

HB3051

FEATURES

- Total power dissipation: max. 250 mW
- Three tolerance series: $\pm 5\%$
- Working voltage range: nom. 2.4 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 40 W.

APPLICATIONS

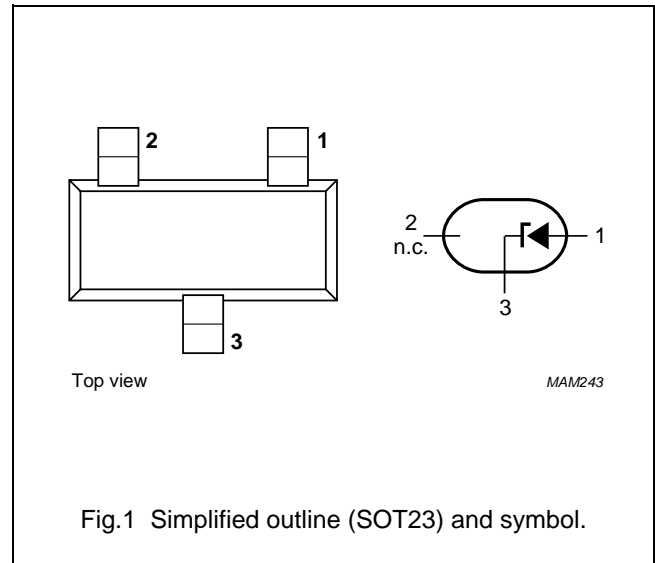
- General regulation functions.

DESCRIPTION

Low-power voltage regulator diodes in small SOT23 plastic SMD packages.

PINNING

PIN	DESCRIPTION
1	anode
2	not connected
3	cathode



HB3051

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		–	200	mA
I_{ZSM}	non-repetitive peak reverse current	$t_p = 100 \mu\text{s}$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge	see Tables 1 and 2		
P_{tot}	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$; note 1	–	250	mW
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu\text{s}$; square wave; $T_j = 25 \text{ }^\circ\text{C}$ prior to surge; see Fig.2	–	40	W
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$
T_j	junction temperature		–65	+150	$^\circ\text{C}$

Note

1. Device mounted on an FR4 printed circuit-board.

ELECTRICAL CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	$I_F = 10 \text{ mA}$; see Fig.3	0.9	V
I_R	reverse current			
	HB3024	$V_R = 1 \text{ V}$	50	μA
	HB3027	$V_R = 1 \text{ V}$	20	μA
	HB3030	$V_R = 1 \text{ V}$	10	μA
	HB3033	$V_R = 1 \text{ V}$	5	μA
	HB3036	$V_R = 1 \text{ V}$	5	μA
	HB3039	$V_R = 1 \text{ V}$	3	μA
	HB3043	$V_R = 1 \text{ V}$	3	μA
	HB3047	$V_R = 2 \text{ V}$	3	μA
	HB3051	$V_R = 2 \text{ V}$	2	μA
	HB3056	$V_R = 2 \text{ V}$	1	μA
	HB3062	$V_R = 4 \text{ V}$	3	μA
	HB3068	$V_R = 4 \text{ V}$	2	μA
	HB3075	$V_R = 5 \text{ V}$	1	μA
	HB3082	$V_R = 5 \text{ V}$	700	nA
	HB3091	$V_R = 6 \text{ V}$	500	nA
	HB30100	$V_R = 7 \text{ V}$	200	nA
HB30110	$V_R = 8 \text{ V}$	100	nA	
HB30120	$V_R = 8 \text{ V}$	100	nA	
HB30130	$V_R = 8 \text{ V}$	100	nA	
HB30150 to 750	$V_R = 0.7V_{Znom}$	50	nA	

Table 1

T_j = 25 °C unless otherwise specified.

	WORKING VOLTAGE V _Z (V) at I _{Ztest} = 5 mA						DIFFERENTIAL RESISTANCE r _{dif} (Ω)				TEMP. COEFF. S _Z (mV/K) at I _{Ztest} = 5 mA (see Figs 4 and 5)			DIODE CAP. C _d (pF) at f = 1 MHz; V _R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I _{ZSM} (A) at t _p = 100 μs; T _{amb} = 25 °C
							at I _{Ztest} = 1 mA		at I _{Ztest} = 5 mA						
					MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.	MAX.	MAX.
2V4				2.2	2.6	275	600	70	100	-3.5	-1.6	0	450	6.0	
2V7				2.5	2.9	300	600	75	100	-3.5	-2.0	0	450	6.0	
3V0				2.8	3.2	325	600	80	95	-3.5	-2.1	0	450	6.0	
3V3				3.1	3.5	350	600	85	95	-3.5	-2.4	0	450	6.0	
3V6				3.4	3.8	375	600	85	90	-3.5	-2.4	0	450	6.0	
3V9				3.7	4.1	400	600	85	90	-3.5	-2.5	0	450	6.0	
4V3				4.0	4.6	410	600	80	90	-3.5	-2.5	0	450	6.0	
4V7				4.4	5.0	425	500	50	80	-3.5	-1.4	0.2	300	6.0	
5V1				4.8	5.4	400	480	40	60	-2.7	-0.8	1.2	300	6.0	
5V6				5.2	6.0	80	400	15	40	-2.0	1.2	2.5	300	6.0	
6V2				5.8	6.6	40	150	6	10	0.4	2.3	3.7	200	6.0	
6V8				6.4	7.2	30	80	6	15	1.2	3.0	4.5	200	6.0	
7V5				7.0	7.9	30	80	6	15	2.5	4.0	5.3	150	4.0	
8V2				7.7	8.7	40	80	6	15	3.2	4.6	6.2	150	4.0	
9V1				8.5	9.6	40	100	6	15	3.8	5.5	7.0	150	3.0	
10				9.4	10.6	50	150	8	20	4.5	6.4	8.0	90	3.0	
11				10.4	11.6	50	150	10	20	5.4	7.4	9.0	85	2.5	
12				11.4	12.7	50	150	10	25	6.0	8.4	10.0	85	2.5	
13				12.4	14.1	50	170	10	30	7.0	9.4	11.0	80	2.5	
15				13.8	15.6	50	200	10	30	9.2	11.4	13.0	75	2.0	
16				15.3	17.1	50	200	10	40	10.4	12.4	14.0	75	1.5	
18				16.8	19.1	50	225	10	45	12.4	14.4	16.0	70	1.5	
20				18.8	21.2	60	225	15	55	14.4	16.4	18.0	60	1.5	
22				20.8	23.3	60	250	20	55	16.4	18.4	20.0	60	1.25	
24				22.8	25.6	60	250	25	70	18.4	20.4	22.0	55	1.25	

Table 2T_j = 25 °C unless otherwise specified.

	WORKING VOLTAGE V _Z (V) at I _{Ztest} = 2 mA						DIFFERENTIAL RESISTANCE r _{dif} (Ω)				TEMP. COEFF. S _Z (mV/K) at I _{Ztest} = 2 mA (see Figs 4 and 5)			DIODE CAP. C _d (pF) at f = 1 MHz; V _R = 0 V	NON-REPETITIVE PEAK REVERSE CURRENT I _{ZSM} (A) at t _p = 100 μs; T _{amb} = 25 °C
							at I _{Ztest} = 0.5 mA		at I _{Ztest} = 2 mA						
					MIN.	MAX.	TYP.	MAX.	TYP.	MAX.	MIN.	TYP.	MAX.	MAX.	MAX.
27				25.1	28.9	65	300	25	80	21.4	23.4	25.3	50	1.0	
30				28.0	32.0	70	300	30	80	24.4	26.6	29.4	50	1.0	
33				31.0	35.0	75	325	35	80	27.4	29.7	33.4	45	0.9	
36				34.0	38.0	80	350	35	90	30.4	33.0	37.4	45	0.8	
39				37.0	41.0	80	350	40	130	33.4	36.4	41.2	45	0.7	
43				40.0	46.0	85	375	45	150	37.6	41.2	46.6	40	0.6	
47				44.0	50.0	85	375	50	170	42.0	46.1	51.8	40	0.5	
51				48.0	54.0	90	400	60	180	46.6	51.0	57.2	40	0.4	
56				52.0	60.0	100	425	70	200	52.2	57.0	63.8	40	0.3	
62				58.0	66.0	120	450	80	215	58.8	64.4	71.6	35	0.3	
68				64.0	72.0	150	475	90	240	65.6	71.7	79.8	35	0.25	
75				70.0	79.0	170	500	95	255	73.4	80.2	88.6	35	0.2	

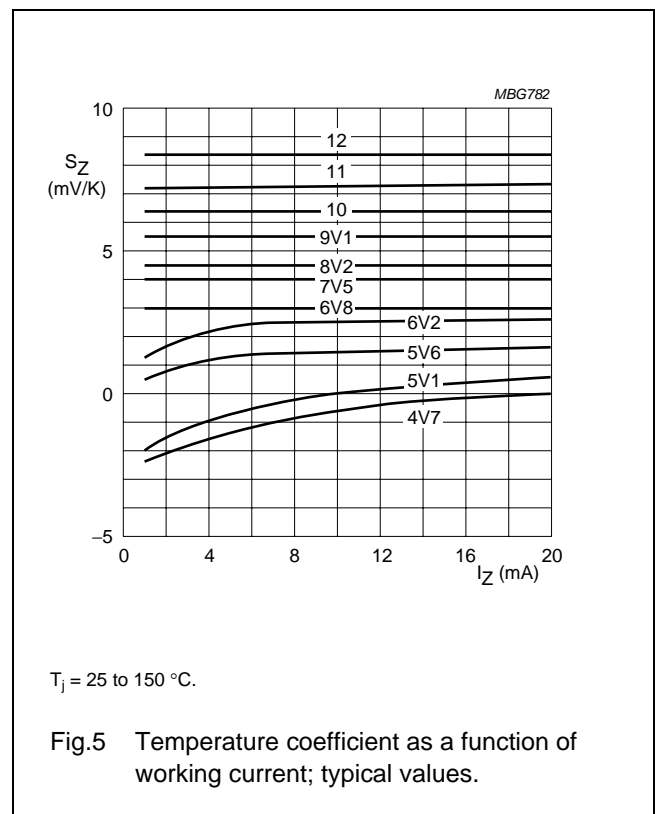
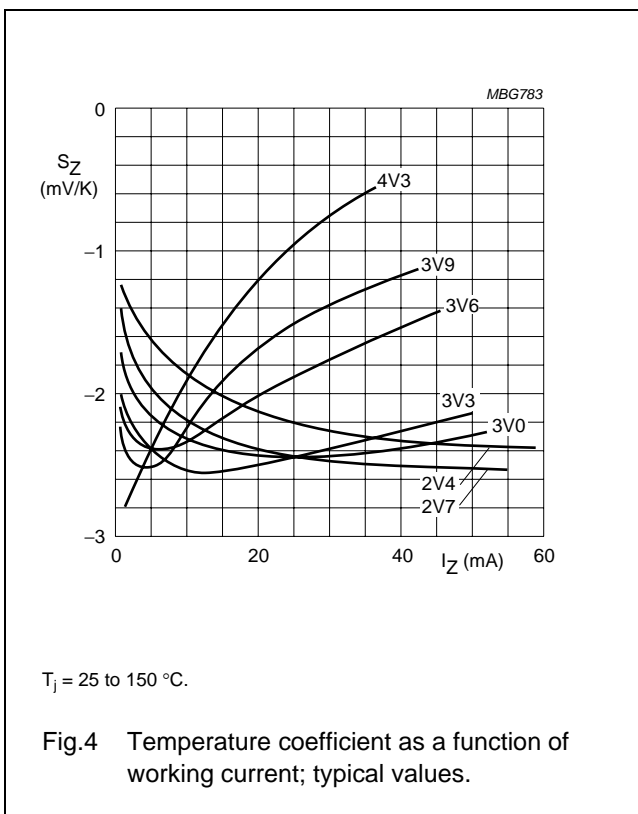
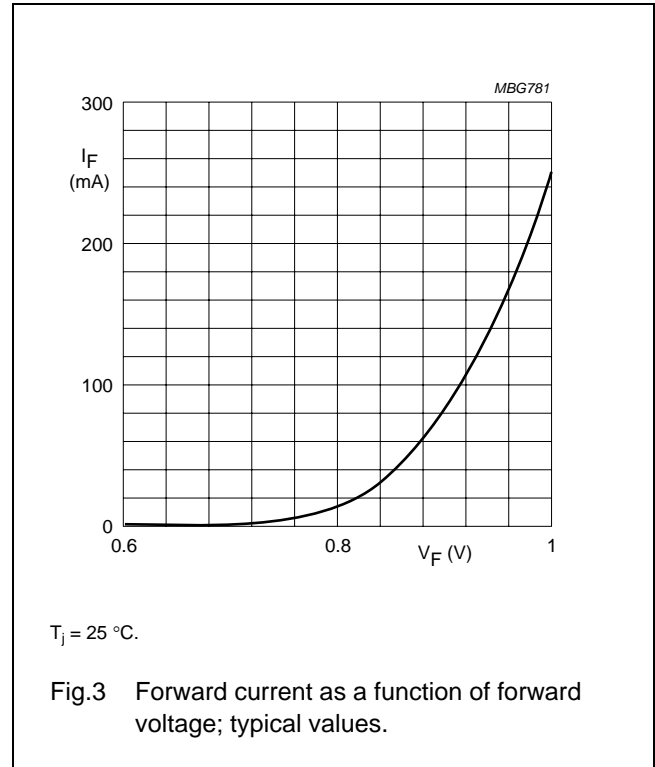
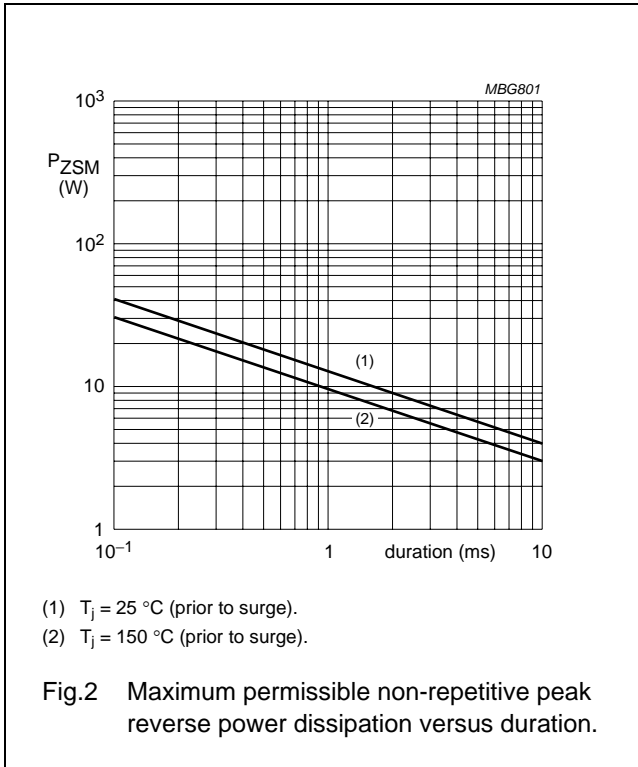
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		330	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Device mounted on an FR4 printed circuit-board.

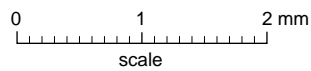
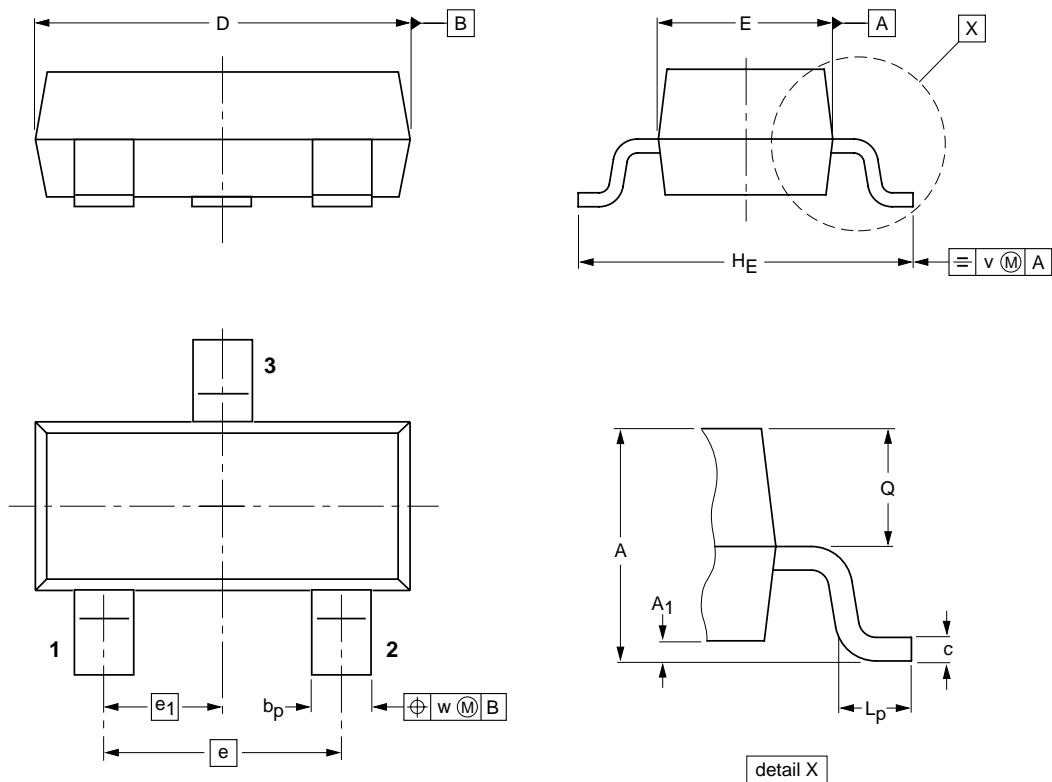
GRAPHICAL DATA



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT23		TO-236AB			97-02-28 99-09-13