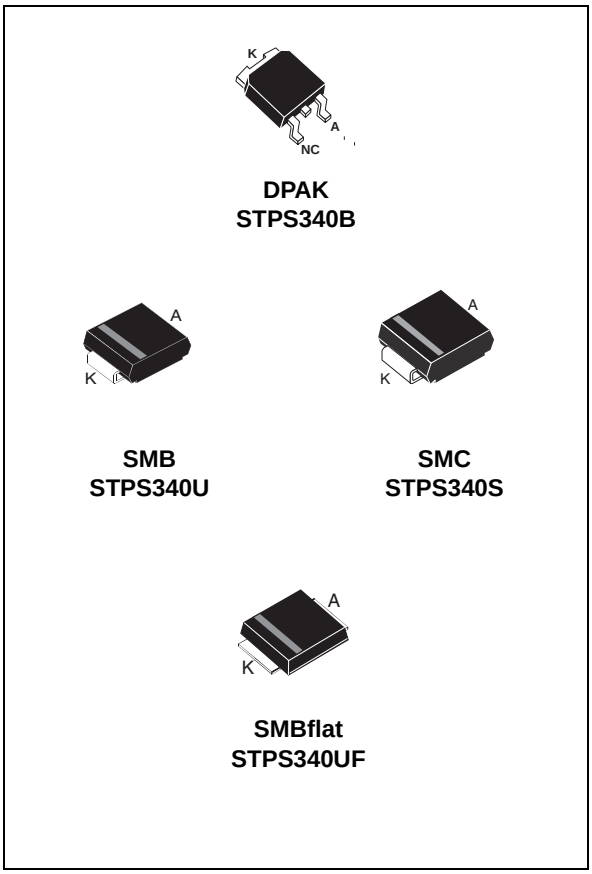
SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER



DPAK
STPS340B

SMB
STPS340U

SMC
STPS340S

SMBflat
STPS340UF

Features

- Very small conduction losses
- Negligible switching losses
- Low forward voltage drop
- Low thermal resistance
- Extremely fast switching
- Surface mounted device
- Avalanche capability specified
- ECOPACK®2 compliant component, STPS340UF

Table 1. Device summary

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

1 Characteristics

Table 2. Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			40	V
$I_{F(RMS)}$	Forward rms current		DPAK	6	A
$I_{F(AV)}$	Average forward current	T_c = 135 °C δ = 0.5	DPAK	3	A
		T_L = 105 °C δ = 0.5	SMB/SMC		
		T_L = 115 °C δ = 0.5	SMBflat		
I_{FSM}	Surge non repetitive forward current	t_p =10 ms sinusoidal		75	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C		1300	W
T_{stg}	Storage temperature range			-65 to + 150	°C
T_j	Operating junction temperature (1)			150	°C

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMB	25	°C/W
		SMBflat	15	
		SMC	20	
$R_{th(j-c)}$	Junction to case	DPAK	5.5	°C/W

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			20	µA
		T_j = 125 °C			2	10	mA
V_F(1)	Forward voltage drop	T_j = 25 °C	I_F = 3 A			0.63	V
		T_j = 125 °C			0.52	0.57	
		T_j = 25 °C	I_F = 6 A			0.84	
		T_j = 125 °C			0.63	0.72	

1. Pulse test: t_p = 380 µs, δ < 2%

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

Figure 1. Average forward power dissipation versus average forward current (per diode)

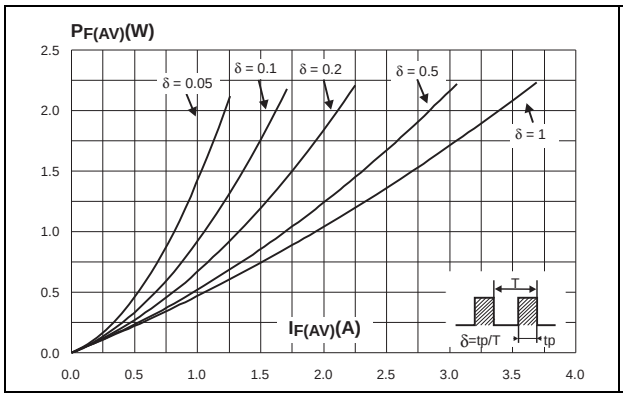


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode) (DPAK / SMB / SMC)

