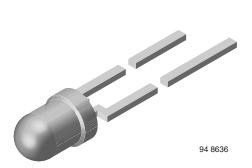
HALOGEN FREE

<u>GREEN</u>



Vishay Semiconductors

High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



DESCRIPTION

VSLB3940 is a high speed infrared emitting diode in GaAlAs, MQW technology, molded in a clear plastic package.

FEATURES

Package type: leaded

• Package form: T-1, clear epoxy

• Dimensions: Ø 3 mm

• Peak wavelength: $\lambda_p = 940 \text{ nm}$

• High speed

• High radiant power

· High radiant intensity

• Angle of half intensity: $\varphi = \pm 22^{\circ}$

· Low forward voltage

· Suitable for high pulse current operation

· Good spectral matching to Si photodetectors

 Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>



- Infrared remote control units
- · Free air transmission systems
- Infrared source for optical counters and card readers

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
VSLB3940	65	± 22	940	15	

Note

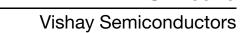
• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
VSLB3940	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1		
VSLB3940-MSZ	Ammopack	MOQ: 10 000 pcs, 2000 pcs/box	T-1		
VSLB3940-QS21	Tape and reel	MOQ: 10 000 pcs, 2000 pcs/reel	T-1		

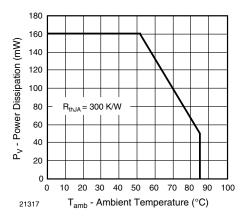
Note

· MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage		V _R	5	V	
Forward current		I _F	100	mA	
Peak forward current	$t_p/T = 0.1, t_p = 100 \mu s$	I _{FM}	1	А	
Surge forward current	t _p = 100 μs	I _{FSM}	1.5	А	
Power dissipation		P_V	160	mW	
Junction temperature		T _j	100	°C	
Operating temperature range		T _{amb}	-40 to +85	°C	
Storage temperature range		T _{stg}	-40 to +100	°C	
Soldering temperature	$t \le 5$ s, 2 mm from case	T _{sd}	260	°C	
Thermal resistance junction / ambient	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	300	K/W	









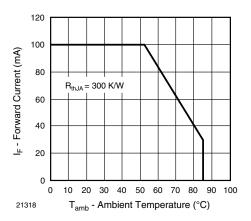


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F	1.15	1.35	1.6	V
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	V _F	-	2.2	-	V
Temperature coefficient of V _F	I _F = 1 mA	TK _{VF}	-	-1.5	-	mV/K
	I _F = 100 mA	TK _{VF}	-	-1.1	-	mV/K
Reverse current	V _R = 5 V	I _R	-	-	10	μΑ
Junction capacitance	$V_R = 0 \text{ V, f} = 1 \text{ MHz,}$ $E = 0 \text{ mW/cm}^2$	CJ	=	70	-	pF
B 6 444 3	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	l _e	32	65	110	mW/sr
Radiant intensity	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	l _e	-	650	-	mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фе	-	40	-	mW
Temperature coefficient of radiant power	I _F = 1 mA	TK_{\phie}	-	-1.1	-	%/K
	I _F = 100 mA	TK _{φe}	-	-0.51	-	%/K
Angle of half intensity		φ	-	± 22	-	deg
Peak wavelength	I _F = 30 mA	λρ	-	940	-	nm
Spectral bandwidth	I _F = 30 mA	Δλ	-	25	-	nm
Temperature coefficient of Ip	I _F = 30 mA	TK_{\lambdap}	-	0.25	-	nm
Rise time	I _F = 100 mA, 20 % to 80 %	t _r	-	15	-	ns
Fall time	I _F = 100 mA, 20 % to 80 %	t _f	-	15	-	ns
Virtual source diameter		d	-	2	-	mm

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

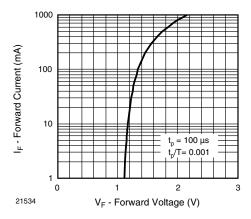


Fig. 3 - Forward Current vs. Forward Voltage

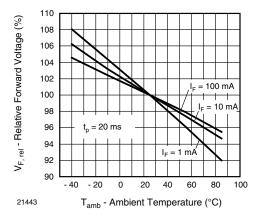


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

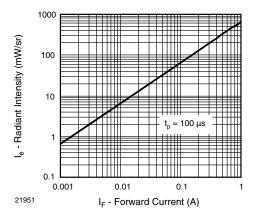


Fig. 5 - Radiant Intensity vs. Forward Current

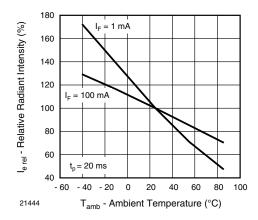


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

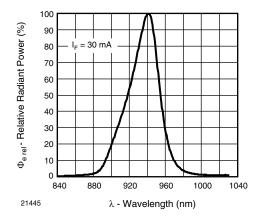


Fig. 7 - Relative Radiant Power vs. Wavelength

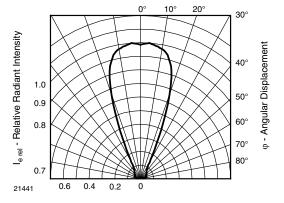
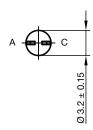


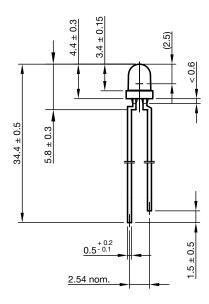
Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

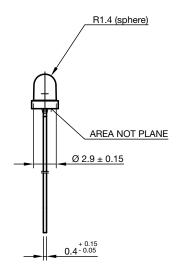


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PACKAGE DIMENSIONS in millimeters







technical drawings according to DIN specifications

Drawing-No.: 6.544-5255.01-4

Issue: 9; 28.07.14



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