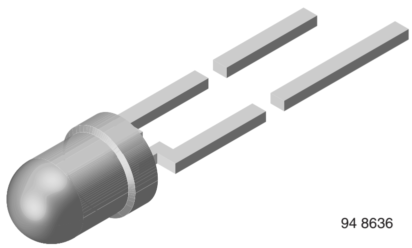
High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



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: λ_p = 940 nm
- High speed
- High radiant power
- High radiant intensity
- Angle of half intensity: φ = ± 22°
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching to Si photodetectors
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free
e2
RoHS
COMPLIANT
GREEN
(5-2008)**

Note

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

APPLICATIONS

- 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

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 μs	I_{FM}	1	A
Surge forward current	t_p = 100 μs	I_{FSM}	1.5	A
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	$t \leq 5$ 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

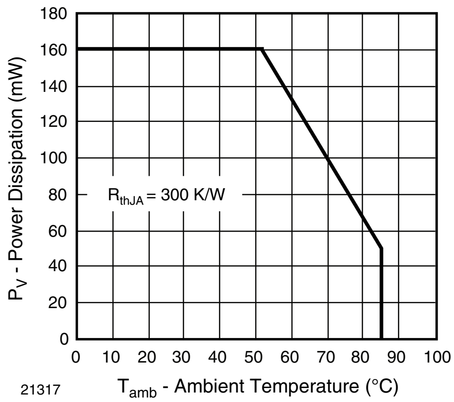


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

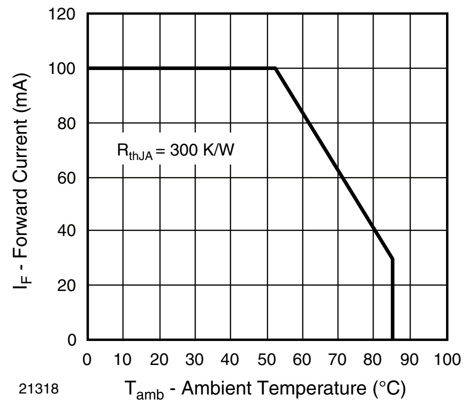


Fig. 1 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 100 mA, t_p = 20 ms	V_F	1.15	1.35	1.6	V
	I_F = 1 A, t_p = 100 µs	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	µA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0 mW/cm^2	C_J		70		pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	32	65	110	mW/sr
	I_F = 1 A, t_p = 100 µs	I_e		650		mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕe		40		mW
Temperature coefficient of radiant power	I_F = 1 mA	$TK_{\varphi e}$		- 1.1		%/K
	I_F = 100 mA	$TK_{\varphi e}$		- 0.51		%/K
Angle of half intensity		φ		± 22		deg
Peak wavelength	I_F = 30 mA	λ_p		940		nm
Spectral bandwidth	I_F = 30 mA	$\Delta\lambda$		25		nm
Temperature coefficient of λ_p	I_F = 30 mA	$TK_{\lambda p}$		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)

