

# MirrorFETs™ and LIMOFETs™

T-39-15

IXYS is developing new integrated solutions that simplify the logic-to-power interface while adding safeguard protection features to the power device. Because of its process compatibility with CMOS, HDMOS technology has enabled us to create a new family of "SMART" power MOS products. On the power device we have added monolithic current sensing to simplify the design of current mode switching power supplies. These devices will soon integrate on the power chip a function to monitor device junction temperature.

To complement these sensing power FETs, we will supply innovative CMOS IC driver circuits which accept the current and temperature sense signals, and provide status outputs which can be used to close the protection feedback loop.

IXYS' expanding "SMART" power product family is addressing the need for practical and cost-effective solutions to efficiently handle the critical two-way communications among the load, power device, and control logic.

## MirrorFETs

MirrorFETs add a new capability to power control designs—load current sensing which eliminates high-power sense resistors or expensive current measuring circuitry. They are available in five-leaded versions of the popular TO-220 and TO-247 packages as well as in the new Z-Pac.

IXYS has improved the tracking accuracy of the current sense to within  $\pm 2.5\%$  over the temperature range. The accuracy of these devices is less dependent on the sense voltage due to the high transconductance of HDMOS FET designs. This allows for sense voltages of 0.5 volts which matches IC input thresholds and results in better noise immunity.

MirrorFETs also come with a separate Kelvin source pad on the chip which is brought out separately from the load source terminal. In high frequency switching applications, the Kelvin source is used with the gate to reduce inductive noise generated when load and drive currents share common bond wires.

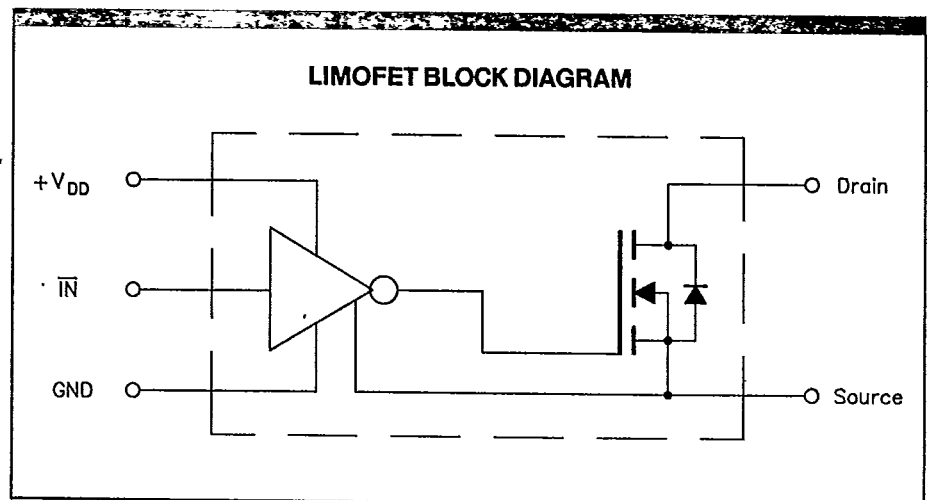
These devices have current handling capabilities ranging from 20 amps at 100 volts to 10 amps at 1000 volts. They offer the same level of ruggedness and low on-resistance as our standard N-channel power MOSFETs.

## LIMOFETs—Logic In/MOS Output

In applications in which space and part count is critical, IXYS supplies a device which combines MegaMOS FETs and IC drive technology in one package.

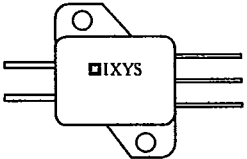
The initial family of LIMOFETs will be packaged in the new 5-pin hermetic Z-Pac. The input side is TTL and CMOS compatible allowing for direct interface to the control logic. The internal CMOS driver has a rugged totem-pole output section capable of switching the MegaMOS FETs to 500 kHz. The third input terminal to the Z-Pac is used for the  $V_{cc}$  of the driver sections; a  $V_{cc}$  of 7-15 volts is required.

LIMOFETs in a Z-Pac are internally isolated and range in current from 75 amps at 100 volts to 10 amps at 1000 volts. For Hi-Rel military applications, they offer a major space savings over discrete FETs and IC drivers. Future versions of these logic input FETs will have on-board over-current and temperature protection as well as diagnostic static outputs.

