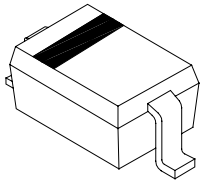
HMSZ5223B
thru
HMSZ5257B ZENER DIODES



SOD-323

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board T_A=25°C, Derate above 25°C	P_D	225 1.8	mW mW/°C
Total Device Dissipation Alumina Substrate**T_A=25°C, Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C

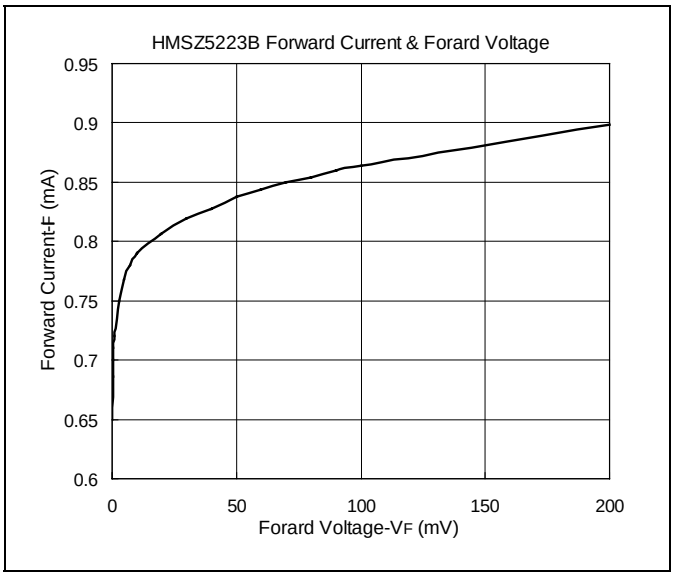
*FR-5 - 1.0×0.75×0.062 in. **Alumina - 0.4×0.3×0.024 in. 99.5% alumina.

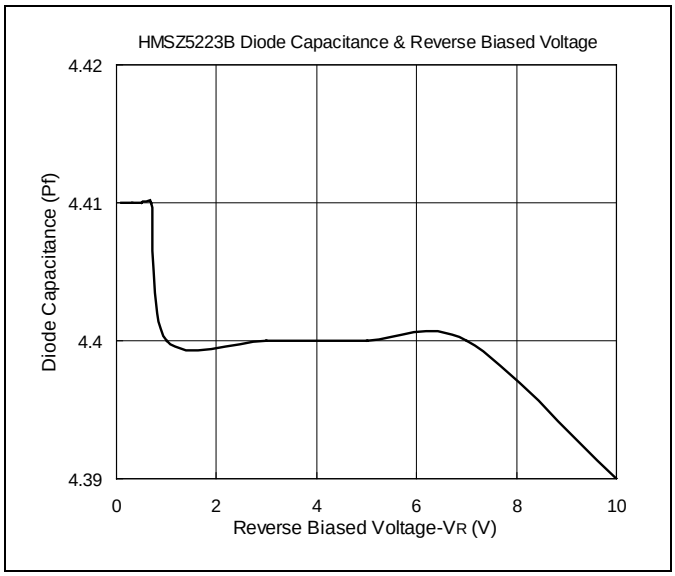
Electrical Characteristic (V_F=0.9V(Max.) @I_F=10mA for all types.)

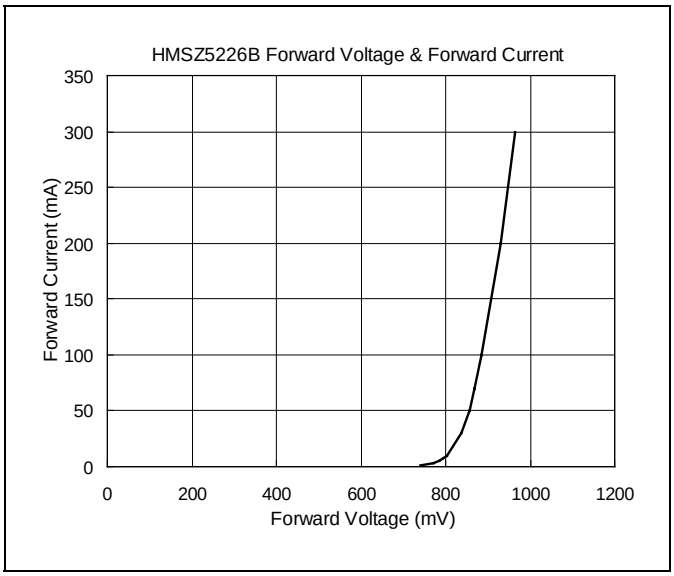
Device	Marking Code	Test Current I_{ZT}(mA)	Zener Voltage V_Z(V)	Z_{ZK} I_Z=0.25mA Ω(Max.)	Z_{ZT} I_Z=I_{ZT} Ω(Max.)	Max. Reverse Current I_R(uA)	@ V_R(V)
HMSZ5223B	23	20	2.7 ±5%	1300	30	75	1.0
HMSZ5226B	26	20	3.3 ±5%	1600	28	25	1.0
HMSZ5227B	27	20	3.6 ±5%	1700	24	15	1.0
HMSZ5228B	28	20	3.9 ±5%	1900	23	10	1.0
HMSZ5229B	29	20	4.3 ±5%	2000	22	5.0	1.0
HMSZ5230B	30	20	4.7 ±5%	1900	19	5.0	2.0
HMSZ5231B	31	20	5.1 ±5%	1600	17	5.0	2.0
HMSZ5232B	32	20	5.6 ±5%	1600	11	5.0	3.0
HMSZ5233B	33	20	6.0 ±5%	1600	7.0	5.0	3.5
HMSZ5234B	34	20	6.2 ±5%	1000	7.0	5.0	4.0
HMSZ5235B	25	20	6.8 ±5%	750	5.0	3.0	5.0
HMSZ5236B	36	20	7.5 ±5%	500	6.0	3.0	6.0
HMSZ5237B	37	20	8.2 ±5%	500	8.0	3.0	6.5
HMSZ5238B	38	20	8.7 ±5%	600	8.0	3.0	6.5
HMSZ5239B	39	20	9.1 ±5%	600	10	3.0	7.0
HMSZ5240B	40	20	10 ±5%	600	17	3.0	8.0
HMSZ5241B	41	20	11 ±5%	600	22	2.0	8.4
HMSZ5242B	42	20	12 ±5%	600	30	1.0	9.1
HMSZ5243B	43	9.5	13 ±5%	600	13	0.5	9.9

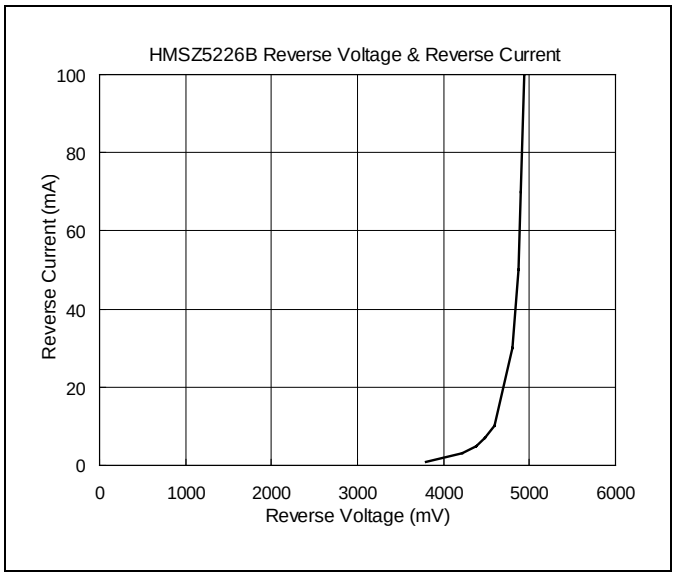
Device	Marking Code	Test Current I_{ZT}(mA)	Zener Voltage V_Z(V)	Z_{ZK} I_Z=0.25mA Ω(Max.)	Z_{ZT} I_Z=I_{ZT} Ω(Max.)	Max. Reverse Current	
						I_R(uA)	@ V_R(V)
HMSZ5244B	44	9.0	14 ±5%	600	15	0.1	10
HMSZ5245B	45	8.5	15 ±5%	600	16	0.1	11
HMSZ5246B	46	7.8	16 ±5%	600	17	0.1	12
HMSZ5247B	47	7.4	17 ±5%	600	19	0.1	13
HMSZ5248B	48	7.0	18 ±5%	600	21	0.1	14
HMSZ5249B	49	6.6	19 ±5%	600	23	0.1	14
HMSZ5250B	50	6.2	20 ±5%	600	25	0.1	15
HMSZ5251B	51	5.6	22 ±5%	600	29	0.1	17
HMSZ5252B	52	5.2	24 ±5%	600	33	0.1	18
HMSZ5253B	53	5.0	25 ±5%	600	35	0.1	19
HMSZ5254B	54	4.6	27 ±5%	600	41	0.1	21
HMSZ5255B	55	4.5	28 ±5%	600	44	0.1	21
HMSZ5256B	56	4.2	30 ±5%	600	49	0.1	23
HMSZ5257B	57	3.8	33 ±5%	700	58	0.1	25

