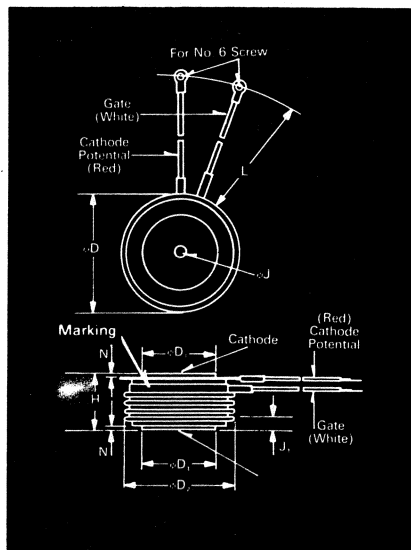


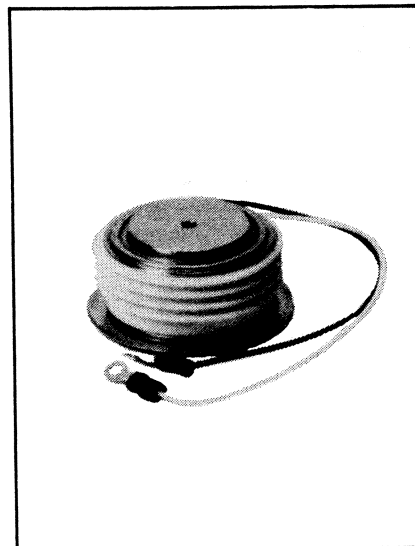
# Fast Switching SCR T72H\_35

**350A Avg.  
(550 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s**



| Symbol     | Inches |       | Millimeters |        |
|------------|--------|-------|-------------|--------|
|            | Min.   | Max.  | Min.        | Max.   |
| $\phi D$   | 2.250  | 2.290 | 57.15       | 58.17  |
| $\phi D_1$ | 1.333  | 1.343 | 33.86       | 34.11  |
| $\phi D_2$ | 2.030  | 2.090 | 51.56       | 53.09  |
| H          | 1.020  | 1.060 | 25.91       | 26.92  |
| $\phi J$   | .135   | .145  | 3.43        | 3.68   |
| $J_1$      | .075   | .090  | 1.91        | 2.29   |
| L          | 7.75   | 8.50  | 196.85      | 215.90 |
| N          | .040   |       | 1.02        |        |

Creep Distance—1.00 in. min. (25.40 mm).  
Strike Distance—.69 in. min. (17.53 mm).  
(In accordance with NEMA standards.)  
Finish—Nickel Plate.  
Approx. Weight—8 oz. (227 g).  
1. Dimension "H" is a clamped dimension.



## T72 Outline

### Features:

- Interdigitated, di/namic Gate structure
- Hard Commutation Turn-Off
- Forward Blocking Voltage Capabilities to 1200 Volts
- Low Switching Losses at High Frequency
- Soft Commutation (Feedback Diode) Testing Available
- High di/dt with softgate control

### Applications:

- Induction Heating
- Transportation
- Inverters
- Crowbars
- Cycloconverters

## Ordering Information

| Type | Voltage                                   |      | Current                |      | Turn-off                 |      | Gate current         |      | Leads |      |
|------|-------------------------------------------|------|------------------------|------|--------------------------|------|----------------------|------|-------|------|
| Code | V <sub>DRM</sub> and V <sub>RRM</sub> (V) | Code | I <sub>T(av)</sub> (A) | Code | t <sub>q</sub> $\mu$ sec | Code | I <sub>GT</sub> (ma) | Code | Case  | Code |
| T72H | 100                                       | 01   | 350                    | 35   | 10                       | 8    | 150                  | 4    | T72   | DN   |
|      | 200                                       | 02   |                        |      | 15                       | 7    |                      |      |       |      |
|      | 300                                       | 03   |                        |      | 20                       | 6    |                      |      |       |      |
|      | 400                                       | 04   |                        |      | 25                       | 5    |                      |      |       |      |
|      | 500                                       | 05   |                        |      | 30                       | 4    |                      |      |       |      |
|      | 600                                       | 06   |                        |      | 40                       | 3    |                      |      |       |      |
|      | 700                                       | 07   |                        |      | 50                       | 2    |                      |      |       |      |
|      | 800                                       | 08   |                        |      | 100                      | 1    |                      |      |       |      |
|      | 900                                       | 09   |                        |      |                          |      |                      |      |       |      |
|      | 1000                                      | 10   |                        |      |                          |      |                      |      |       |      |
|      | 1100                                      | 11   |                        |      |                          |      |                      |      |       |      |
|      | 1200                                      | 12   |                        |      |                          |      |                      |      |       |      |
|      | 1400                                      | 14   |                        |      |                          |      |                      |      |       |      |

