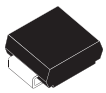
STTH2L06

HIGH EFFICIENCY ULTRAFAST DIODE

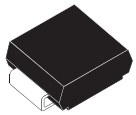
Table 1: Main Product Characteristics

$I_{F(AV)}$	2 A
V_{RRM}	600 V
T_j	175°C
V_F (typ)	0.85 V
t_{rr} (typ)	60 ns

DO-41
STTH2L06



SMA
STTH2L06A



SMB
STTH2L06U

FEATURES AND BENEFITS

- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- High junction temperature

DESCRIPTION

The STTH2L06 is using ST Turbo 2 600V planar Pt doping technology. It is specially suited for SMPS and base drive transistor circuits.
Packaged in axial, SMA and SMB, this device is intended for use in high frequency inverters, free wheeling and polarity protection.

Table 2: Order Codes

Part Number	Marking
STTH2L06	STTH2L06
STTH2L06RL	STTH2L06

Part Number	Marking
STTH2L06A	L6A
STTH2L06U	L6U

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			600	V
$I_{F(RMS)}$	RMS forward voltage			7	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	DO-41	Tl = 90°C	2	A
		SMA	Tl = 100°C	2	
		SMB	Tl = 115°C	2	
I_{FSM}	Surge non repetitive forward current	DO-41	tp = 10ms sinusoidal	45	A
		SMA / SMB		35	
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature			175	°C

Table 4: Thermal Resistance

Symbol	Parameter		Value (max).	Unit
$R_{th(j-l)}$	Junction to lead	DO-41 L = 5 mm	35	°C/W
		SMA	30	
		SMB	25	

Table 5: Static Electrical Characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			2	µA
		T_j = 150°C			12	85	
V_F **	Forward voltage drop	T_j = 25°C	I_F = 2A			1.3	V
		T_j = 150°C			0.85	1.05	

Pulse test: * tp = 5 ms, δ < 2%

** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation: $P = 0.89 \times I_{F(AV)} + 0.08\ I_F{}^2{}_{(RMS)}$

Table 6: Dynamic Characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25°C	I_F = 1A dI_F/dt = 50 A/µs V_R =30V		60	85	ns
t_{fr}	Forward recovery time	T_j = 25°C	I_F = 2A dI_F/dt = 100 A/µs $V_{FR} = 1.1 \times V_{Fmax}$			100	ns
V_{FP}	Forward recovery voltage					9	V

Figure 1: Conduction losses versus average forward current

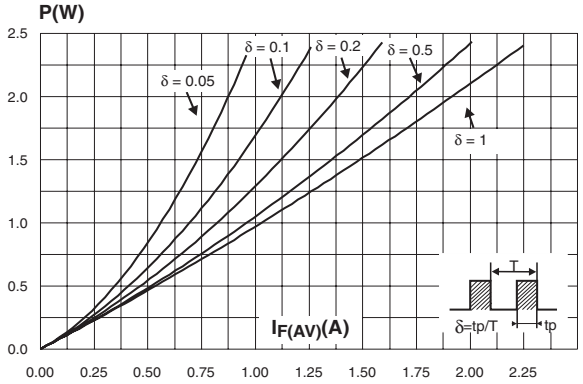


Figure 2: Forward voltage drop versus forward current

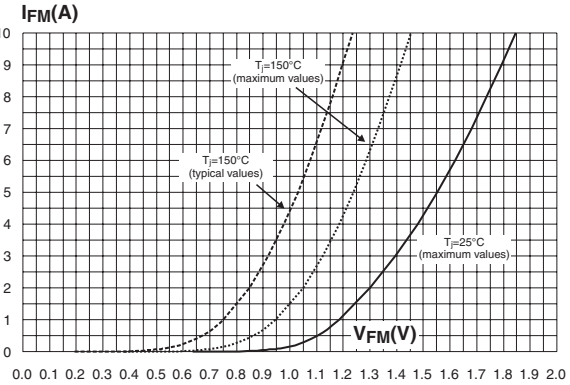


Figure 3: Relative variation of thermal impedance junction to case versus pulse duration (SMA - S_{CU} = 1cm^2)

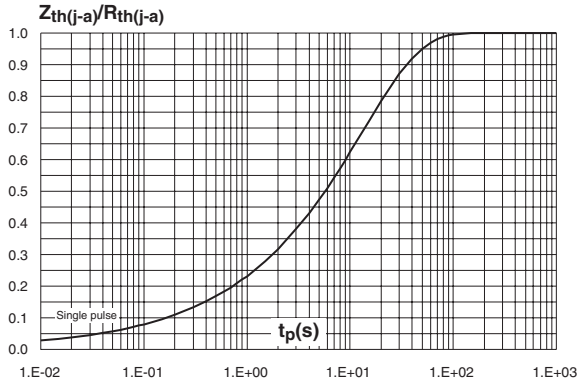


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration (SMB - S_{CU} = 1cm^2)

