | 22   | S        |
| $C_{iss}$    | $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$  |  | 2250 | pF       |
| $C_{oss}$    |  |  | 370  | pF       |
| $C_{rss}$    |  |  | 90   | pF       |
| $t_{d(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_{D25}$<br>$R_G = 10\ \Omega \text{ (External)}$ |  | 24   | ns       |
| $t_r$        |  |  | 30   | ns       |
| $t_{d(off)}$ |  |  | 97   | ns       |
| $t_f$        |  |  | 28   | ns       |
| $Q_{g(on)}$  | $V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$                                      |  | 70   | nC       |
| $Q_{gs}$     |  |  | 17   | nC       |
| $Q_{gd}$     |  |  | 35   | nC       |
| $R_{thJC}$   |  |  |      | 0.42 K/W |
| $R_{thCK}$   | (TO-3P)  |  | 0.21 | K/W      |
|              | (TO-220)   |  | 0.25 | K/W      |

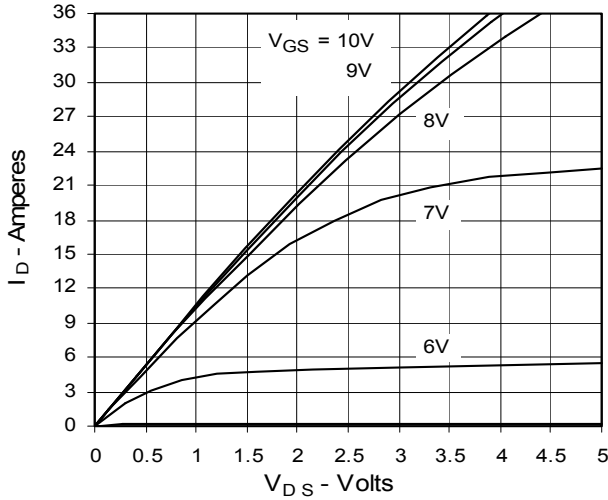
| Symbol   | Test Conditions  | Characteristic Values  |      |               |
|----------|--|--|------|---------------|
|          |  | $(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$ |      |               |
|          |  | Min.   | typ. | Max.          |
| $I_S$    | $V_{GS} = 0\text{ V}$  |  |      | 36 A          |
| $I_{SM}$ | Repetitive   |  |      | 90 A          |
| $V_{SD}$ | $I_F = I_S, V_{GS} = 0\text{ V},$<br>Pulse test, $t \leq 300\ \mu\text{s}, \text{ duty cycle } d \leq 2\%$ |  |      | 1.5 V         |
| $t_{rr}$ | $I_F = 25\text{ A}$<br>$-di/dt = 100\text{ A}/\mu\text{s}$   |  | 250  | ns            |
| $Q_{RM}$ | $V_R = 100\text{ V}$   |  | 2.0  | $\mu\text{C}$ |

**TO-263 (IXTP) Outline**

**TO-3P (IXTQ) Outline**

**TO-220 (IXTA) Outline**


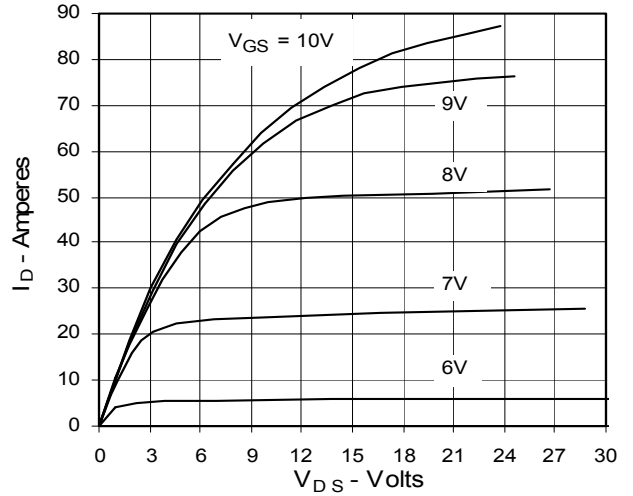
IXYS reserves the right to change limits, test conditions, and dimensions.

|  |           |           |           |           |           |           |             |             |             |           |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|-------------|-----------|
| IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: | 4,850,072 | 4,931,844 | 5,034,796 | 5,063,307 | 5,237,481 | 5,381,025 | 6,404,065B1 | 6,162,665   | 6,534,343   | 6,583,505 |
|  | 4,835,592 | 4,881,106 | 5,017,508 | 5,049,961 | 5,187,117 | 5,486,715 | 6,306,728B1 | 6,259,123B1 | 6,306,728B1 | 6,683,344 |

