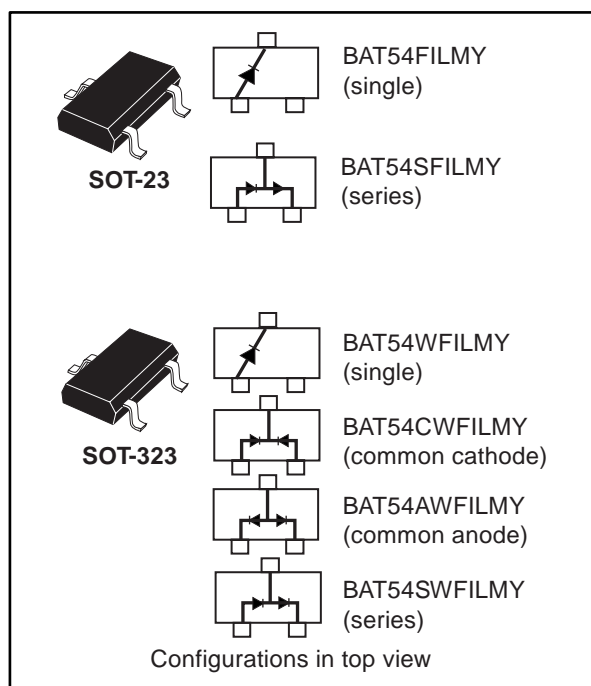


## Automotive small signal Schottky diodes

Datasheet - production data



### Description

The BAT54 series use the 40 V Schottky barrier diodes packaged in SOT-23 and SOT-323.

These devices are suitable for automotive applications.

**Table 1: Device summary**

Symbol	Value
$I_F$	300 mA
$V_{RRM}$	40 V
C (typ.)	7 pF
$T_j(\text{max.})$	150 °C

### Features

- AEC-Q101 qualified
- Low conduction and reverse losses
- Negligible switching losses
- Low forward and reverse recovery times
- Extremely fast switching
- Surface mount device
- Low capacitance diode
- PPAP capable
- ECOPACK<sup>®</sup>2 compliant component



# 1 Characteristics

**Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)**

Symbol	Parameter	Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage	40	V
I <sub>F</sub>	Continuous forward current	300	mA
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	1
T <sub>stg</sub>	Storage temperature range	-65 to +150	°C
T <sub>j</sub>	Operating junction temperature range <sup>(1)</sup>	-40 to +150	°C
T <sub>L</sub>	Maximum soldering temperature	260	°C

**Notes:**

<sup>(1)</sup>(dP<sub>tot</sub>/dT<sub>j</sub>) < (1/R<sub>th(j-a)</sub>) condition to avoid thermal runaway for a diode on its own heatsink.

**Table 3: Thermal parameters**

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction to ambient <sup>(1)</sup>	SOT-23	500
		SOT-323	550

**Notes:**

<sup>(1)</sup>Epoxy printed circuit board with recommended pad layout

**Table 4: Static electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = 30 V	-	-	1	µA
		T <sub>j</sub> = 100 °C		-	-	100	
V <sub>F</sub> <sup>(2)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 0.1 mA	-	-	240	mV
			I <sub>F</sub> = 1 mA	-	-	320	
			I <sub>F</sub> = 10 mA	-	-	400	
			I <sub>F</sub> = 30 mA	-	-	500	
			I <sub>F</sub> = 100 mA	-	-	900	

**Notes:**

<sup>(1)</sup>Pulse test: t<sub>p</sub> = 5 ms, δ < 2 %

<sup>(2)</sup>Pulse test: t<sub>p</sub> = 380 µs, δ < 2%

**Table 5: Dynamic characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
C	Diode capacitance	V <sub>R</sub> = 1 V, F = 1 MHz	-	7	10	pF
t <sub>rr</sub>	Reverse recovery time	I <sub>F</sub> = 10 mA, I <sub>R</sub> = 10 mA, T <sub>j</sub> = 25 °C I <sub>rr</sub> = 1 mA, R <sub>L</sub> = 100 Ω	-		5	ns