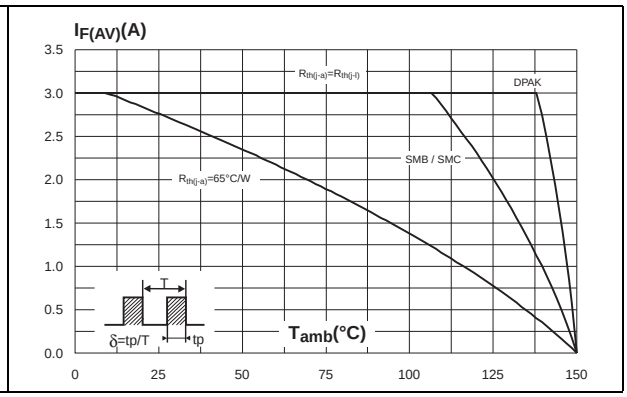


Figure 3. Average forward current versus ambient temperature (δ = 0.5, per diode) (SMBflat)

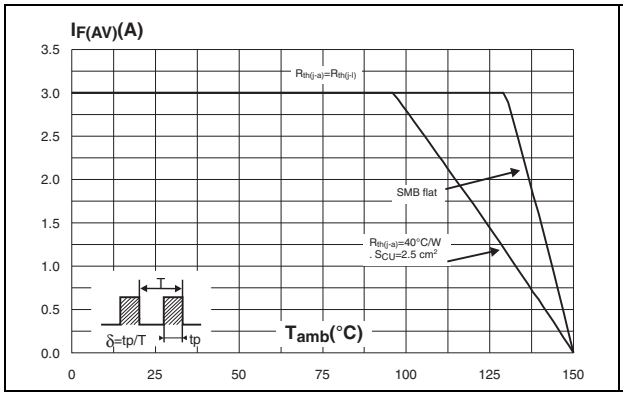


Figure 4. Non repetitive surge peak forward current versus overload duration (maximum values) (DPAK)

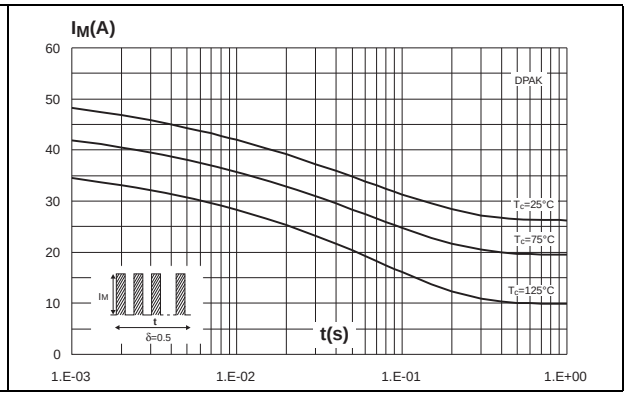


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values) (SMB)

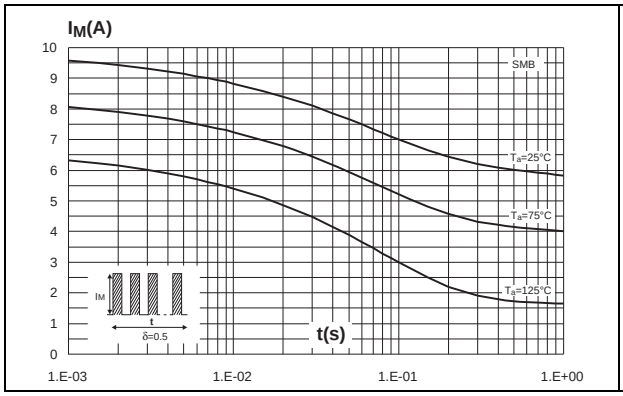


Figure 6. Non repetitive surge peak forward current versus overload duration (maximum values) (SMC)