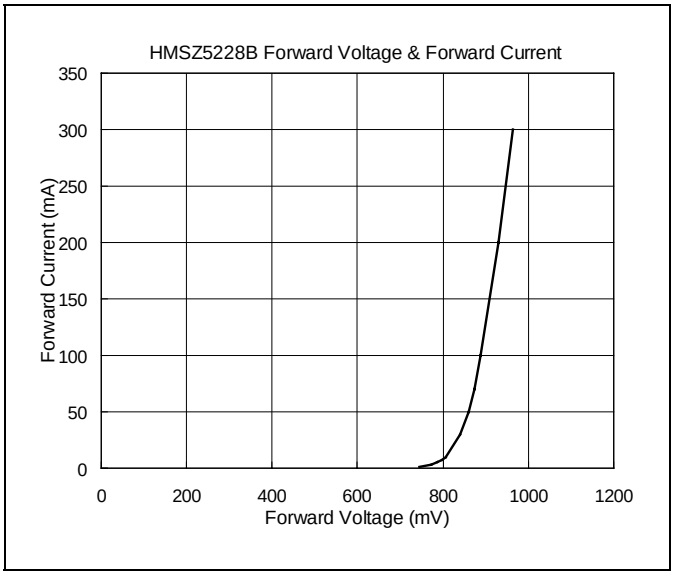
Characteristics Curve

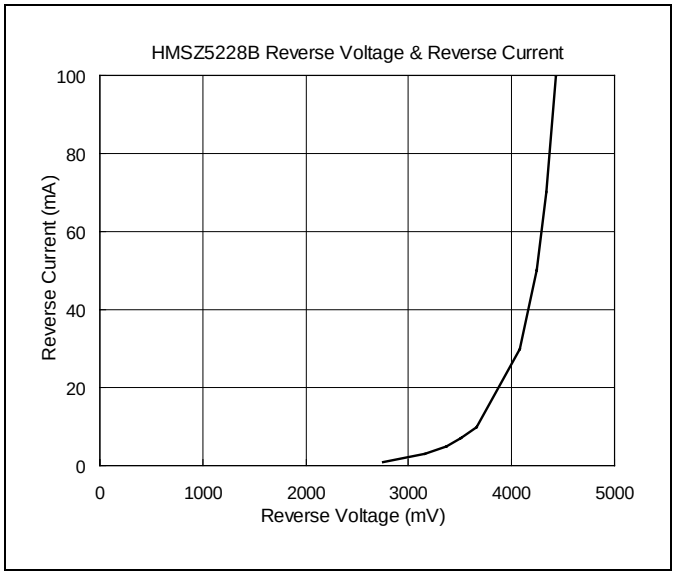


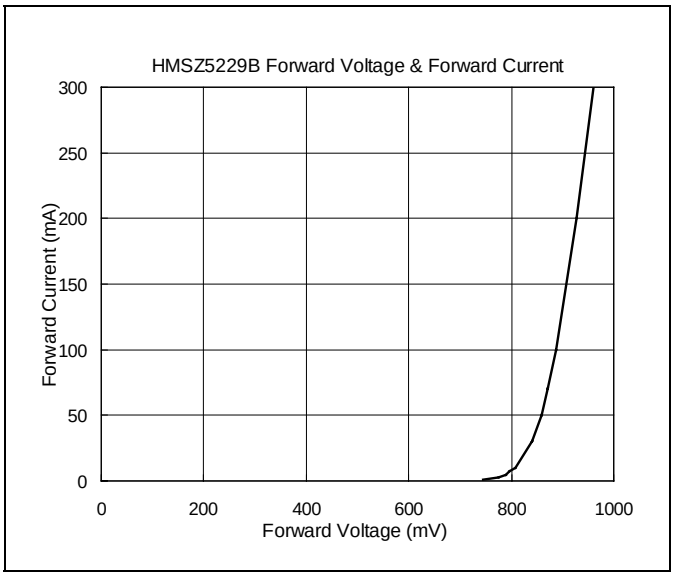


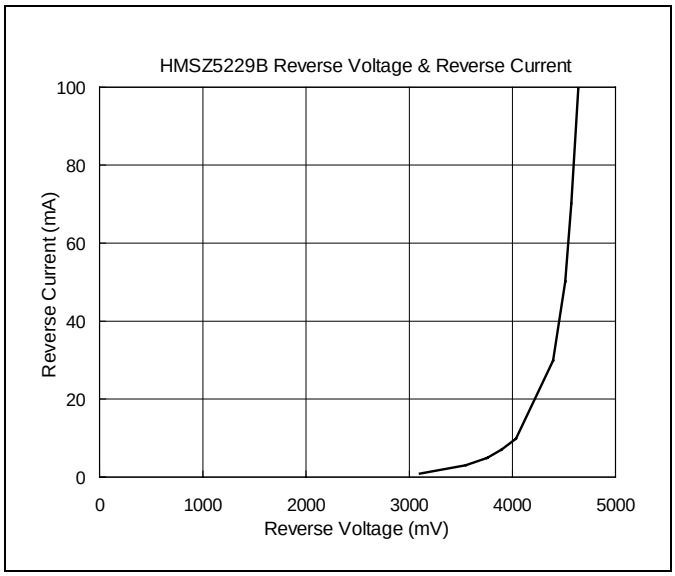


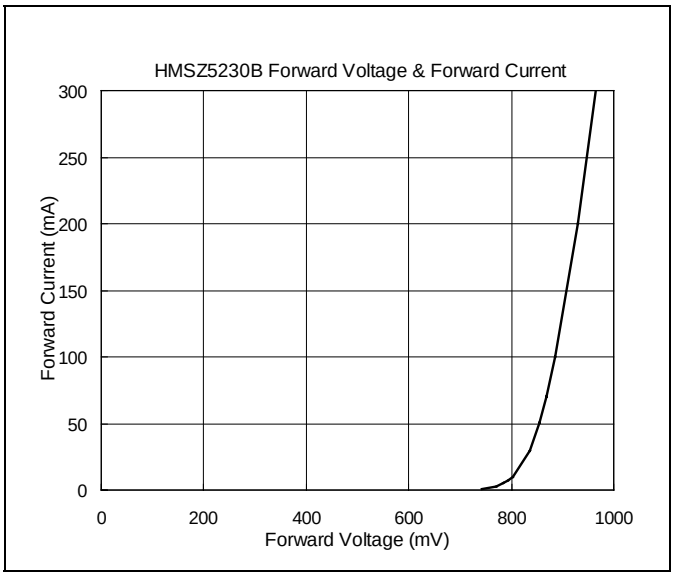


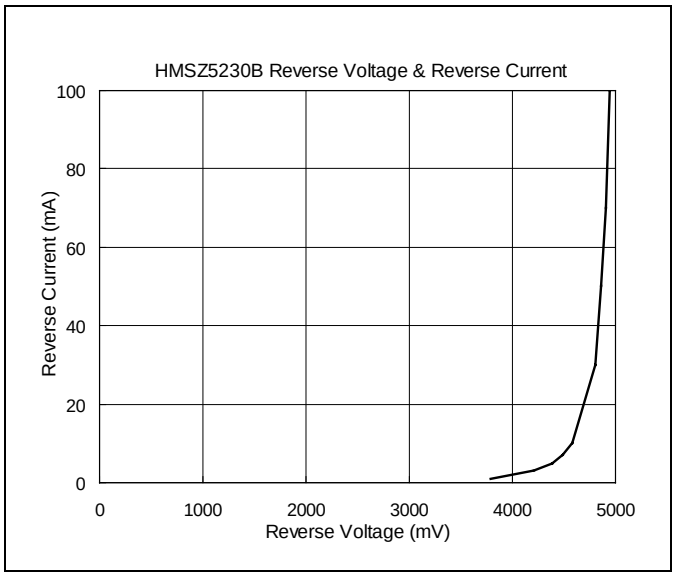


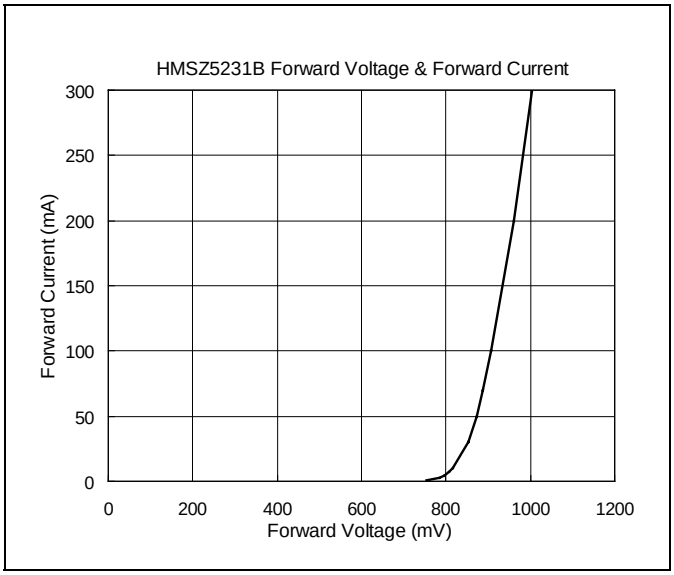


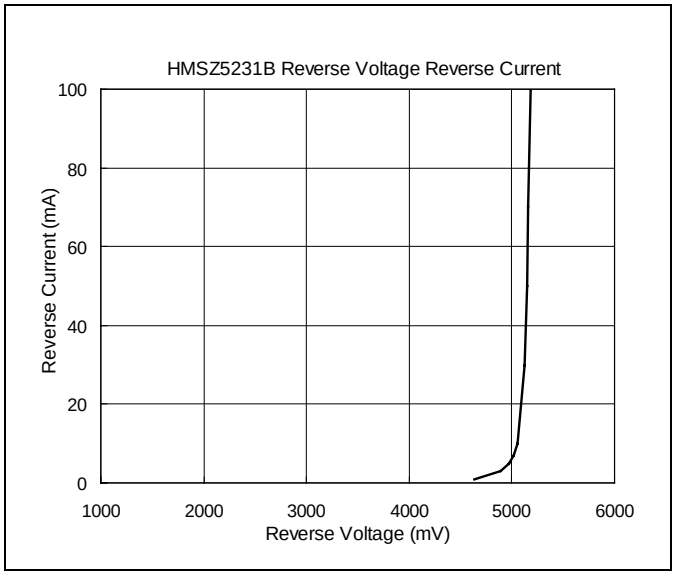

HMSZ5229B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
Forward Voltage (mV)

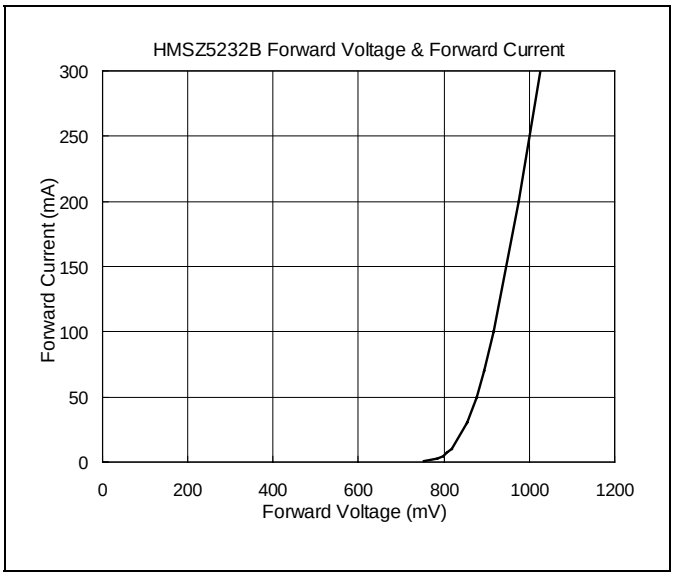

HMSZ5229B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
0
1000
2000
3000
4000
5000
Reverse Voltage (mV)

