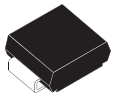
STTH3R06

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

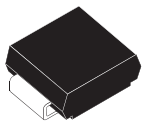
Table 1: Main Product Characteristics

$I_{F(AV)}$	3 A
V_{RRM}	600 V
I_R (max)	100 µA
T_j	175°C
V_F (typ)	1.0 V
t_{rr} (typ)	35 ns

DO-201AD
STTH3R06



SMB
STTH3R06U



SMC
STTH3R06S

FEATURES AND BENEFITS

- Ultrafast switching
- Low forward voltage drop
- Low thermal resistance
- Low leakage current (platinium doping)

DESCRIPTION

The STTH3R06, which is using ST Turbo 2 600V technology, is specially suited for use in switching power supplies, inverters and as a free wheeling diode.

Table 2: Order Codes

Part Number	Marking
STTH3R06	STTH3R06
STTH3R06RL	STTH3R06
STTH3R06U	3R6U
STTH3R06S	R6S

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			600	V
$I_{F(RMS)}$	RMS forward current			10	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	DO-201AD	Tl = 80°C	3	A
		SMB	Tl = 55°C		
		SMC	Tl = 80°C		
I_{FSM}	Surge non repetitive forward current	DO-201AD	tp = 10ms sinusoidal	55	A
		SMB / SMC		45	
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature			175	°C

Table 4: Thermal Parameters

Symbol	Parameter		Maximum	Unit
$R_{th(j-l)}$	Junction to lead	DO-201AD L = 10 mm	20	°C/W
		SMB	25	
		SMC	20	
$R_{th(j-a)}$	Junction to ambient (see fig. 13)	DO-201AD L = 10 mm	75	°C/W

Table 5: Static Electrical Characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I_R	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			3	µA
		T_j = 150°C			15	100	
V_F	Forward voltage drop	T_j = 25°C	I_F = 3A			1.7	V
		T_j = 150°C			1.0	1.25	

To evaluate the conduction losses use the following equation: $P = 1.03 \times I_{F(AV)} + 0.09\ I_F{}^2{}_{(RMS)}$

Table 6: Dynamic Characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25°C	I_F = 0.5A I_{RR} = 0.25A I_R = 1A			30	ns
			I_F = 1A dI_F/dt = -50 A/µs V_R =30V		35		
t_{fr}	Forward recovery time	T_j = 25°C	I_F = 3A dI_F/dt = 100 A/µs $V_{FR} = 1.1 \times V_{Fmax}$			100	ns
V_{FP}	Forward recovery voltage		I_F = 3A dI_F/dt = 100 A/µs			10	V

Figure 1: Conduction losses versus average current

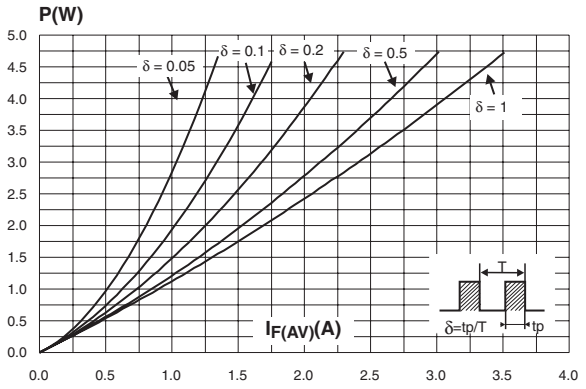


Figure 2: Forward voltage drop versus forward current

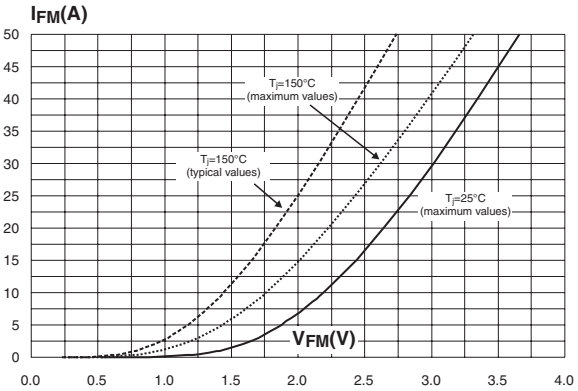


Figure 3: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy printed circuit FR4, L_{leads} = 10mm, S_{CU}=1cm²)