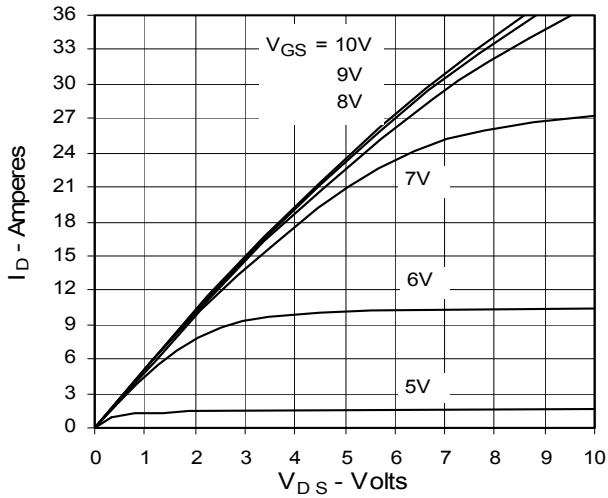
**Fig. 1. Output Characteristics**  
@ 25°C



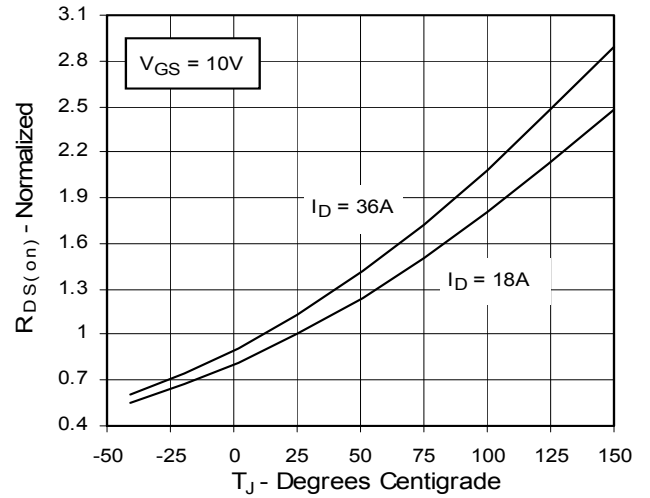
**Fig. 2. Extended Output Characteristics**  
@ 25°C



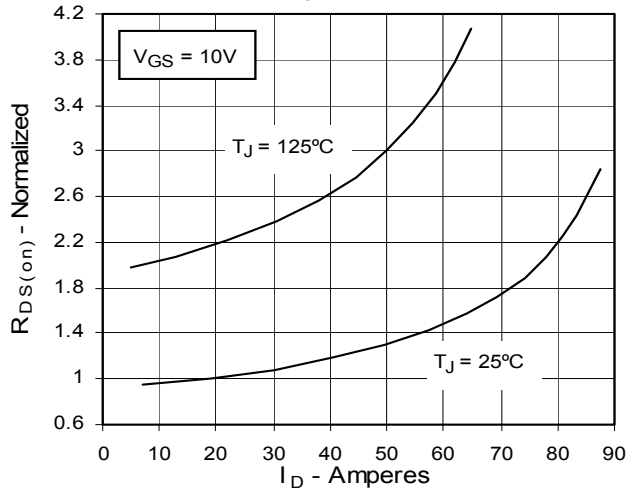
**Fig. 3. Output Characteristics**  
@ 125°C