## Example

Obtain optimum device performance for your application by selecting proper Order Code.

Type T72H rated at 350 A average with V<sub>DRM</sub> = 1000V, I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 30  $\mu$ sec max. and leads—order as:

| Type    | Voltage | Current | Turn Off | Gate Current | Leads |
|---------|---------|---------|----------|--------------|-------|
| T 7 2 H | 1 0     | 3 5     | 5        | 4            | D N   |

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SCR  
T72H\_35**

## Voltage ①

Blocking State Maximums ( $T_J = 125^\circ\text{C}$ )

|                                                                            |           |  |
|----------------------------------------------------------------------------|-----------|--|
| Repetitive peak forward blocking voltage, V ...                            | $V_{DRM}$ |  |
| Repetitive peak reverse voltage, V ...                                     | $V_{RRM}$ |  |
| Non-repetitive transient peak reverse voltage,<br>$t \leq 5.0$ msec, V ... | $V_{RSM}$ |  |
| Forward leakage current, mA peak ...                                       | $I_{DRM}$ |  |
| Reverse leakage current, mA peak ...                                       | $I_{RRM}$ |  |

|     |     |     |     |     |     |     |     |      |      |      |      |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900  | 1000 | 1100 | 1200 |
| 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900  | 1000 | 1100 | 1200 |
| 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 |
|     |     |     |     |     |     | 35  |     |      |      |      |      |
|     |     |     |     |     |     | 35  |     |      |      |      |      |

## Current

Conducting State Maximums  
( $T_J = 125^\circ\text{C}$ )

|                                                                                         |              |  |
|-----------------------------------------------------------------------------------------|--------------|--|
| RMS forward current, A ...                                                              | $I_{T(rms)}$ |  |
| Ave. forward current, A ...                                                             | $I_{T(av)}$  |  |
| One-half cycle surge current③, A ...                                                    | $I_{TSM}$    |  |
| 3 cycle surge current③, A ...                                                           | $I_{TSM}$    |  |
| 10 cycle surge current③, A ...                                                          | $I_{TSM}$    |  |
| $I^2t$ for fusing (for times $\geq 8.3$ ms)<br>A <sup>2</sup> sec.                      | $I^2t$       |  |
| Forward voltage drop at $I_{TM} = 1500\text{A}$<br>and $T_J = 25^\circ\text{C}$ , V ... | $V_{TM}$     |  |
| Min. repetitive $di/dt$ ①④ A/ $\mu$ sec ...                                             | $di/dt$      |  |

**T72H\_35**

550  
350  
7000  
5040  
4340  
205,000  
3.15  
500

## Switching

( $T_J = 25^\circ\text{C}$ )

Max. turn-off time,  $I_T = 1000\text{A}$ ,  $T_J = 125^\circ\text{C}$

$t_p = 100$   $\mu$ sec,  $dirR/dt = 50$   
A/ $\mu$ sec., reapplied  $dv/dt =$   
200 V/ $\mu$ sec. linear to 0.8  $V_{DRM}$ ,  $\mu$ sec. ①④  $t_q$

Typ. delay time,  $I_{TM} = 1000\text{A}$   
 $T_D = .8$   $V_{DRM}$ ④,  $\mu$ sec  $t_d$

Min. critical  $dv/dt$  exponential to .8  
 $V_{DRM}$ ,  $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec ①④  $dv/dt$

