

# HUTSON INDUSTRIES

# TRIAC's



## ISOTAB\* TRIACS ELECTRICALLY ISOLATED

TO-220

8 AMPERE  
10 AMPERE  
15 AMPERE

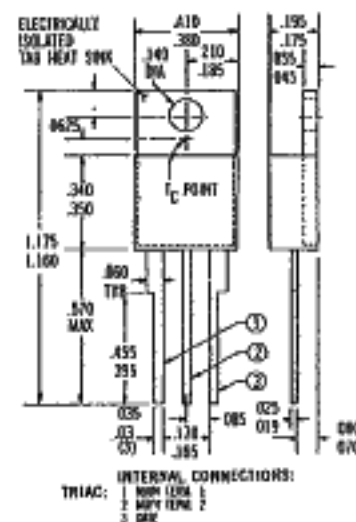


Hutson ISOTAB\*-packaged triacs featuring an improved electrical isolation technique, will withstand a minimum of 1600 VAC from leads to tab for one minute at 80°C case temperature. Hermetically sealed within this package is a dense, void-free-glass passivated, hermetically-sealed chip. ISOTAB triacs have a low thermal impedance and are available in wide range of current and voltage ratings, from 8 to 15 Amperes and 50 to 600 Volts. The 15 Amp versions feature Beryllium Oxide isolation for further improved thermal characteristics.

These economical, highly reliable triacs are the result of Hutson's advanced engineering and manufacturing technology, and experience in switching-device applications.

These Hutson triacs are bi-directional triode thyristors and may be switched from off-state to conduction for either polarity of applied voltage with positive or negative gate triggering. They are designed for control of AC loads in applications such as lighting, heating, and motor speed controls, and static switching relays.

In addition to these plastic packaged triacs, Hutson offers other package configurations in current ratings to 60 Amperes and Voltage ( $V_{DRM}$ ) ratings to 1000V. All Hutson triacs are available in chip form. For additional information, please consult Hutson Industries.



TO-220  
ELECTRICALLY ISOLATED  
ISOTAB

REGISTERED TRADEMARK OF HUTSON INDUSTRIES

ALL DIMENSIONS IN INCHES

\* Trademark of Hutson Industries.