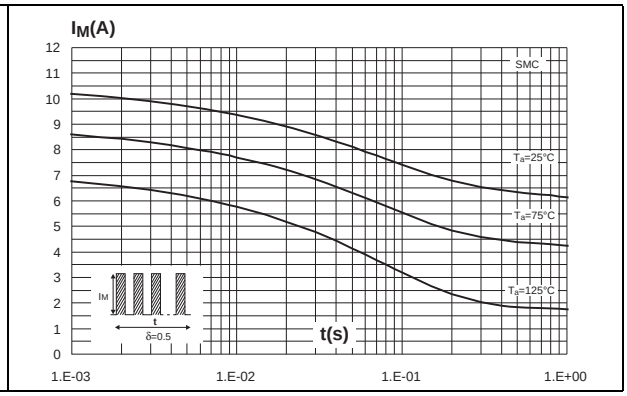


Figure 7. Non repetitive surge peak forward current versus overload duration (maximum values) SMBflat

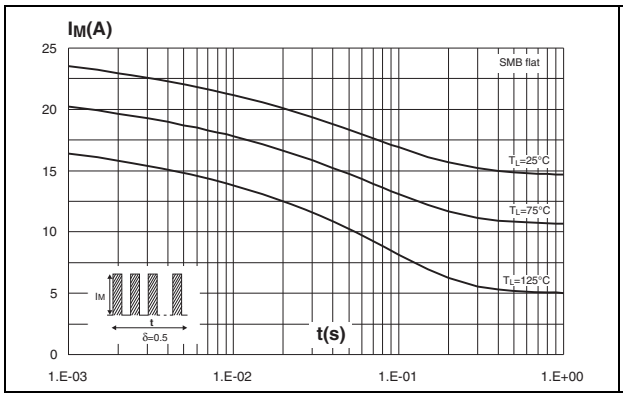


Figure 8. Normalized avalanche power derating versus pulse duration

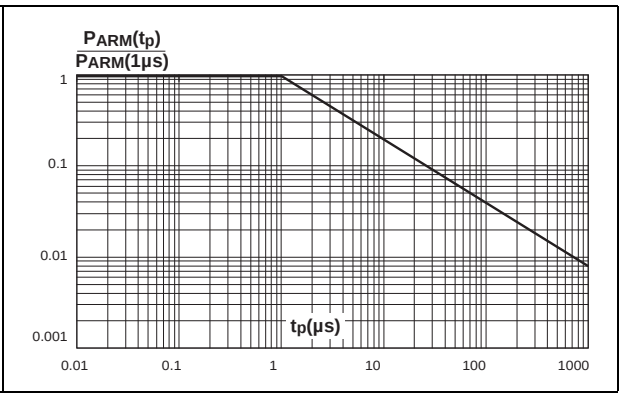


Figure 9. Normalized avalanche power derating versus junction temperature

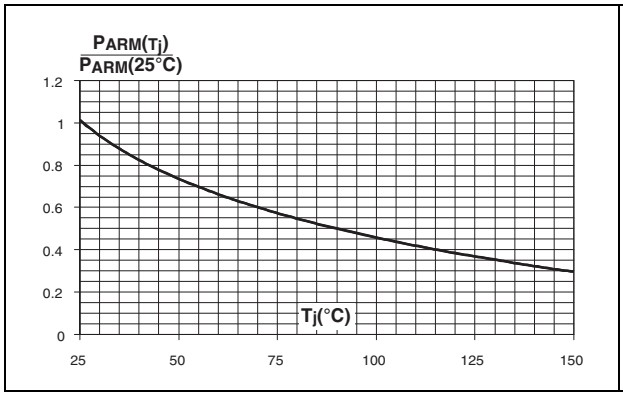


Figure 10. Relative variation of thermal impedance junction to ambient versus pulse duration (DPAK)

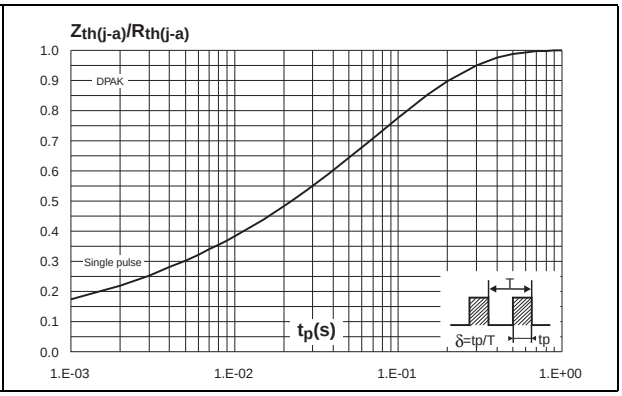


Figure 11. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)