Min.  $di/dt$ , non-repetitive, A/ $\mu$ sec ①④④  $di/dt$

Symbol

10 to 50  
.5  
300  
1200

## Gate

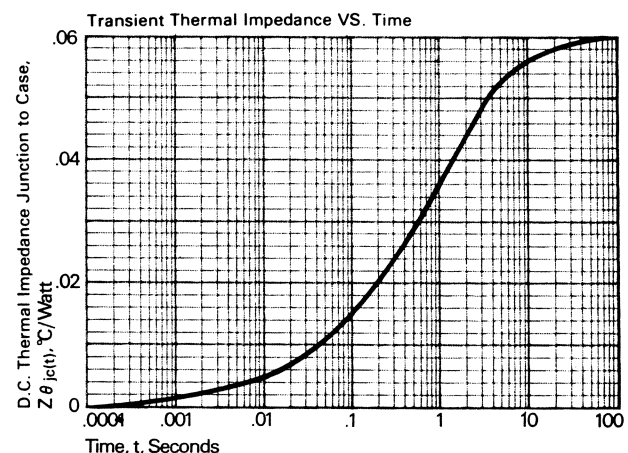
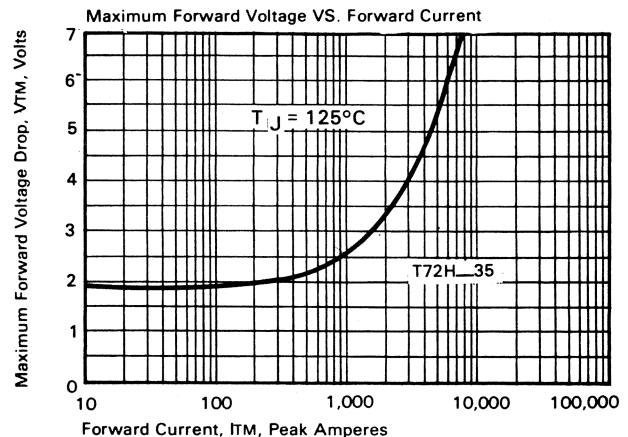
Maximum Parameters  
( $T_J = 25^\circ\text{C}$ )

|                                                                                         |             |     |
|-----------------------------------------------------------------------------------------|-------------|-----|
| Gate current to trigger at $V_D = 12\text{V}$ , mA                                      | $I_{GT}$    | 150 |
| Gate voltage to trigger at $V_D = 12\text{V}$ , V ...                                   | $V_{GT}$    | 3   |
| Non-triggering gate voltage, $T_J = 125^\circ\text{C}$ ,<br>and rated $V_{DRM}$ , V ... | $V_{GDM}$   | .25 |
| Peak forward gate current, A ...                                                        | $I_{GTM}$   | 4   |
| Peak reverse gate voltage, V ...                                                        | $V_{GRM}$   | 5   |
| Peak gate power, Watts ...                                                              | $P_{GM}$    | 16  |
| Average gate power, Watts ...                                                           | $P_{G(av)}$ | 3   |

## Thermal and Mechanical

|                                                                                                     |                 |              |
|-----------------------------------------------------------------------------------------------------|-----------------|--------------|
| Min., Max. oper. junction temp., $^\circ\text{C}$ ...                                               | $T_J$           | -40 to +125  |
| Min., Max. storage temp., $^\circ\text{C}$ ...                                                      | $T_{stg}$       | -40 to +150  |
| Max. mounting force, lb. ... ①                                                                      |                 | 2000 to 2400 |
| Thermal resistance①, double-<br>side cooling, junction to case,<br>$^\circ\text{C}/\text{Watt}$ ... | $R_{\theta JC}$ | .06          |
| Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$ ...                                          | $R_{\theta CS}$ | .02          |

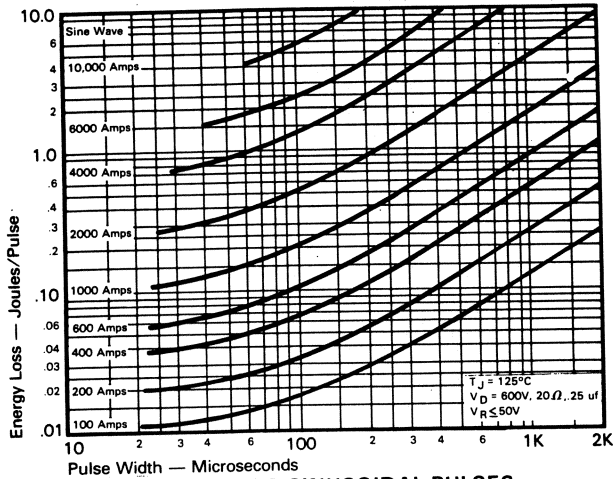
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher  $dv/dt$  ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.