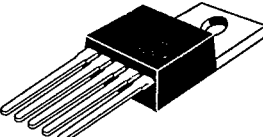


T-39-15

## LIMOFETs

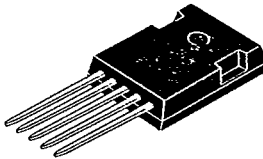
| Part Number | Drain-Source Voltage<br>$V_{(BR)DSS}$<br>(Volts) | Drain Current<br>$I_{D(Cont)}$<br>(Amps) | On Resistance<br>$R_{DS(on)}$<br>(Ohms) | Driver Characteristics  |                         |                         | Notes | Case Style                                                                                       |
|-------------|--------------------------------------------------|------------------------------------------|-----------------------------------------|-------------------------|-------------------------|-------------------------|-------|--------------------------------------------------------------------------------------------------|
|             |                                                  |                                          |                                         | $V_{IH}$ min<br>(Volts) | $V_{IL}$ max<br>(Volts) | $V_{DD}$ max<br>(Volts) |       |                                                                                                  |
| IXLZ11N100  | 1000                                             | 11                                       | 1.15                                    | 2.4                     | 0.8                     | 20                      | 1     | Z-Pac<br><br> |
| IXLZ10N100  | 1000                                             | 10                                       | 1.2                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ12N90   | 900                                              | 12                                       | 0.9                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ11N90   | 900                                              | 11                                       | 0.95                                    | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ18N65   | 650                                              | 18                                       | 0.4                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ15N65   | 650                                              | 15                                       | 0.5                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ21N60   | 600                                              | 21                                       | 0.3                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ17N60   | 600                                              | 17                                       | 0.4                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ24N50   | 500                                              | 24                                       | 0.23                                    | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ21N50   | 500                                              | 21                                       | 0.25                                    | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ35N30   | 300                                              | 35                                       | 0.1                                     | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ42N20   | 200                                              | 42                                       | 0.065                                   | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |
| IXLZ67N10   | 100                                              | 67                                       | 0.03                                    | 2.4                     | 0.8                     | 20                      | 1     |                                                                                                  |

## MirrorFET Power MOSFETs

| Part Number | Drain-Source Voltage<br>$V_{(BR)DSS}$<br>(Volts) | Drain Current<br>$I_D$ @ 25 °C Case |                           | On Resistance<br>$R_{DS(on)}$<br>(Ohms) | Mirror Ratio |            | Power Diss.<br>$P_D$ Max<br>(Watts) | Notes | Case Style                                                                                            |
|-------------|--------------------------------------------------|-------------------------------------|---------------------------|-----------------------------------------|--------------|------------|-------------------------------------|-------|-------------------------------------------------------------------------------------------------------|
|             |                                                  | $I_{D(Cont)}$<br>(Amps)             | $I_{D(Pulsed)}$<br>(Amps) |                                         | $I_D/I_{Mn}$ | Tol<br>(%) |                                     |       |                                                                                                       |
| IXTP8N50MA  | 500                                              | 8                                   | 32                        | 0.8                                     | 1310         | 2.5        | 125                                 | 1     | TO-220-5<br><br> |
| IXTP8N50MB  | 500                                              | 8                                   | 32                        | 0.8                                     | 1310         | 5.0        | 125                                 | 1     |                                                                                                       |
| IXTP8N45MA  | 450                                              | 8                                   | 32                        | 0.8                                     | 1310         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP8N45MB  | 450                                              | 8                                   | 32                        | 0.8                                     | 1310         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP15N30MA | 300                                              | 15                                  | 60                        | 0.28                                    | 1295         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP15N30MB | 300                                              | 15                                  | 60                        | 0.28                                    | 1295         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP15N25MA | 250                                              | 15                                  | 60                        | 0.28                                    | 1295         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP15N25MB | 250                                              | 15                                  | 60                        | 0.28                                    | 1295         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP22N20MA | 200                                              | 22                                  | 88                        | 0.15                                    | 1305         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP22N20MB | 200                                              | 22                                  | 88                        | 0.15                                    | 1305         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP22N15MA | 150                                              | 22                                  | 88                        | 0.15                                    | 1305         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP22N15MB | 150                                              | 22                                  | 88                        | 0.15                                    | 1305         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP30N10MA | 100                                              | 30                                  | 120                       | 0.077                                   | 1350         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP30N10MB | 100                                              | 30                                  | 120                       | 0.077                                   | 1350         | 5.0        | 125                                 |       |                                                                                                       |
| IXTP30N08MA | 80                                               | 30                                  | 120                       | 0.077                                   | 1350         | 2.5        | 125                                 |       |                                                                                                       |
| IXTP30N08MB | 80                                               | 30                                  | 120                       | 0.077                                   | 1350         | 5.0        | 125                                 |       |                                                                                                       |