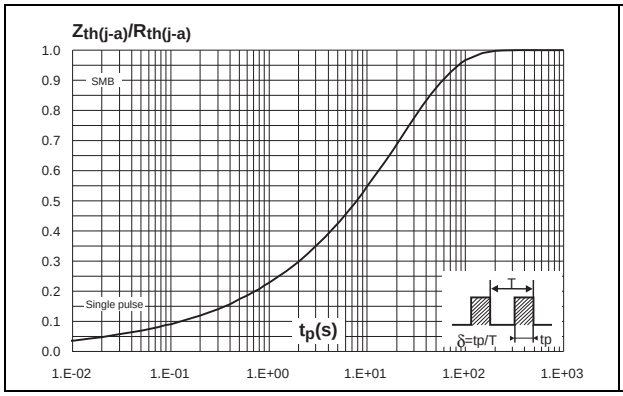


Figure 12. Relative variation of thermal impedance junction to ambient versus pulse duration (SMC)

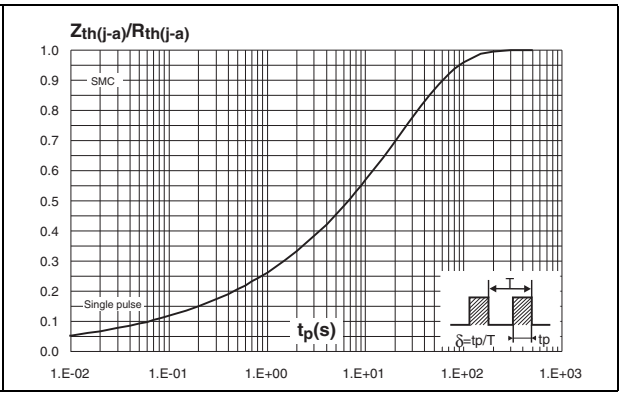


Figure 13. Relative variation of thermal impedance junction to lead versus pulse duration - SMBflat

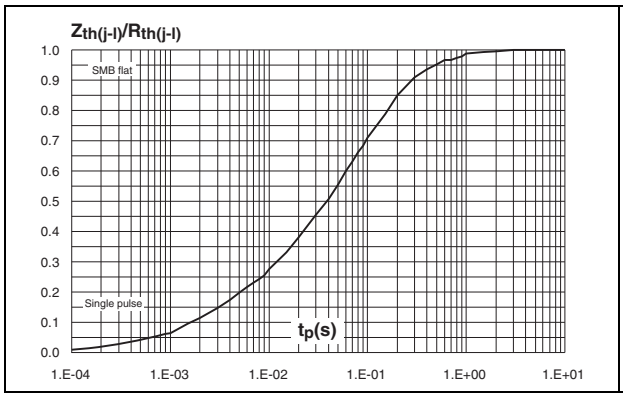


Figure 14. Reverse leakage current versus reverse voltage applied (typical values)

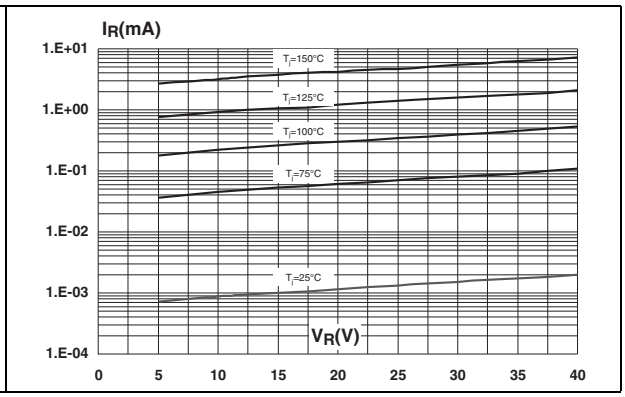


Figure 15. Junction capacitance versus reverse voltage applied (typical values)

