Pb Free Plating Product

STTH1506DPI

ThinkiSemi 15A,600V(2x300V) Dual Tandem Structure Ultra Fast Recovery Rectifiers

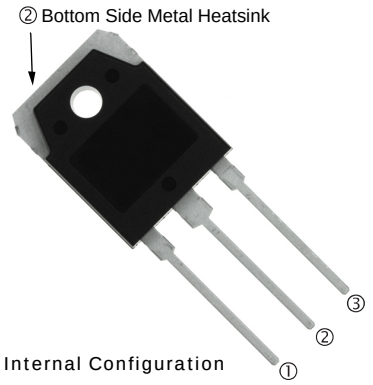
APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

TO-3PB(TO-3PN)



Tandem Structure
In Series Connection

GENERAL DESCRIPTION

STTH1506DPI use ThinkiSemi matured&latest FRED FAB process(planar passivation chip) with ultrafast and soft recovery characteristic.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		26	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal	130	A
Ipeak	Peak current waveform	δ = 0.15 Tc = 120°C	35	A
T_{stg}	Storage temperature range		-65 +150	°C
Tj	Maximum operating junction temperature		+ 150	°C

THERMAL AND POWER DATA

Symbol	Parameter	Test conditions	Value	Unit
$R_{th\ (j-c)}$	Junction to case		1.6	°C/W

STATIC ELECTRICAL CHARACTERISTICS (for both diodes)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R*	Reverse leakage current	$V_R = V_{RRM}$	Tj = 25°C			20	µA
			Tj = 125°C		30	200	
V_F**	Forward voltage drop	I_F = 15 A	Tj = 25°C			3.6	V
			Tj = 150°C		1.95	2.4	

Pulse test: * tp = 100ms, δ < 2%
** tp = 380µs, δ < 2%

To evaluate the maximum conduction losses use the following equation:
$P = 1.7 \times I_{F(AV)} + 0.047 \times I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 0.5 A Irr = 0.25A I_R = 1 A	Tj = 25°C		16		ns
		I_F = 1 A dI_F/dt = - 50A/µs V_R = 30 V				35	
I_{RM}	Reverse recovery current	V_R = 400 V I_F = 15 A dI_F/dt = -200 A/µs	Tj = 125°C		4.8	6.0	A
S	Reverse recovery softness factor				0.4		-
Q_{rr}	Reverse recovery charges				80		nC

TURN-ON SWITCHING CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
t_{fr}	Forward recovery time	I_F = 15 A dI_F/dt = 100A/µs, V_{FR} = 1.1 x $V_F$max	Tj = 25°C			200	ns
V_{FP}	Forward recovery voltage	I_F = 15 A dI_F/dt = 100 A/µs	Tj = 25°C			6	V

Fig. 1: Conduction losses versus average current.

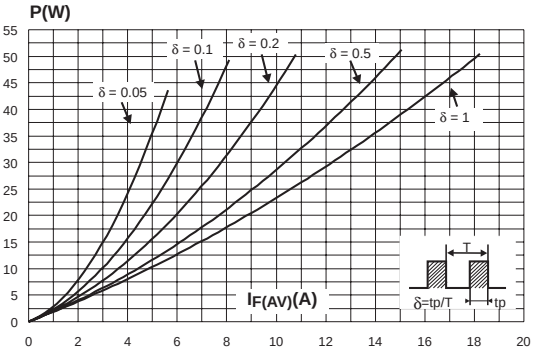


Fig. 2: Forward voltage drop versus forward current.