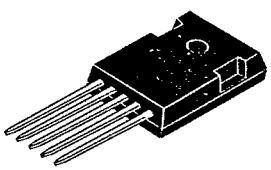
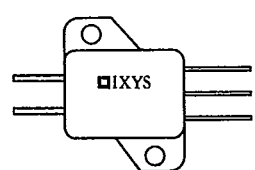
Notes: 1. New product available 4Q88

## MirrorFET Power MOSFETs

| Part Number | Drain-Source Voltage<br>$V_{(BR)DSS}$<br>(Volts) | Drain Current<br>$I_D$ @ 25 °C Case |                           | On Resistance<br>$R_{DS(on)}$<br>(Ohms) | Mirror Ratio |            | Power Diss.<br>$P_D$ Max<br>(Watts) | Notes | Case Style                                                                                      |
|-------------|--------------------------------------------------|-------------------------------------|---------------------------|-----------------------------------------|--------------|------------|-------------------------------------|-------|-------------------------------------------------------------------------------------------------|
|             |                                                  | $I_{D(Cont)}$<br>(Amps)             | $I_{D(Pulsed)}$<br>(Amps) |                                         | $I_D/I_{Mn}$ | Tol<br>(%) |                                     |       |                                                                                                 |
| IXTH20N60MA | 600                                              | 20                                  | 80                        | 0.35                                    | NA           | 2.5        | 300                                 | 1     | TO-247-5<br> |
| IXTH20N60MB | 600                                              | 20                                  | 80                        | 0.35                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH20N55MA | 550                                              | 20                                  | 80                        | 0.35                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH20N55MB | 550                                              | 20                                  | 80                        | 0.35                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH24N50MA | 500                                              | 24                                  | 96                        | 0.23                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH24N50MB | 500                                              | 24                                  | 96                        | 0.23                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH12N50MA | 500                                              | 12                                  | 48                        | 0.4                                     | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH12N50MB | 500                                              | 12                                  | 48                        | 0.4                                     | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |
| IXTH24N45MA | 450                                              | 24                                  | 96                        | 0.23                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH24N45MB | 450                                              | 24                                  | 96                        | 0.23                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH12N45MA | 450                                              | 12                                  | 48                        | 0.4                                     | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH12N45MB | 450                                              | 12                                  | 48                        | 0.4                                     | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |
| IXTH27N40MA | 400                                              | 27                                  | 108                       | 0.18                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH27N40MB | 400                                              | 27                                  | 108                       | 0.18                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH15N40MA | 400                                              | 15                                  | 60                        | 0.3                                     | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH15N40MB | 400                                              | 15                                  | 60                        | 0.3                                     | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |
| IXTH27N35MA | 350                                              | 27                                  | 108                       | 0.18                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH27N35MB | 350                                              | 27                                  | 108                       | 0.18                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH15N35MA | 350                                              | 15                                  | 60                        | 0.3                                     | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH15N35MB | 350                                              | 15                                  | 60                        | 0.3                                     | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |
| IXTH35N25MA | 250                                              | 35                                  | 140                       | 0.1                                     | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH35N25MB | 250                                              | 35                                  | 140                       | 0.1                                     | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH23N25MA | 250                                              | 23                                  | 92                        | 0.14                                    | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH23N25MB | 250                                              | 23                                  | 92                        | 0.14                                    | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |
| IXTH42N20MA | 200                                              | 42                                  | 168                       | 0.065                                   | NA           | 2.5        | 300                                 | 1     |                                                                                                 |
| IXTH42N20MB | 200                                              | 42                                  | 168                       | 0.065                                   | NA           | 5.0        | 300                                 | 1     |                                                                                                 |
| IXTH31N20MA | 200                                              | 31                                  | 124                       | 0.085                                   | 1100         | 2.5        | 150                                 | 1     |                                                                                                 |
| IXTH31N20MB | 200                                              | 31                                  | 124                       | 0.085                                   | 1100         | 5.0        | 150                                 | 1     |                                                                                                 |