# 1.1 Characteristics (curves)

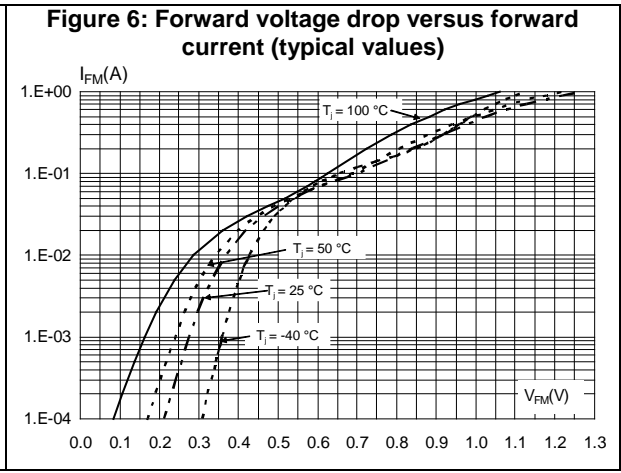
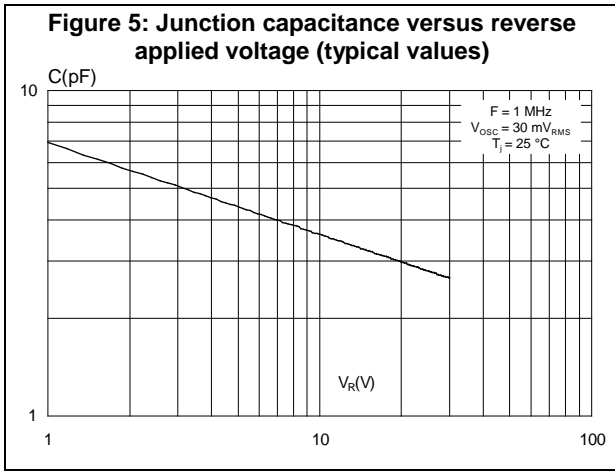
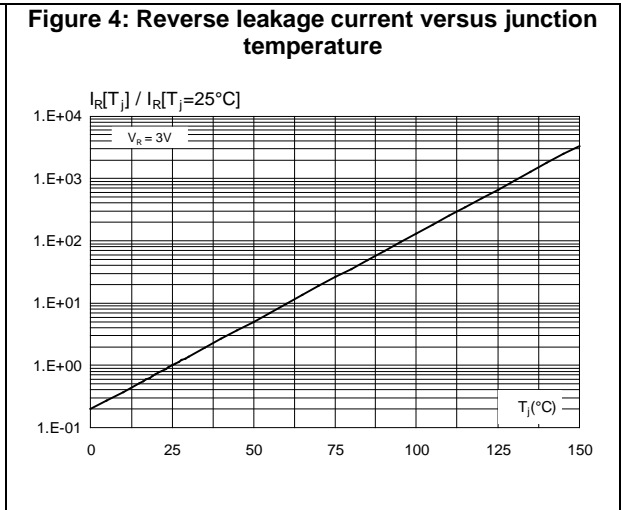