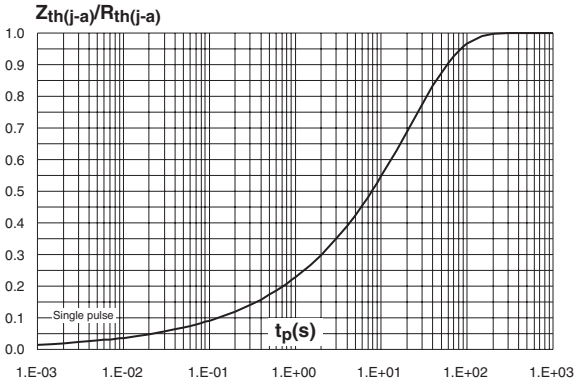


Figure 5: Relative variation of thermal impedance junction to case versus pulse duration (DO-41)

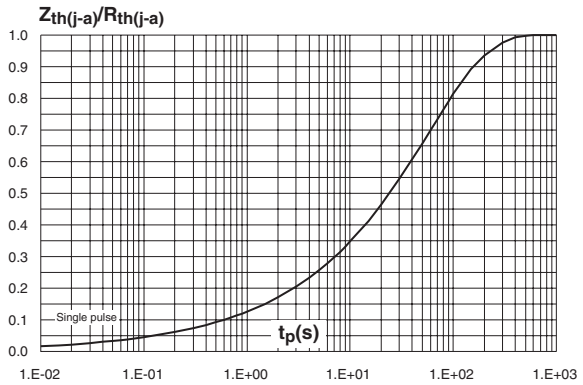


Figure 6: Peak reverse recovery current versus dI_F/dt (typical values)

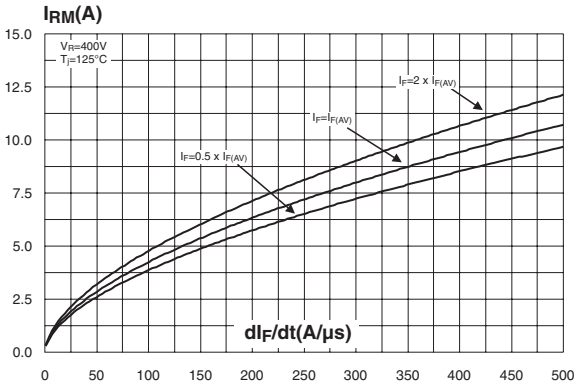


Figure 7: Reverse recovery time versus dI_F/dt (typical values)

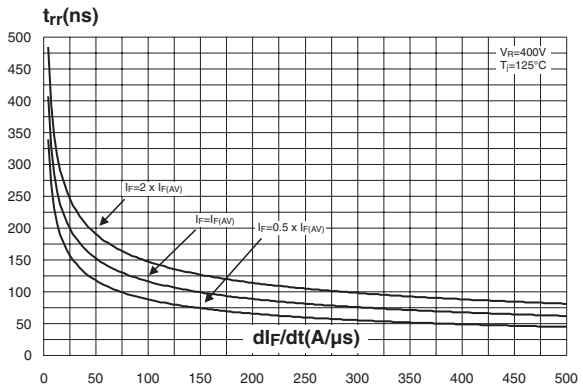


Figure 8: Reverse recovery charges versus dI_F/dt (typical values)