Notes: 1. New product available 4Q88

## MirrorFET Power MOSFETs

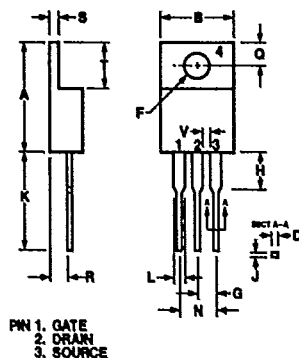
| Part Number | Drain-Source Voltage<br>$V_{DS}$<br>(Volts) | Drain Current<br>$I_D$ @ 25 °C Case |                           | On Resistance<br>$R_{DS(on)}$<br>(Ohms) | Mirror Ratio |            | Power Diss.<br>$P_D$ Max<br>(Watts) | Notes | Case Style                                                                                          |
|-------------|---------------------------------------------|-------------------------------------|---------------------------|-----------------------------------------|--------------|------------|-------------------------------------|-------|-----------------------------------------------------------------------------------------------------|
|             |                                             | $I_{D(Cont)}$<br>(Amps)             | $I_{D(Pulsed)}$<br>(Amps) |                                         | $I_D/I_{Mn}$ | Tol<br>(%) |                                     |       |                                                                                                     |
| IXTH42N15MA | 150                                         | 42                                  | 168                       | 0.065                                   | NA           | 2.5        | 300                                 | 1     | TO-247-5<br><br> |
| IXTH42N15MB | 150                                         | 42                                  | 168                       | 0.065                                   | NA           | 5.0        | 300                                 | 1     |                                                                                                     |
| IXTH31N15MA | 150                                         | 31                                  | 124                       | 0.085                                   | 1100         | 2.5        | 150                                 | 1     |                                                                                                     |
| IXTH31N15MB | 150                                         | 31                                  | 124                       | 0.085                                   | 1100         | 5.0        | 150                                 | 1     |                                                                                                     |
| IXTH67N10MA | 100                                         | 67                                  | 268                       | 0.025                                   | NA           | 2.5        | 300                                 | 1     |                                                                                                     |
| IXTH67N10MB | 100                                         | 67                                  | 268                       | 0.025                                   | NA           | 5.0        | 300                                 | 1     |                                                                                                     |
| IXTH39N10MA | 100                                         | 39                                  | 156                       | 0.055                                   | 1100         | 2.5        | 150                                 | 1     |                                                                                                     |
| IXTH39N10MB | 100                                         | 39                                  | 156                       | 0.055                                   | 1100         | 5.0        | 150                                 | 1     |                                                                                                     |
| IXTH67N08MA | 80                                          | 67                                  | 268                       | 0.025                                   | NA           | 2.5        | 300                                 | 1     |                                                                                                     |
| IXTH67N08MB | 80                                          | 67                                  | 268                       | 0.025                                   | NA           | 5.0        | 300                                 | 1     |                                                                                                     |
| IXTH39N08MA | 80                                          | 39                                  | 156                       | 0.055                                   | 1100         | 2.5        | 150                                 | 1     |                                                                                                     |
| IXTH39N08MB | 80                                          | 39                                  | 156                       | 0.055                                   | 1100         | 5.0        | 150                                 | 1     |                                                                                                     |
| IXTZ20N60MA | 600                                         | 20                                  | 80                        | 0.35                                    | NA           | 2.5        | 300                                 | 1     | Z-Pac<br><br>  |
| IXTZ20N60MB | 600                                         | 20                                  | 80                        | 0.35                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                     |
| IXTZ24N50MA | 500                                         | 24                                  | 96                        | 0.23                                    | NA           | 2.5        | 300                                 | 1     |                                                                                                     |
| IXTZ24N50MB | 500                                         | 24                                  | 96                        | 0.23                                    | NA           | 5.0        | 300                                 | 1     |                                                                                                     |
| IXTZ27N40MA | 400                                         | 27                                  | 108                       | 0.18                                    | NA           | 2.5        | 300                                 |       |                                                                                                     |
| IXTZ27N40MB | 400                                         | 27                                  | 108                       | 0.18                                    | NA           | 5.0        | 300                                 |       |                                                                                                     |
| IXTZ35N25MA | 250                                         | 35                                  | 140                       | 0.1                                     | NA           | 2.5        | 300                                 |       |                                                                                                     |
| IXTZ35N25MB | 250                                         | 35                                  | 140                       | 0.1                                     | NA           | 5.0        | 300                                 |       |                                                                                                     |
| IXTZ42N20MA | 200                                         | 42                                  | 168                       | 0.065                                   | NA           | 2.5        | 300                                 |       |                                                                                                     |
| IXTZ42N20MB | 200                                         | 42                                  | 168                       | 0.065                                   | NA           | 5.0        | 300                                 |       |                                                                                                     |
| IXTZ67N10MA | 100                                         | 67                                  | 268                       | 0.03                                    | NA           | 2.5        | 300                                 |       |                                                                                                     |
| IXTZ67N10MB | 100                                         | 67                                  | 268                       | 0.03                                    | NA           | 5.0        | 300                                 |       |                                                                                                     |
|             |                                             |                                     |                           |                                         |              |            |                                     |       |                                                                                                     |
|             |                                             |                                     |                           |                                         |              |            |                                     |       |                                                                                                     |
|             |                                             |                                     |                           |                                         |              |            |                                     |       |                                                                                                     |
|             |                                             |                                     |                           |                                         |              |            |                                     |       |                                                                                                     |

