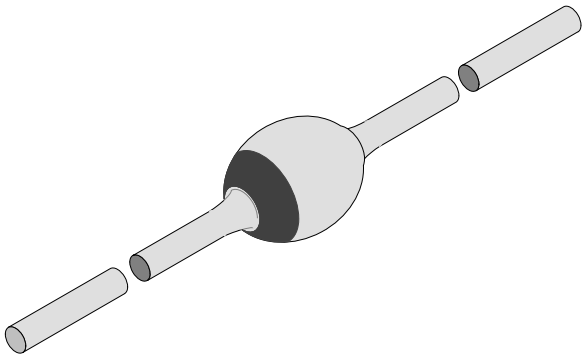
Silicon Mesa Rectifiers

Features

- Controlled avalanche characteristics
- Glass passivated junction
- Hermetically sealed package
- Low reverse current
- High surge current loading
- Electrically equivalent diodes:
  BYW52 – 1N5059 BYW53 – 1N5060
  BYW54 – 1N5061 BYW55 – 1N5062



94 9539

Applications

Rectifier, general purpose

Absolute Maximum Ratings

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Value	Unit
Reverse voltage =Repetitive peak reverse voltage		BYW52	$V_R=V_{RRM}$	200	V
		BYW53	$V_R=V_{RRM}$	400	V
		BYW54	$V_R=V_{RRM}$	600	V
		BYW55	$V_R=V_{RRM}$	800	V
		BYW56	$V_R=V_{RRM}$	1000	V
Peak forward surge current	t_p=10ms, half sinewave		I_{FSM}	50	A
Repetitive peak forward current			I_{FRM}	12	A
Average forward current	φ=180°		I_{FAV}	2	A
Pulse avalanche peak power	t_p=20µs half sinus wave, T_j=175°C		P_R	1000	W
Pulse energy in avalanche mode, non repetitive (inductive load switch off)	$I_{(BR)R}$=1A, T_j=175°C		E_R	20	mJ
i^2* t–rating			i^2*t	8	A^2*s
Junction and storage temperature range			$T_j=T_{stg}$	–55...+175	°C

Maximum Thermal Resistance

T_j = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Junction ambient	l=10mm, T_L=constant	R_{thJA}	45	K/W
	on PC board with spacing 25mm	R_{thJA}	100	K/W

Electrical Characteristics

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	I_F=1A		V_F		0.9	1.0	V
Reverse current	V_R=V_{RRM}		I_R		0.1	1	µA
	V_R=V_{RRM}, T_j=100°C		I_R		5	10	µA
Breakdown voltage	I_R=100µA, t_p/T=0.01, t_p=0.3ms		$V_{(BR)}$			1600	V
Diode capacitance	V_R=0, f=0.47MHz		C_D		50		pF
Reverse recovery time	I_F=0.5A, I_R=1A, i_R=0.25A		t_{rr}			4	µs
	I_F=1A, di/dt=5A/µs, V_R=50V		t_{rr}			4	µs
Reverse recovery charge	I_F=1A, di/dt=5A/µs		Q_{rr}			200	nC

Characteristics (T$_j$ = 25°C unless otherwise specified)