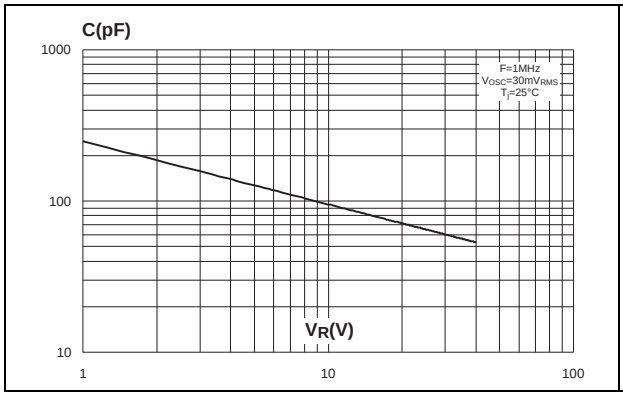


Figure 16. Forward voltage drop versus forward current

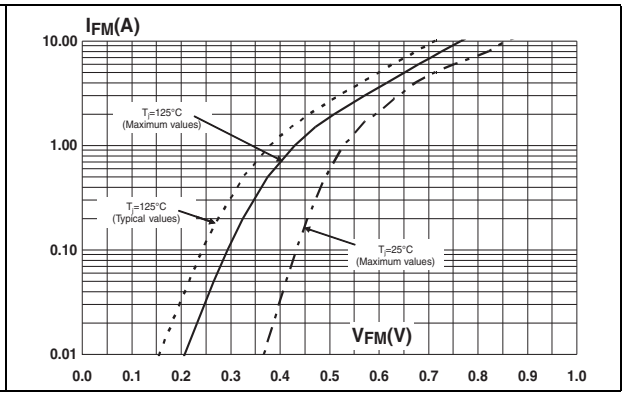


Figure 17. Thermal resistance junction to ambient versus copper surface under each lead (DPAK)

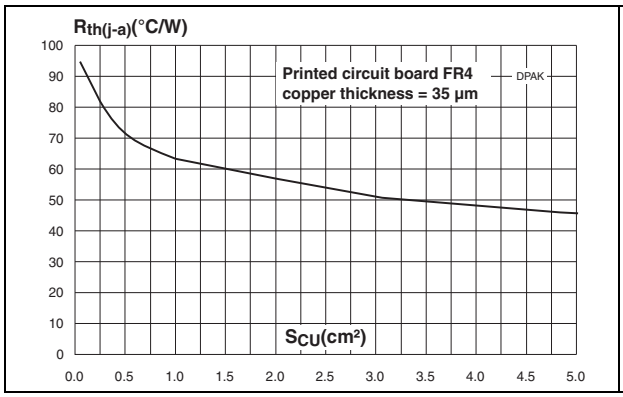


Figure 18. Thermal resistance junction to ambient versus copper surface under each lead (SMB / SMC)

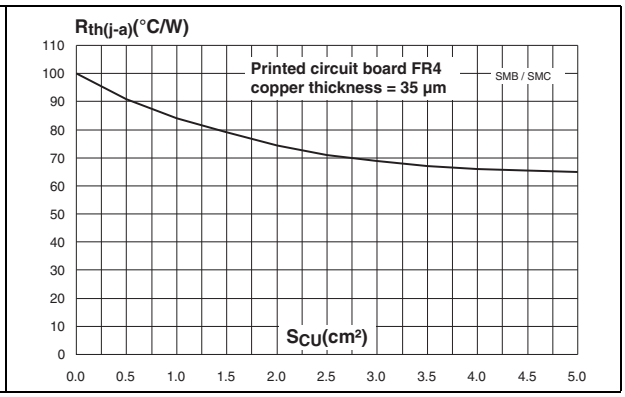
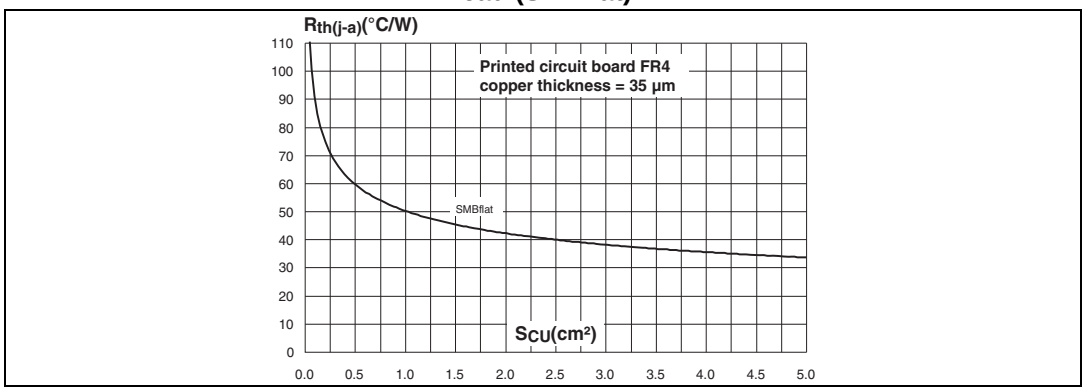