Notes: 1. New product available 4Q88

# DETAILED PACKAGE OUTLINES

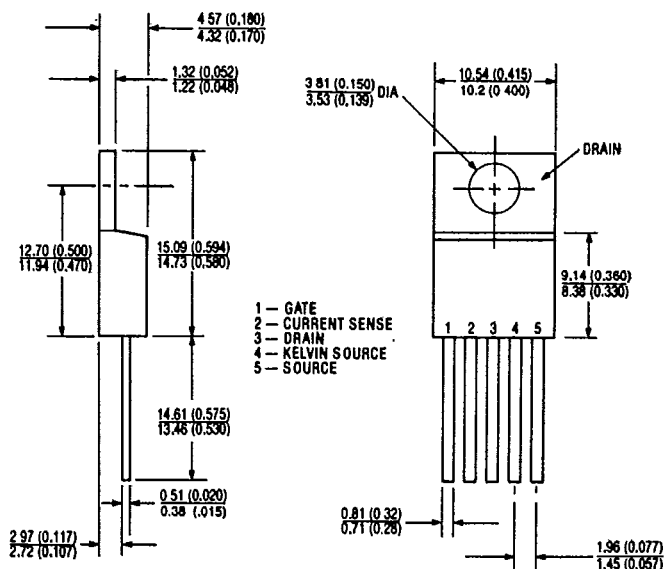
T-91-20

TO-220 AB

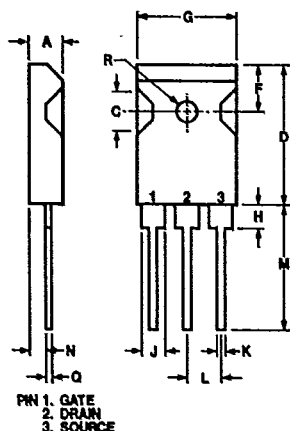


| Dim. | Millimeter |       | Inches |      |
|------|------------|-------|--------|------|
|      | Min.       | Max.  | Min.   | Max. |
| A    | 14.23      | 16.51 | .560   | .650 |
| B    | 9.66       | 10.66 | .380   | .420 |
| C    | 3.56       | 4.82  | .140   | .190 |
| D    | 0.64       | 0.89  | .025   | .035 |
| F    | 3.54       | 4.08  | .139   | .161 |
| G    | 2.29       | 2.79  | .090   | .110 |
| H    | —          | 6.35  | —      | .250 |
| J    | 0.51       | .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  | .230   | .270 |
| V    | 1.15       | —     | .045   | —    |

CONFORMS TO OUTLINE TO-220 (IR H-7)  
Dimensions in Millimeters (Inches)

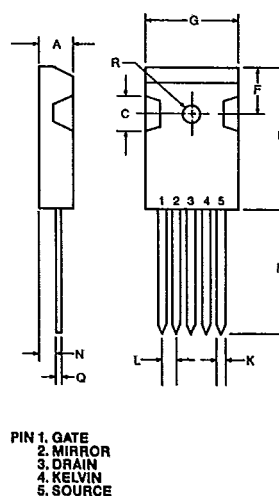


TO-247 (3 LEADED)