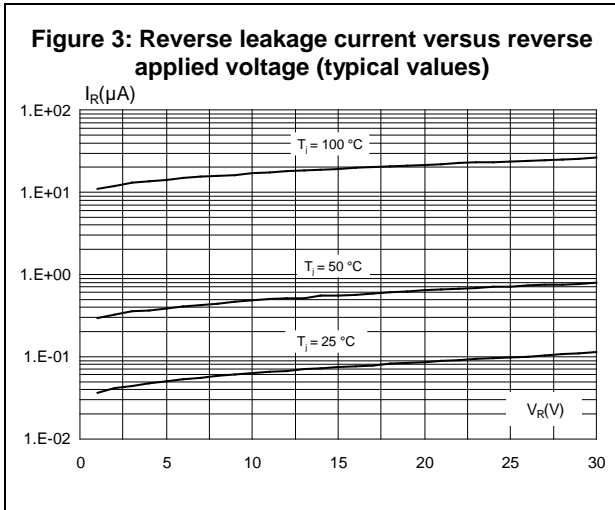
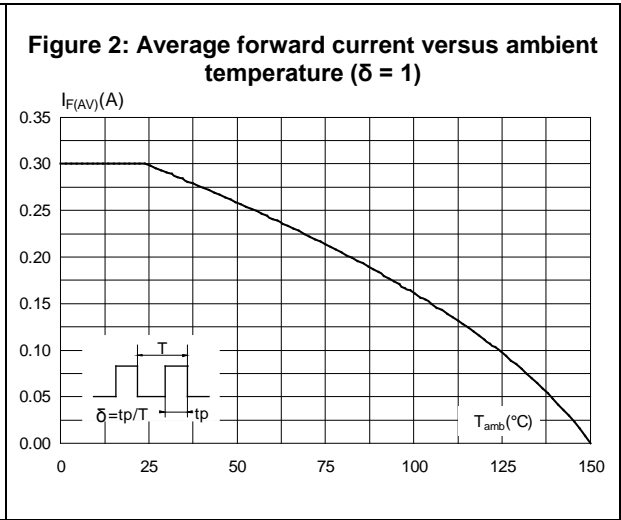
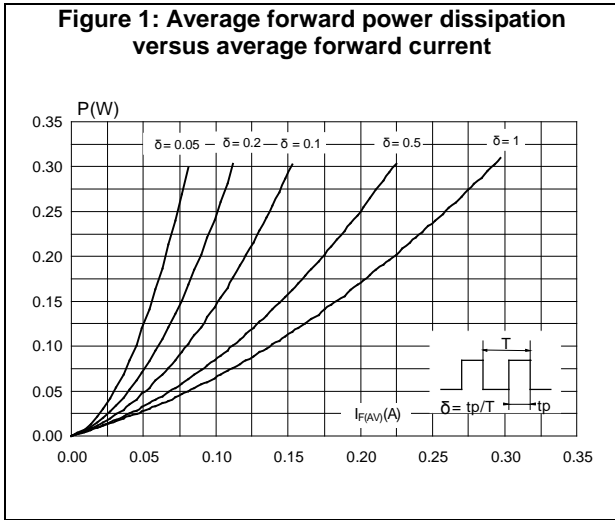
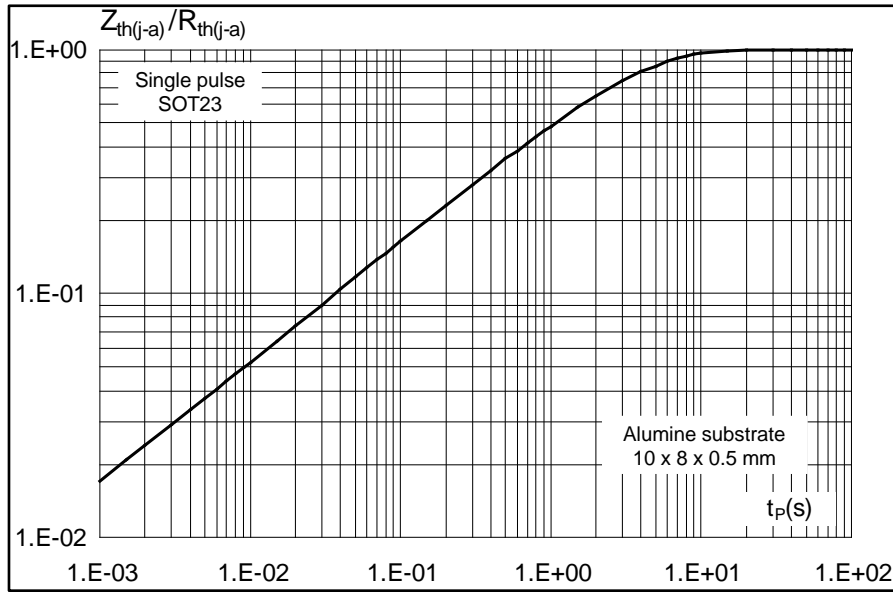