**Fig. 4.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$  Value vs. Junction Temperature**



**Fig. 5.  $R_{DS(on)}$  Normalized to 0.5  $I_{D25}$  Value vs.  $I_D$**



**Fig. 6. Drain Current vs. Case Temperature**

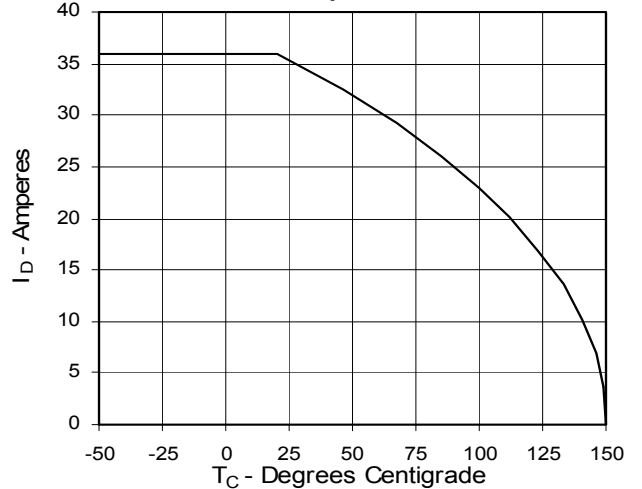


Fig. 7. Input Admittance

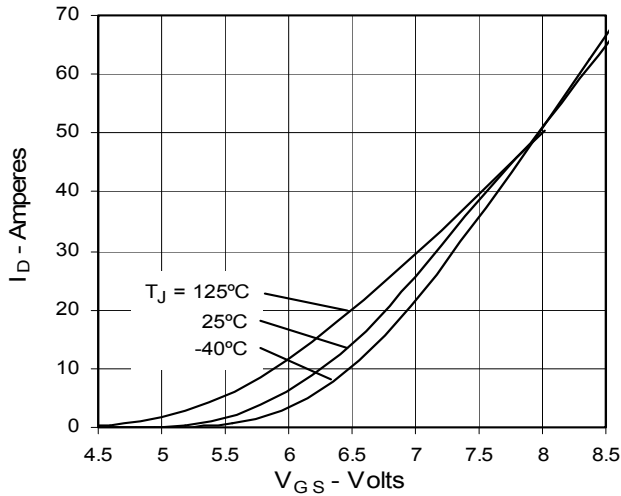


Fig. 8. Transconductance

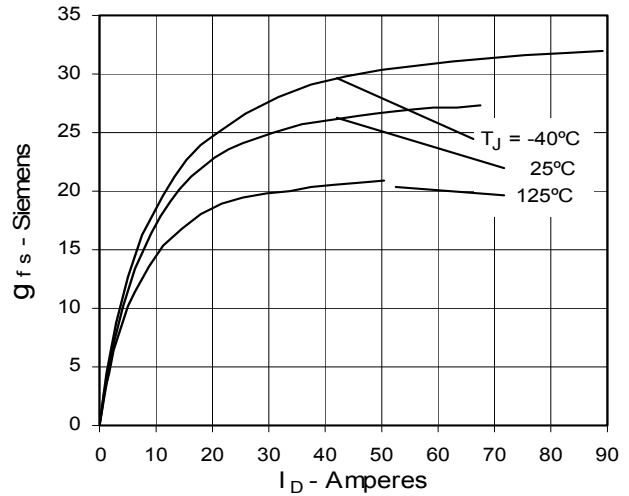


Fig. 9. Source Current vs. Source-To-Drain Voltage