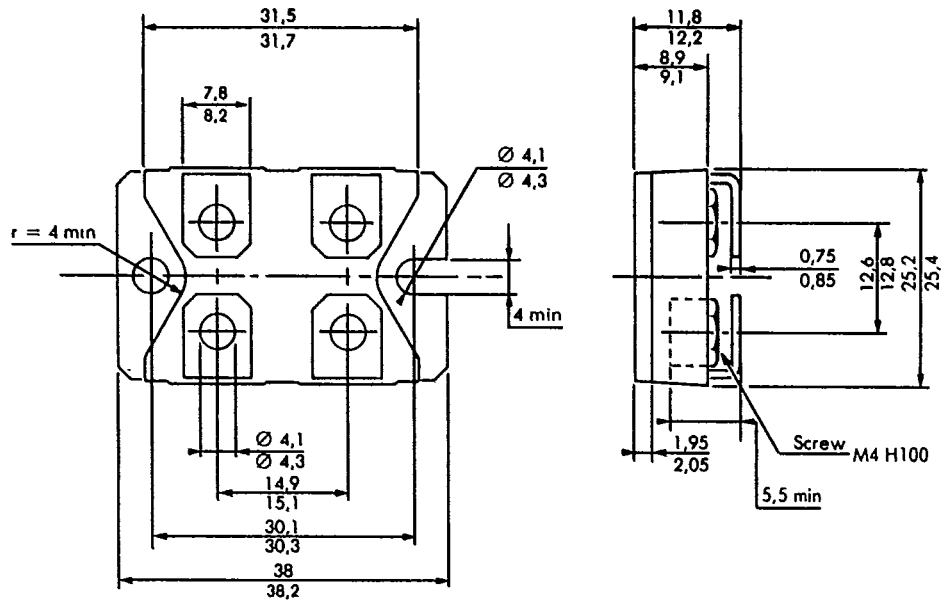
| Dim.           | Millimeter |      | Inches |      |
|----------------|------------|------|--------|------|
|                | Min.       | Max. | Min.   | Max. |
| A              | 4.7        | 5.3  | .185   | .209 |
| C              | 4.5        | 6.0  | .178   | .236 |
| D              | 19.7       | 21.4 | .776   | .843 |
| F              | 5.3        | 6.1  | .209   | .240 |
| G              | 15.3       | 15.9 | .602   | .625 |
| H              | 3.7        | 4.3  | .146   | .169 |
| J              | 1.95       | 2.4  | .077   | .094 |
| J <sub>1</sub> | 2.97       | 3.4  | .117   | .134 |
| K              | 1.0        | 1.4  | .040   | .055 |
| L              | 5.4        | 5.5  | .213   | .217 |
| M              | 19.9       | 20.2 | .783   | .795 |
| N              | 2.2        | 2.6  | .087   | .102 |
| Q              | 0.4        | 0.8  | .016   | .031 |
| R              | 2.9        | 3.3  | .114   | .129 |

TO-247 (5 LEADED)

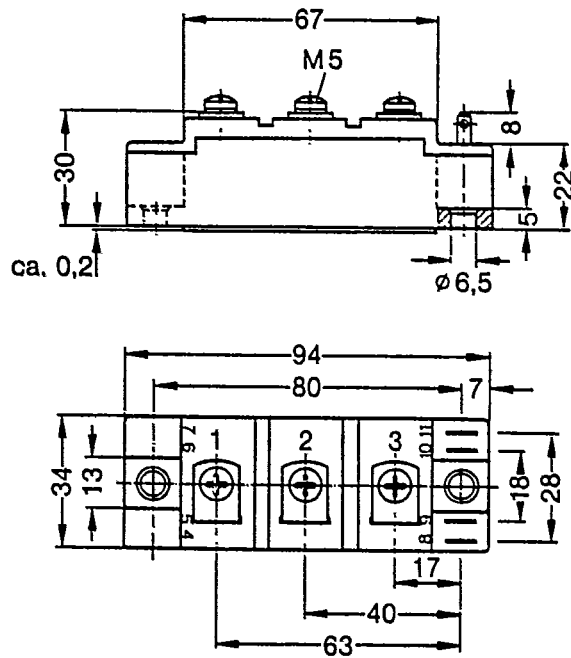


| Dim. | Millimeter |      | Inches |      |
|------|------------|------|--------|------|
|      | Min.       | Max. | Min.   | Max. |
| A    | 4.7        | 5.3  | .185   | .209 |
| C    | 4.5        | 6.0  | .178   | .236 |
| D    | 19.7       | 21.4 | .776   | .843 |
| F    | 5.3        | 6.1  | .209   | .240 |
| G    | 15.3       | 15.9 | .602   | .625 |
| K    | 1.1        | 1.3  | .043   | .051 |
| L    | 2.51       | 2.56 | .099   | .101 |
| M    | 19.9       | 20.2 | .783   | .795 |
| N    | 2.2        | 2.6  | .087   | .102 |
| Q    | 0.4        | 0.8  | .016   | .031 |
| R    | 2.9        | 3.3  | .114   | .129 |