Figure 7: Relative variation of thermal impedance junction to ambient versus pulse duration (SOT-23)



## 2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

- Epoxy meets UL94, V0
- Lead-free packages

### 2.1 SOT23 package information

Figure 8: SOT23-3L package outline

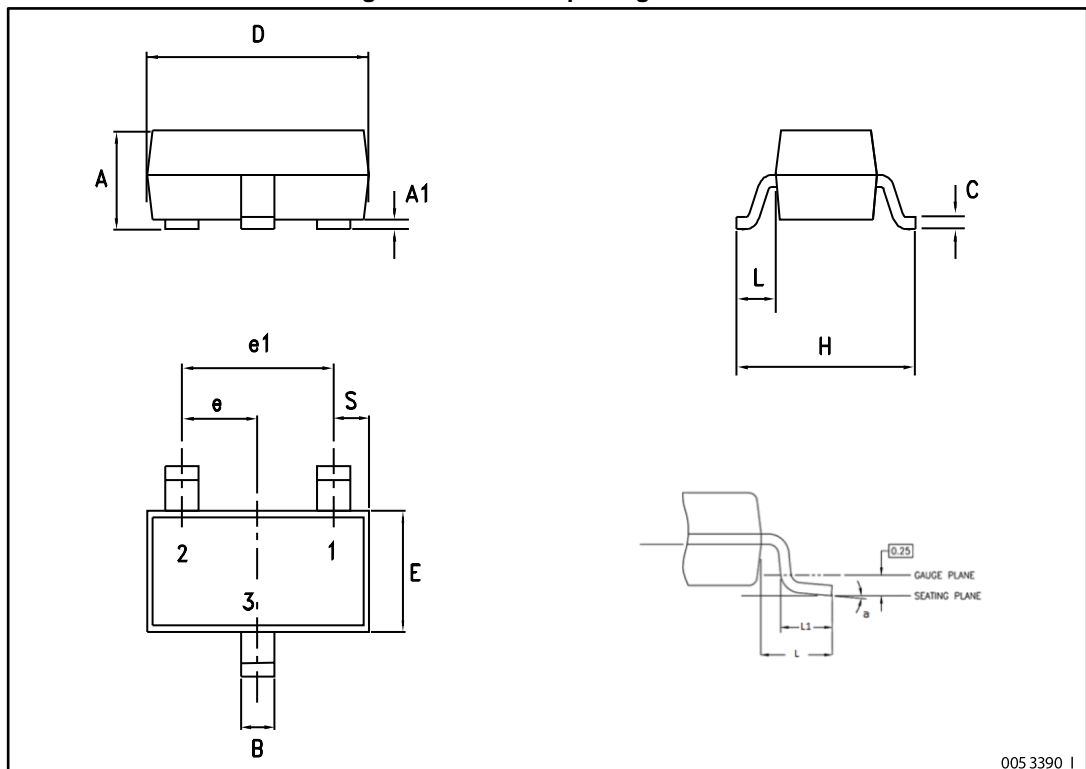
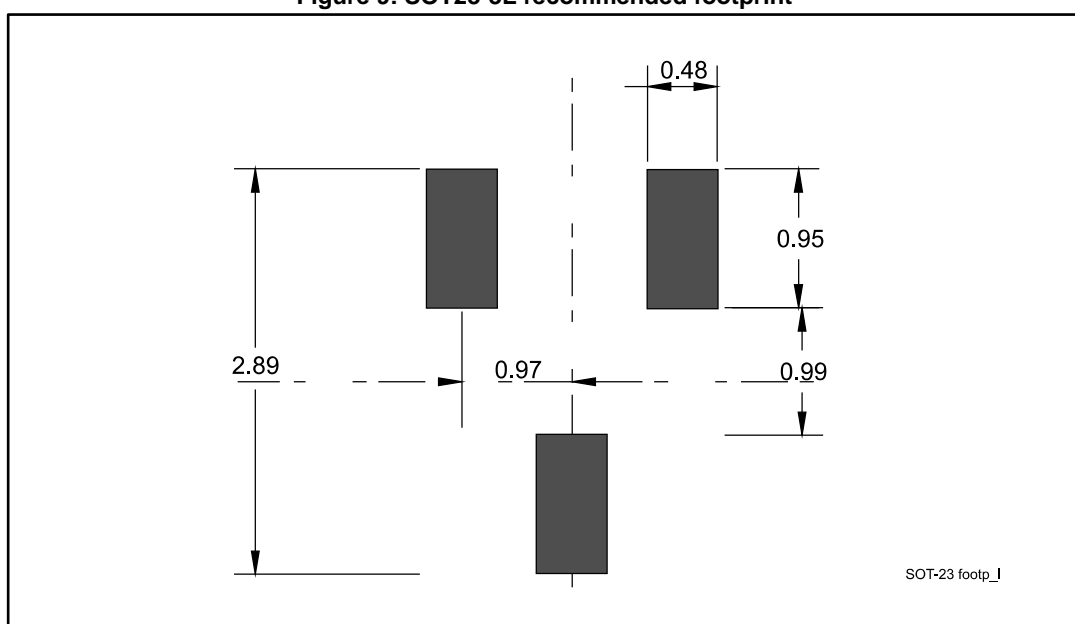


