

TPM3810B: Radio-frequency PIN Limiter Diodes

Description

- The TPM3810B series of limiter diodes is designed for use as passive receiver protectors in wireless and other RF systems.
- It has low loss, low distortion and good limiter action.
- The TPM3810B series of diodes has been characterized in limiter circuits and tightly specified to ensure consistent performance.



Features

- Low-distortion design
- Low insertion loss
- Low-cost plastic package

Applications

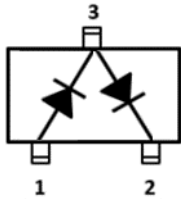
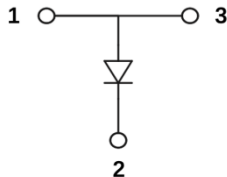
- WLAN, WiMAX
- Cellular infrastructure
- RFID readers
- Test instruments.



ESD WARNING:

Handling Precautions Should Be Taken To Avoid Static Discharge.

Part Number and Configuration

TPM3810B-16 DFN1006	TPM3810B-03 SOT23	TPM3810B-20 DFN2020
		
Marking: F	Marking: RQ2	Marking: CQ

Absolute Maximum Ratings, $T_c = +25^{\circ}\text{C}$

Parameter	Symbol	Min	Max	Unit
Reverse voltage	V_R		20	V
Forward current	I_F		100	mA
Operating temperature	T_A	-55	+150	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-55	+150	$^{\circ}\text{C}$

Electrical Specifications, $T_c = +25^{\circ}\text{C}$

Parameter	Symbol	Test condition	Min	Typical	Max	Unit
Series resistance	R_S	$f = 100 \text{ MHz}, I_F = 10 \text{ mA}$		2.7		Ω
Capacitance	C_T	$0 \text{ V}, f = 1 \text{ MHz}$		0.36		pF
Capacitance ratio	C_{TR}	$C_T @ 0 \text{ V} / C_T @ 6 \text{ V}$		1.32		
Carrier lifetime	τ	$I_F = 10 \text{ mA}$		25		ns
I region width				2.5		μm
Breakdown voltage	V_R	$I_R = 10 \mu\text{A}$	20	48	50	V
Leakage current	I_R	$V_R = 20 \text{ V}$			20	nA

Typical 1GHz Limiter Performance

Parameter	-03	-16	-20	Test condition
Connection	Parallel	Parallel	Parallel	
Insertion Loss	0.9 dB	0.4 dB	0.3dB	Input power = 0 dBm
1 dB Compression	+4 dBm	+9 dBm	+10 dBm	
Attenuation@ +20 dBm	10.8 dB	6.3 dB	6.2 dB	Input power = 20 dBm
Attenuation@ +30 dBm	12.6 dB	13 dB	13.5 dB	Input power = 30 dBm
Max. CW Input Power			3W	

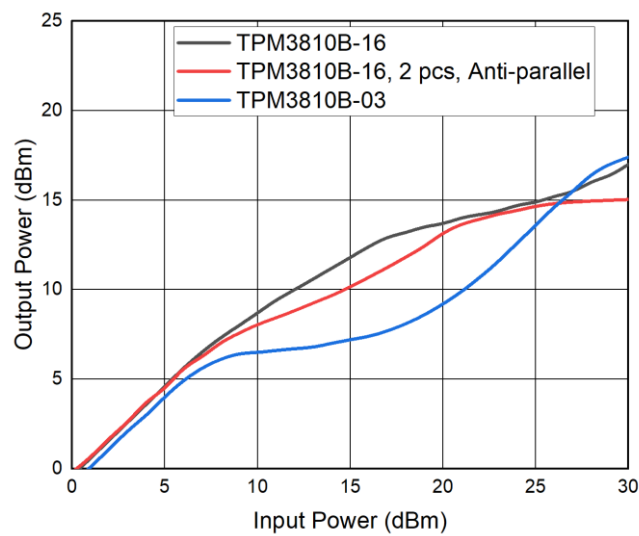


Figure 1. Typical 1 GHz Limiter Performance

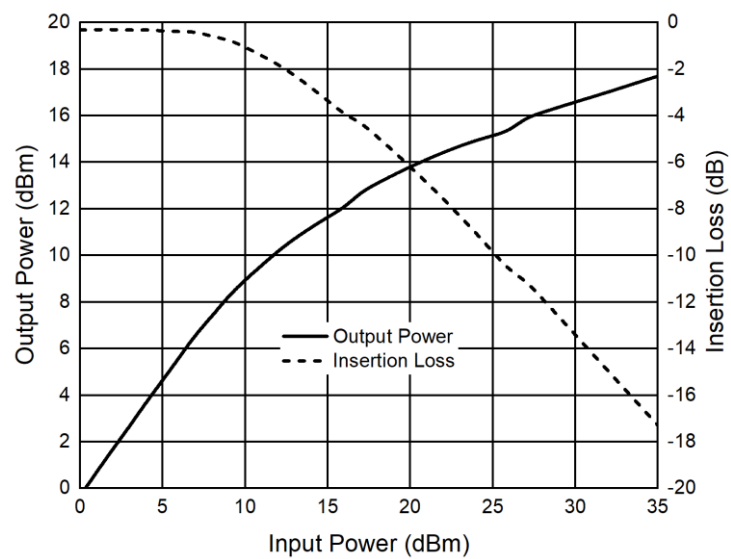
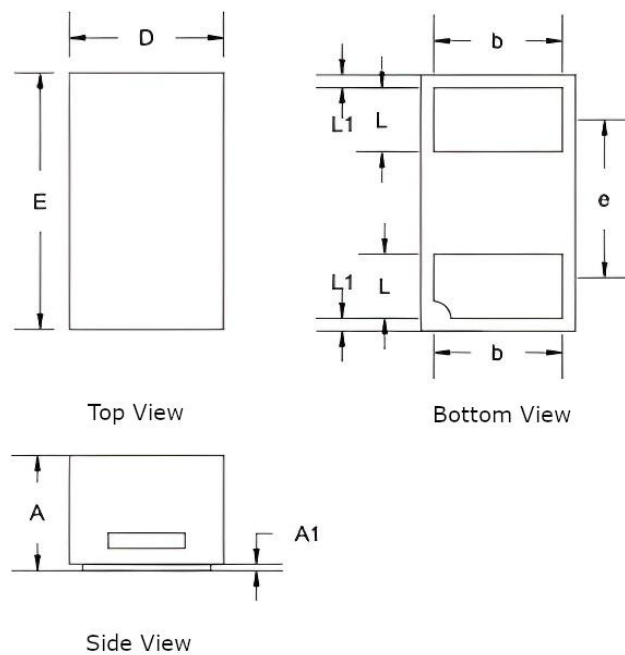