# Fast Switching SCR T72H\_35

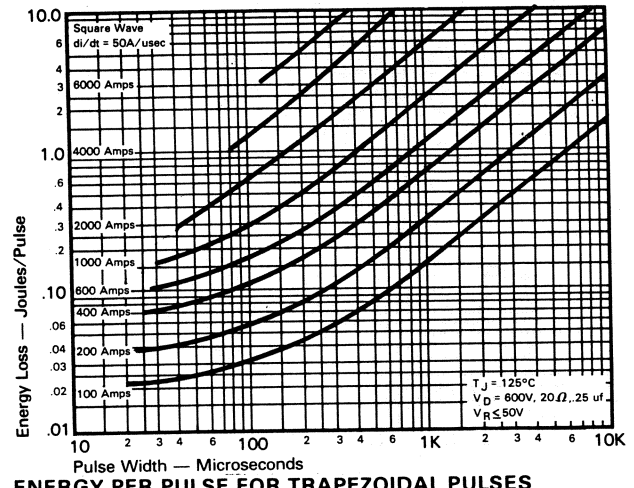
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## Sinusoidal Current Data

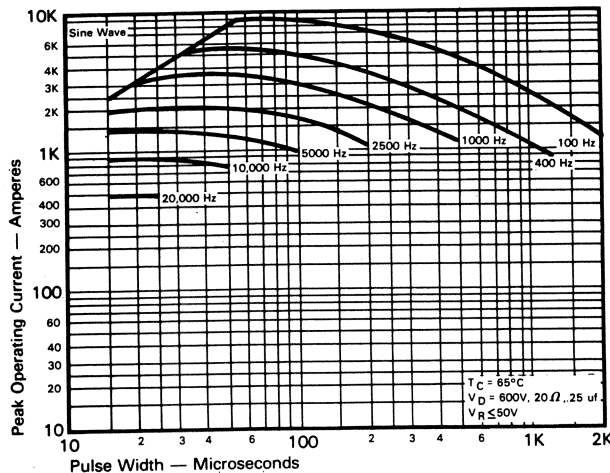


ENERGY PER PULSE FOR SINUSOIDAL PULSES

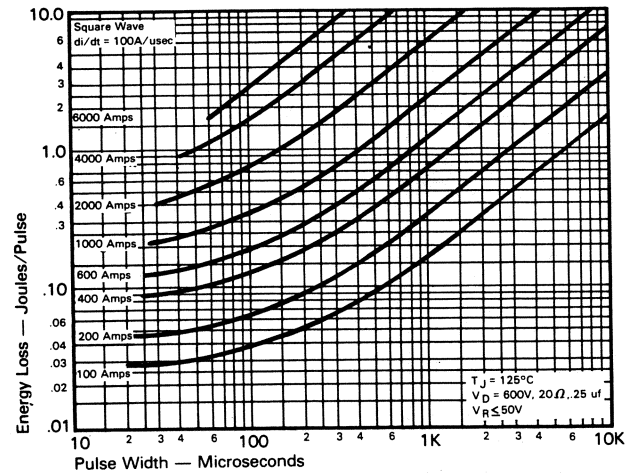
## Trapezoidal Wave Current Data



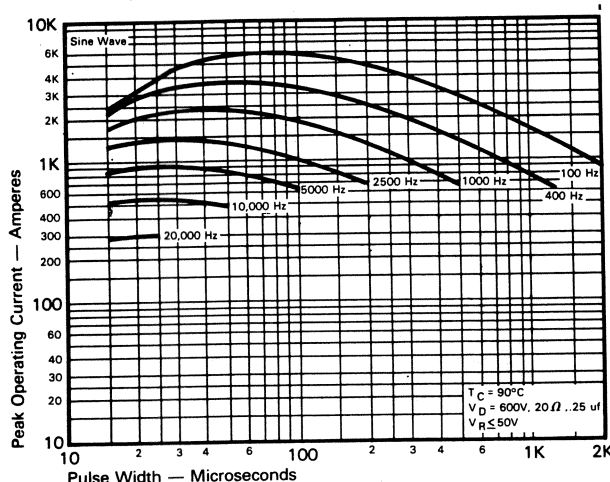
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A}/\mu\text{sec}$ )



