

Plastic package Surface Mount attenuating silicon PIN diodes



PLASTIC PACKAGE SURFACE MOUNT ATTENUATING 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

Typical applications include variable RF attenuators and AGC (Automatic Gain Control) circuits, from MHz to several GHz.

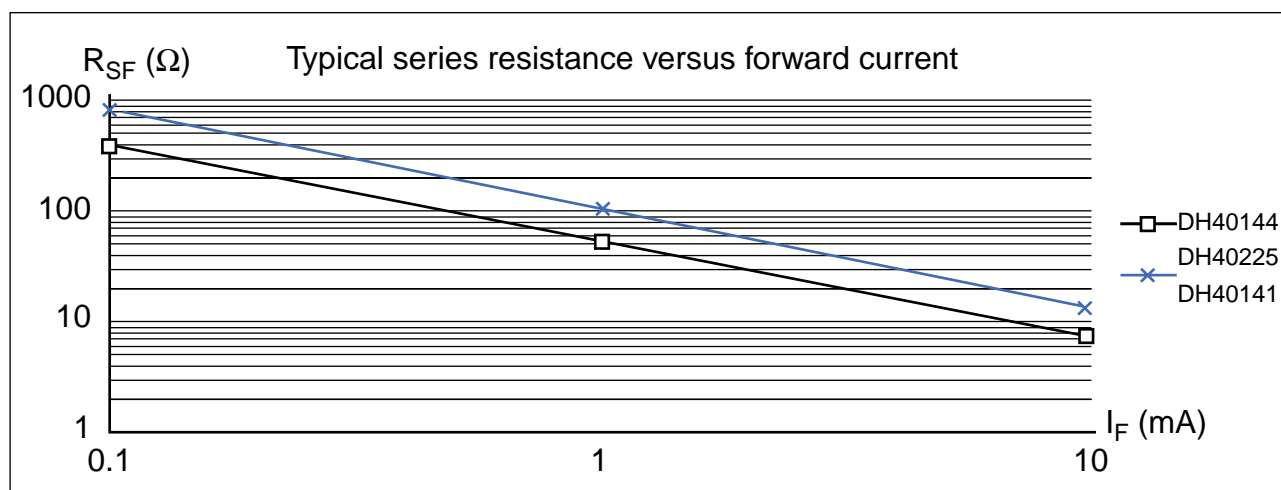
The attenuating Pin diode uses properties of variation of forward series resistance versus the DC forward bias current. In order to obtain the best dynamic range, a single diode attenuator may be used in series or shunt configuration or designed as a multiple diode circuit (T or p circuit), where the device may be matched through the attenuation range.

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

$$\frac{\hat{I}_{HF}}{\pi \tau_I I_{DC} F} \ll 1$$

- \hat{I}_{HF} : RF peak current (A)
- τ_I : Diode minority carrier lifetime (s)
- I_{DC} : DC bias current (A)
- F : Application frequency (Hz)

Typical performance curve



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Electrical characteristics at 25° C

Electrical Parameters	I Zone thickness (1)	Forward series resistance Rsf (Ω)						Junction capacitance Cj (2)		Reverse current IR	Carrier lifetime τi
Test conditions	μm	F = 120 MHz						F = 1 MHz		VR = 100 V	IF = 10 mA IR = 6 mA
Type		IF = 0.1 mA		IF = 1 mA		IF = 10 mA		pF		μA	μs
	typ.	min.	max	min.	max	min.	max	typ.	max	max	typ.
DH40141	140	400	800	50	100	6.5	13	0.05	0.10	10	2.5
DH40144	140	200	400	25	50	3.5	7	0.10	0.30	10	5.0
DH40225	220	400	800	50	100	6.5	13	0.10	0.30	10	7.0

(1) Other I zone thicknesses on request

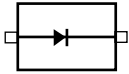

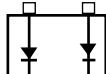
(2) Other capacitance values on request (measured at 50 V)

Temperature ranges:

 Operating junction (T_j) : - 55° C to + 125° C

Storage : - 65° C to + 150° C

Packages

Packages	SOD323	SOT23	SOT143
			
DH40141	DH40141-60	DH40141-51	DH40141-70
DH40144	DH40144-60	DH40144-51	DH40144-70
DH40225	DH40225-60	DH40225-51	DH40225-70

(1) Other configuration available on request.

How to order?

DH40141	-	51	T3
Diode type		Package information	Conditioning
		51: single SOT23 53: dual common cathode SOT23 54: dual common anode SOT23 60: single SOD323 70: dual SOT143 87: SOT323	T3: 3000 pieces tape & reel T10: 10000 pieces tape & reel blank: bulk