## HUTSON INDUSTRIES

P. O. BOX 34235 • 2019 W. VALLEY VIEW LANE  
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TWX 910-860-5537



ISPT 00008-1X

APRIL 1977

|                                                                                     |                                                                                                                                                                                                                                                           | SYMBOL           | $V_{DROM}$                                   | DEVICE NOS. (NOTE 1)                                           |                                               |                                               | UNITS              |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------|----------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|--------------------|
| MAXIMUM RATINGS                                                                     | Repetitive Peak Off-State Voltage, Gate Open, and $T_J = 100^\circ\text{C}$                                                                                                                                                                               | $V_{DROM}$       | 50<br>100<br>200<br>300<br>400<br>500<br>600 | 08<br>18<br>28<br>38<br>48<br>58<br>68                         | 010<br>110<br>210<br>310<br>410<br>510<br>610 | 015<br>115<br>215<br>315<br>415<br>515<br>615 | VOLT               |
|                                                                                     | RMS On-State Current at $T_C = 75^\circ\text{C}$ and Conduction Angle of $180^\circ$                                                                                                                                                                      | $I_{IRMS}$       |                                              | 8                                                              | 10                                            | 15                                            | AMP                |
|                                                                                     | Peak Surge (Non-Repetitive) On-State Current, One-Cycle, at 50Hz or 60Hz                                                                                                                                                                                  | $I_{TSM}$        |                                              | 100                                                            | 100                                           | 150                                           | AMP                |
|                                                                                     | Peak Gate-Trigger Current for $3\mu\text{sec}$ , Max.                                                                                                                                                                                                     | $I_{GTM}$        |                                              | 3                                                              | 4                                             | 4                                             | AMP                |
|                                                                                     | Peak Gate-Power Dissipation at $I_{GT} \leq I_{GTM}$ for $3\mu\text{sec}$ , Max.                                                                                                                                                                          | $P_{GM}$         |                                              | 20                                                             | 40                                            | 40                                            | WATT               |
|                                                                                     | Average Gate-Power Dissipation                                                                                                                                                                                                                            | $P_{GAVG}$       |                                              | 0.2                                                            | 0.5                                           | 0.8                                           | WATT               |
|                                                                                     | Storage Temperature Range                                                                                                                                                                                                                                 | $T_{stg}$        |                                              | $\longleftrightarrow -40 \text{ to } +150 \longleftrightarrow$ |                                               |                                               | $^\circ\text{C}$   |
|                                                                                     | Operating Temperature Range, $T_C$                                                                                                                                                                                                                        | $T_{oper.}$      |                                              | $\longleftrightarrow -40 \text{ to } +100 \longleftrightarrow$ |                                               |                                               | $^\circ\text{C}$   |
| ELECTRICAL CHARACTERISTICS<br>At Maximum Ratings and at Specified Case Temperatures | Peak Off-State Current, Gate Open, $T_J = 100^\circ\text{C}$ $V_{DROM} = \text{Max. Rating}$                                                                                                                                                              | $I_{DROM}$       |                                              | 2.0<br>MAX                                                     | 2.0<br>MAX                                    | 2.0<br>MAX                                    | mA                 |
|                                                                                     | Maximum On-State Voltage at $T_C = 25^\circ\text{C}$ (Peak)                                                                                                                                                                                               | $V_F$            |                                              | 2.2<br>MAX                                                     | 2.2<br>MAX                                    | 2.2<br>MAX                                    | VOLTS              |
|                                                                                     | Peak On-State Current                                                                                                                                                                                                                                     |                  |                                              | 11                                                             | 14                                            | 21                                            | AMP                |
|                                                                                     | DC Holding Current, Gate Open and $T_C = 25^\circ\text{C}$                                                                                                                                                                                                | $I_{HO}$         |                                              | 50<br>MAX                                                      | 50<br>MAX                                     | 50<br>MAX                                     | mA                 |
|                                                                                     | Critical Rate-of-Rise of Off-State Voltage for $V_D = V_{DROM}$ , Gate Open, $T_C = 100^\circ\text{C}$                                                                                                                                                    | Critical $dv/dt$ |                                              | 5<br>TYP                                                       | 5<br>TYP                                      | 5<br>TYP                                      | V/ $\mu\text{sec}$ |
|                                                                                     | DC Gate-Trigger Current for $V_D = 12\text{VDC}$ , $R_L = 30\Omega$ and at $T_C = 25^\circ\text{C}$<br>( $T_1 + \text{Gate} +$ , $T_2 - \text{Gate} -$ ) Quads I and III<br>( $T_1 + \text{Gate} -$ , $T_2 - \text{Gate} +$ ) Quads II and IV<br>(Note 2) | $I_{GT}$         |                                              | 50 MAX<br>80 MAX                                               | 50 MAX<br>80 MAX                              | 50 MAX<br>80 MAX                              | mA<br>mA           |
|                                                                                     | DC Gate-Trigger Voltage for $V_D = 12\text{VDC}$ , $R_L = 30\Omega$ and at $T_C = 25^\circ\text{C}$                                                                                                                                                       | $V_{GT}$         |                                              | 2.5<br>MAX                                                     | 2.5<br>MAX                                    | 2.5<br>MAX                                    | VOLTS              |
|                                                                                     | Gate-Controlled Turn-on Time for $V_D = V_{DROM}$ , $I_{GT} = 80\text{mA}$ ,<br>$t_r = 0.1\mu\text{sec}$ ,<br>$I_T = 10\text{A}$ (Peak) and $T_C = 25^\circ\text{C}$                                                                                      | $t_{gt}$         |                                              | 2.5<br>TYP                                                     | 2.5<br>TYP                                    | 2.5<br>TYP                                    | $\mu\text{sec}$    |
| Thermal Resistance, Junction-to-Case                                                |                                                                                                                                                                                                                                                           | $R_{\theta JC}$  |                                              | 2.5<br>TYP                                                     | 2.5<br>TYP                                    | *1.5<br>TYP                                   | $^\circ\text{C/W}$ |

ALL VALUES APPLY IN EITHER DIRECTION

\*BeO Substrate

ISOTT 00008-2X

# ISOTAB (ELECTRICALLY ISOLATED) TRIACS

## DEVICE NO. DESIGNATION

NOTE 1: I = ELECTRICALLY ISOLATED

T = TRIAC

0 to 6 = 50 to 600 V ( $V_{BOU}$ ) RATING  
8, 10, 15 = 8A, 10A & 15A ( $I_{T(RMS)}$ )

NOTE 2: I or CHARACTERISTICS:

NO SUFFIX = 50 mA, I & III QUADS;  
80 mA, II & IV QUADS;

A = 50 mA I & III QUADS ONLY

B = 100 mA I & III QUADS ONLY

HA = 25 mA I & III QUADS ONLY

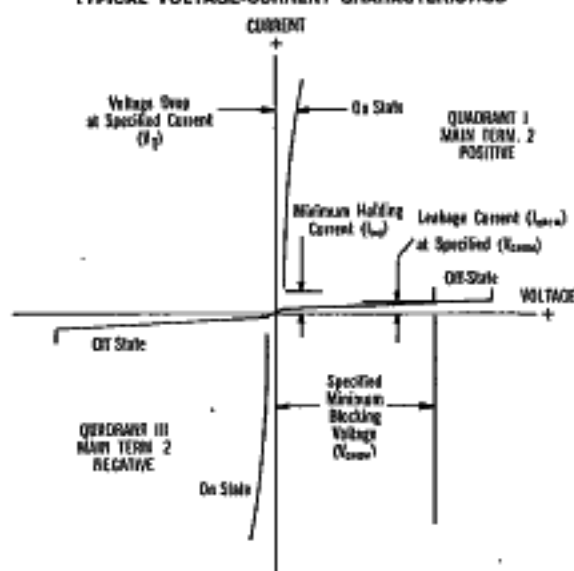
HX = 25 mA I & III QUADS 40 mA, QUADS II & IV

EXAMPLE

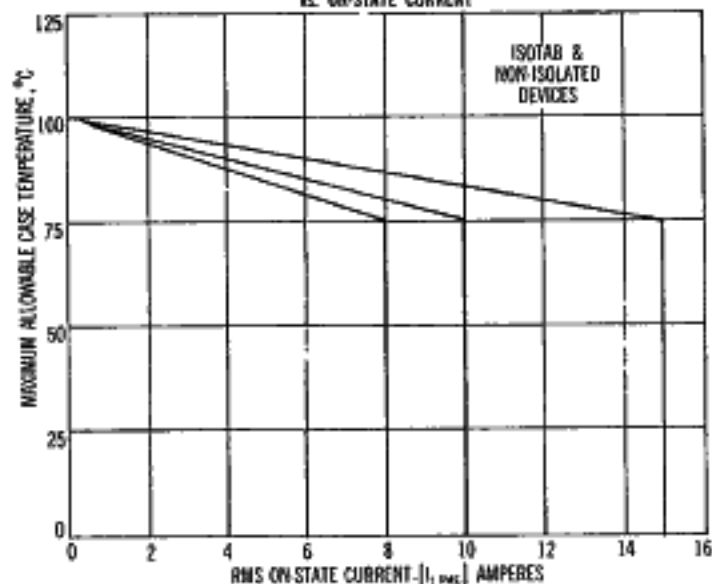
I T 4 8 A

Example Device No.  
would be:  
an Electrically  
isolated Triac,  
400 V ( $V_{BOU}$ ),  
8A ( $I_{T(RMS)}$ ) with  
50 mA ( $I_{GT}$ )  
Quads I & III