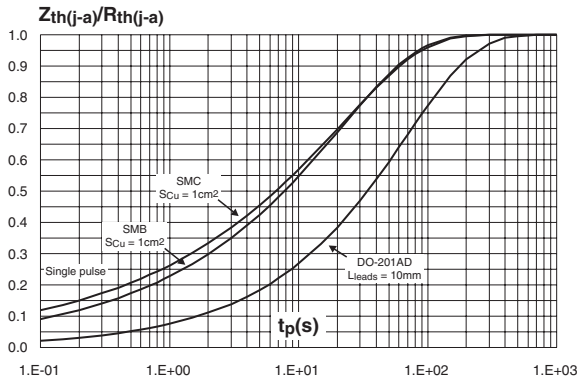


Figure 4: Peak reverse recovery current versus dI_F/dt (typical values)

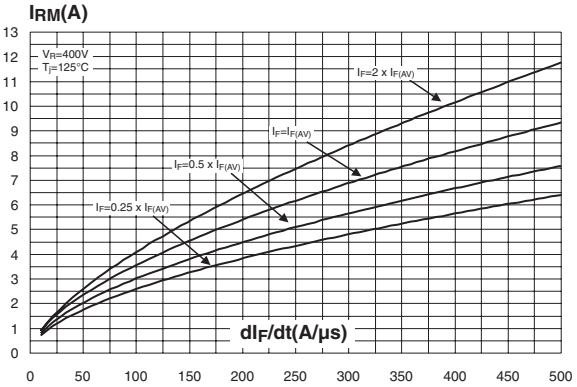


Figure 5: Reverse recovery time versus dI_F/dt (typical values)

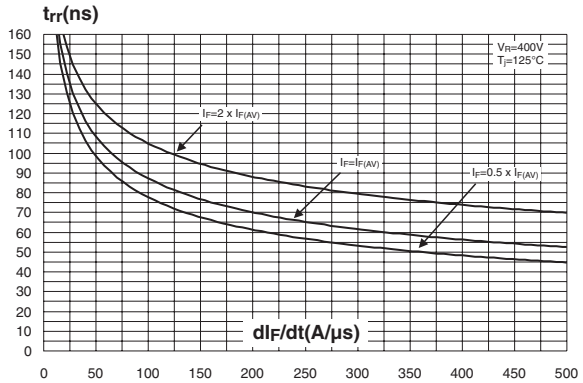


Figure 6: Reverse recovery charges versus dI_F/dt (typical values)

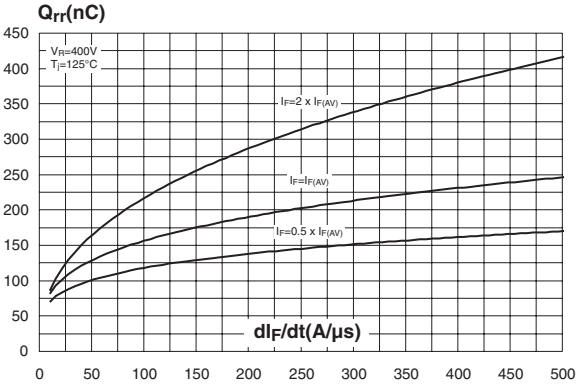


Figure 7: Softness factor versus d_{IF}/dt (typical values)