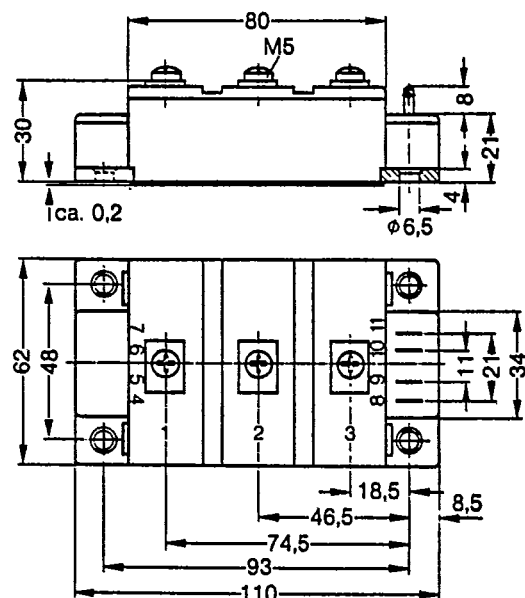
**TO-238**  
Dimensions in Millimeters



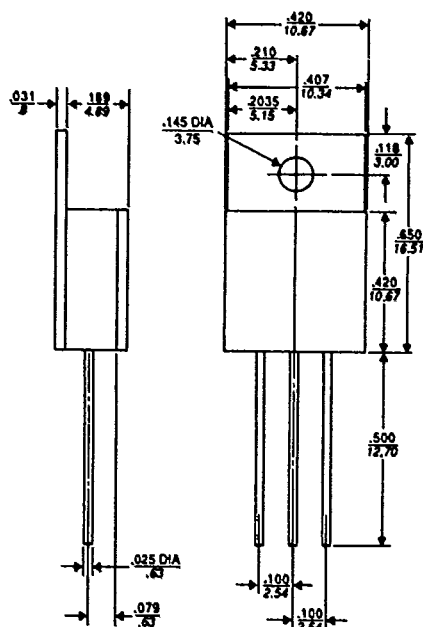
**Y-4**  
Dimensions in Millimeters



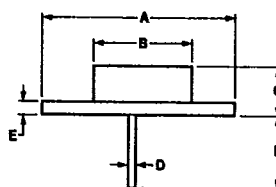
**Y-3**  
Dimensions in Millimeters



## TO-220 HERMETIC



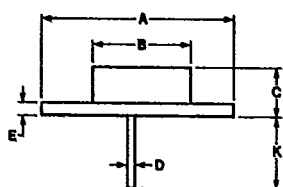
## TO-204 AE



PIN 1. GATE  
2. SOURCE  
CASE - DRAIN

| Dim. | Millimeter | Max.  | Inches | Max. |
|------|------------|-------|--------|------|
| A    | —          | 39.37 | —      | 1.55 |
| B    | —          | 19.71 | —      | .776 |
| C    | 7.62       | 10.16 | .300   | .400 |
| D    | 1.47       | 1.57  | .058   | .062 |
| E    | 1.52       | 3.43  | .060   | .135 |
| F    | 30.15      | BSC   | 1.187  | BSC  |
| G    | 10.67      | 11.18 | .420   | .440 |
| H    | 5.33       | 6.10  | .210   | .240 |
| J    | 16.68      | 17.12 | .657   | .674 |
| K    | 11.20      | 11.98 | .441   | .472 |
| Q    | 3.86       | 4.11  | .152   | .162 |
| R    | 24.84      | 25.27 | .978   | .995 |