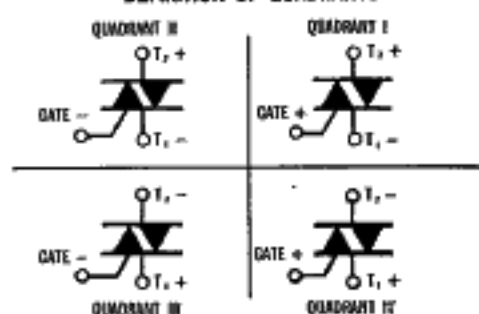
TYPICAL VOLTAGE-CURRENT CHARACTERISTICS



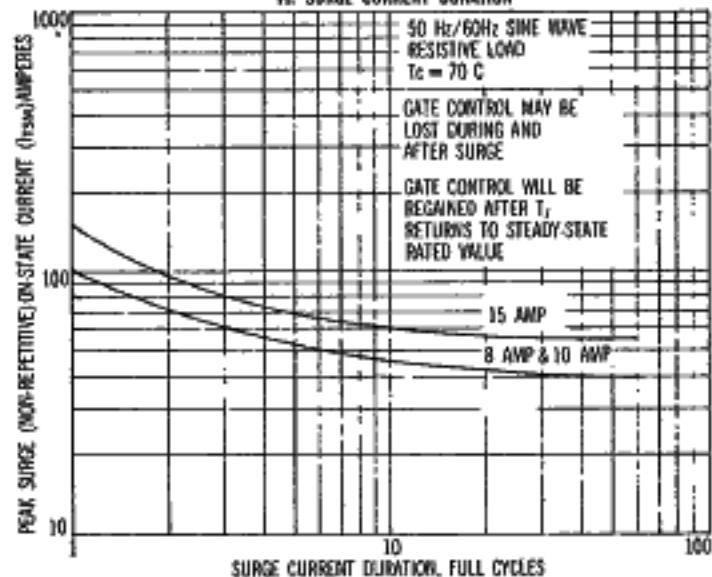
MAXIMUM ALLOWABLE CASE TEMPERATURE  
vs. ON-STATE CURRENT