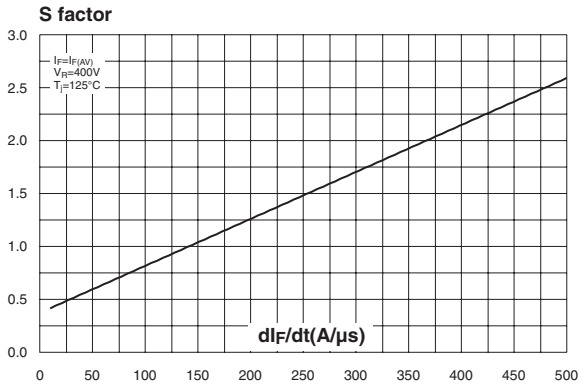


Figure 8: Relative variations of dynamic parameters versus junction temperature

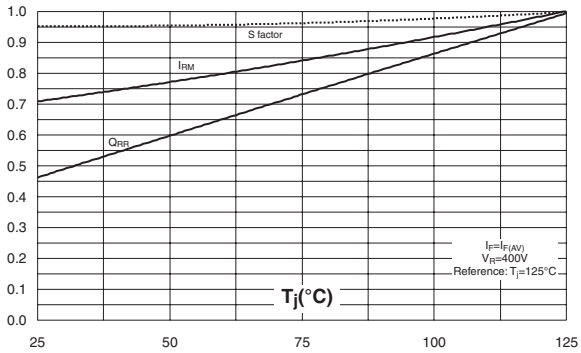


Figure 9: Transient peak forward voltage versus dI_F/dt (typical values)

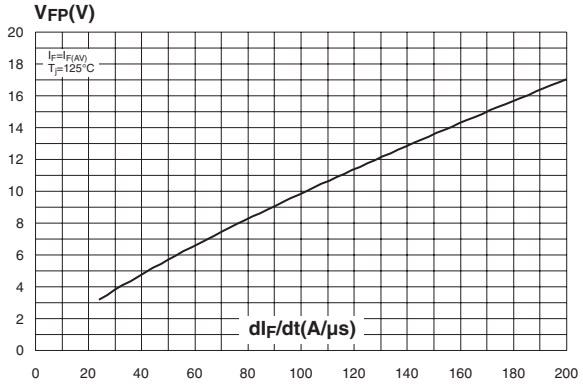


Figure 10: Forward recovery time versus dI_F/dt (typical values)

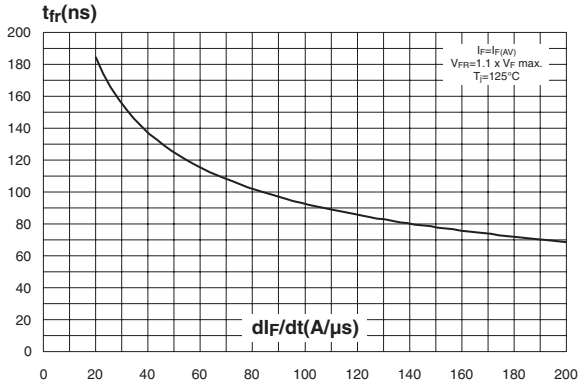


Figure 11: Junction capacitance versus reverse voltage applied (typical values)

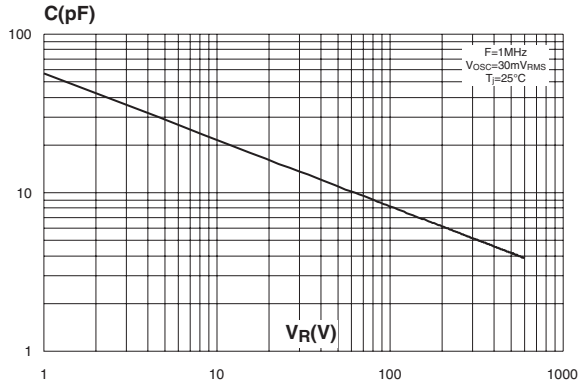


Figure 12: Thermal resistance junction to ambient versus copper surface under lead (epoxy FR4, e_{CU}=35µm) (DO-201AD)