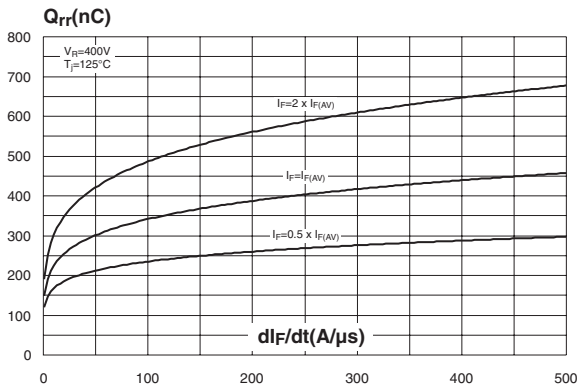


Figure 9: Relative variations of dynamic parameters versus junction temperature

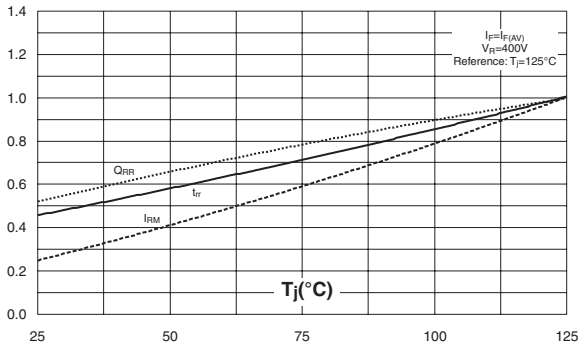


Figure 10: Transient peak forward voltage versus dI_F/dt (typical values)

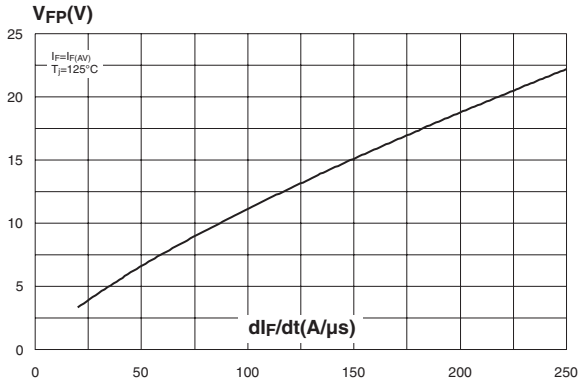


Figure 11: Forward recovery time versus dI_F/dt (typical values)

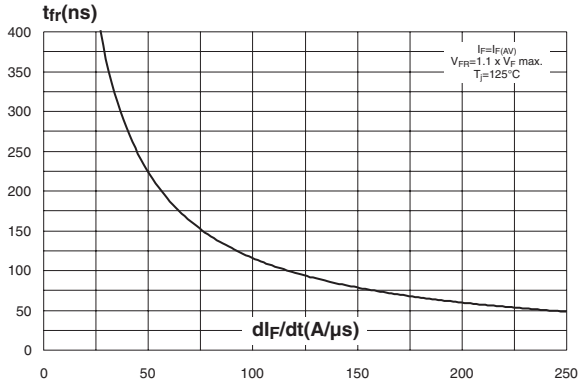


Figure 12: Junction capacitance versus reverse voltage applied (typical values)

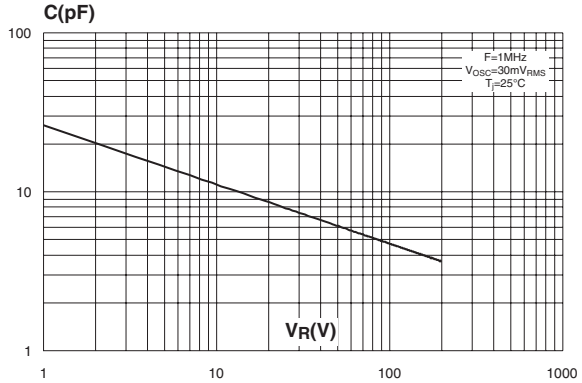


Figure 13: Thermal resistance junction to ambient versus copper surface under tab (epoxy FR4, e_{CU}=35µm) (SMA / SMB)

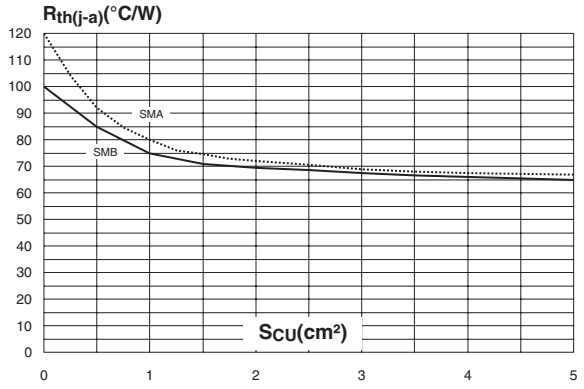


Figure 14: Thermal resistance versus lead lengh (DO-41)

