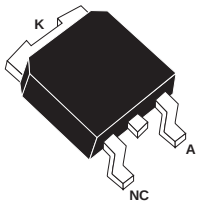
STPS340U/S/B

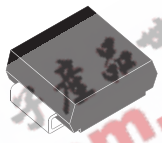
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

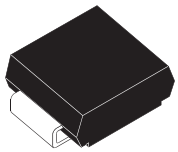
$I_{F(AV)}$	3 A
V_{RRM}	40 V
Tj (max)	150 °C
V_F (max)	0.57 V



DPAK
STPS340B



SMB
(JEDEC DO-214AA)
STPS340U



SMC
(JEDEC DO-214AB)
STPS340S

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- EXTREMELY FAST SWITCHING
- SURFACE MOUNTED DEVICE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Single chip Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters.

Packaged in SMB, SMC and DPAK this device is intended for use in low and medium voltage operation, high frequency inverters, free wheeling and polarity protection applications where low switching losses are required.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			40	V
$I_{F(RMS)}$	RMS forward current		DPAK	6	A
			SMB / SMC	10	
$I_{F(AV)}$	Average forward current	T_c = 135°C δ = 0.5	DPAK	3	A
		T_L = 105°C δ = 0.5	SMB / SMC		
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		75	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs F = 1kHz square		1	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		1300	W
T_{stg}	Storage temperature range			- 65 to + 150	°C
Tj	Maximum operating junction temperature			+ 150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-l)}$	Junction to leads	SMC	20	°C/W
		SMB	25	
$R_{th\ (j-c)}$	Junction to case	DPAK	5.5	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			20	µA
		Tj = 125°C	$V_R = V_{RRM}$		2	10	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 3 A			0.63	V
		Tj = 25°C	I_F = 6 A			0.84	
		Tj = 125°C	I_F = 3 A		0.52	0.57	
		Tj = 125°C	I_F = 6 A		0.63	0.72	

Pulse test : * tp = 380 µs, δ < 2 %

To evaluate the maximum conduction losses use the following equation :
$P = 0.42 \times I_{F(AV)} + 0.050\ I_F{}^2{}_{(RMS)}$

Fig. 1: Average forward power dissipation versus average forward current.

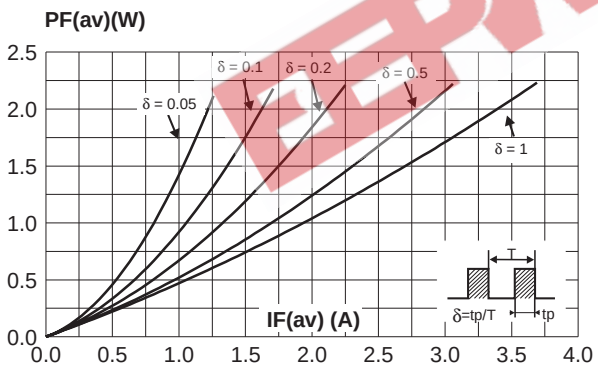


Fig. 2: Average current versus ambient temperature (δ =0.5).

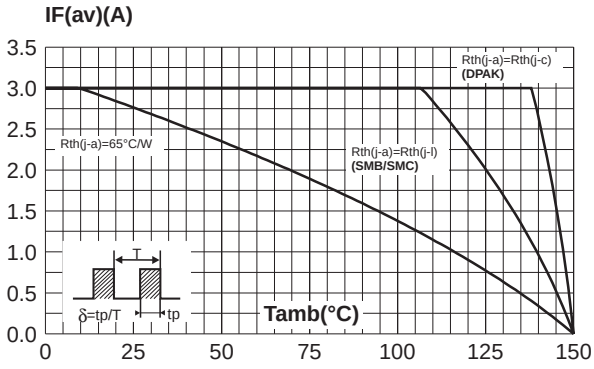


Fig. 3: Normalized avalanche power derating versus pulse duration.

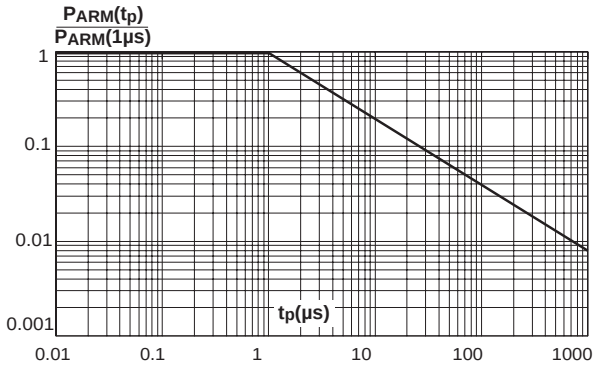


Fig. 4: Normalized avalanche power derating versus junction temperature.