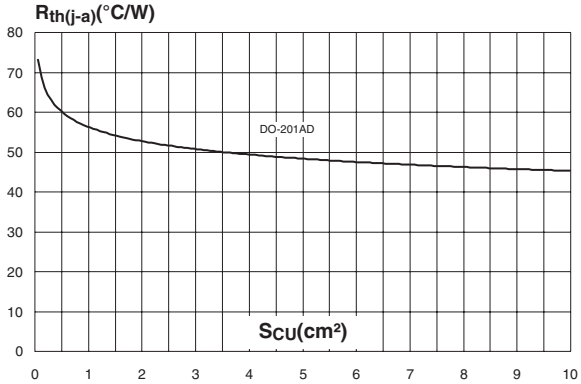


Figure 13: Thermal resistance junction to ambient versus copper surface under lead (epoxy FR4, e_{CU}=35µm) (SMB / SMC)

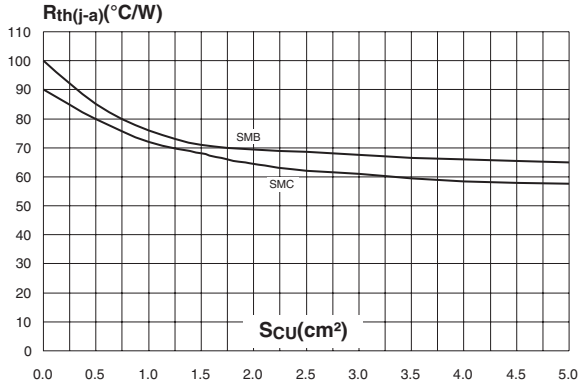


Figure 14: Thermal resistance versus lead length

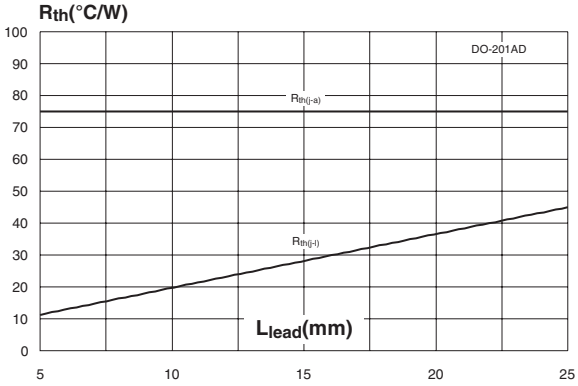
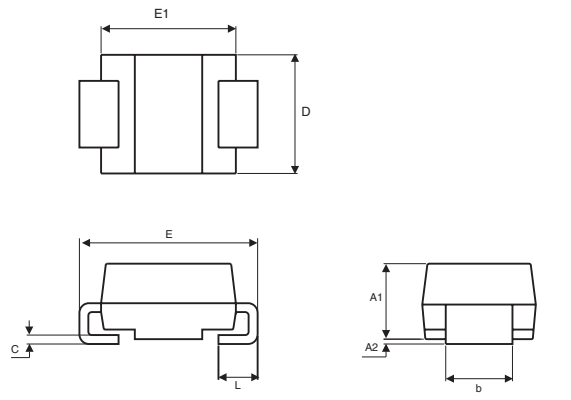


Figure 15: SMB Package Mechanical Data



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 16: SMB Foot Print Dimensions
(in millimeters)