DEFINITION OF QUADRANTS



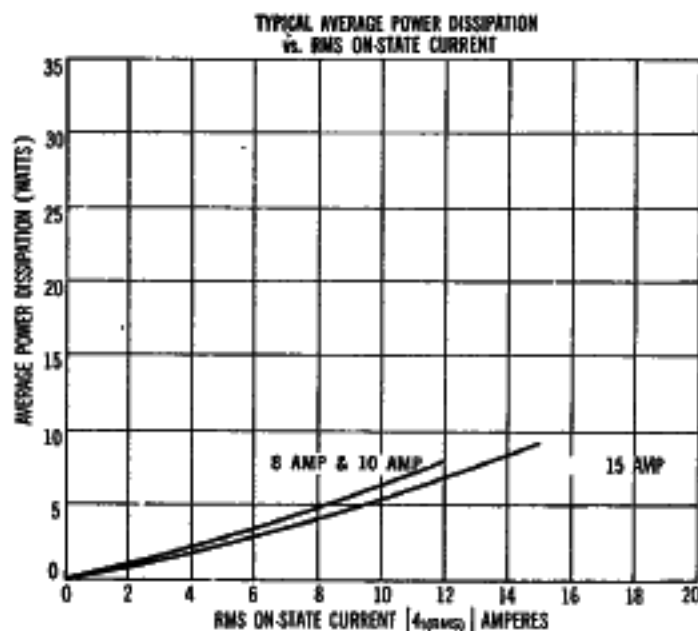
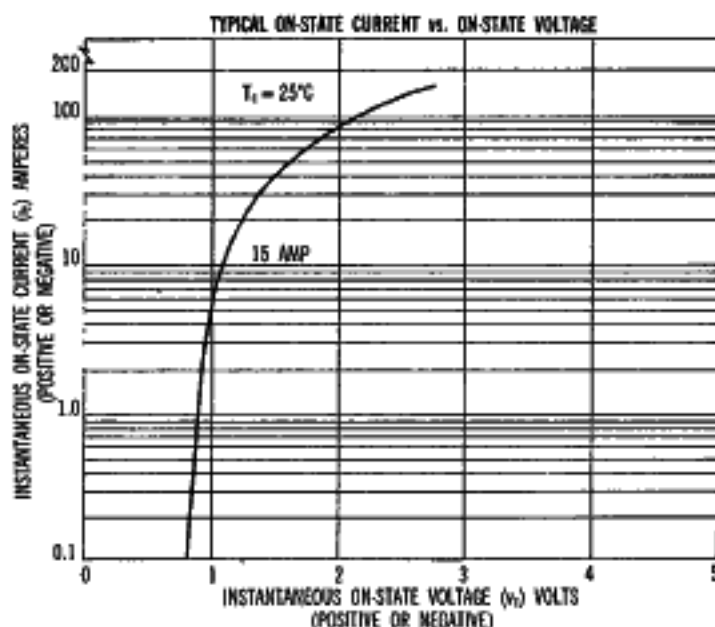
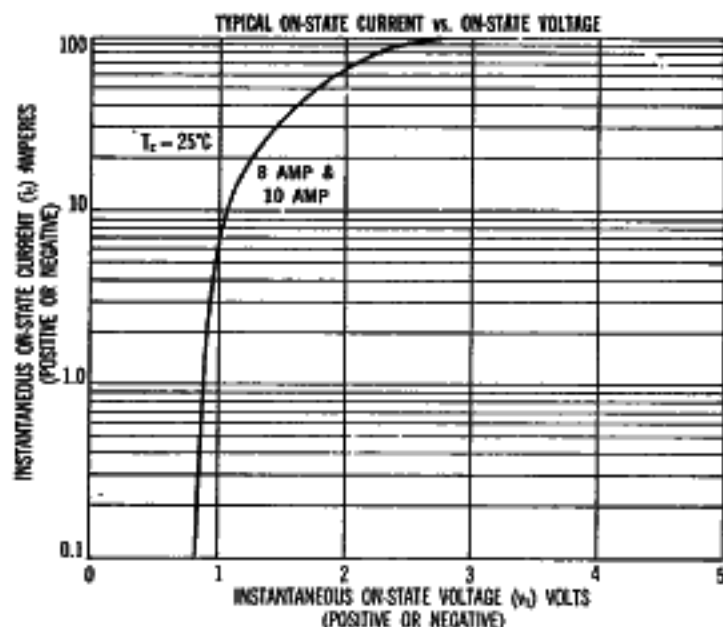
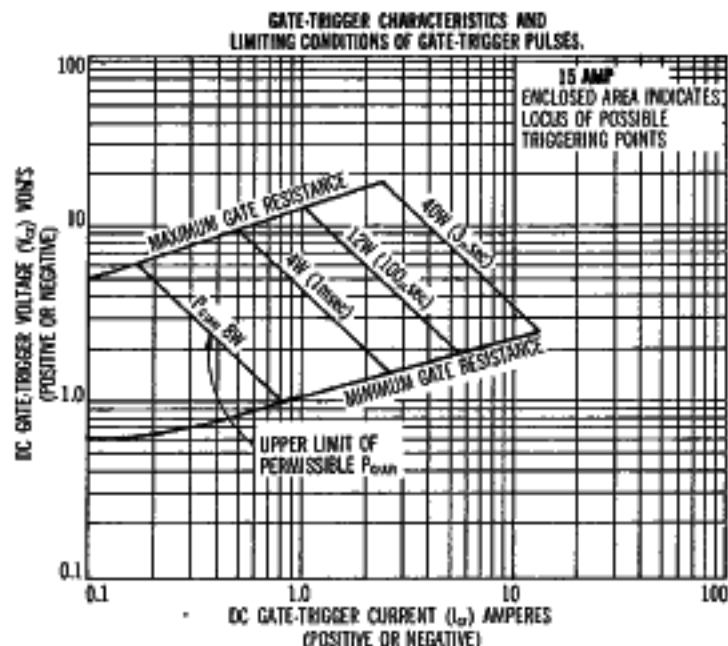
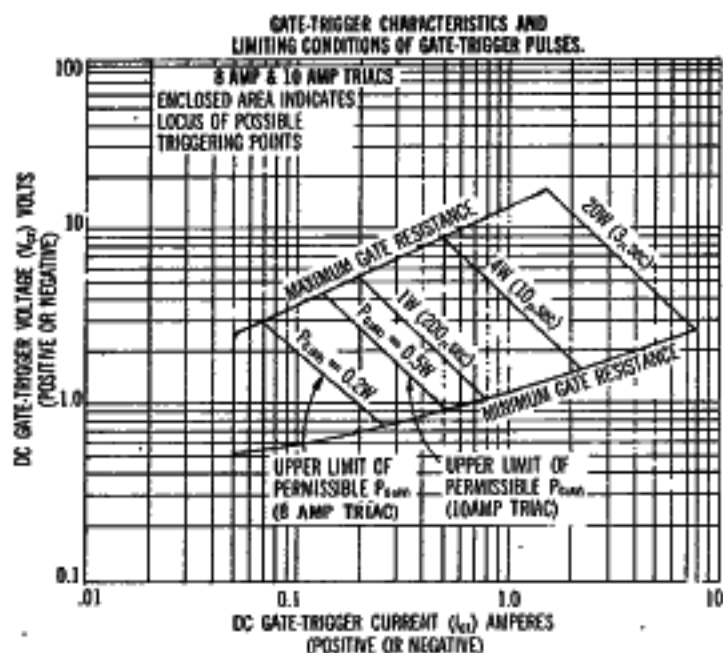
PEAK SURGE ON-STATE CURRENT  
vs. SURGE CURRENT DURATION



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ISPTT-00008-3X

# HUTSON INDUSTRIES 8A, 10A, 15A ISOTAB (ELECTRICALLY ISOLATED) TRIACS



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