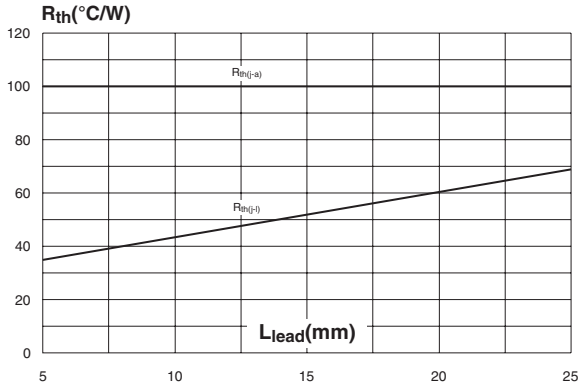
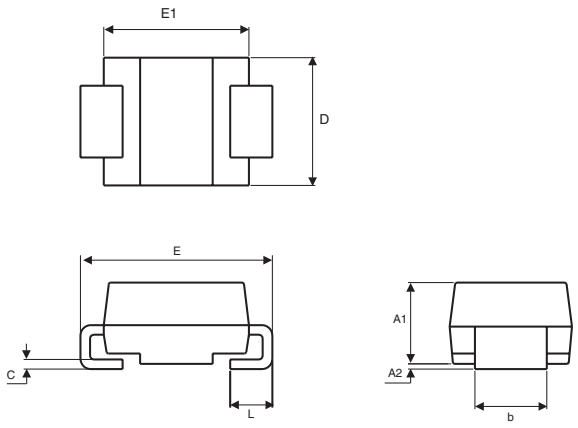


Figure 15: SMA Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

Figure 16: SMA Foot Print Dimensions
(in millimeters)

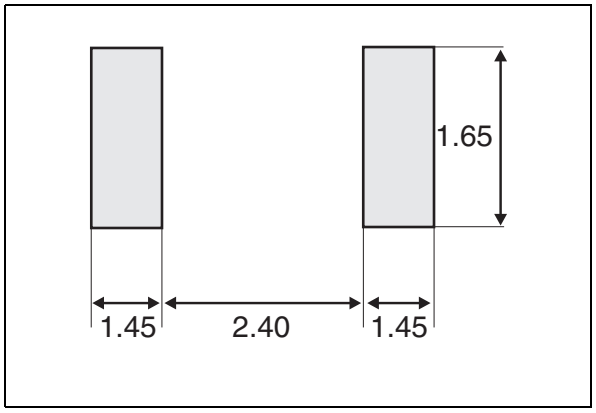
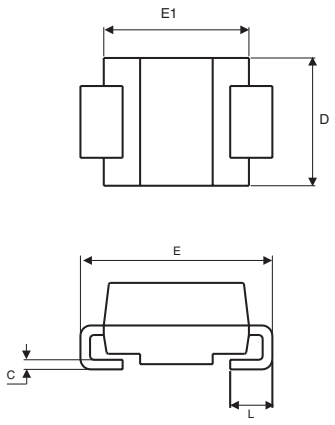


Figure 17: SMB Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

Figure 18: SMB Foot Print Dimensions
(in millimeters)

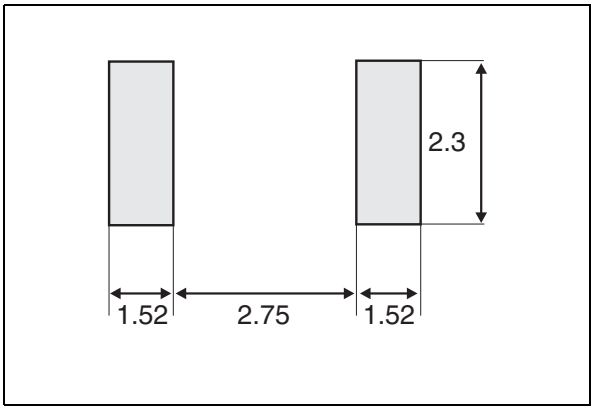
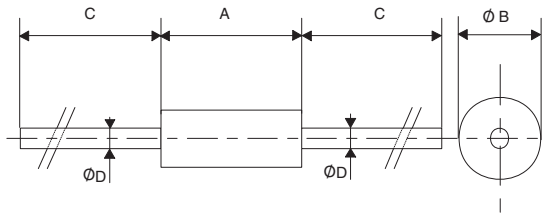


Figure 19: DO-41 Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
C	28		1.102	
D	0.712	0.863	0.028	0.034

Table 7: Ordering Information

Part Number	Marking	Package	Weight	Base qty	Delivery mode
STTH2L06	STTH2L06	DO-41	0.34 g	2000	Ammopack
STTH2L06RL	STTH2L06	DO-41	0.34 g	5000	Tape & reel
STTH2L06A	L6A	SMA	0.068 g	5000	Tape & reel
STTH2L06U	L6U	SMB	0.11 g	2500	Tape & reel

Table 8: Revision History

Date	Revision	Description of Changes
07-Sep-2004	1	First issue