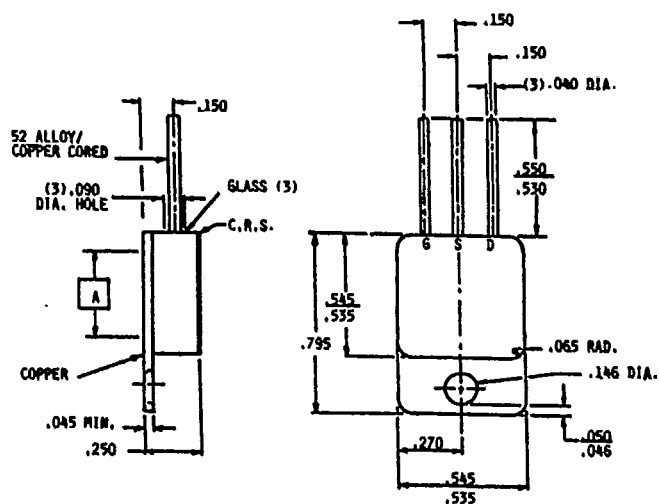
## TO-204 AA



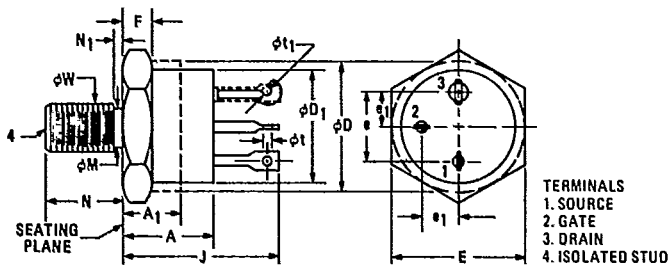
PIN 1. GATE  
2. SOURCE  
CASE - DRAIN

| Dim. | Millimeter | Max.  | Inches | Max. |
|------|------------|-------|--------|------|
| A    | —          | 39.37 | —      | .155 |
| B    | —          | 19.71 | —      | .776 |
| C    | 6.35       | 8.89  | .250   | .350 |
| D    | .097       | 1.09  | .038   | .043 |
| E    | —          | 3.43  | —      | .135 |
| F    | 30.15      | BSC   | 1.187  | BSC  |
| G    | 10.67      | 11.18 | .420   | .440 |
| H    | 5.33       | 6.10  | .210   | .240 |
| J    | 16.68      | 17.12 | .657   | .674 |
| K    | 11.20      | 11.98 | .441   | .472 |
| Q    | 3.86       | 4.11  | .152   | .162 |
| R    | 24.84      | 25.47 | .978   | 1.00 |

## TO-254 HERMETIC



# CONFORMS TO JEDEC OUTLINE TO-210AC (TO-61) Dimensions in Millimeters (Inches)



TERMINALS  
1. SOURCE  
2. GATE  
3. DRAIN  
4. ISOLATED STUD

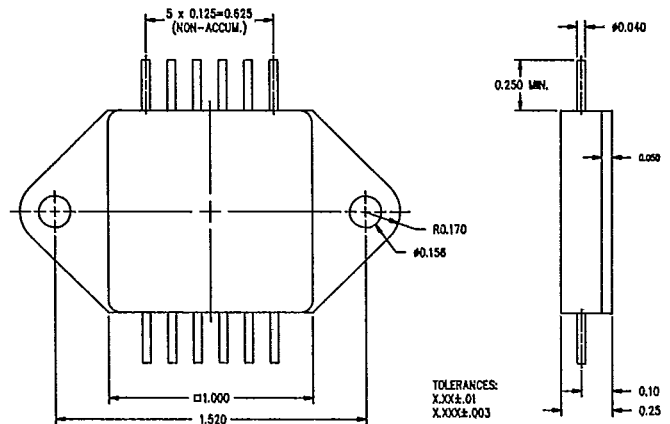
| Symbol          | Inches | Millimeters | Notes |
|-----------------|--------|-------------|-------|
| A               | 0.325  | 8.26        | 11.68 |
| A <sub>1</sub>  | 0.270  | 6.86        | 2     |
| ϕD              | 0.610  | 15.49       | 17.45 |
| ϕD <sub>1</sub> | 0.570  | 14.48       | 15.49 |
| E               | 0.667  | 16.94       | 17.45 |
| e               | 0.340  | 8.64        | 10.54 |
| e <sub>1</sub>  | 0.170  | 4.32        | 5.41  |
| F               | 0.090  | 2.29        | 3.81  |

| Symbol          | Inches | Millimeters | Notes |
|-----------------|--------|-------------|-------|
| J               | 0.640  | 16.26       | 22.23 |
| ϕM              | 0.220  | 5.59        | 6.32  |
| N               | 0.422  | 10.72       | 11.56 |
| N <sub>1</sub>  | 0.090  | 2.29        |       |
| ϕt              | 0.055  | 1.19        | 1.83  |
| ϕt <sub>1</sub> | 0.046  | 1.17        | 1.96  |
| ϕW              | 0.2225 | 5.661       | 5.761 |

## NOTES

1. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
2. PACKAGE CONTOUR OPTIONAL WITHIN DIMENSIONS SPECIFIED.
3. PITCH DIAMETER - THREAD 1/4 28 UNF 2A (COATED).  
REFERENCE IS SCREW THREAD STANDARDS FOR FEDERAL SERVICES - HANDBOOK H 281.
4. THIS TERMINAL CAN BE FLATTENED AND PIERCED OR HOOK TYPE.
5. POSITION OF LEADS IN RELATION TO THE HEXAGON IS NOT CONTROLLED.

## QUADPAC



## Z-Pac