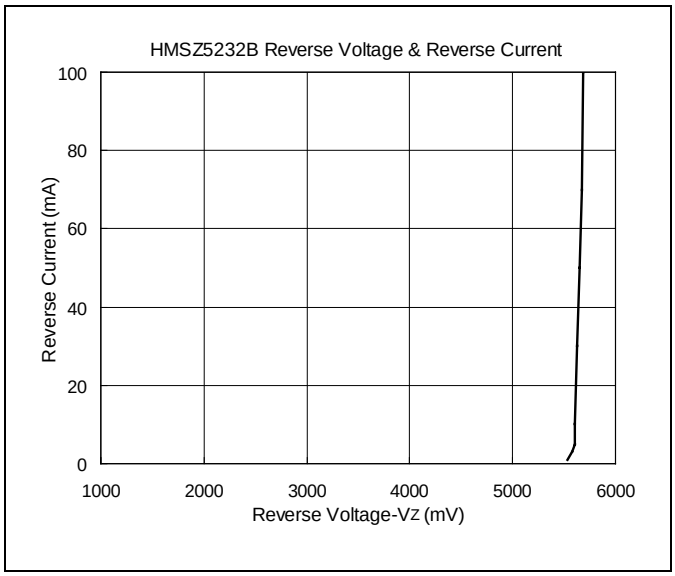

HMSZ5230B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
Forward Voltage (mV)

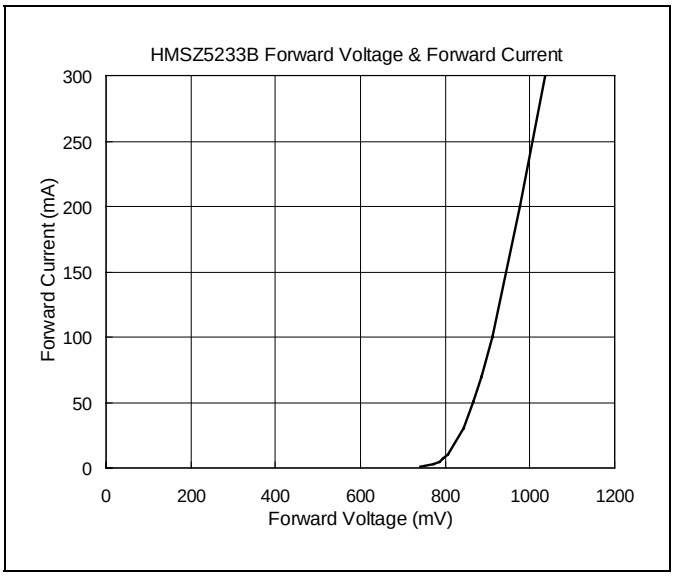

HMSZ5230B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
0
1000
2000
3000
4000
5000
Reverse Voltage (mV)

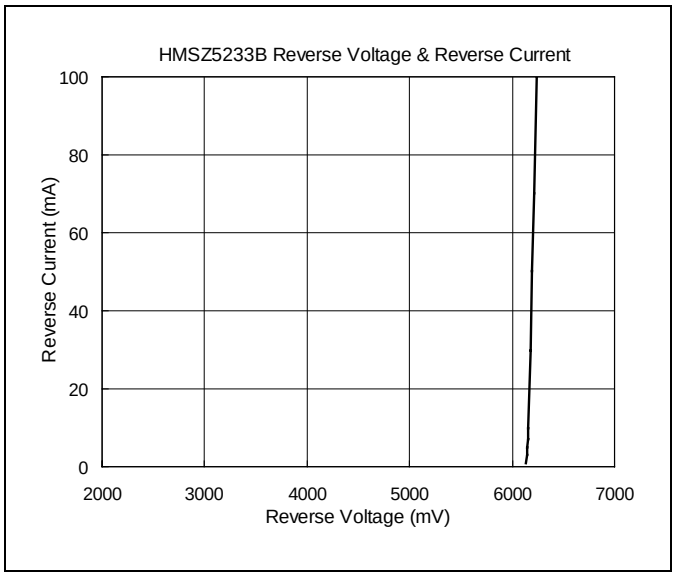

HMSZ5231B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

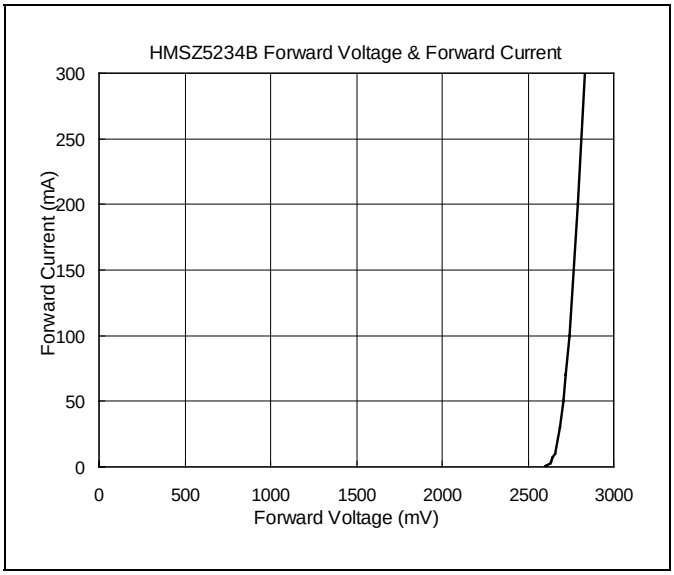

HMSZ5231B Reverse Voltage Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
1000
2000
3000
4000
5000
6000
Reverse Voltage (mV)

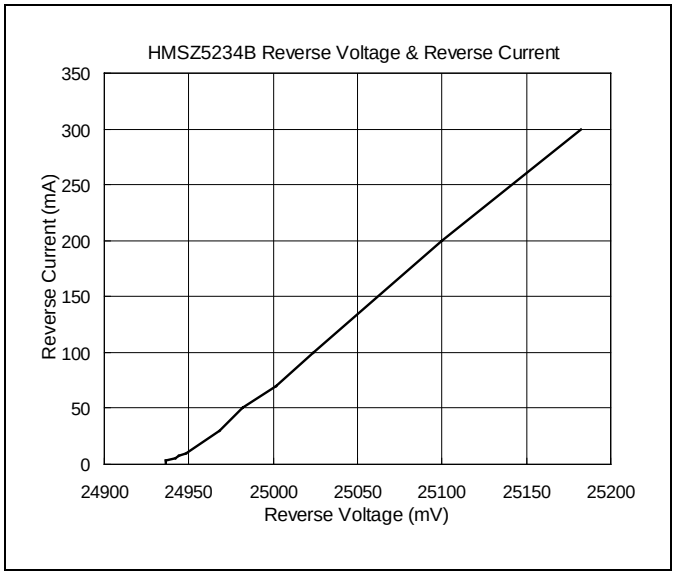

HMSZ5232B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

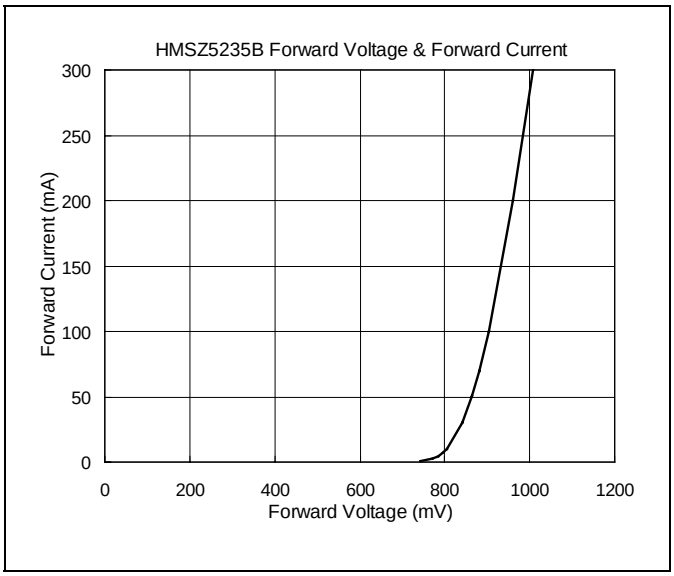

HMSZ5232B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
1000
2000
3000
4000
5000
6000
Reverse Voltage-Vz (mV)

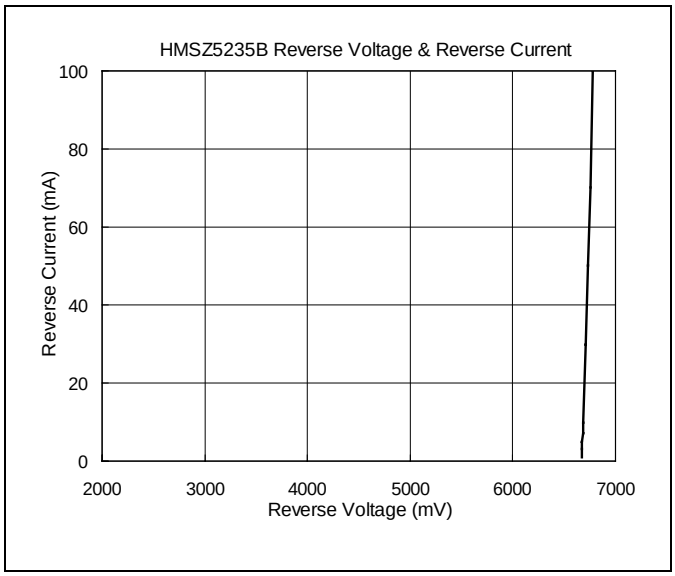

HMSZ5233B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

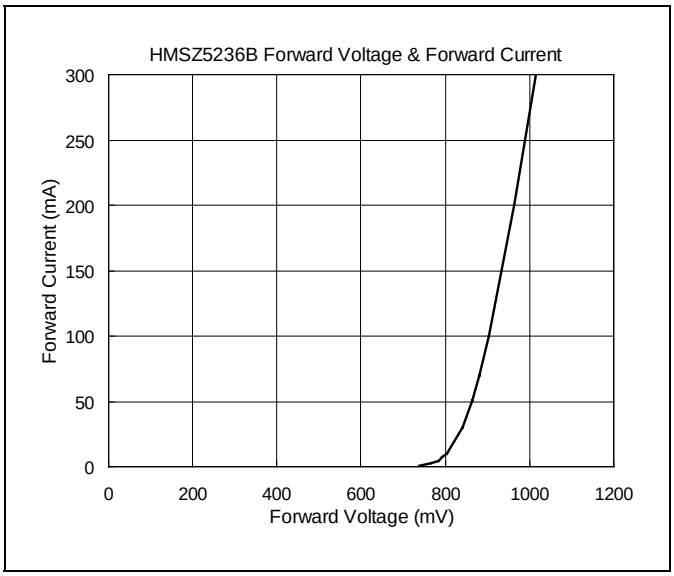

HMSZ5233B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
2000
3000
4000
5000
6000
7000
Reverse Voltage (mV)

