

Plastic package Surface Mount switching silicon PIN diodes

# PLASTIC PACKAGE SURFACE MOUNT SWITCHING SILICON PIN DIODES

## **Description**

TEMEX uses its proprietary technology to manufacture its Silicon PIN diodes in plastic package.

This product family is designed for a low cost, medium to high volume market that may be supplied in tape and reel for automated pick and place assembly on surface mount circuit boards. The use of this technology eliminates wire bonding on to the chips.

## **Applications**

The DH50XXX series PIN diodes are offered in a large selection of capacitance range (.3 pF to 1.2 pF) and breakdown voltage (35 V to 200 V). They provide low loss (low series resistance), low switching time and low switching current.

TEMEX' diodes are designed to cover a broad range of CW low power (up to 2 W), medium peak power, RF and microwave applications (up to 3 GHz).

Main applications include: SPST and SPDT switches, antenna (Wireless Communication Systems) and filter switches, phase shifters ....

Note: To reduce the distortion, it is necessary to verify and design with the following formula:

$$\frac{\hat{I}_{HF}}{\pi \tau_{l} I_{DC} F} << 1$$

 $\hat{I}_{HF}$ : RF peak current (A)

 $\tau_1$ : Diode minority carrier lifetime (s)

I<sub>DC</sub>: DC bias current (A)

 $\pi F$ : Application frequency (Hz)



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#### Characteristics @ Ta = +25° C

| PACKAGED DIODES |  |  |   |  |  |  |  |
|-----------------|--|--|---|--|--|--|--|
|                 | Breakdown<br>voltage (V <sub>BR</sub> <sup>(1)</sup> ) | Total capacitance (C <sub>T</sub> <sup>(2)</sup> ) | Series<br>resistance (R <sub>SF</sub> ) | Minority carrier<br>lifetime (τ <sub>ι</sub> ) |  |  |  |
| Test conditions | Ι <sub>R</sub> = 10 μΑ                                 | F = 1 MHz  | I <sub>F</sub> = 10 mA                  | I <sub>F</sub> = 10 mA                         |  |  |  |
|                 |  | V <sub>R</sub> = 50 V                              | F = 120 MHz                             | I <sub>R</sub> = 6 mA                          |  |  |  |
| Туре            | V  | pF   | Ω                                       | ns   |  |  |  |
|                 | min.   | max  | max                                     | typ.   |  |  |  |
| DH50051         | 35   | 0.3 (3)  | 2.5 <sup>(5)</sup>                      | 150  |  |  |  |
| DH50058         | 35   | 1 (3)  | 0.5                                     | 200  |  |  |  |
| DH50053         | 50   | 0.35 (4)   | 1.5                                     | 200  |  |  |  |
| DH50103         | 100  | 0.35   | 3                                       | 500  |  |  |  |
| DH50109         | 100  | 1.2  | 0.6                                     | 1000   |  |  |  |
| DH50203         | 200  | 0.35   | 3                                       | 500  |  |  |  |
| DH50209         | 200  | 1.2  | 0.6                                     | 1000   |  |  |  |
| DH80051         | 400  | 0.6  | 2                                       | 2000   |  |  |  |

(1) : Other breakdown values on request

(4) :  $V_R = 20 \text{ V at F} = 1 \text{ MHz}$ 

(2) : Other capacitance values on request

(5) :  $R_{SF}$  at  $I_F = 5 \text{ mA}$ 

(3) :  $V_R = 5 V \text{ at } F = 1 MHz$ 

# Temperature ranges:

Operating junction (T<sub>i</sub>) : -55° C to +125° C Storage: -55° C to +150° C

## **Packages**

| Packages | SOD323<br>→ | SOT23      | SOT23      | SOT23      | SOT143     |
|----------|-------------|------------|------------|------------|------------|
| DH50051  | DH50051-60  | DH50051-51 | DH50051-53 | DH50051-54 | DH50051-70 |
| DH50058  | DH50058-60  | DH50058-51 | DH50058-53 | DH50058-54 | DH50058-70 |
| DH50053  | DH50053-60  | DH50053-51 | DH50053-53 | DH50053-54 | DH50053-70 |
| DH50103  | DH50103-60  | DH50103-51 | DH50103-53 | DH50103-54 | DH50103-70 |
| DH50109  | DH50109-60  | DH50109-51 | DH50109-53 | DH50109-54 | DH50109-70 |
| DH50203  | DH50203-60  | DH50203-51 | DH50203-53 | DH50203-54 | DH50103-70 |
| DH50209  | DH50209-60  | DH50209-51 | DH50209-53 | DH50209-54 | DH50209-70 |
| DH80051  | DH80051-60  | DH80051-51 | DH80051-53 | DH80051-54 | DH80051-70 |

<sup>(1)</sup> Other configuration available on request.

# How to order?