Figure 19. Thermal resistance junction to ambient versus copper surface under each lead (SMBflat)

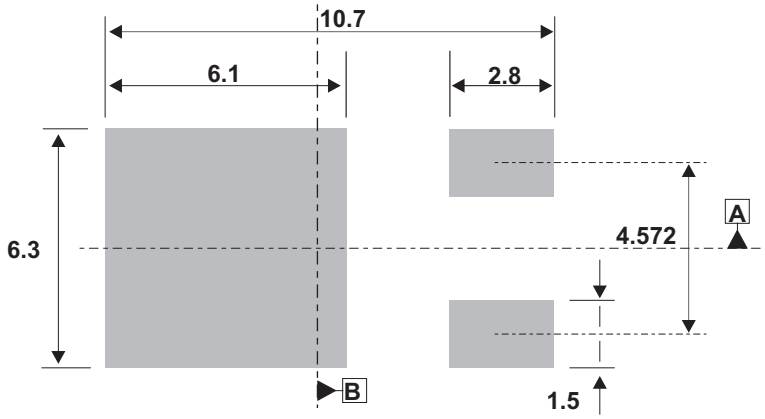


2 Package Information

Table 5. DPAK dimension values

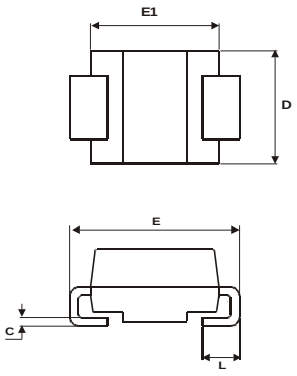
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.18		2.40	0.085		0.094
A1	0.90		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.01
b	0.64		0.90	0.025		0.035
b4	4.95		5.46	0.195		0.215
c	0.46		0.61	0.018		0.024
c2	0.46		0.60	0.018		0.024
D	5.97		6.22	0.235		0.245
E	6.35		6.73	0.250		0.265
e1	4.4		4.7	0.173		0.185
H	9.35		10.34	0.368		0.407
L	1.0		1.78	0.039		0.070
L2			1.27			0.05
L4	0.6		1.02	0.024		0.040
V2	0°		8°	0°		8°

Figure 20. DPAK footprint dimensions (in mm)



This footprint ensures insultation up to 630 V rms (according to IEC 664-1)
The device must be positioned within ⌖ 0.05 A B

Table 6. SMB dimensions



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	0.40	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	1.50	0.030	0.059

Figure 21. SMB footprint (dimensions in mm)

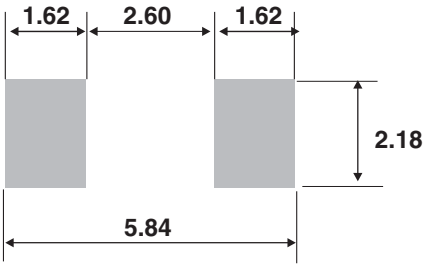
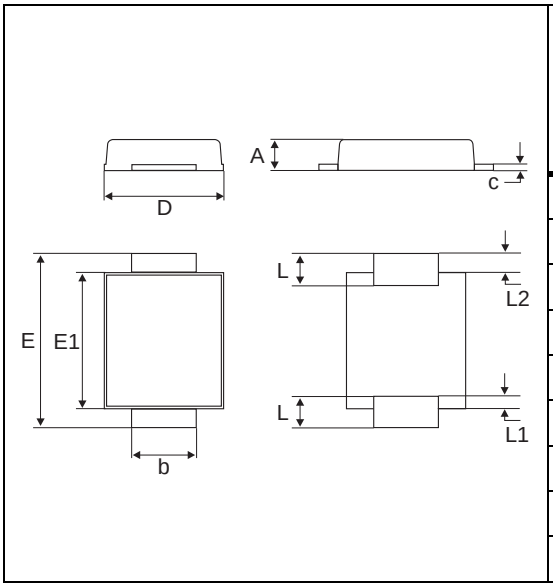


