Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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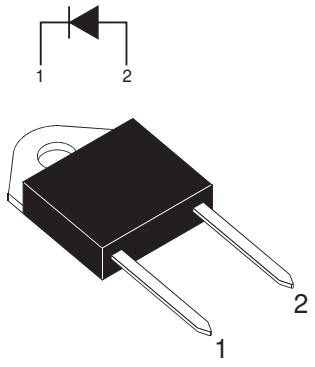
STTH1506DPI

Tandem 600V HYPERFAST BOOST DIODE

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	15 A
V_{RRM}	600 V
Tj (max)	150 °C
V_F (max)	2.4 V
I_{RM} (typ.)	4.8 A
t_{rr} (typ.)	16 ns



DOP3I
(insulated)

FEATURES AND BENEFITS

- ESPECIALLY SUITED AS BOOST DIODE IN CONTINUOUS MODE POWER FACTOR CORRECTORS AND HARD SWITCHING CONDITIONS
- DESIGNED FOR HIGH DI/DT OPERATION. HYPERFAST RECOVERY CURRENT TO COMPETE WITH SIC DEVICES. ALLOWS DOWNSIZING OF MOSFET AND HEATSINKS
- INTERNAL CERAMIC INSULATED DEVICES WITH EQUAL THERMAL CONDITIONS FOR BOTH 300V DIODES
- INSULATION ($2500V_{RMS}$) ALLOWS PLACEMENT ON SAME HEATSINK AS MOSFET AND FLEXIBLE HEATSINKING ON COMMON OR SEPARATE HEATSINK
- STATIC AND DYNAMIC EQUILIBRIUM OF INTERNAL DIODES ARE WARRANTED BY DESIGN
- PACKAGE CAPACITANCE: C=16pF

DESCRIPTION

The TURBOSWITCH “H” is an ultra high performance diode composed of two 300V dice in series. TURBOSWITCH “H” family drastically cuts losses in the associated MOSFET when run at high dI_F/dt.

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.

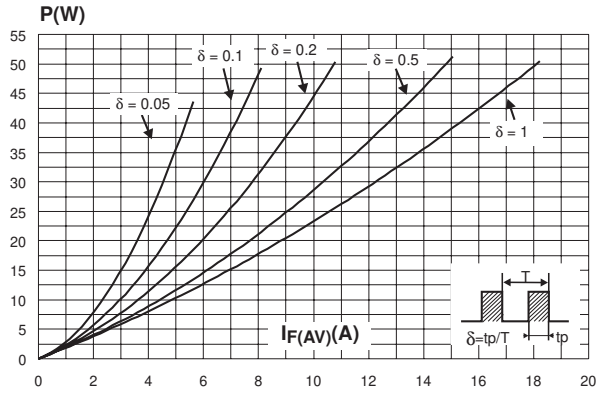


Fig. 2: Forward voltage drop versus forward current.

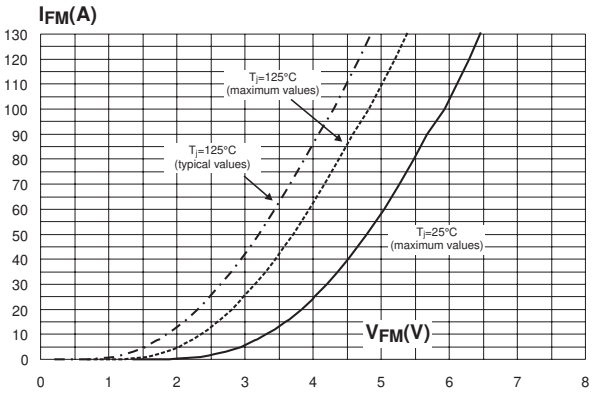


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

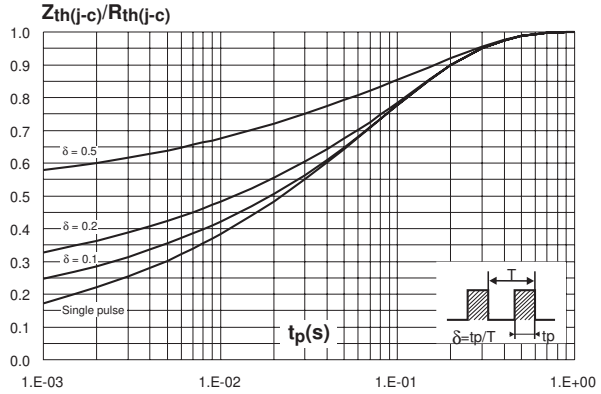


Fig. 4: Peak reverse recovery current versus dI_F/dt (typical values).