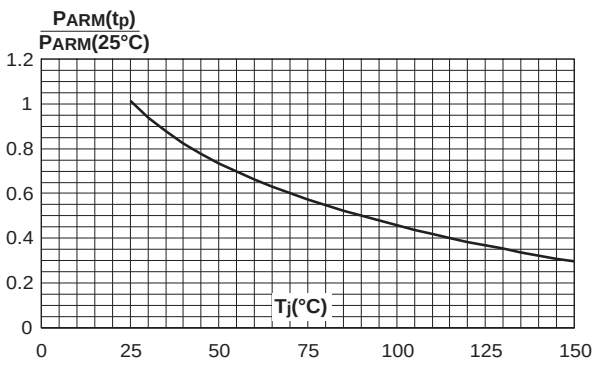


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (SMB)(Maximum values).

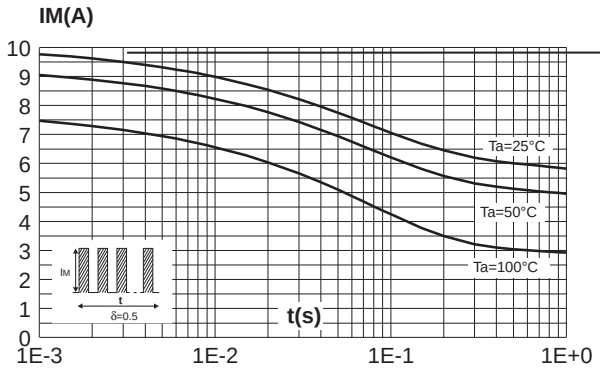


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (SMC) (Maximum values).

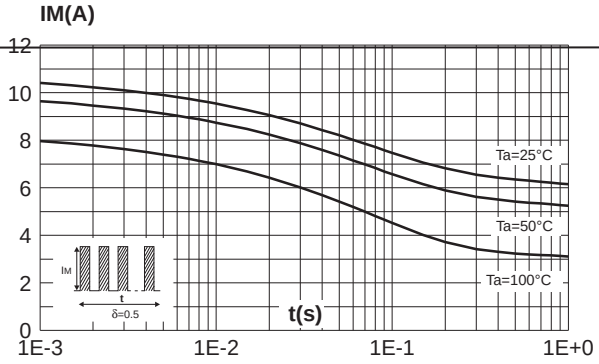


Fig. 5-3: Non repetitive surge peak forward current versus overload duration (DPAK) (Maximum values).

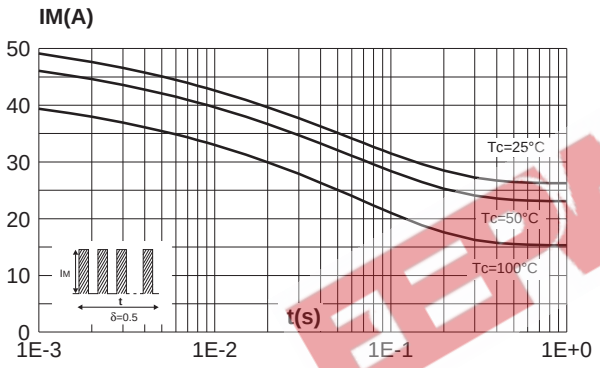


Fig. 6-1: Relative variation of thermal transient impedance junction to lead versus pulse duration (SMB).

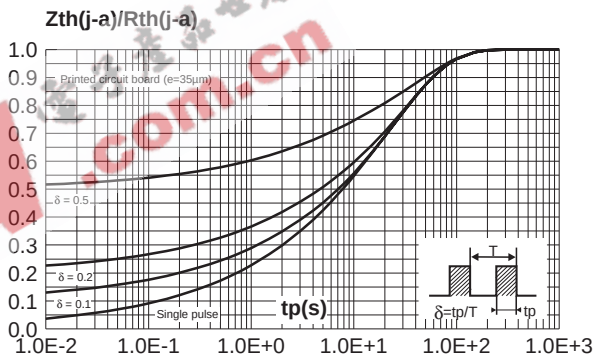


Fig. 6-2: Relative variation of thermal transient impedance junction to lead versus pulse duration (SMC).