Figure 2. TPM3810B-20. Insertion Loss and Output Power vs. Input Power.
($f = 1$ GHz, including board losses)

Package Dimension Drawing

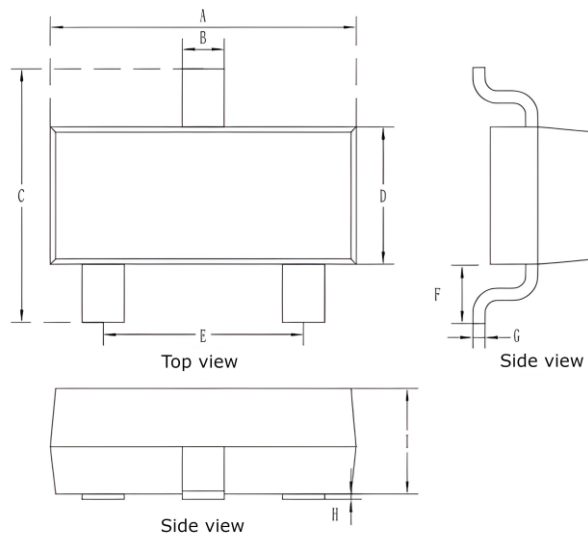
● DFN1006

Symbol	Size (mm)		
	Min	TYP	Max
A	0.440	0.475	0.500
A1	0.000	0.025	0.050
E	0.950	1.000	1.050
D	0.550	0.600	0.650
b	0.450	0.500	0.550
e		0.650BSC	
L	0.200	0.250	0.300
L1	0.050REF		



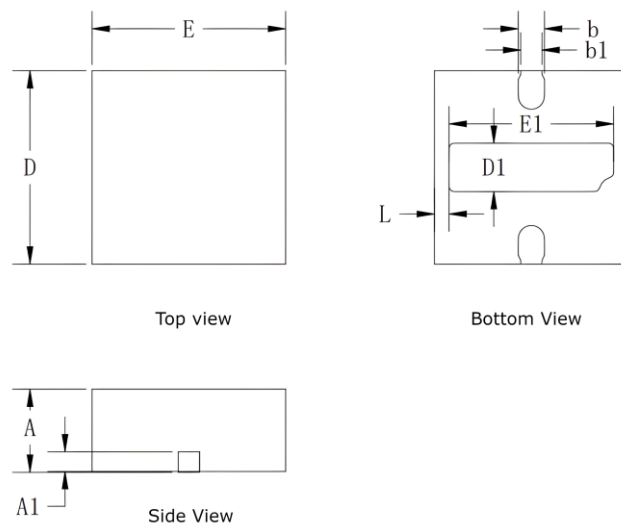
SOT-23

Symbol	Size (mm)		
	Min	TYP	Max
A	2.800	2.900	3.000
B	0.300	0.400	0.500
C	2.250	2.400	2.550
D	1.200	1.300	1.400
E	1.800	1.900	2.000
F	0.550 REF		
G	0.080	0.115	0.150
H	0.000	0.050	0.100
I	0.900	1.000	1.100



DFN2020

Symbol	Size (mm)		
	Min	TYP	Max
A	0.800	0.850	0.900
A1	0.203REF		
b	0.220	0.270	0.320
b1	0.170	0.220	0.270
D	1.900	2.000	2.100
D1	0.450	0.500	0.550
E	1.900	2.000	2.100
E1	1.650	1.700	1.750
L	0.100	0.150	0.200





Disclaimer

General Information

The information in this datasheet is provided for reference only and is subject to change without notice. While efforts have been made to ensure accuracy, DNMICRON, INC. makes no warranties regarding the completeness or correctness of the data. Users are advised to verify product suitability for their specific applications.

Application Notes

The device's electrical characteristics and performance data are general guidelines. Any application-specific configuration must be independently verified. DNMICRON, INC. is not responsible for misuse or damage resulting from improper use or incorrect application.

No Liability

DNMICRON, INC. is not liable for any direct, indirect, or consequential damage arising from the use of the product. The user assumes all risks associated with the device's use in their systems.

Warranty

Products are covered by the standard warranty policy. For warranty terms and conditions, refer to the DNMICRON, INC. Warranty Policy.

Compliance

Users are responsible for ensuring that their use of the product complies with all applicable laws and regulations. The product may comply with RoHS and REACH standards.

Changes

DNMICRON, INC. reserves the right to update or discontinue the datasheet or product without notice. Updated information will be provided via the official website.

Contact Information

Website: www.dnmicron.com

Email: sales@dnmicron.com