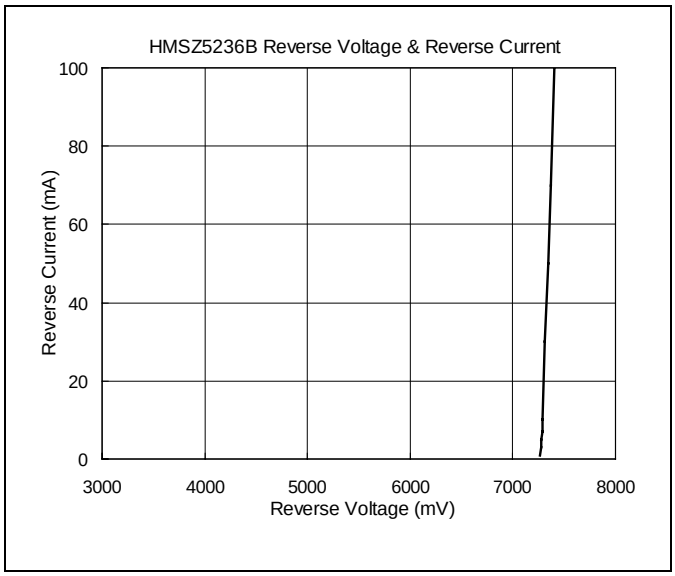

HMSZ5234B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
500
1000
1500
2000
2500
3000
Forward Voltage (mV)

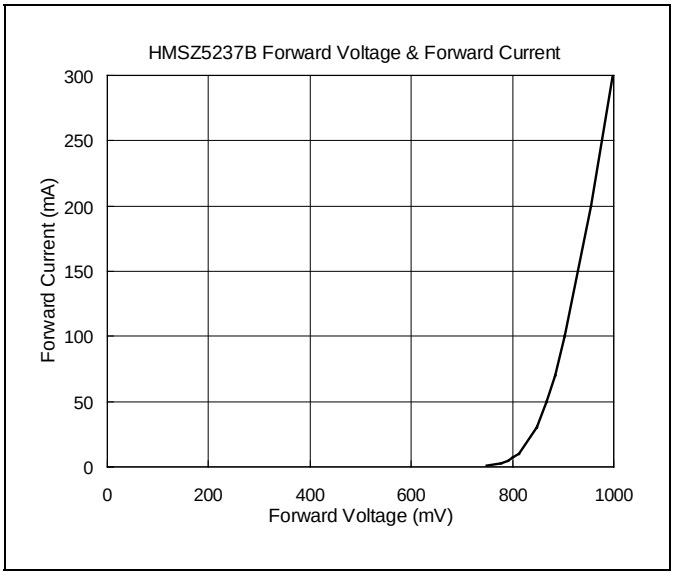

HMSZ5234B Reverse Voltage & Reverse Current
Reverse Current (mA)
350
300
250
200
150
100
50
0
24900
24950
25000
25050
25100
25150
25200
Reverse Voltage (mV)

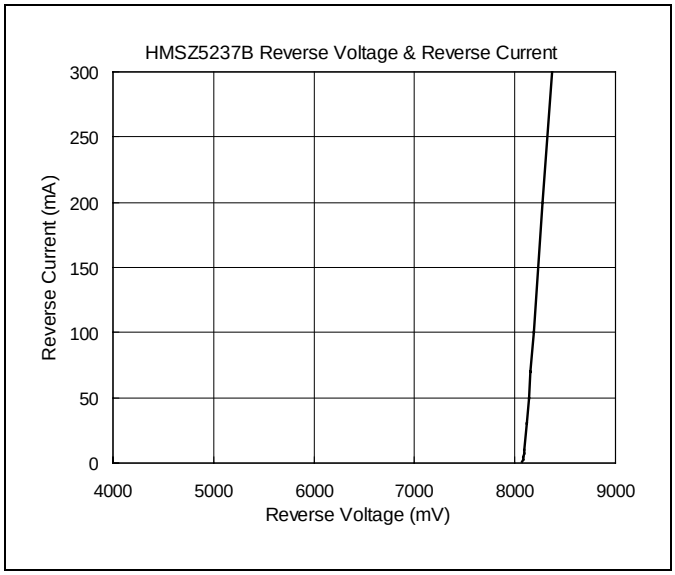

HMSZ5235B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

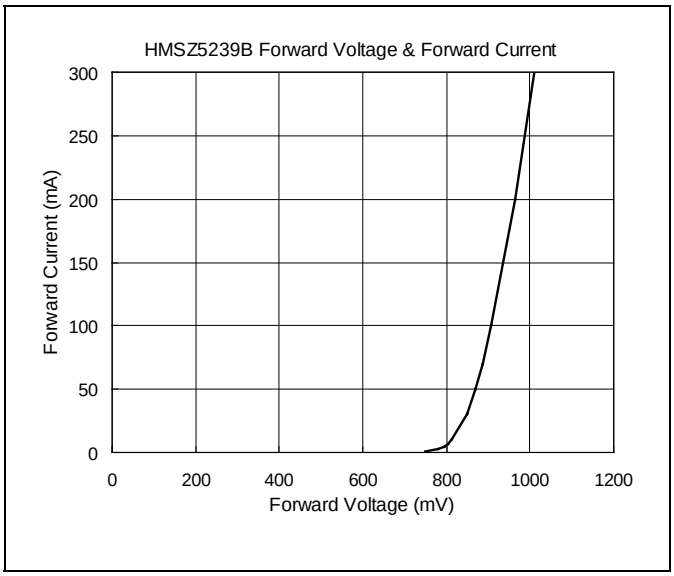

HMSZ5235B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
2000
3000
4000
5000
6000
7000
Reverse Voltage (mV)

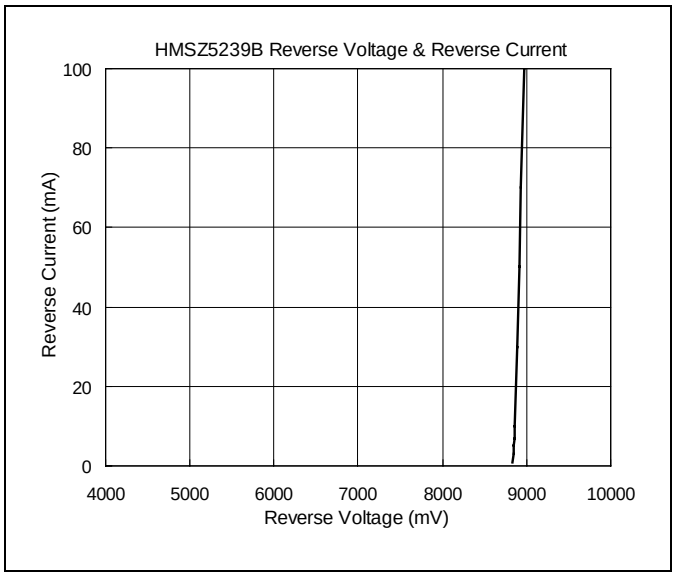

HMSZ5236B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

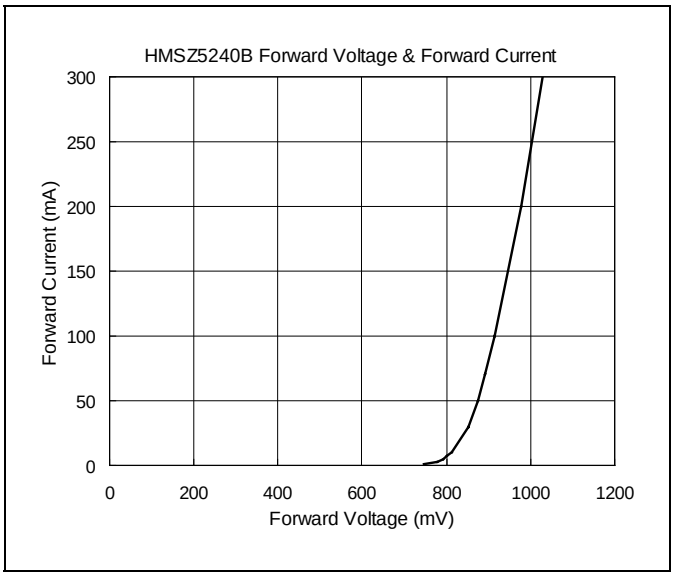

HMSZ5236B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
3000
4000
5000
6000
7000
8000
Reverse Voltage (mV)

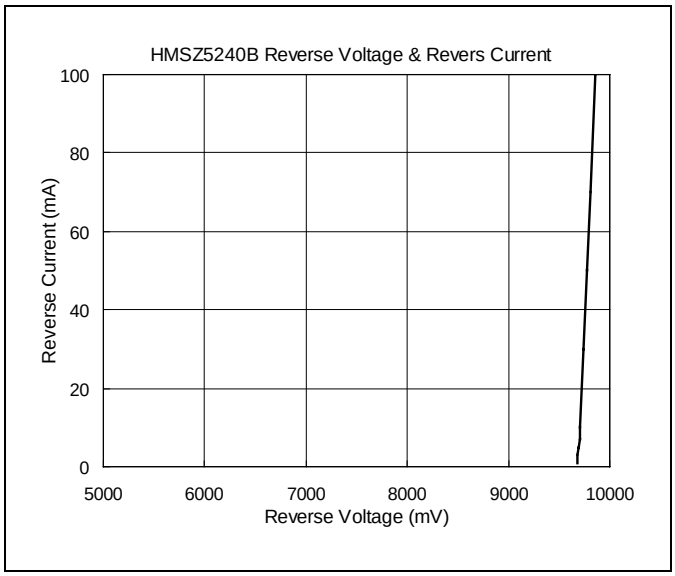

HMSZ5237B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
Forward Voltage (mV)