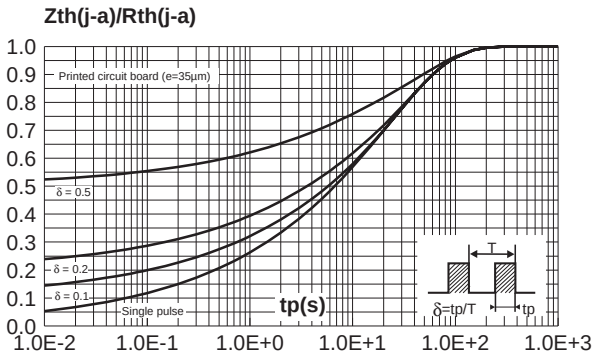


Fig. 6-3: Relative variation of thermal transient impedance junction to lead versus pulse duration(DPAK).

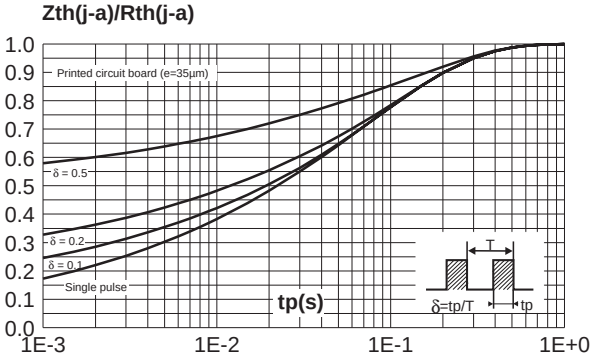


Fig. 7: Reverse leakage current versus reverse voltage applied (Typical values).

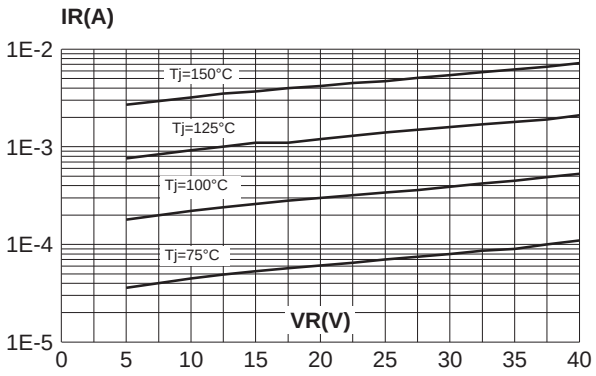


Fig. 8: Junction capacitance versus reverse voltage applied (Typical values).

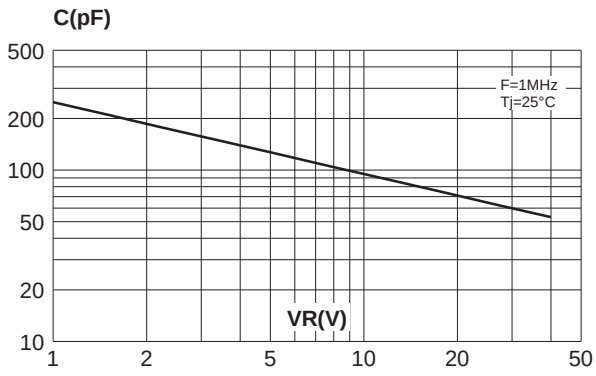


Fig. 9: Forward voltage drop versus forward current (Maximum values).

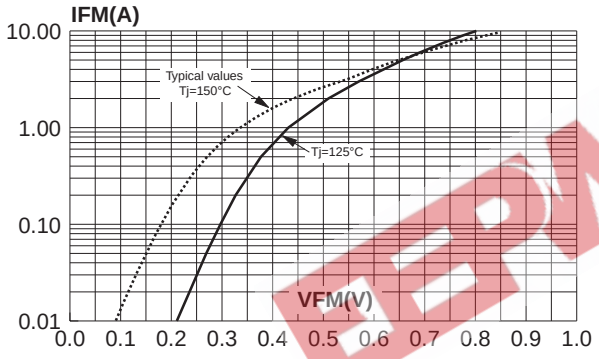


Fig. 10-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm) (SMB).