Table 6: SOT23-3L mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	0.89		1.40
A1	0		0.10
B	0.30		0.51
C	0.085		0.18
D	2.75		3.04
e	0.85		1.05
e1	1.70		2.10
E	1.20		1.75
H	2.10		3.00
L		0.60	
S	0.35		0.65
L1	0.25		0.55
a	0°		8°

Figure 9: SOT23-3L recommended footprint



Dimensions are in mm.

## 2.2 SOT323-3L package information

Figure 10: SOT323-3L package outline

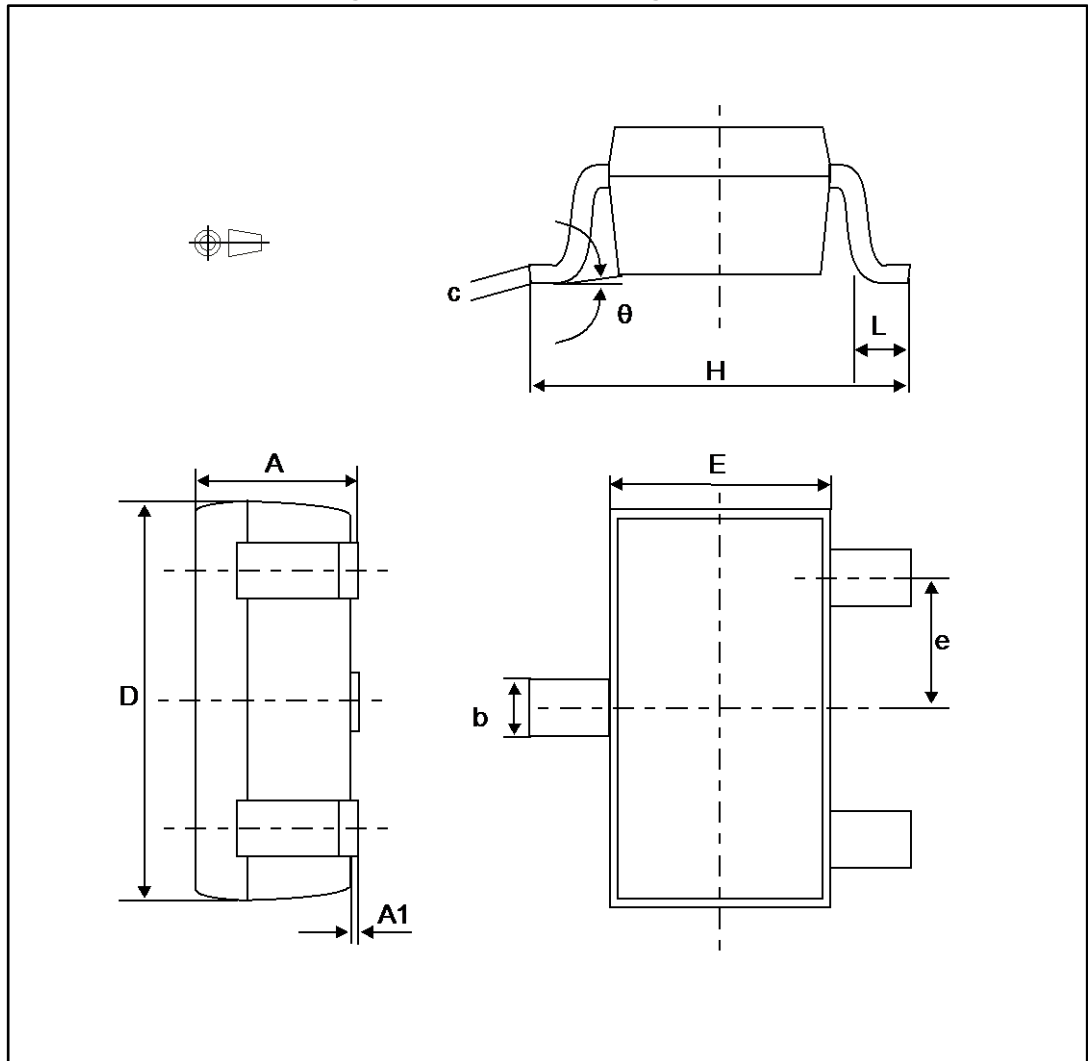
