# Nlps     FAST TURN-OFF THYRISTOR     FH500TF**

**Features**

- Interdigitated amplifying gates
- Fast turn-on and high di/dt
- Low switching losses

**Typical Applications**

- Inductive heating
- Electronic welders
- Self-commutated inverters

| | |
|---|---|
| $I_{T(AV)}$ | **500A** |
| $V_{DRM}/V_{RRM}$ | **800~1600V** |
| $t_q$ | **18~50μs** |
| $I_{TSM}$ | **4.3 kA** |
| $I^2t$ | **92 $10^3 A^2 S$** |

| SYMBOL | CHARACTERISTIC | TEST CONDITIONS | | $T_j(℃)$ | VALUE | | | UNIT |
|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Type | Max | |
| $I_{T(AV)}$ | Mean on-state current | 180° half sine wave 50Hz Double side cooled, | $T_C$=55℃ | 125 | | | 500 | A |
| $V_{DRM}$ $V_{RRM}$ | Repetitive peak off-state voltage Repetitive peak reverse voltage | tp=10ms | | 125 | 800 | | 1600 | V |
| $I_{DRM}$ $I_{RRM}$ | Repetitive peak current | at $V_{DRM}$ at $V_{RRM}$ | | 125 | | | 30 | mA |
| $I_{TSM}$ | Surge on-state current | 10ms half sine wave $V_R$=0.6$V_{RRM}$ | | 125 | | | 4.3 | kA |
| $I^2t$ | $I^2t$ for fusing coordination | | | | | | 92 | $A^2s*10^3$ |
| $V_{TO}$ | Threshold voltage | | | 125 | | | 1.50 | V |
| $r_T$ | On-state slope resistance | | | | | | 1.32 | mΩ |
| $V_{TM}$ | Peak on-state voltage | $I_{TM}$=1000A, F=7.0kN | | 125 | | | 2.82 | V |
| dv/dt | Critical rate of rise of off-state voltage | $V_{DM}$=0.67$V_{DRM}$ | | 125 | | | 500 | V/μs |
| di/dt | Critical rate of rise of on-state current | $V_{DM}$= 67%$V_{DRM}$ to 800A, Gate pulse $t_r$≤0.5μs $I_{GM}$=1.5A f=1Hz | | 125 | | | 1200 | A/μs |
| $Q_{rr}$ | Recovery charge | $I_{TM}$=500A,tp=2000μs, di/dt=-60A/μs,$V_R$=50V | | 125 | | 350 | | μC |
| tq | Circuit commutated turn-off time | $I_{TM}$=500A,tp=2000μs, $V_R$ =50V dv/dt=30V/μs ,di/dt=-60A/μs | | 125 | 18 | | 50 | μs |
| $I_{GT}$ | Gate trigger current | | | | 40 | | 250 | mA |
| $V_{GT}$ | Gate trigger voltage | $V_A$=12V, $I_A$=1A | | 25 | 0.9 | | 2.5 | V |
| $I_H$ | Holding current | | | | 20 | | 400 | mA |
| $V_{GD}$ | Non-trigger gate voltage | $V_{DM}$=67%$V_{DRM}$ | | 125 | 0.3 | | | V |
| $R_{th(j-c)}$ | Thermal resistance Junction to case | DC, double side cooled Clamping force 7.0kN | | | | | 0.045 | ℃/W |
| $R_{th(c-h)}$ | Thermal resistance case to heat sink | | | | | | 0.010 | |
| $F_m$ | Mounting force | | | | 5.3 | | 10 | kN |
| $T_{stg}$ | Stored temperature | | | | -40 | | 140 | ℃ |
| $W_t$ | Weight | | | | | 80 | | g |
| Outline | P02 | | | | | | | |