Table 7. SMBflat dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90		1.10	0.035		0.043
b(1)	1.95		2.20	0.077		0.087
c(1)	0.15		0.40	0.006		0.016
D	3.30		3.95	0.130		0.156
E	5.10		5.60	0.200		0.220
E1	4.05		4.60	0.189		0.181
L	0.75		1.50	0.029		0.059
L1		0.40			0.016	
L2		0.60			0.024	

1. Applies to plated leads

Figure 22. SMBflat footprint (dimensions in mm)

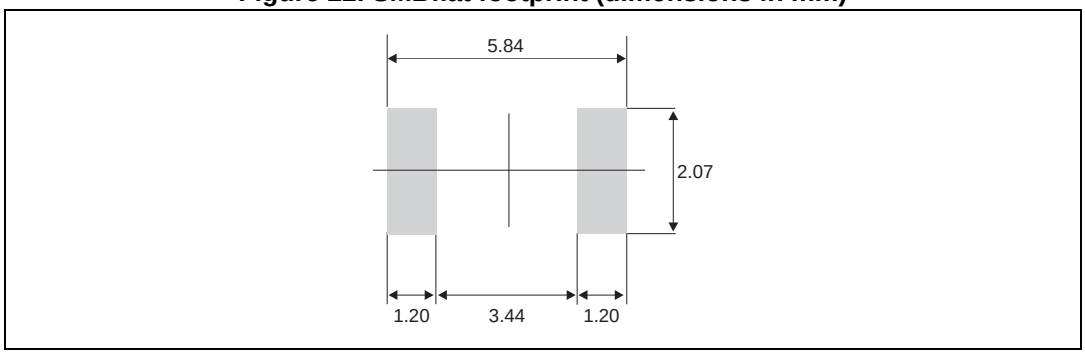
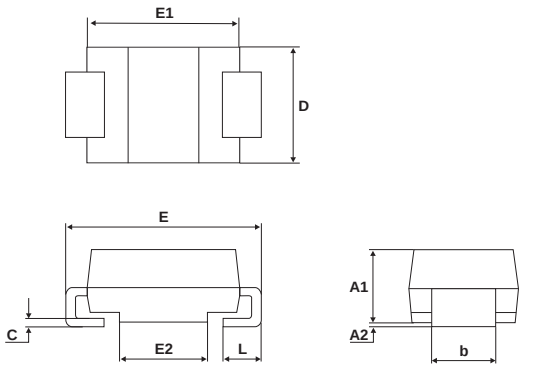
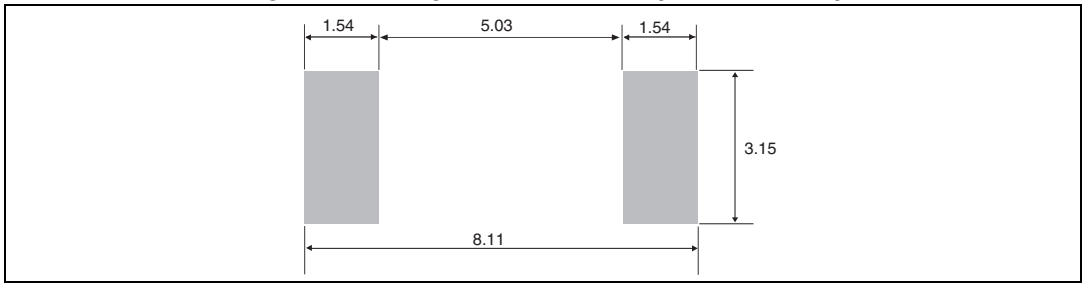


Table 8. SMC package dimensions



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	1.40	0.030	0.063

Figure 23. Footprint dimensions (in millimeters)



3 Ordering information

Table 9. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS340	SS34	SMB	0.107 g	3000	Tape and reel
STPS340S	S34	SMC	0.243 g	3000	
STPS340B	S340	DPAK	0.30 g	75	Tube
STPS340B-TR				2500	Tape and reel
STPS340UF	FU34	ECOPACK®2 SMBflat	0.50 g	3000	Tape and reel

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