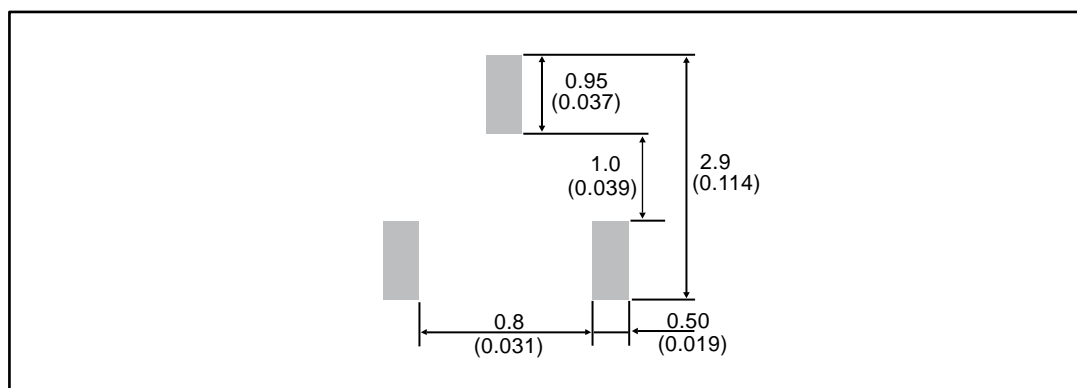


Table 7: SOT323-3L package mechanical data

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.8		1.1	0.031		0.043
A1	0.0		0.1	0.000		0.003
b	0.25		0.4	0.0098		0.0157
c	0.1		0.26	0.003		0.0102
D	1.8	2.0	2.2	0.070	0.078	0.086
E	1.15	1.25	1.35	0.0452	0.0492	0.0531
e	0.60	0.65	0.70	0.024	0.026	0.028
H	1.8	2.1	2.4	0.070	0.082	0.094
L	0.1	0.2	0.30	0.004	0.008	0.012
Θ	0		30°	0		30°

