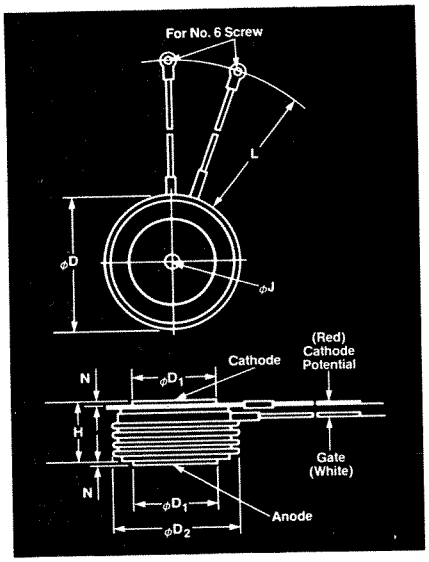
POWEREX 173 Pavilion Lane, Youngwood, PA 15697 www.pwrx.com

Fast Switching SCR T82F

750A Avg. (1180A RMS) Up to 1200 Volts 25-60 μs



T82 Outline

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	2.250	2.290	57.15	58.17
ϕD_1	1.333	1.343	33.86	34.11
ϕD_2	2.030	2.090	51.56	53.09
H	1.020	1.060	25.91	26.92
ϕJ	.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.



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

FAST SWITCHING THYRISTORS

Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads	
Code	V_{DRM} and V_{RRM} (V)	Code	$I_{T(av)}$ (A)	Code	tq μsec	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								

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, tq = 30 μsec max. and leads—order as:

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

750A Avg. (1180A RMS) Up to 1200 Volts 25-60 μs

Fast Switching SCR T82F

Voltage ②

Blocking State Maximums (T_J = 125°C)	Symbol
Repetitive peak forward blocking voltage, V	V_{DRM}
Repetitive peak reverse voltage, V	V_{RRM}
Non-repetitive transient peak reverse voltage, t ≤ 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°C)	Symbol	T82F__75
RMS forward current, A	$I_{T(rms)}$	1180
Ave. forward current, A	$I_{T(av)}$	750
One-half cycle surge current ③, A	I_{TSM}	10000
I^2t for fusing (for times ≥ 8.3 ms) A^2 sec	I^2t	416,000
Forward voltage drop at I_{TM} = 1500A and T_J = 25°C, V	V_{TM}	1.75
Min. repetitive di/dt ①④⑥ A/μsec	di/dt	500

Switching

(T_J = 25°C)	Symbol	
Max. turn-off time, I_T = 1000A, T_J = 125°C, tp = 100 μsec. di_R/dt = 50 A/μsec., reapplied dv/dt = 400 V/μsec linear to 0.8 V_{DRM}, μsec. ⑤⑦	tq	25 to 60
Typ. delay time, I_{TM} = 1000A T_D = .8 V_{DRM}④, μsec	td	.5
Min. critical dv/dt exponential to .8 V_{DRM} T_J = 125°C, V/μsec ② ⑤	dv/dt	400
Min. di/dt non-repetitive, A/μsec ①④⑥	di/dt	1200

Gate

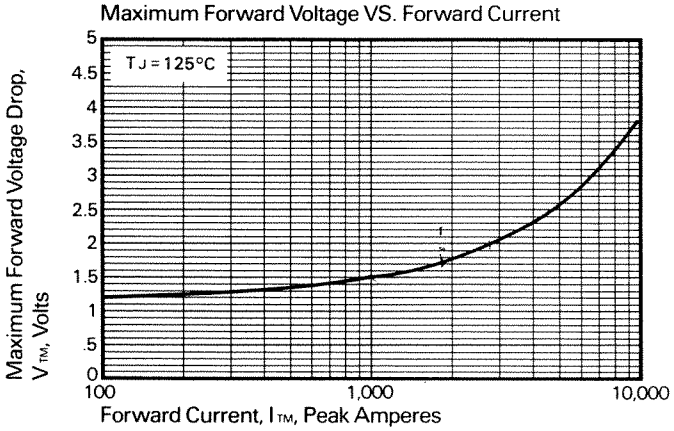
Maximum Parameters (T_J = 25°C)	Symbol	
Gate current to trigger at V_D = 12V, mA	I_{GT}	200
Gate voltage to trigger at V_D = 12V, V	V_{GT}	3
Non-triggering gate voltage, T_J = 125°C, and rated V_{DRM}, V	V_{GDM}	.25
Peak forward gate current, A	I_{GTM}	4
Peak reverse gate voltage, V	V_{GRM}	5
Peak gate power, Watts	P_{GM}	16
Average gate power, Watts	$P_{G(av)}$	3

Thermal and Mechanical

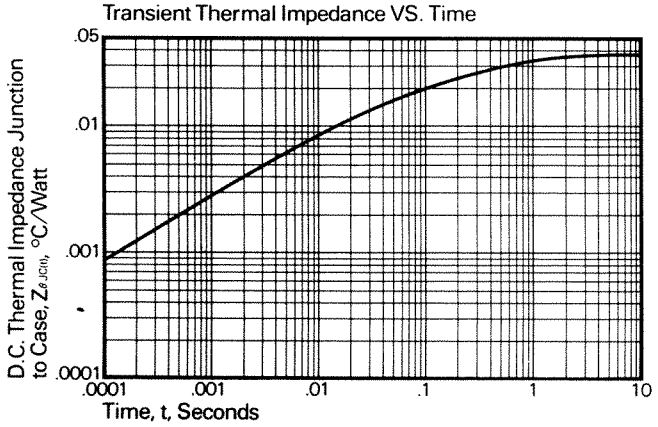
	Symbol	
Min., Max. oper. junction temp., °C	T_J	-40 to +125
Min., Max. storage temp., °C	T_{stg}	-40 to +150
Max. mounting force, lb. .... ①		3000 to 3500
Thermal resistance ①, double-side cooling, junction to case, °C/Watt	$R_{\theta JC}$	.037
Case to sink, lubricated, °C/Watt	$R_{\theta CS}$	.02

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.

Maximum Forward Voltage VS. Forward Current



Transient Thermal Impedance VS. Time



FAST SWITCHING THYRISTORS