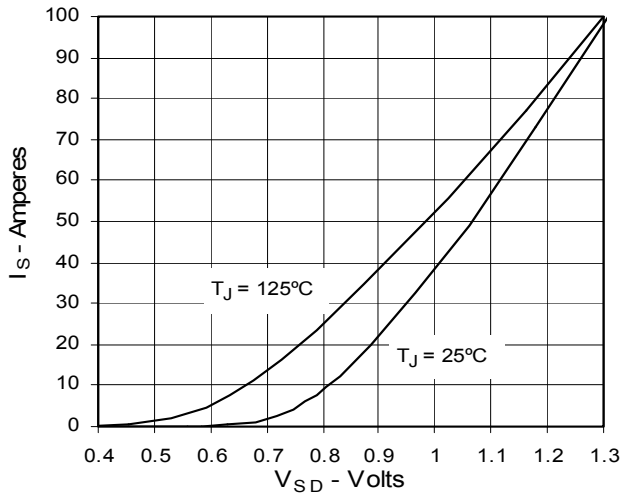


Fig. 10. Gate Charge

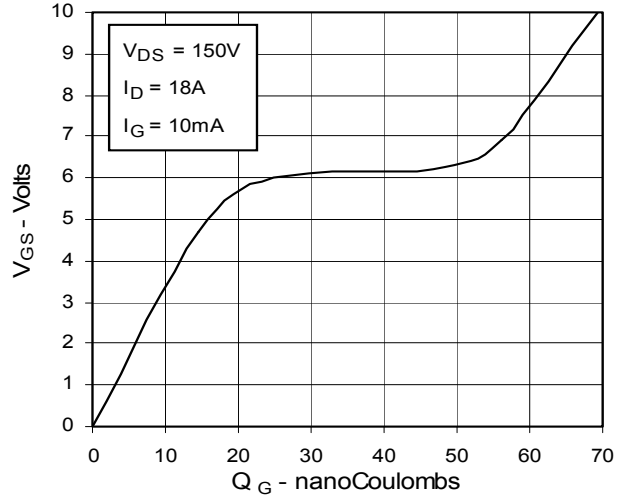


Fig. 11. Capacitance

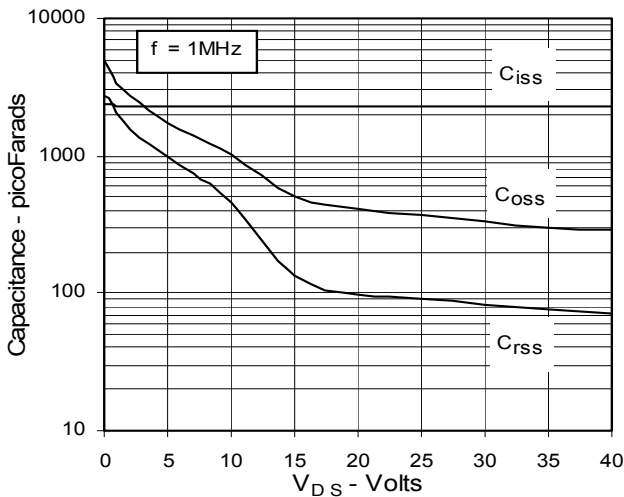
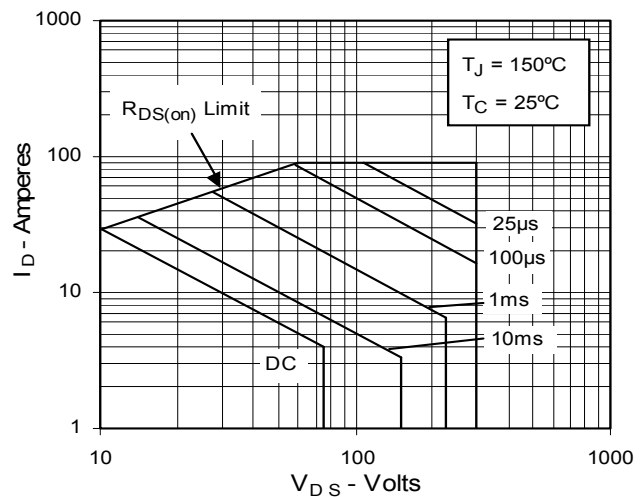
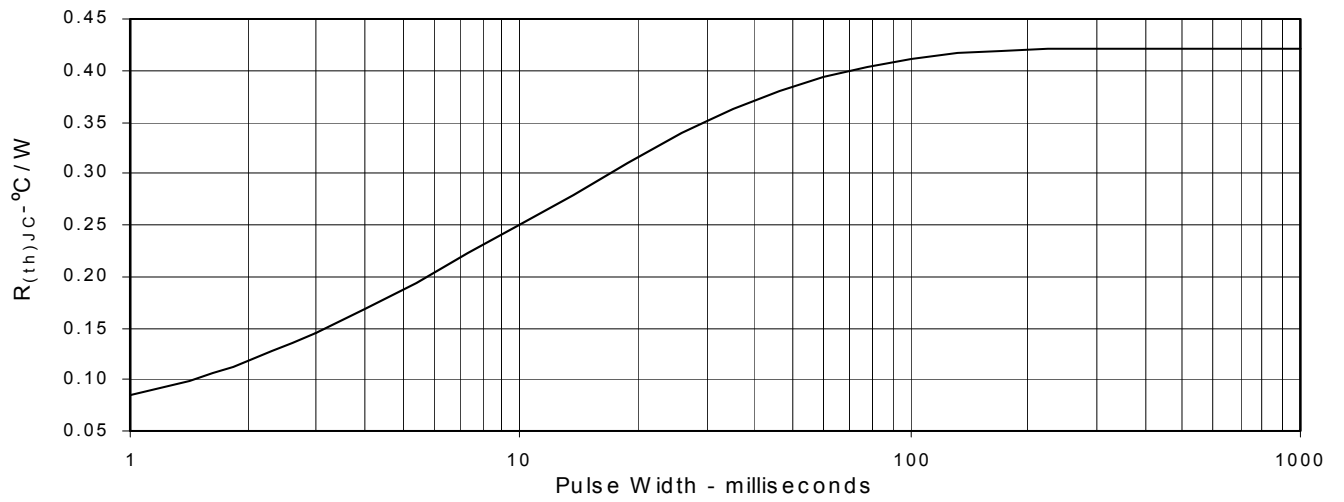


Fig. 12. Forward-Bias Safe Operating Area



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

**Fig. 13. Maximum Transient Thermal Resistance**



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.