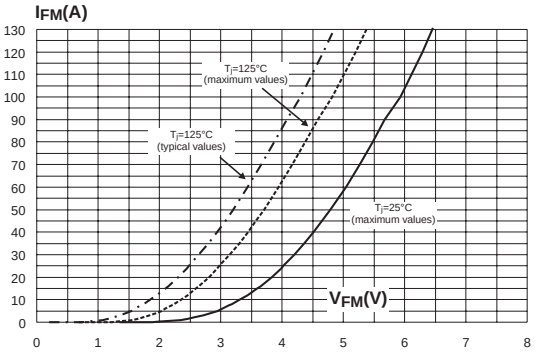


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

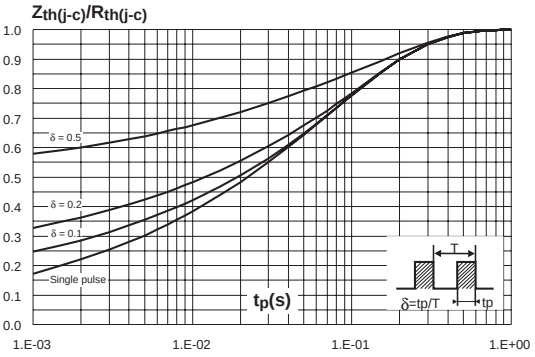


Fig. 4: Peak reverse recovery current versus dI_F/dt (typical values).

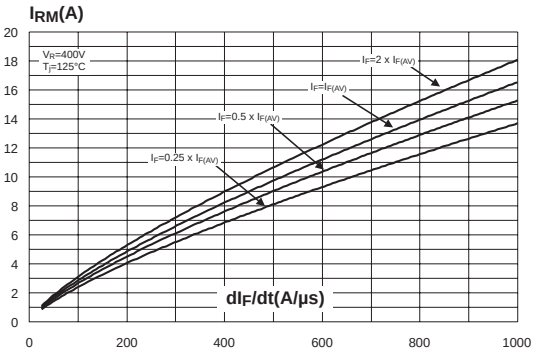


Fig. 5: Reverse recovery time versus dI_F/dt (typical values).

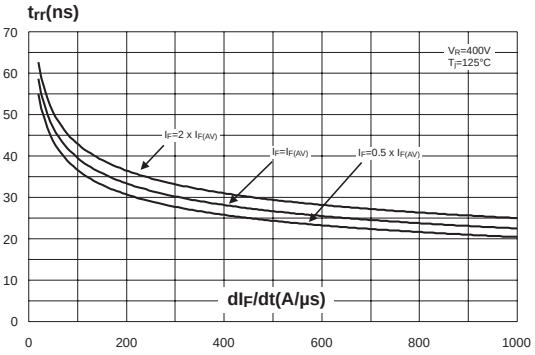


Fig. 6: Reverse recovery charges versus dI_F/dt (typical values).

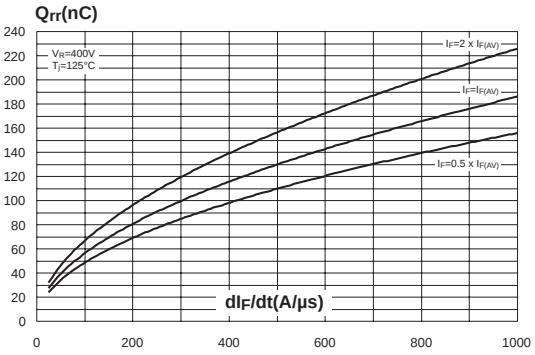


Fig. 7: Softness factor versus dI_F/dt (typical values).

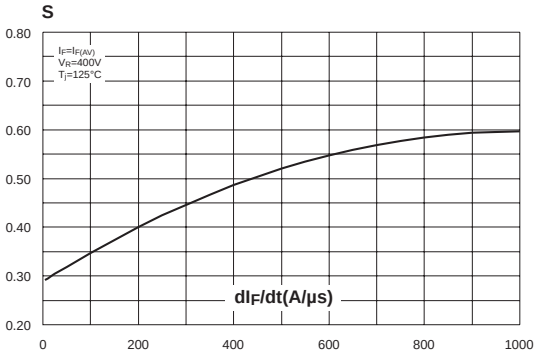


Fig. 8: Relative variations of dynamic parameters versus junction temperature.

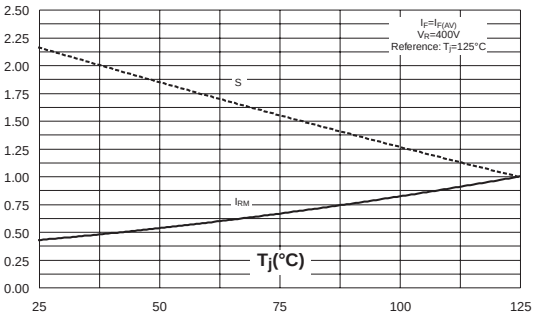


Fig. 9: Transient peak forward voltage versus dI_F/dt (typical values).