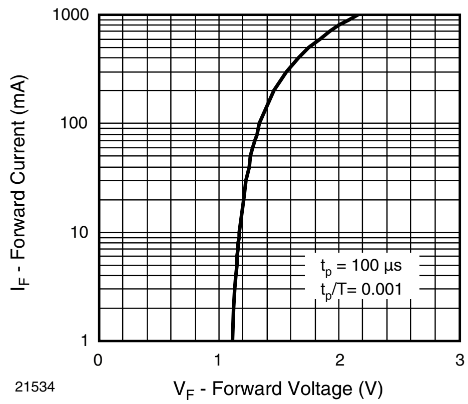


Fig. 2 - Forward Current vs. Forward Voltage

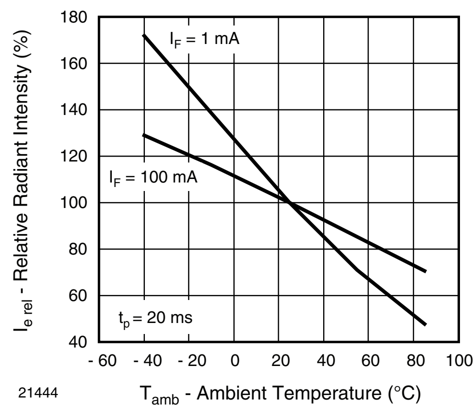


Fig. 5 - Relative Radiant Intensity vs. Ambient Temperature

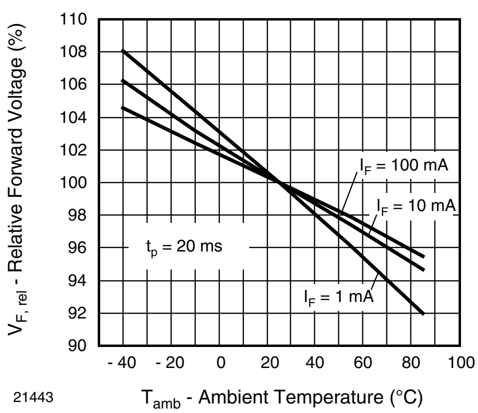


Fig. 3 - Relative Forward Voltage vs. Ambient Temperature

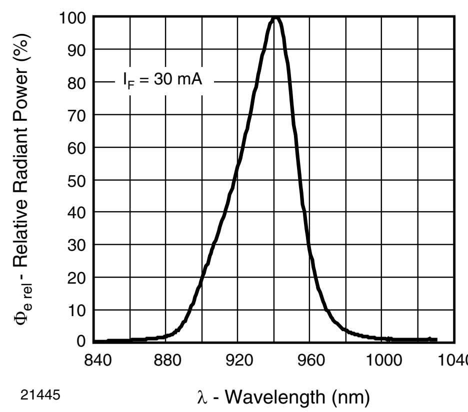


Fig. 6 - Relative Radiant Power vs. Wavelength

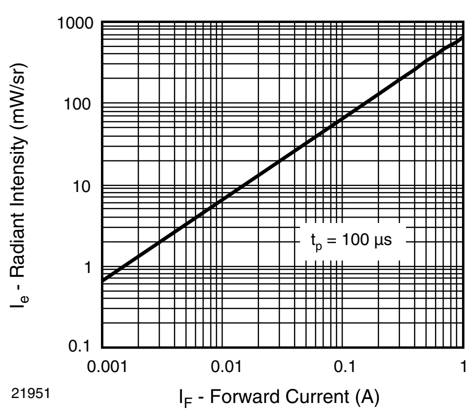


Fig. 4 - Radiant Intensity vs. Forward Current

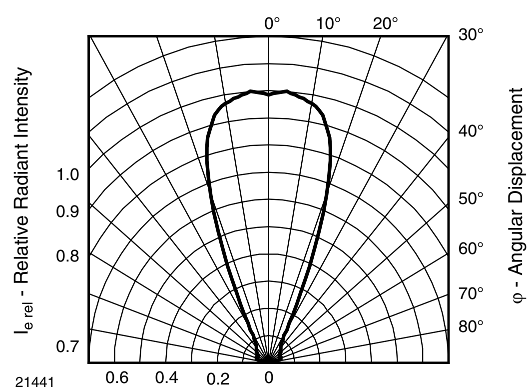
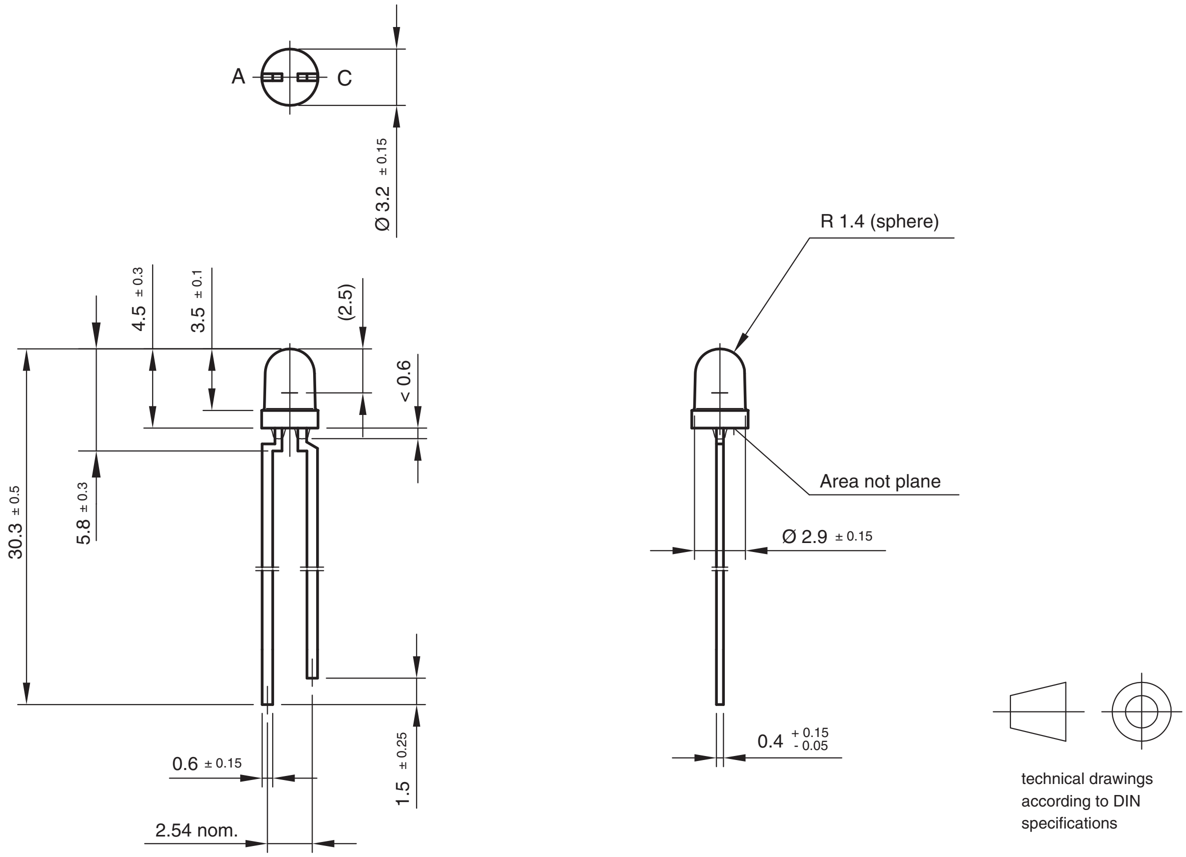


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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