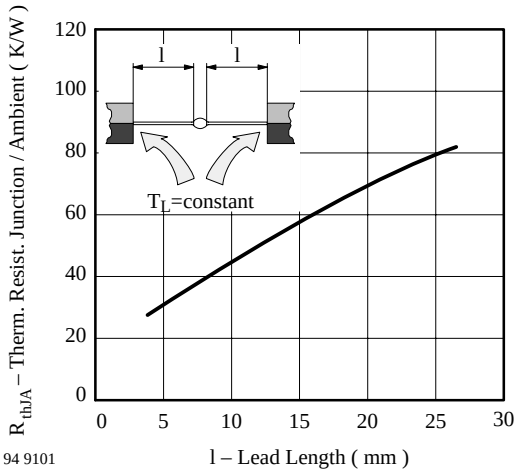


Figure 1. Typ. Thermal Resistance vs. Lead Length

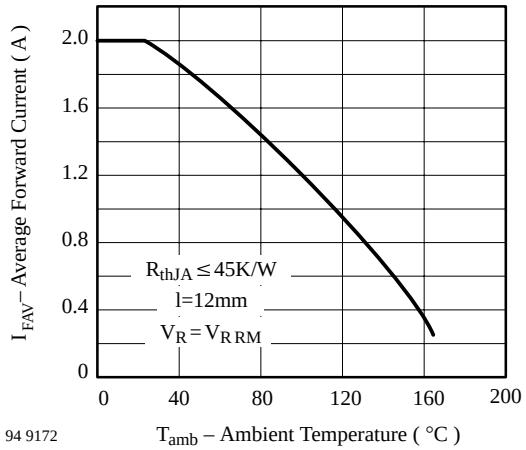


Figure 3. Max. Average Forward Current vs. Ambient Temperature

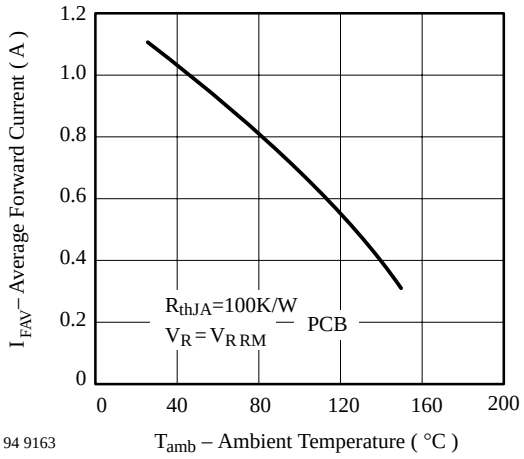


Figure 2. Max. Average Forward Current vs. Ambient Temperature

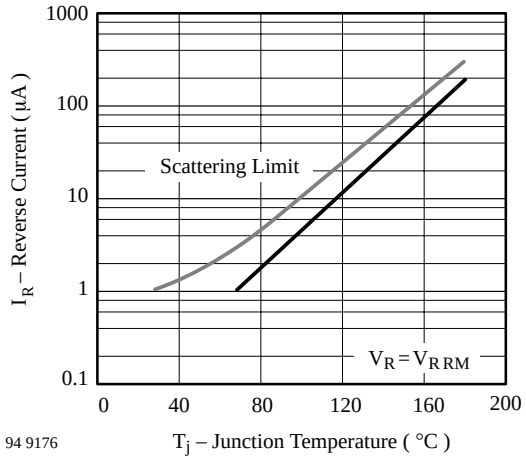


Figure 4. Reverse Current vs. Junction Temperature

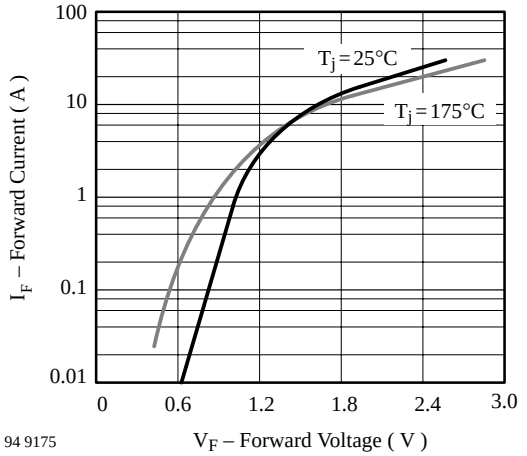


Figure 5. Typ. Forward Current vs. Forward Voltage