On-state voltage Vs.peak on-state current



Fig1

Max. junction to case thermal impedance Vs.time



Fig2

Surge current Vs.Cycles



Fig3

Gate characteristic at 25°C junction temperature



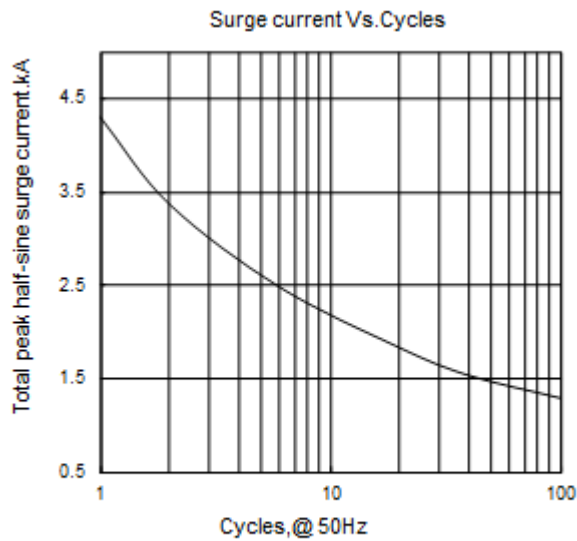Fig4

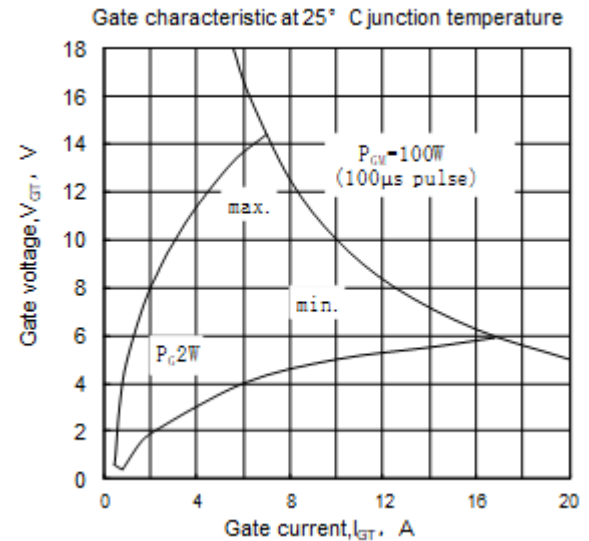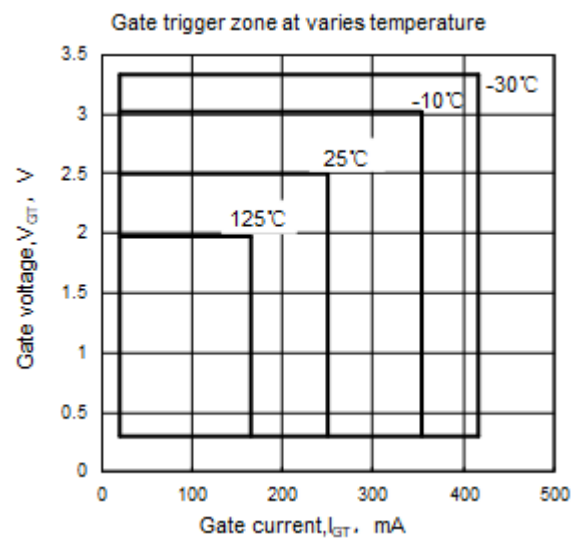Gate trigger zone at varies temperature
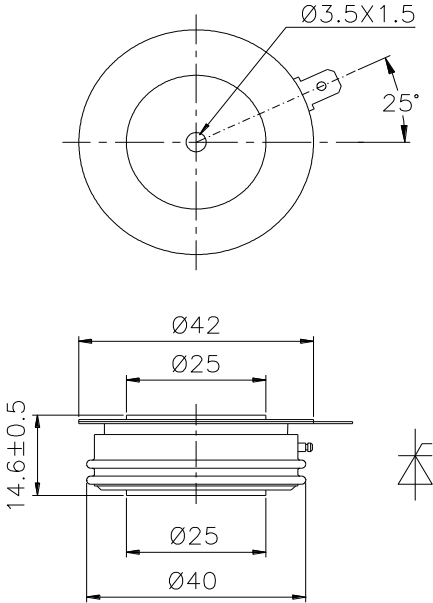


Fig5

Ø3.5X1.5

25°

Ø42
Ø25
14.6±0.5
Ø25
Ø40
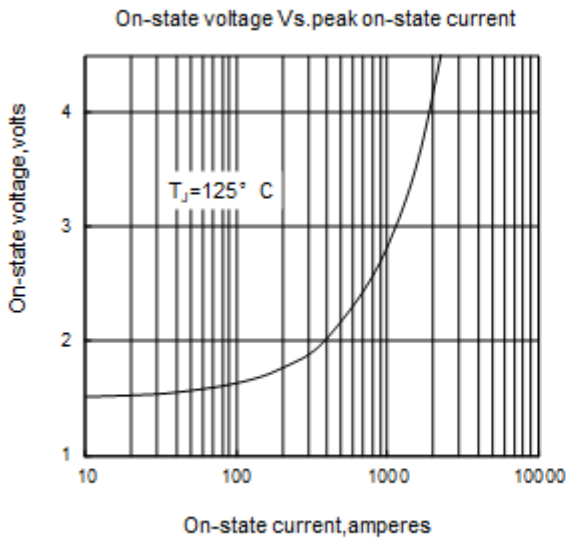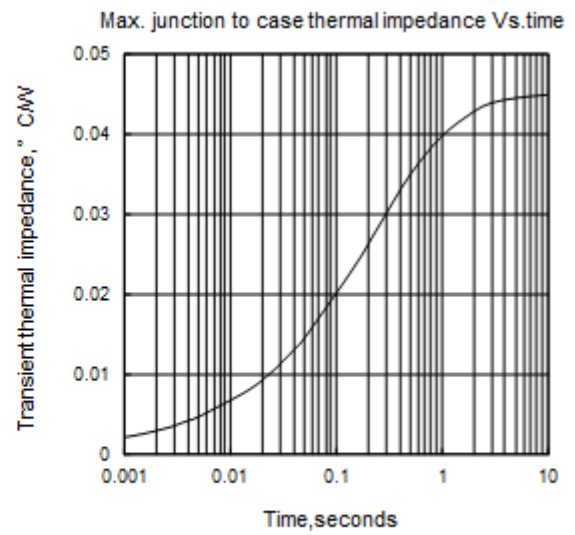
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