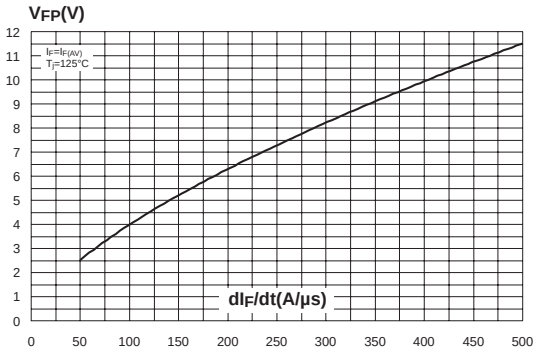


Fig. 10: Forward recovery time versus dI_F/dt (typical values).

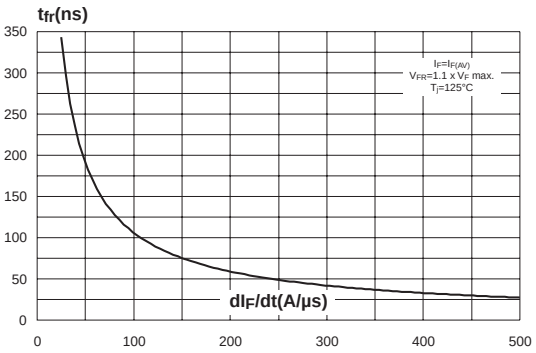
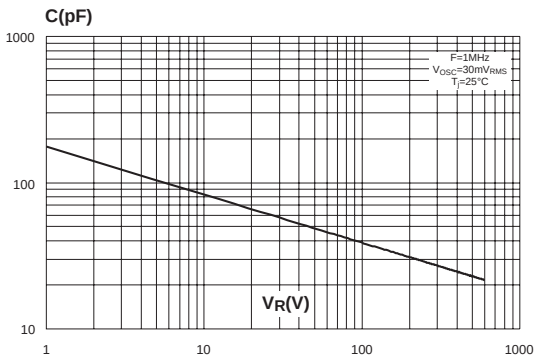
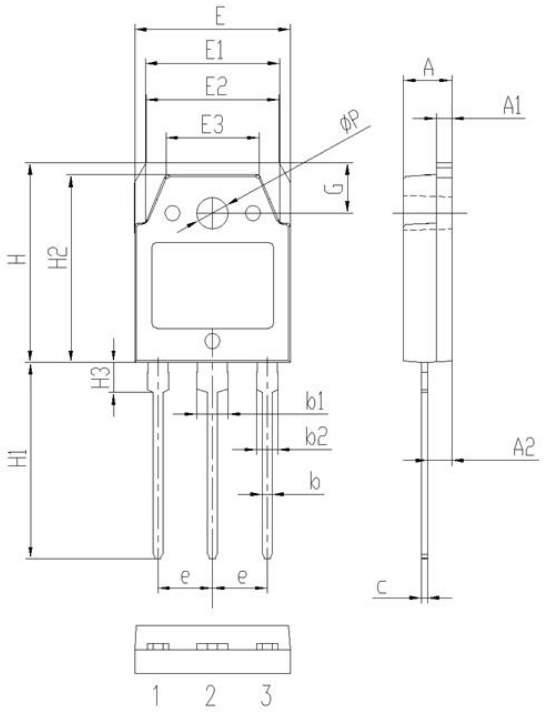


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



TO-3PB/TO-3PN package outline



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.60	5.00
A1	1.50	2.00
A2	2.20	2.60
b	0.80	1.20
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.3	15.7
E1	13.2	13.6
E2	13.1	13.5
E3	9.10	9.50
H	19.7	20.1
H1	19.1	20.1
H2	18.3	18.7
H3	2.80	3.20
G	4.80	5.20
ΦP	3.00	3.40