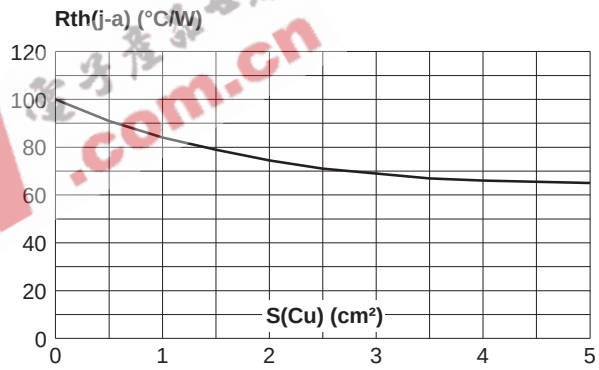


Fig. 10-2: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm) (SMC).

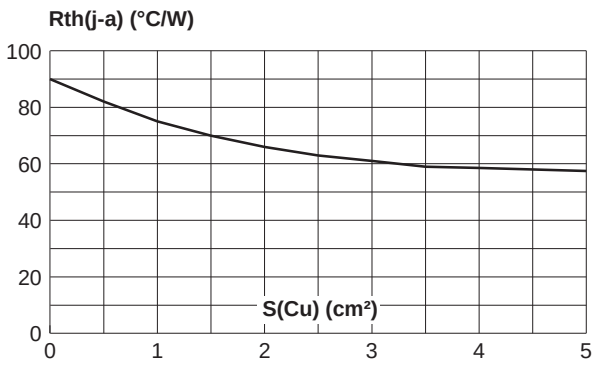
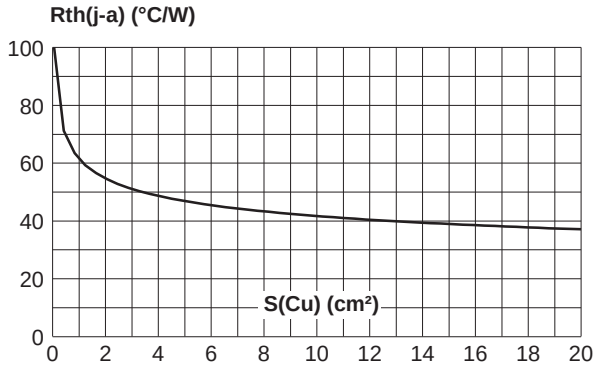
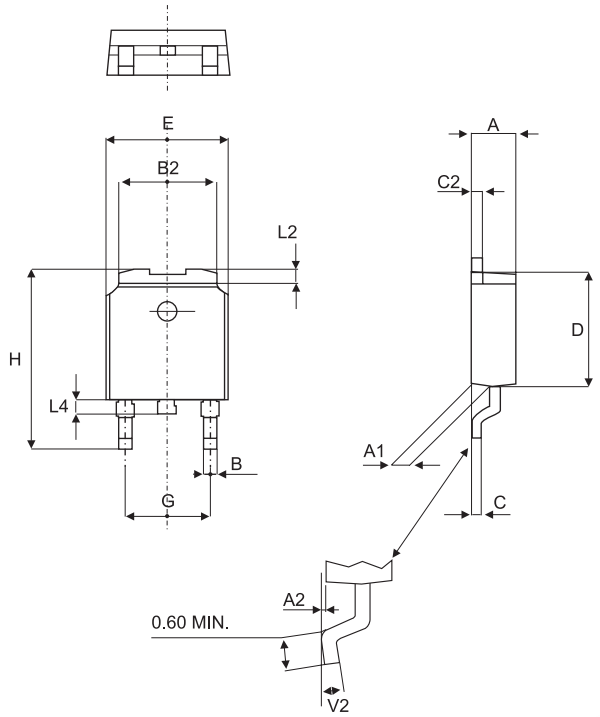


Fig. 10-3: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm) (DPAK).