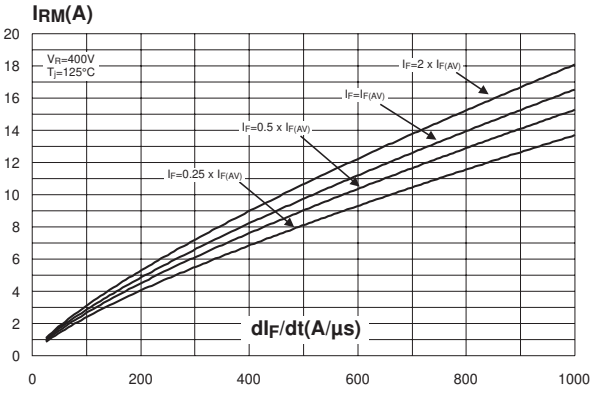


Fig. 5: Reverse recovery time versus dI_F/dt (typical values).

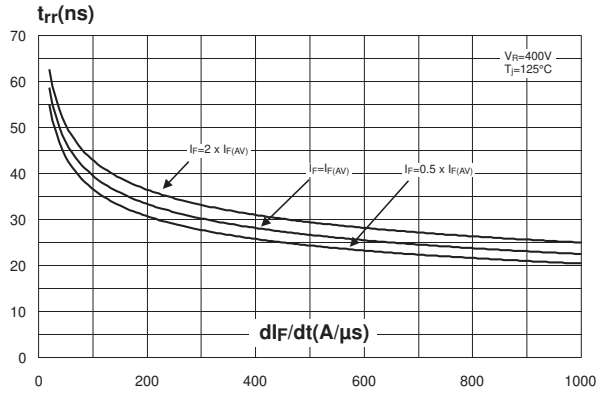


Fig. 6: Reverse recovery charges versus dI_F/dt (typical values).

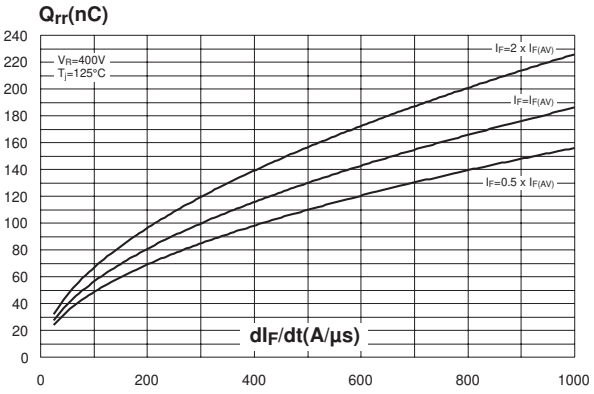


Fig. 7: Softness factor versus dI_F/dt (typical values).

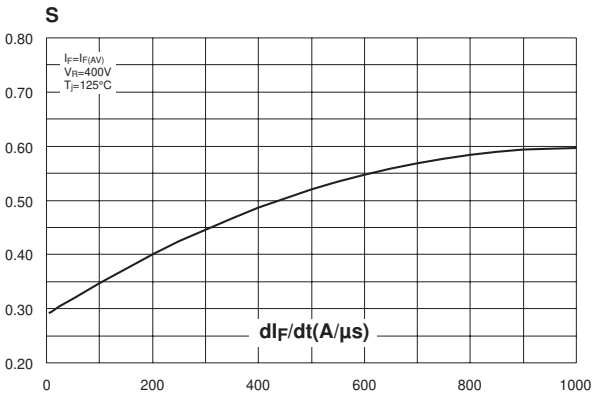


Fig. 8: Relative variations of dynamic parameters versus junction temperature.

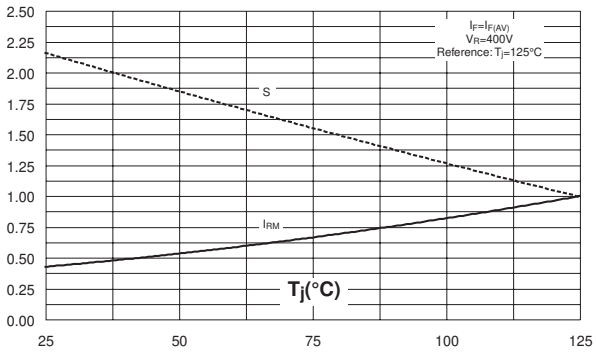


Fig. 9: Transient peak forward voltage versus dI_F/dt (typical values).

