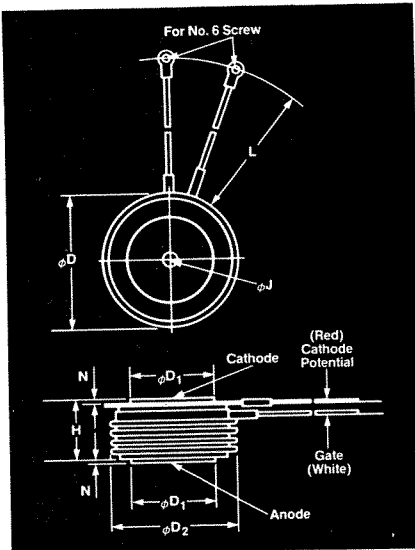


# Fast Switching SCR T82F

**750A Avg.  
(1180A RMS)  
Up to 1200 Volts  
25-60  $\mu$ s**



T82 Outline

**Features:**

- Interdigitated, di/dynamic 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 soft gate control

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).  
Dimension "H" is a clamped dimension.



**Applications:**

- Induction Heating
- Transportation
- Inverters
- Crowbars
- Cycloconverters

**Ordering Information**

Type	Voltage		Current		Turn-off		Gate current		Leads	
	$V_{DRM}$ and $V_{RRM}$ (V)	Code	$I_T(av)$ (A)	Code	$t_q$ $\mu$ sec	Code	$I_{GT}$ (ma)	Code	Case	Code
T82F	100	01	750	75	25	B	200	3	T82	DN
	200	02			30	5				
	300	03			40	4				
	400	04			50	3				
	500	05			60	2				
	600	06								
	700	07								
	800	08								
	900	09								
	1000	10								
	1100	11								
	1200	12								

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

Type T82F rated at 750 A average with  $V_{DRM} = 1000V$ ,  $I_{GT} = 200$  ma,  $t_q = 30 \mu$ sec max. and leads—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 8 2 F	1 0 7 5	5	3	D N	

FAST SWITCHING THYRISTORS

**750A Avg.  
(1180A RMS)  
Up to 1200 Volts  
25-60  $\mu$ s**

**Fast Switching  
SCR  
T82F**

**Voltage ②**

**Blocking State Maximums (T<sub>J</sub> = 125°C) Symbol**

Repetitive peak forward blocking voltage, V ..... V<sub>DRM</sub>  
 Repetitive peak reverse voltage, V ..... V<sub>RRM</sub>  
 Non-repetitive transient peak reverse voltage,  
 t ≤ 5.0 msec, V ..... V<sub>RSM</sub>  
 Forward leakage current, mA peak ..... I<sub>DRM</sub>  
 Reverse leakage current, mA peak ..... I<sub>RRM</sub>

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

← 45 ————— →  
 ← 45 ————— →

**Current**

**Conducting State Maximums (T<sub>J</sub> = 125°C)**

Symbol	T82F __ 75
RMS forward current, A ..... I <sub>T(rms)</sub>	1180
Ave. forward current, A ..... I <sub>T(av)</sub>	750
One-half cycle surge current ③, A ..... I <sub>TSM</sub>	10000
I <sup>2</sup> t for fusing (for times ≥ 8.3 ms) A <sup>2</sup> sec ..... I <sup>2</sup> t	416,000
Forward voltage drop at I <sub>TM</sub> = 1500A and T <sub>J</sub> = 25°C, V ..... V <sub>TM</sub>	1.75
Min. repetitive di/dt ①④⑥ A/ $\mu$ sec ..... di/dt	500

**Switching**

(T<sub>J</sub> = 25°C)