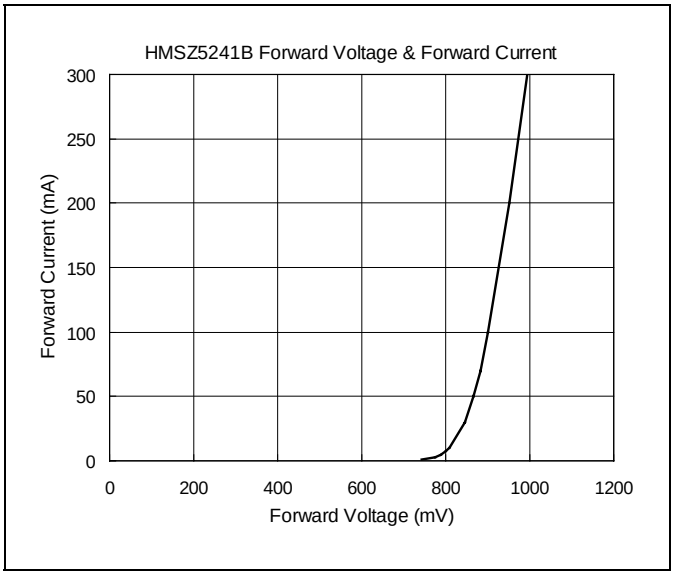

HMSZ5237B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
4000
5000
6000
7000
8000
9000
Reverse Voltage (mV)

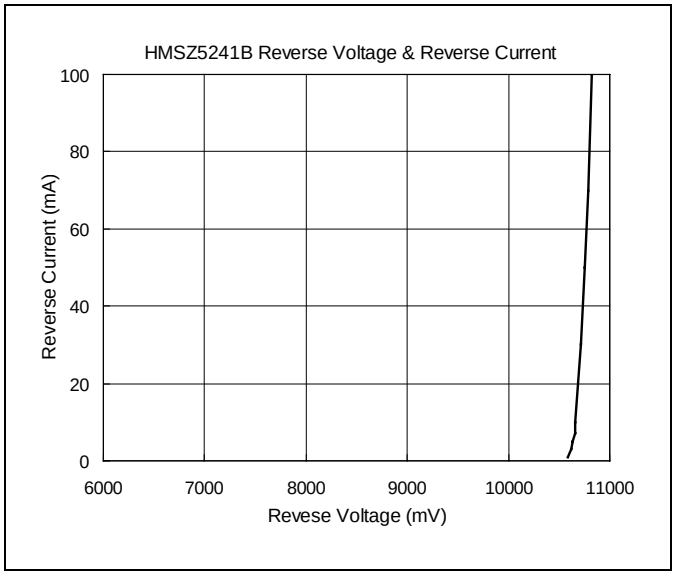

HMSZ5239B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

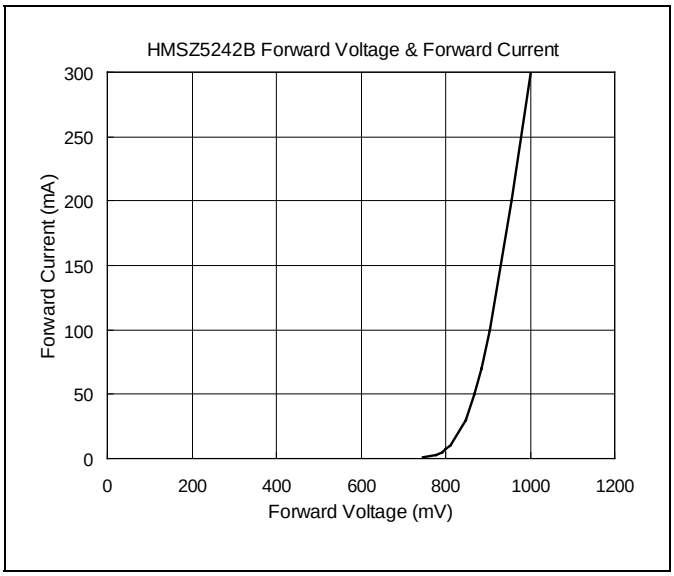

HMSZ5239B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
4000
5000
6000
7000
8000
9000
10000
Reverse Voltage (mV)

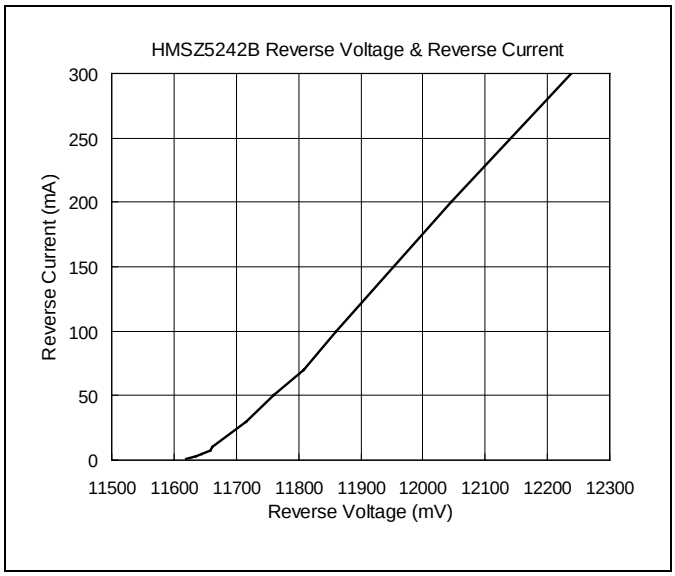

HMSZ5240B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

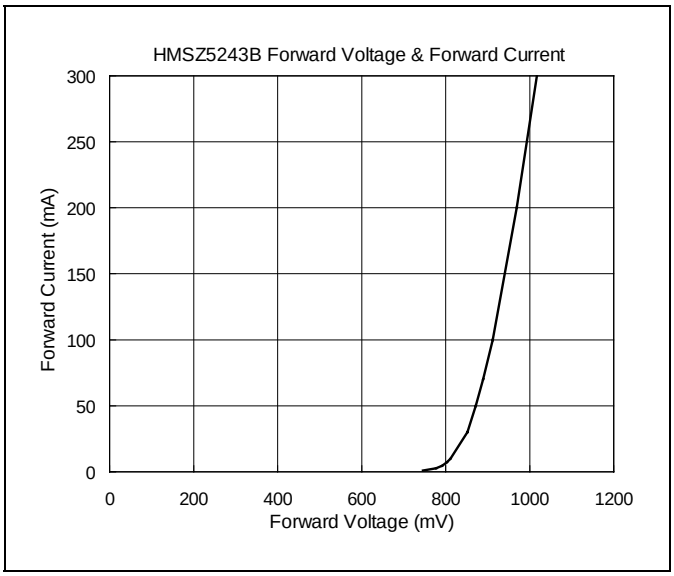

HMSZ5240B Reverse Voltage & Revers Current
Reverse Current (mA)
100
80
60
40
20
0
5000
6000
7000
8000
9000
10000
Reverse Voltage (mV)

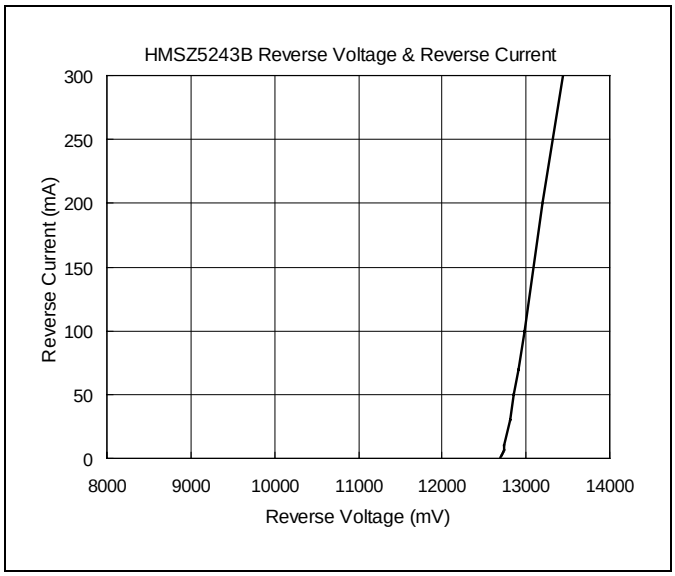

HMSZ5241B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

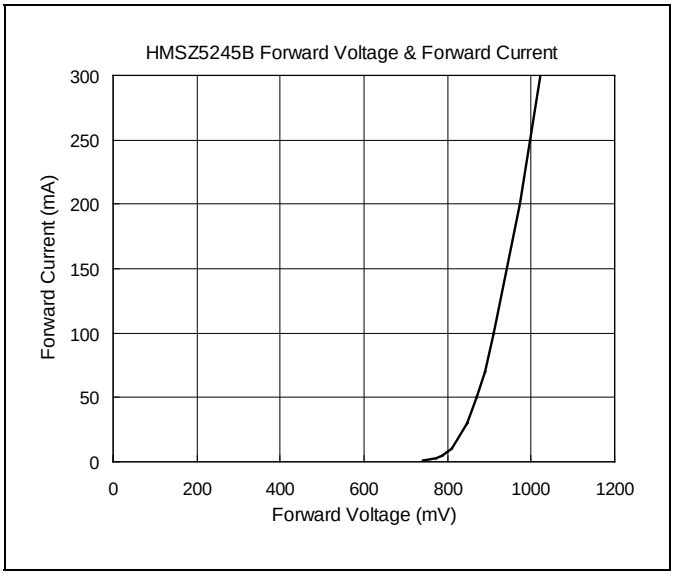

HMSZ5241B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
6000
7000
8000
9000
10000
11000
Revese Voltage (mV)