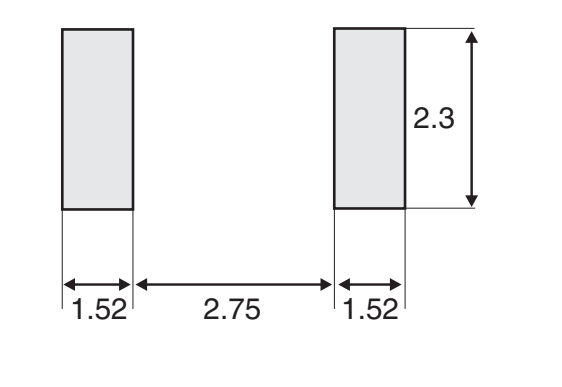
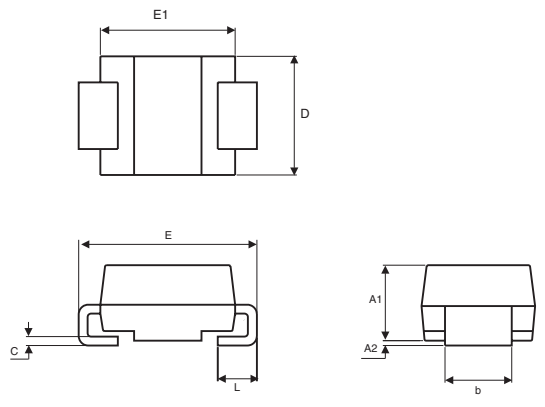


Figure 17: SMC Package Mechanical Data



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	2.90	3.2	0.114	0.126
c	0.15	0.41	0.006	0.016
E	7.75	8.15	0.305	0.321
E1	6.60	7.15	0.260	0.281
E2	4.40	4.70	0.173	0.185
D	5.55	6.25	0.218	0.246
L	0.75	1.60	0.030	0.063

Figure 18: SMC Foot Print Dimensions
(in millimeters)

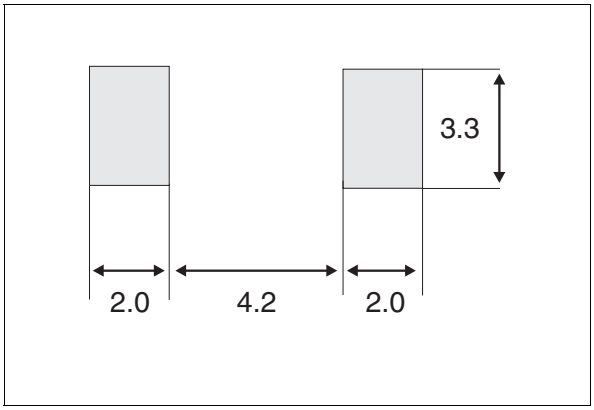
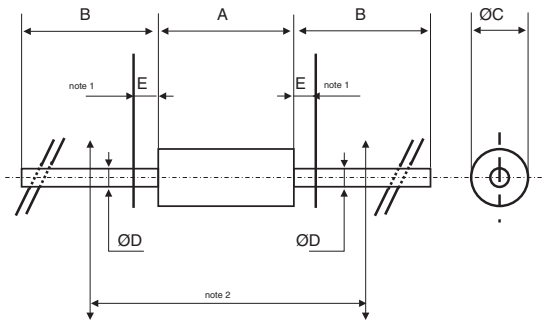


Figure 19: DO-201AD Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		9.50		0.374
B	25.40		1.000	
C		5.30		0.209
D		1.30		0.051
E		1.25		0.049
NOTES	1 - The lead diameter ø D is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59"(15 mm)			

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STTH3R06	STTH3R06	DO-201AD	1.12 g	600	Ammopack
STTH3R06-RL	STTH3R06	DO-201AD	1.12 g	1900	Tape & reel
STTH3R06U	3R6U	SMB	0.11 g	2500	Tape & reel
STTH3R06S	R6S	SMC	0.243 g	2500	Tape & reel

- Epoxy meets UL94, V0
- Band indicated cathode (DO-201AD)
- Bending method: see application note **AN1471** (DO-201AD)

Table 8: Revision History

Date	Revision	Description of Changes
March-2003	1	First issue
07-Sep-2004	2	SMB and SMC packages added
14-Oct-2005	3	Changed marking of STTH3R06U from R06U to 3R6U on page 1. Added ECOPACK statement.

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- Поставка более 17-ти миллионов наименований электронных компонентов;
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- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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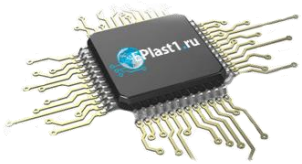
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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