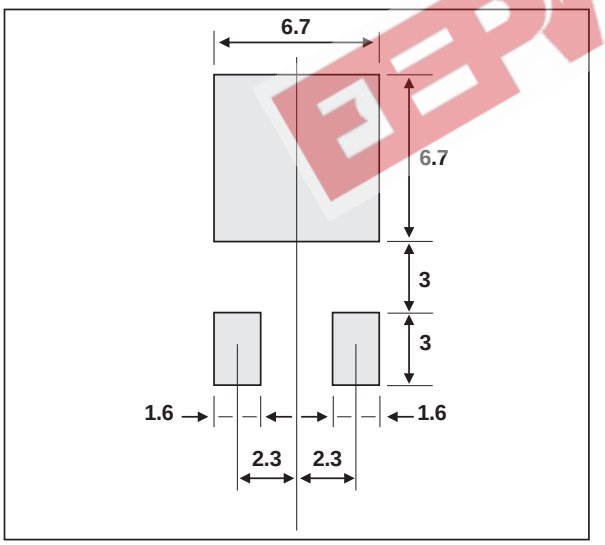
PACKAGE MECHANICAL DATA

DPAK



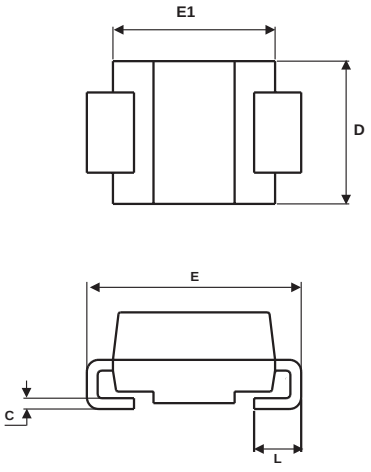
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

FOOTPRINT DIMENSIONS (in millimeters)



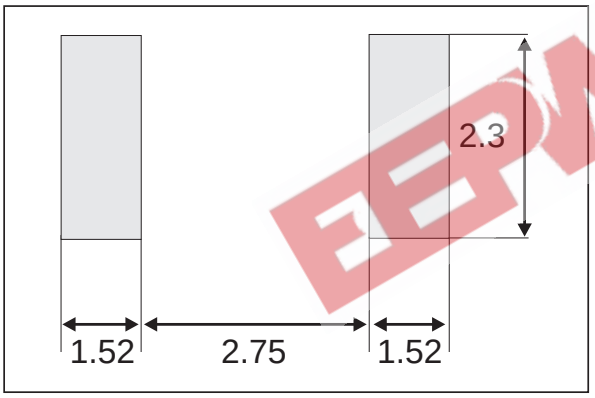
PACKAGE MECHANICAL DATA

SMB



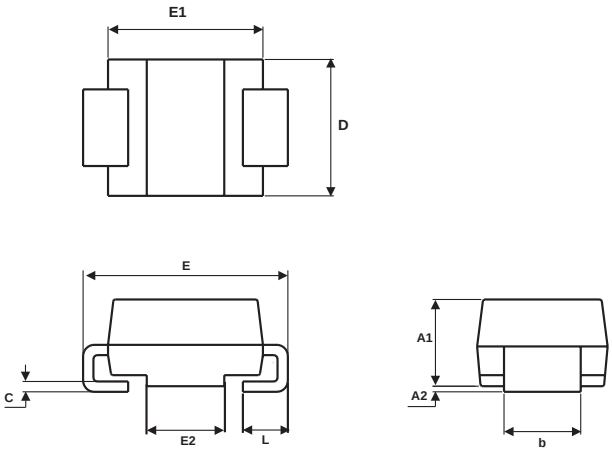
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOTPRINT DIMENSIONS (in millimeters)



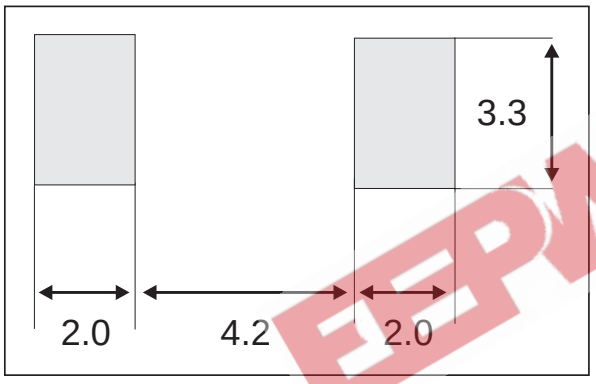
PACKAGE MECHANICAL DATA

SMC



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

FOOTPRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS340U	U34	SMB	0.107g	2500	Tape and reel
STPS340S	S34	SMC	0.243g	2500	Tape and reel
STPS340B	S340	DPAK	0.30g	75	Tube
STPS340B-TR	S340	DPAK	0.30g	2500	Tape and reel

- BAND INDICATES CATHODE ON SMB, SMC
- EPOXY MEETS UL94,V0