Figure 11: SOT323-3L recommended footprint in mm (dimensions in inches)





### 3 Ordering information

Figure 12: Ordering information scheme

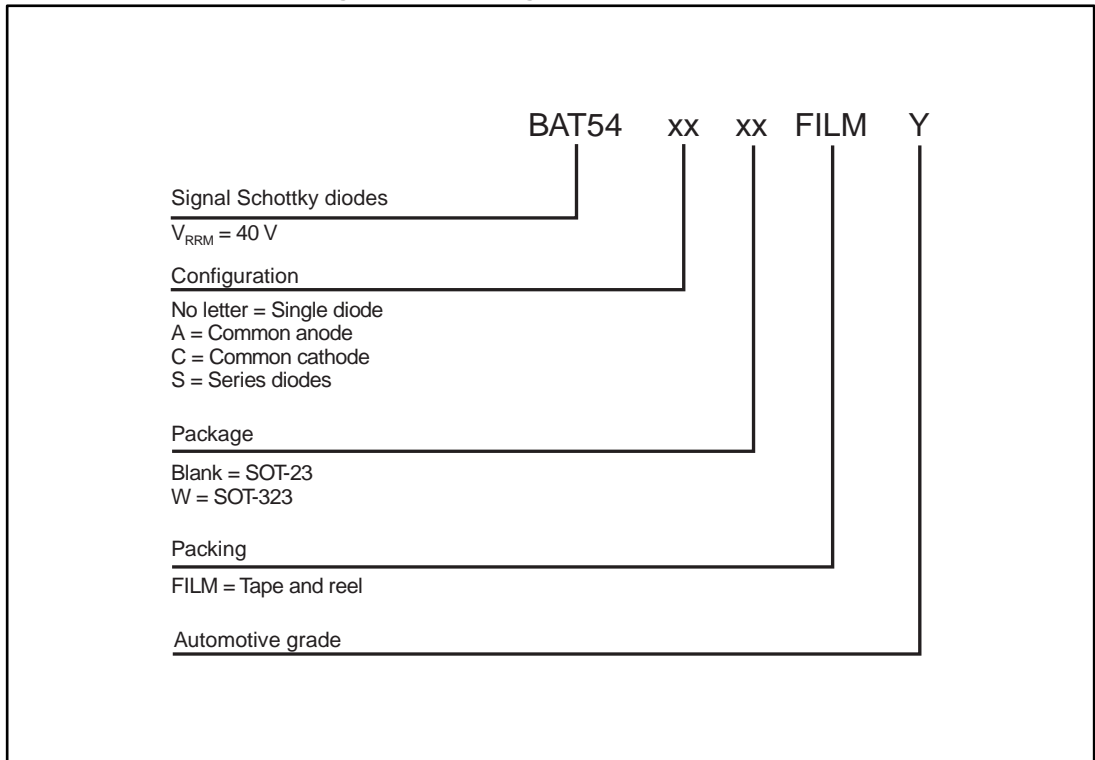


Table 8: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
BAT54FILMY	86Y	SOT-23 single	10 mg	3000	Tape and reel
BAT54SFILMY	88Y	SOT-23 serial			
BAT54WFILMY	73Y	SOT-323 single	6 mg		
BAT54CWFILMY	77Y	SOT-323 common cathode			
BAT54AWFILMY	74Y	SOT-323 common anode			
BAT54SWFILMY	78Y	SOT-323 serial			

## 4 Revision history

Table 9: Document revision history

Date	Revision	Changes
04-Nov-2011	1	Initial release.
06-Jul-2017	2	Added BAT54SWFILMY. Minor text changes to improve readability.
05-Oct-2017	3	Updated <a href="#">Table 4: "Static electrical characteristics"</a> .

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics – All rights reserved



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- 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.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.