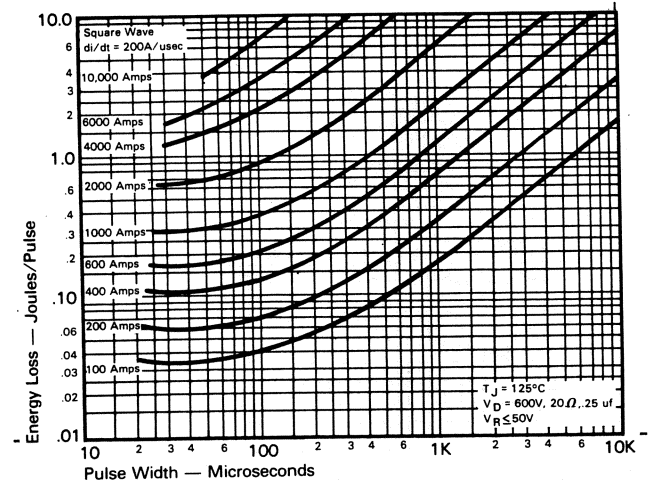
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 100\text{A}/\mu\text{sec}$ )



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 90^\circ\text{C}$ )

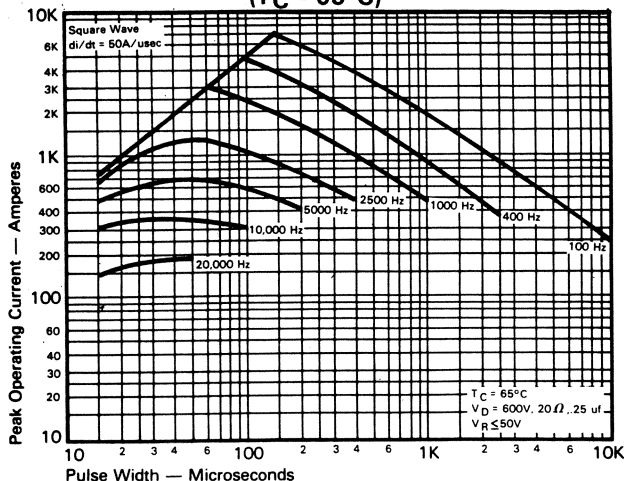


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 200\text{A}/\mu\text{sec}$ )