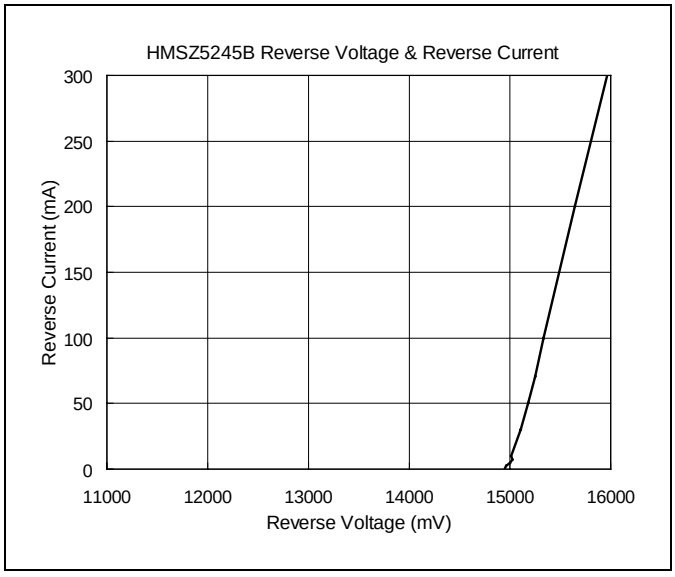

HMSZ5242B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

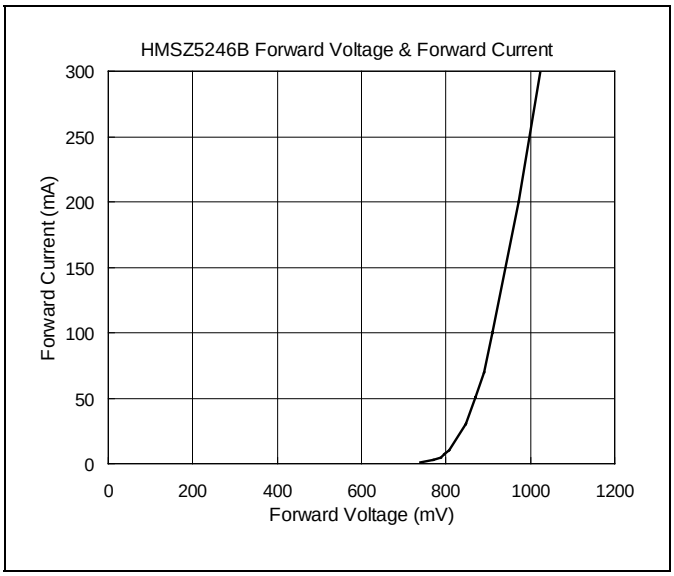

HMSZ5242B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
11500
11600
11700
11800
11900
12000
12100
12200
12300
Reverse Voltage (mV)

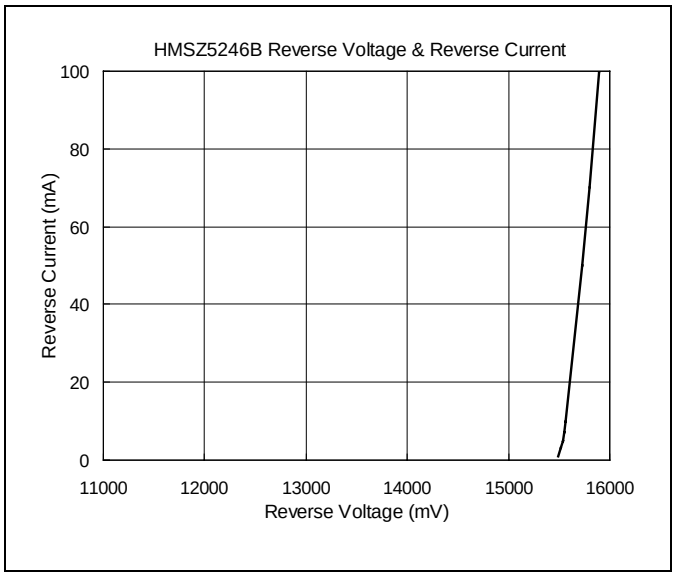

HMSZ5243B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

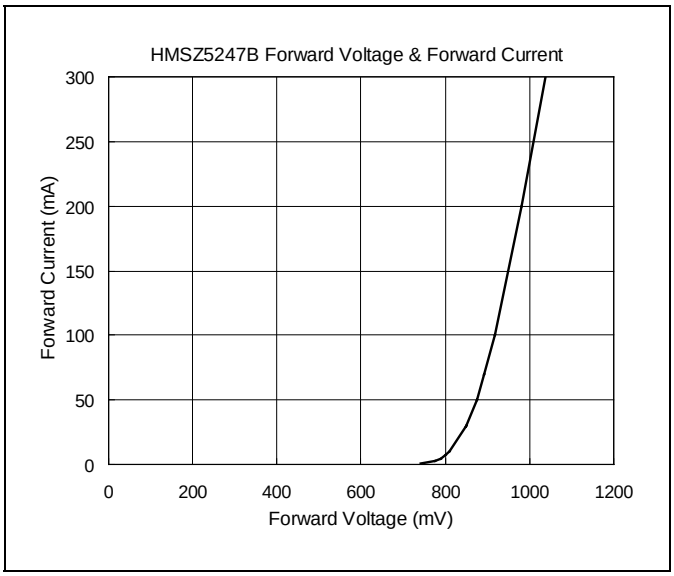

HMSZ5243B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
8000
9000
10000
11000
12000
13000
14000
Reverse Voltage (mV)

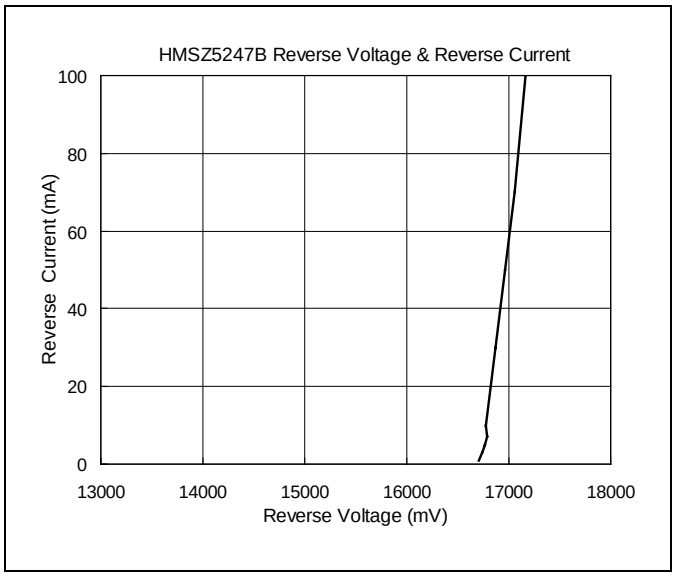

HMSZ5245B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

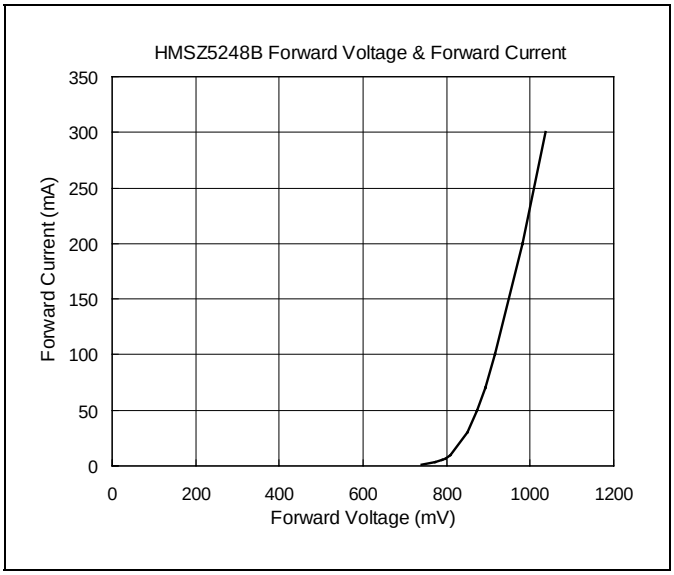

HMSZ5245B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
11000
12000
13000
14000
15000
16000
Reverse Voltage (mV)

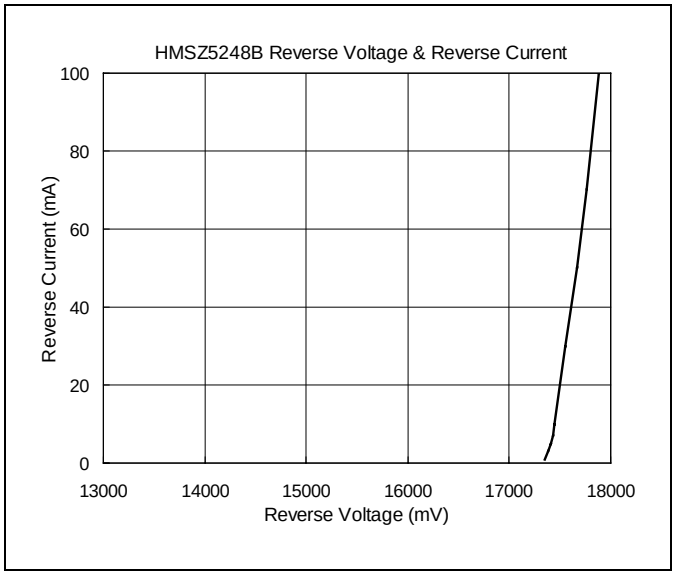

HMSZ5246B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

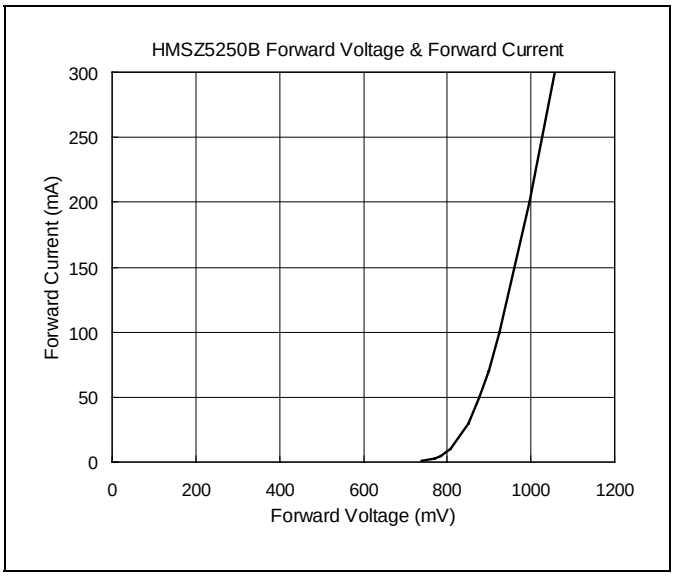

HMSZ5246B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
11000
12000
13000
14000
15000
16000
Reverse Voltage (mV)