Symbol	
Max. turn-off time, I <sub>T</sub> = 1000A, T <sub>J</sub> = 125°C, t <sub>p</sub> = 100 $\mu$ sec, di/dt = 50 A/ $\mu$ sec., reapplied dv/dt = 400 V/ $\mu$ sec linear to 0.8 V <sub>DRM</sub> , $\mu$ sec. ③⑦	t <sub>q</sub> 25 to 60
Typ. delay time, I <sub>TM</sub> = 1000A T <sub>D</sub> = .8 V <sub>DRM</sub> ④, $\mu$ sec	t <sub>d</sub> .5
Min. critical dv/dt exponential to .8 V <sub>DRM</sub> T <sub>J</sub> = 125°C, V/ $\mu$ sec ②⑤	dv/dt 400
Min. di/dt non-repetitive, A/ $\mu$ sec ①④⑥	di/dt 1200

**Gate**

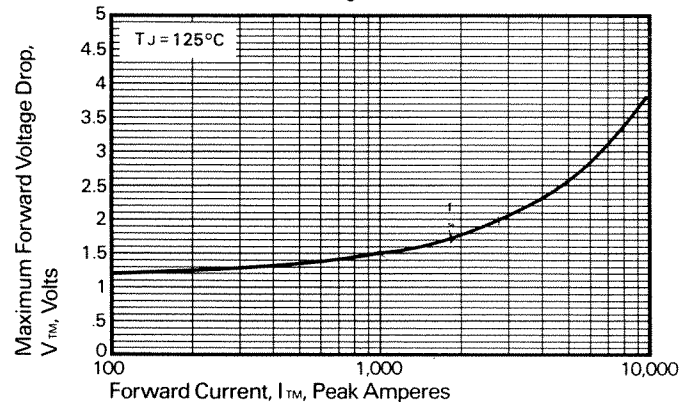
Maximum Parameters (T<sub>J</sub> = 25°C)

Symbol	
Gate current to trigger at V <sub>D</sub> = 12V, mA ..... I <sub>GT</sub>	200
Gate voltage to trigger at V <sub>D</sub> = 12V, V ..... V <sub>GT</sub>	3
Non-triggering gate voltage, T <sub>J</sub> = 125°C, and rated V <sub>DRM</sub> , V ..... V <sub>GDM</sub>	.25
Peak forward gate current, A ..... I <sub>GTM</sub>	4
Peak reverse gate voltage, V ..... V <sub>GDM</sub>	5
Peak gate power, Watts ..... P <sub>GM</sub>	16
Average gate power, Watts ..... P <sub>G(av)</sub>	3

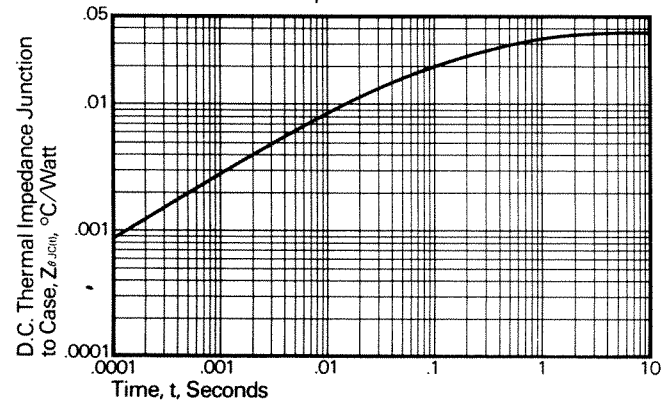
**Thermal and Mechanical**

Symbol	
Min., Max. oper. junction temp., °C ..... T <sub>J</sub>	-40 to +125
Min., Max. storage temp., °C ..... T <sub>stg</sub>	-40 to +150
Max. mounting force, lb. .... ①	3000 to 3500
Thermal resistance ①, double-side cooling, junction to case, °C/Watt ..... R $\theta$ JC	.037
Case to sink, lubricated, °C/Watt ..... R $\theta$ cs	.02

Maximum Forward Voltage VS. Forward Current



Transient Thermal Impedance VS. Time



FAST SWITCHING THYRISTORS

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- 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.