**350A Avg.  
(550 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s**

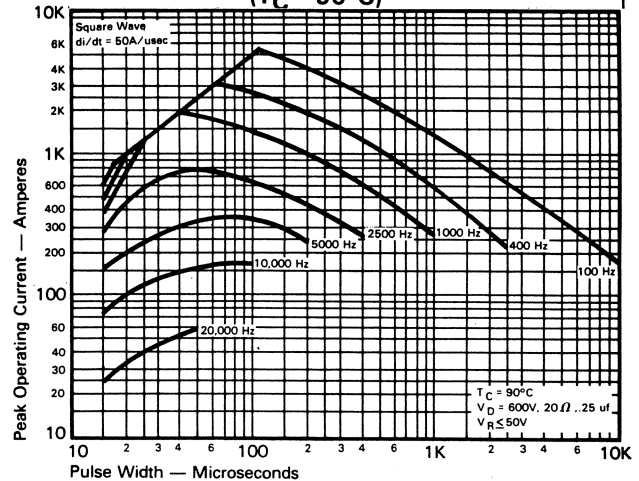
**Fast Switching  
SCR  
T72H\_35**

**Trapezoidal Wave Current Data  
( $T_C = 65^\circ\text{C}$ )**

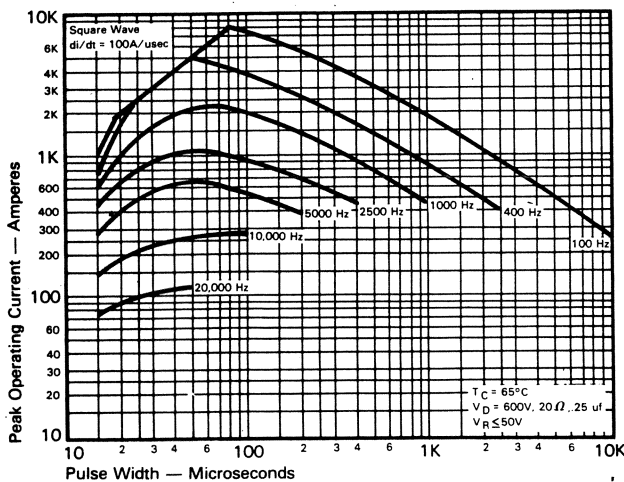


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**

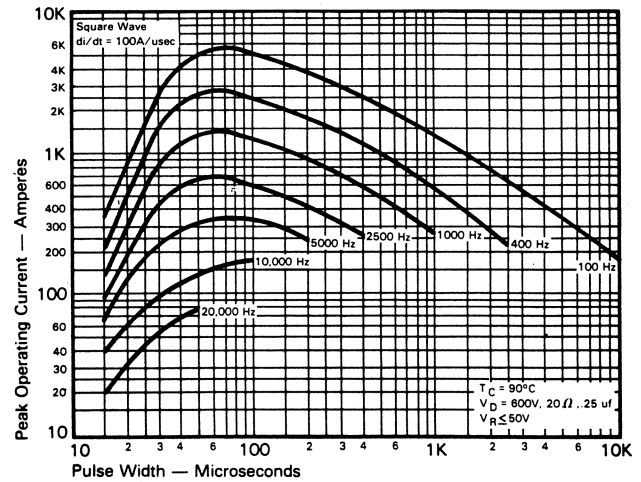
**Trapezoidal Wave Current Data  
( $T_C = 90^\circ\text{C}$ )**



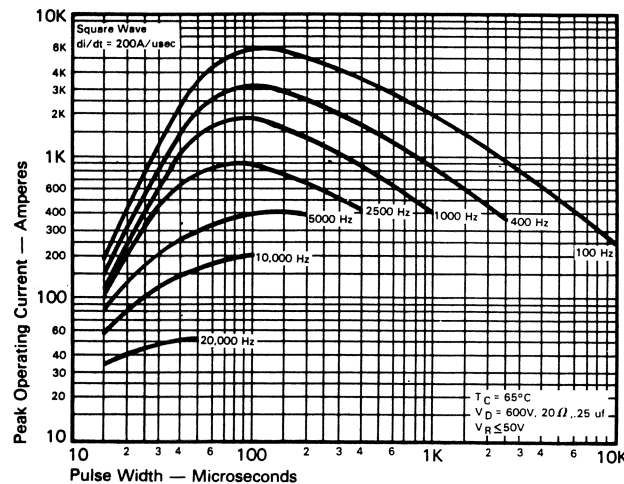
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**



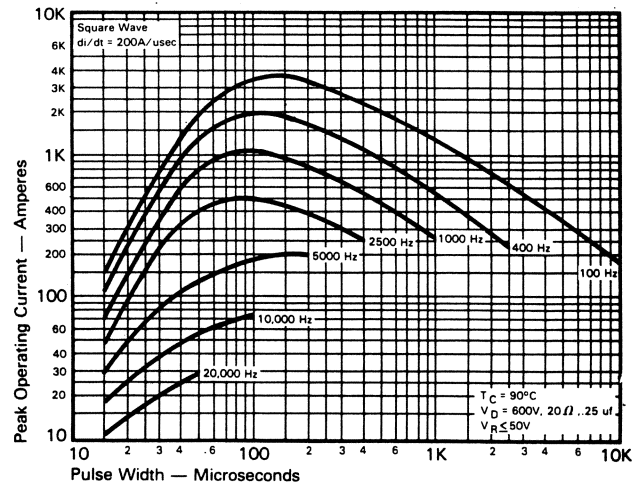
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 100\text{A/usec}$ )**



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 100\text{A/usec}$ )**



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 200\text{A/usec}$ )**



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $di/dt = 200\text{A/usec}$ )**