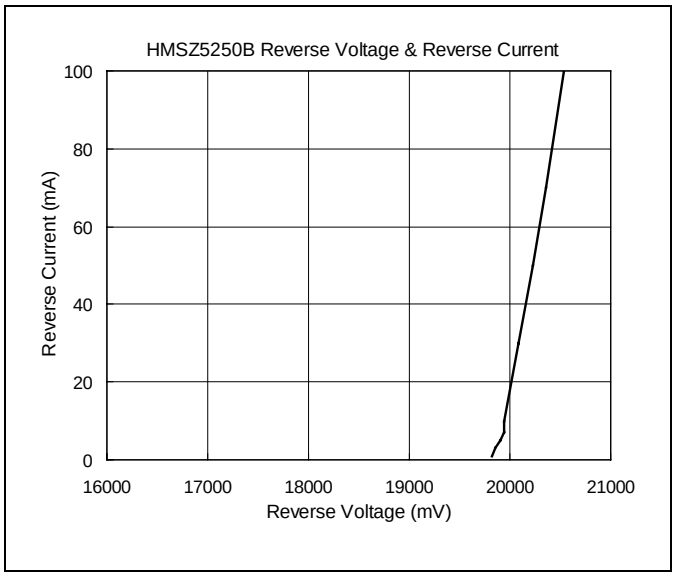

HMSZ5247B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

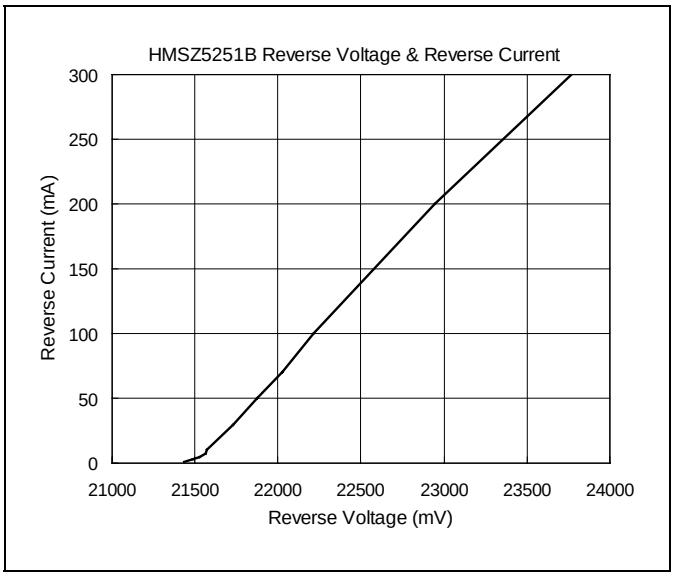

HMSZ5247B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
13000
14000
15000
16000
17000
18000
Reverse Voltage (mV)

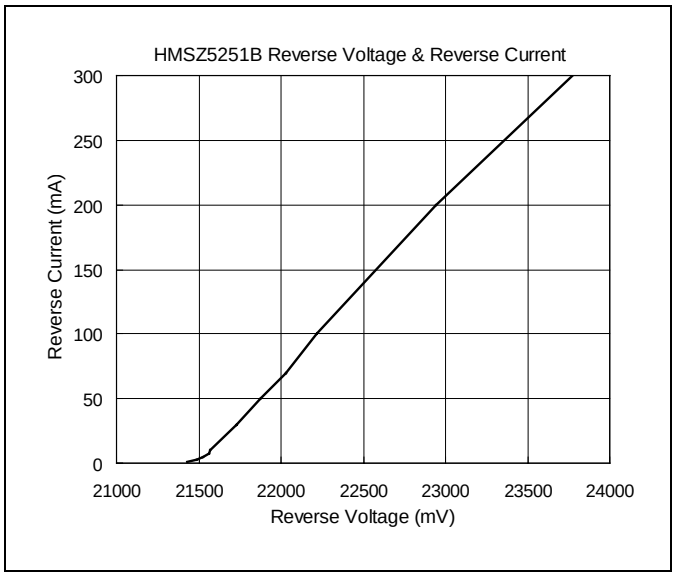

HMSZ5248B Forward Voltage & Forward Current
Forward Current (mA)
350
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

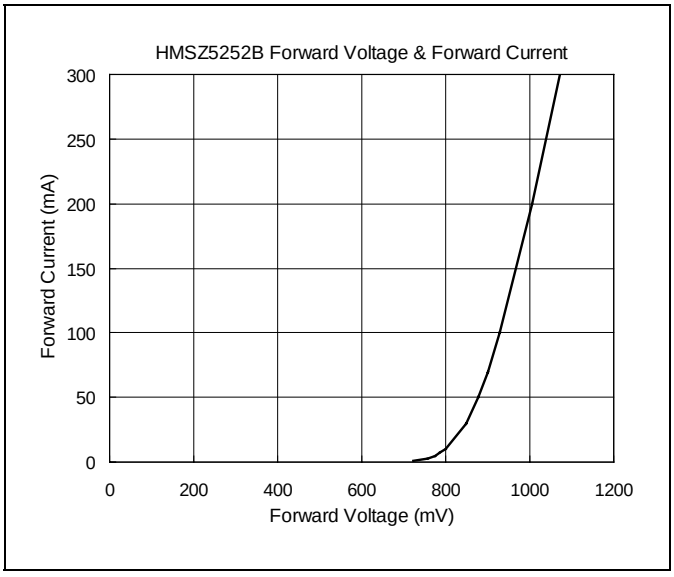

HMSZ5248B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
13000
14000
15000
16000
17000
18000
Reverse Voltage (mV)

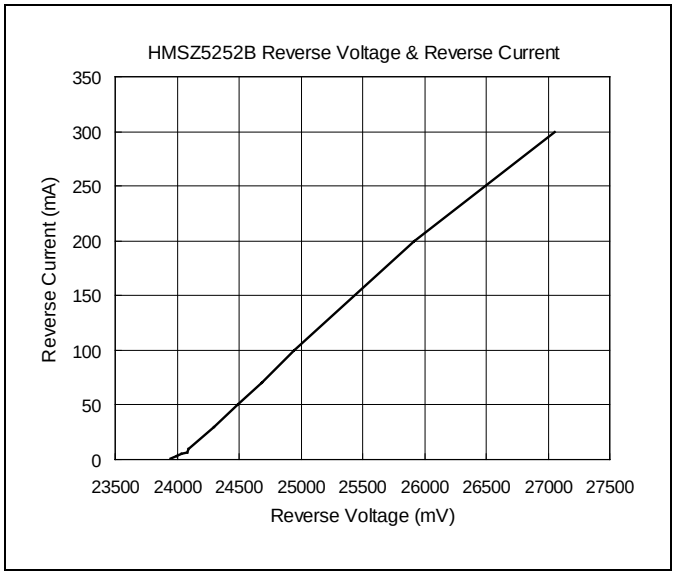

HMSZ5250B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

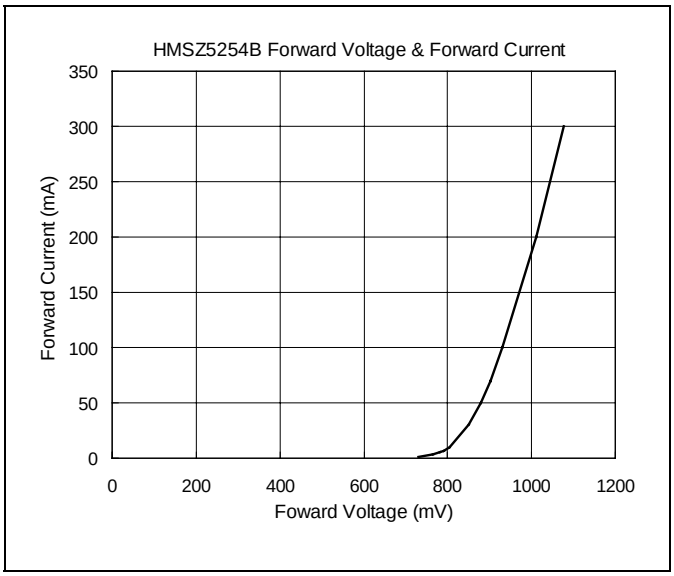

HMSZ5250B Reverse Voltage & Reverse Current
Reverse Current (mA)
100
80
60
40
20
0
16000
17000
18000
19000
20000
21000
Reverse Voltage (mV)

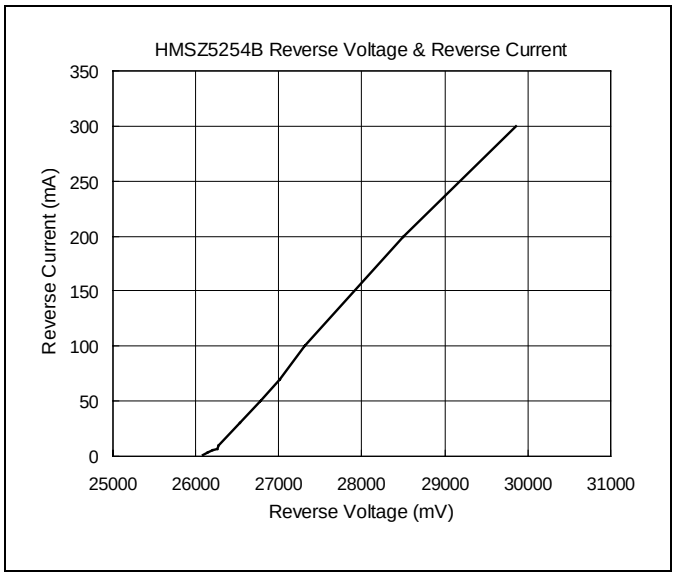

HMSZ5251B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
21000
21500
22000
22500
23000
23500
24000
Reverse Voltage (mV)