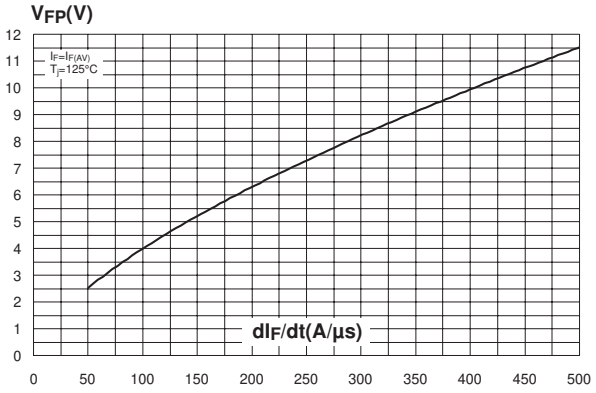


Fig. 10: Forward recovery time versus dI_F/dt (typical values).

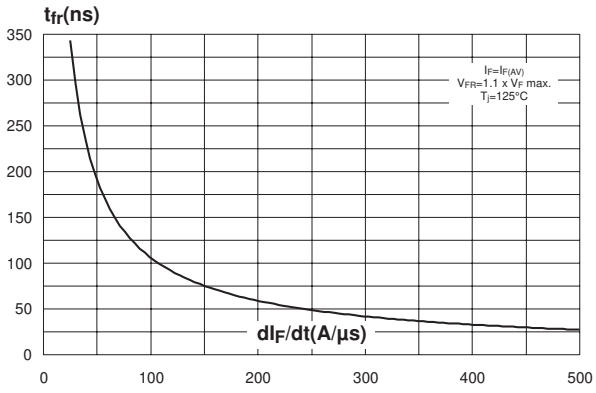
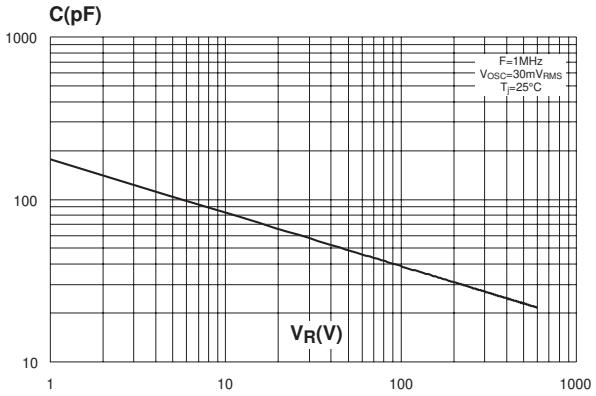
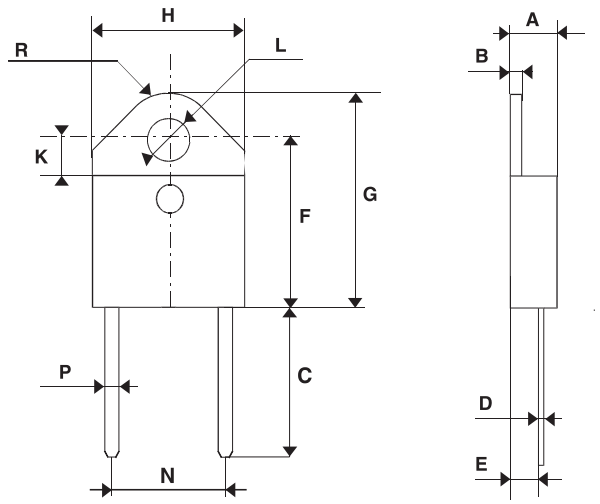


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA

DOP3I



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
B	1.45	1.55	0.057	0.061
C	14.35	15.60	0.565	0.614
D	0.5	0.7	0.020	0.028
E	2.7	2.9	0.106	0.114
F	15.8	16.5	0.622	0.650
G	20.4	21.1	0.815	0.831
H	15.1	15.5	0.594	0.610
K	3.4	3.65	0.134	0.144
L	4.08	4.17	0.161	0.164
N	10.8	11.3	0.425	0.444
P	1.20	1.40	0.047	0.055
R	4.60 typ.		0.181 typ.	

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH1506DPI	STTH1506DPI	DOP3I	4.46 g.	30	Tube

- Epoxy meets UL94,V0