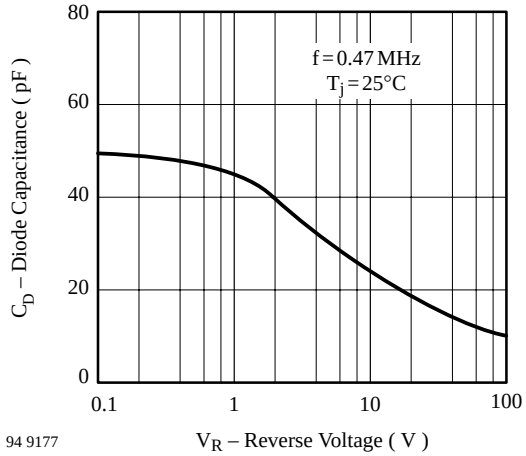


Figure 6. Typ. Diode Capacitance vs. Reverse Voltage

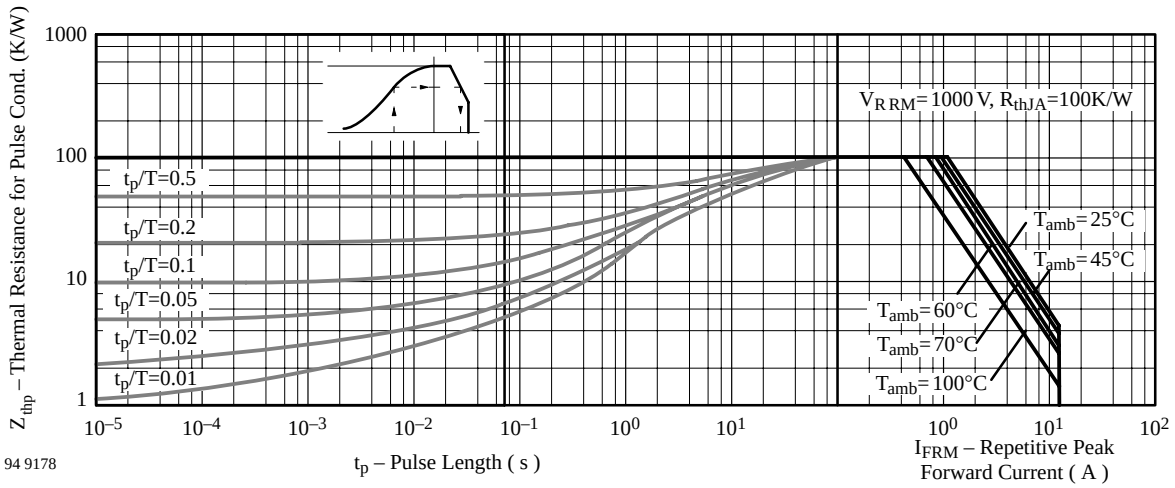
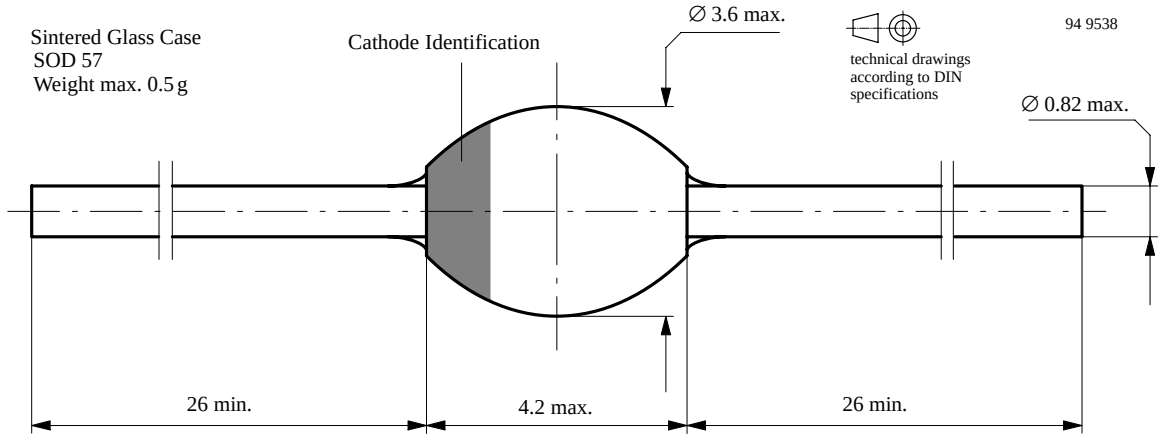


Figure 7. Thermal Response

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.

2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems
   with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively

2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA

3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423