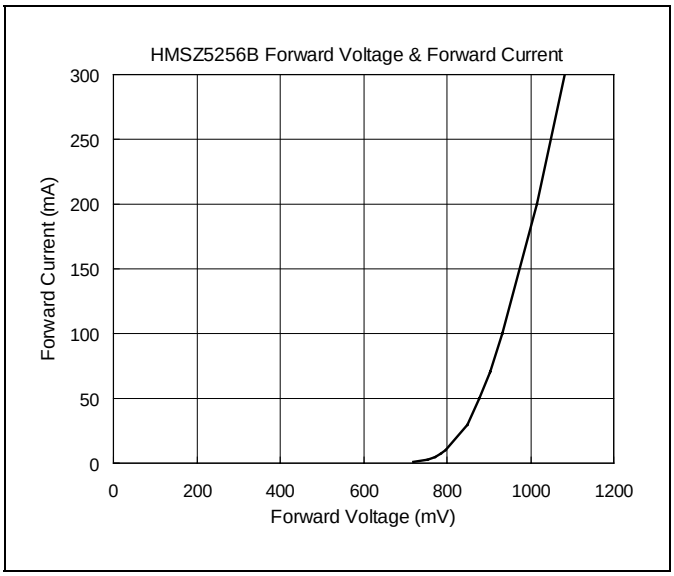

HMSZ5251B Reverse Voltage & Reverse Current
Reverse Current (mA)
300
250
200
150
100
50
0
21000
21500
22000
22500
23000
23500
24000
Reverse Voltage (mV)

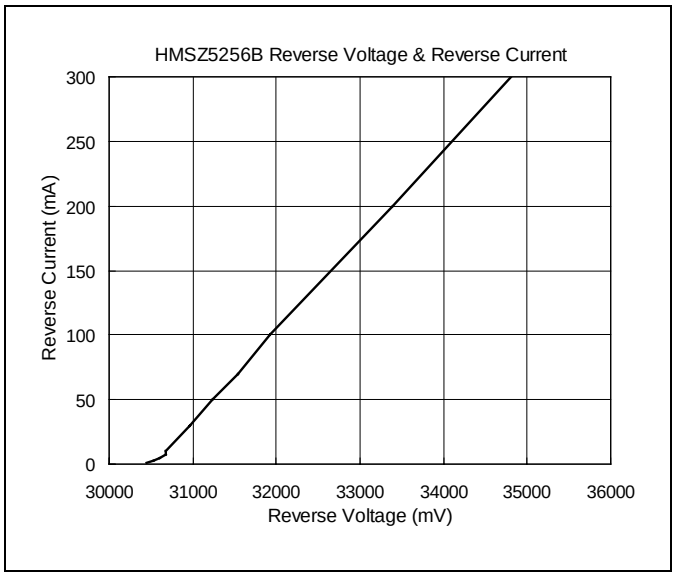

HMSZ5252B Forward Voltage & Forward Current
Forward Current (mA)
300
250
200
150
100
50
0
0
200
400
600
800
1000
1200
Forward Voltage (mV)

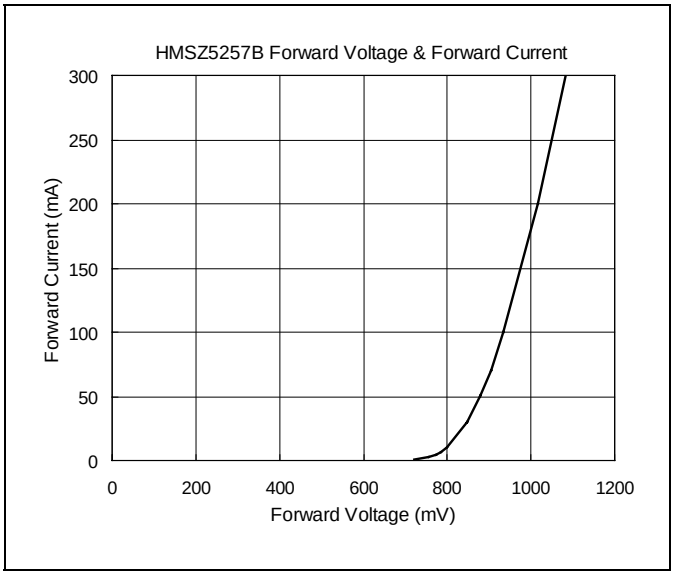

HMSZ5252B Reverse Voltage & Reverse Current
Reverse Current (mA)
350
300
250
200
150
100
50
0
23500
24000
24500
25000
25500
26000
26500
27000
27500
Reverse Voltage (mV)

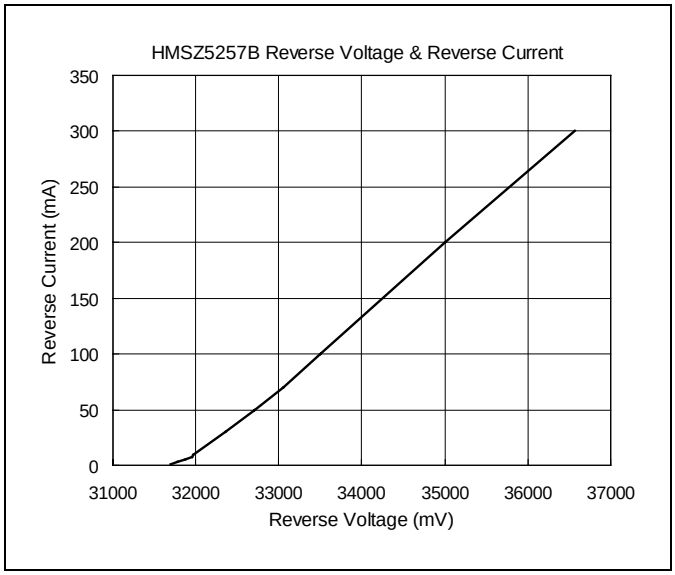

HMSZ5254B Forward Voltage & Forward Current
Forward Current (mA)
0
50
100
150
200
250
300
350
0
200
400
600
800
1000
1200
Foward Voltage (mV)


HMSZ5254B Reverse Voltage & Reverse Current
Reverse Current (mA)
0
50
100
150
200
250
300
350
25000
26000
27000
28000
29000
30000
31000
Reverse Voltage (mV)

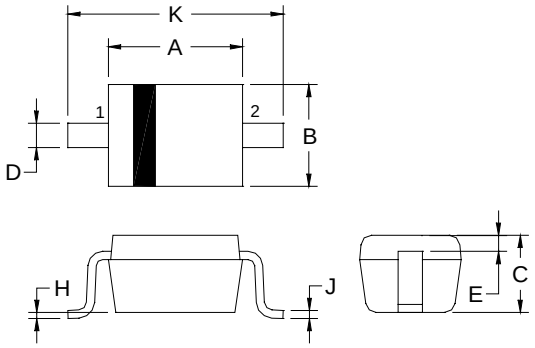

HMSZ5256B Forward Voltage & Forward Current
Forward Current (mA)
0
50
100
150
200
250
300
0
200
400
600
800
1000
1200
Forward Voltage (mV)


HMSZ5256B Reverse Voltage & Reverse Current
Reverse Current (mA)
0
50
100
150
200
250
300
30000
31000
32000
33000
34000
35000
36000
Reverse Voltage (mV)


HMSZ5257B Forward Voltage & Forward Current
Forward Current (mA)
0
50
100
150
200
250
300
0
200
400
600
800
1000
1200
Forward Voltage (mV)

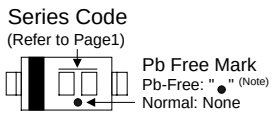

HMSZ5257B Reverse Voltage & Reverse Current
Reverse Current (mA)
0
50
100
150
200
250
300
350
31000
32000
33000
34000
35000
36000
37000
Reverse Voltage (mV)

SOD-323 Dimension



2-Lead SOD-323 Plastic
Surface Mounted Package
HSMC Package Code: SL

Marking:



Note: Pb-free product can distinguish by the green label or the extra description on the right side of the label.

Pin Style: 1.Cathode 2.Anode

Material:
- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	1.60	1.80
B	1.15	1.35
C	0.80	1.00
D	0.25	0.40
E	0.15	-
H	0.00	0.10
J	0.089	0.177
K	2.30	2.70

*: Typical, Unit: mm

Head Office And Factory:

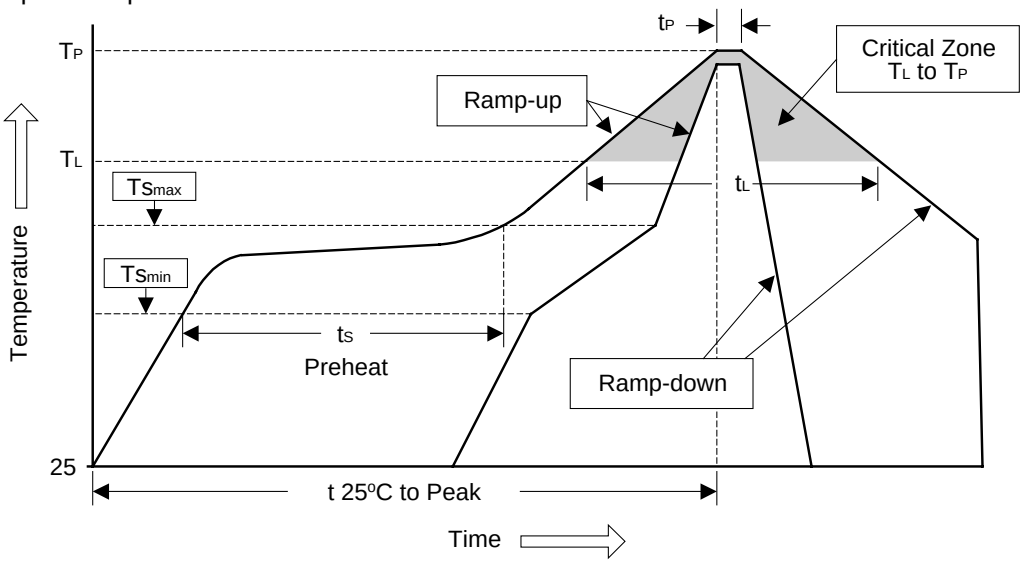
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel: 886-3-5983621~5 Fax: 886-3-5982931

Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%

2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60~120 sec	 150°C 200°C 60~180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60~150 sec	 217°C 60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec