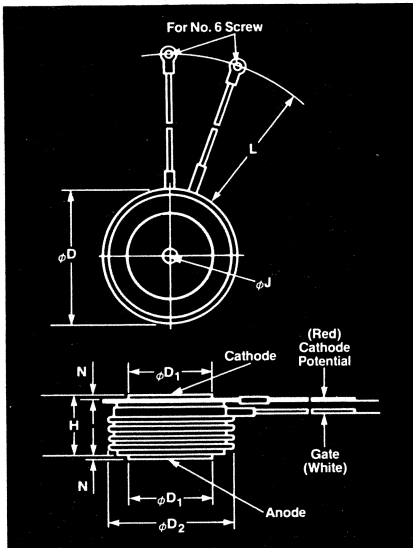


# Fast Switching SCR T82F

650A Avg.  
(1000A RMS)  
Up to 1200 Volts  
15-50  $\mu$ sec



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.



## T82 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 soft gate control

### Applications:

- Induction Heating
- Transportation
- Inverters
- Crowbars
- Cycloconverters

Authorized Distributor:  
Darrah Electric Company  
[www.darrahelectric.com](http://www.darrahelectric.com)

## Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads		
	Code	$V_{DRM}$ and $V_{RRM}$ (V)	$I_{T(av)}$ (A)	Code	$t_q$ $\mu$ sec	Code	$I_{GT}$ (ma)	Code	Case	Code	
T82F		100	650	65	15	7	200	3	T82	DN	
		200									02
		300									03
		400									04
		500									05
		600									06
		700									07
		800									08
		900									09
		1000									10
		1100									11
		1200									12

1400 14

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

Type T82F rated at 650 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	6 5	5	3	D N

**650A Avg.  
(1000A RMS)  
Up to 1200 Volts  
15-50  $\mu$ sec**

**Fast Switching  
SCR  
T82F**

**Voltage** ②

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

Repetitive peak forward blocking voltage, V .....  $V_{DRM}$   
 Repetitive peak reverse voltage, V .....  $V_{RRM}$   
 Non-repetitive transient peak reverse voltage,  
 $t \leq 5.0$  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

←----- 45 -----→  
←----- 45 -----→

**Current**

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

Symbol	T82F __ 65
RMS forward current, A ..... $I_T$ (rms)	1000
Ave. forward current, A ..... $I_T$ (av)	650
One-half cycle surge current ③, A ..... $I_{TSM}$	8500
$I^2t$ for fusing (for times $\geq 8.3$ ms) A <sup>2</sup> sec ..... $I^2t$	300,000
Forward voltage drop at $I_{TM} = 1500A$ and $T_J = 25^\circ\text{C}$ , V ..... $V_{TM}$	2.2
Min. repetitive di/dt ④⑤ A/ $\mu$ sec ..... di/dt	400

**Switching**

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

Symbol	
Max. turn-off time, $I_T = 1000A$ , $T_J = 125^\circ\text{C}$ , $t_p = 100 \mu\text{sec}$ , di/dt = 50 A/ $\mu$ sec., reapplied dv/dt = 400 V/ $\mu$ sec linear to 0.8 $V_{DRM}$ , $\mu\text{sec}$ . ⑥⑦	$t_q$ 15 to 50
Typ. delay time, $I_{TM} = 1000A$ $T_D = .8 V_{DRM}$ , $\mu\text{sec}$	$t_d$ .5
Min. critical dv/dt exponential to .8 $V_{DRM}$ $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec ②⑤	dv/dt 400
Min. di/dt non-repetitive, A/ $\mu$ sec ④⑤⑧	di/dt 1000

**Gate**

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

Symbol	
Gate current to trigger at $V_D = 12V$ , mA ..... $I_{GT}$	200
Gate voltage to trigger at $V_D = 12V$ , V ..... $V_{GT}$	3
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$ , 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**

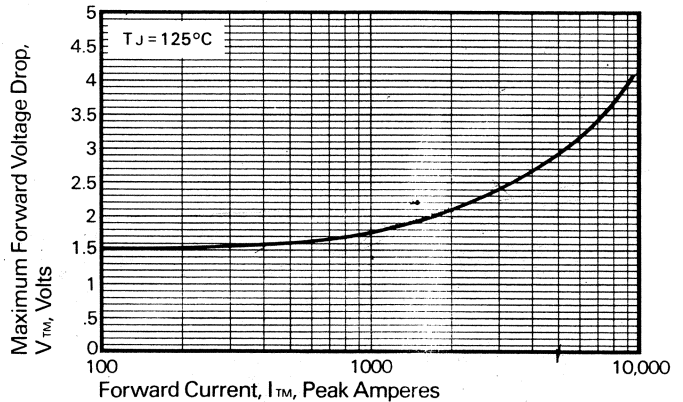
Symbol	
Min., Max. oper. junction temp., $^\circ\text{C}$ ..... $T_J$	-40 to +125
Min., Max. storage temp., $^\circ\text{C}$ ..... $T_{stg}$	-40 to +150
Max. mounting force, lb. .... ①	3600 to 4000
Thermal resistance ①, double- side cooling, junction to case, $^\circ\text{C}/\text{Watt}$ ..... $R_{\theta JC}$	.037
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$ ..... $R_{\theta CS}$	.02

3000 to 3500

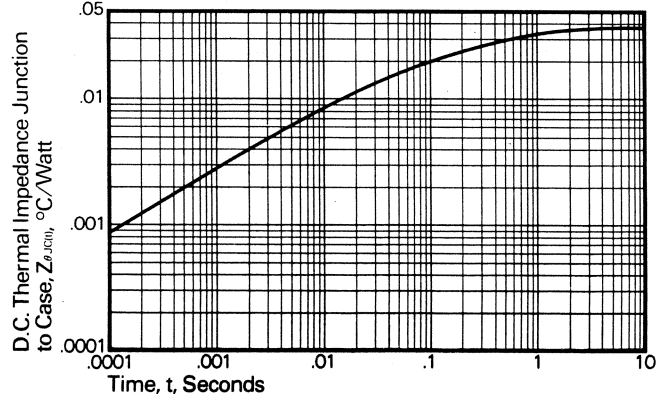


**Darrah Electric Company**  
 5914 Merrill Avenue  
 Cleveland, OH 44102 USA  
 216-631-0912  
 216-631-0440 fax  
 www.darrahelectric.com

Maximum Forward Voltage VS. Forward Current



Transient Thermal Impedance VS. Time



- 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, 5.2.2.8.
- ⑦ For operation with antiparallel diode, consult factory.

FAST SWITCHING  
THYRISTORS