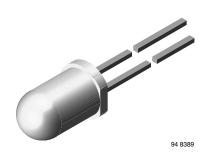
GREEN



Vishay Semiconductors

High Power Infrared Emitting Diode, 940 nm, GaAlAs/GaAs



DESCRIPTION

TSAL6100 is an infrared, 940 nm emitting diode in GaAlAs/GaAs technology with high radiant power molded in a blue-gray plastic package.

FEATURES

Package type: leadedPackage form: T-1¾

• Dimensions (in mm): Ø 5

• Peak wavelength: λ_p = 940 nm

· High reliability

High radiant power

· High radiant intensity

• Angle of half intensity: $\varphi = \pm 10^{\circ}$

• Low forward voltage

· Suitable for high pulse current operation

Good spectral matching with Si photodetectors

 Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

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

APPLICATIONS

- · Infrared remote control units with high power regirements
- Free air transmission systems
- Infrared source for optical counters and card readers
- IR source for smoke detectors

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
TSAL6100	130	± 10	940	800	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TSAL6100	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾	

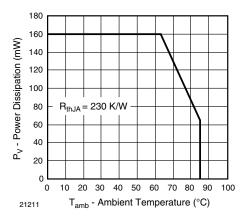
Note

· MOQ: minimum order quantity

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V _R	5	V
Forward current		I _F	100	mA
Peak forward current	$t_p/T = 0.5, t_p = 100 \mu s$	I _{FM}	200	mA
Surge forward current	t _p = 100 μs	I _{FSM}	1.5	Α
Power dissipation		P _V	160	mW
Junction temperature		Tj	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}	230	K/W









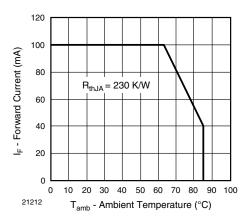


Fig. 2 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.35	1.6	V
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	V _F		2.6	3	V
Temperature coefficient of V _F	I _F = 1 mA	TK _{VF}		- 1.8		mV/K
Reverse current	V _R = 5 V	I _R			10	μΑ
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj		25		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I _e	80	130	400	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	I _e	650	1000		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фe		35		mW
Temperature coefficient of ϕ_e	I _F = 20 mA	TKφ _e		- 0.6		%/K
Angle of half intensity		φ		± 10		deg
Peak wavelength	I _F = 100 mA	λ_{p}		940		nm
Spectral bandwidth	I _F = 100 mA	Δλ		50		nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p		0.2		nm/K
Rise time	I _F = 100 mA	t _r		800		ns
Fall time	I _F = 100 mA	t _f		800		ns
Virtual source diameter	Method: 63 % encircled energy	d		3.7		mm



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

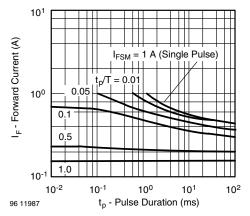


Fig. 3 - Pulse Forward Current vs. Pulse Duration

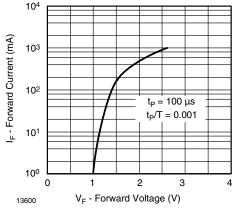


Fig. 4 - Forward Current vs. Forward Voltage

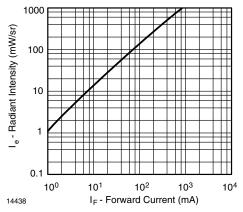


Fig. 5 - Radiant Intensity vs. Forward Current

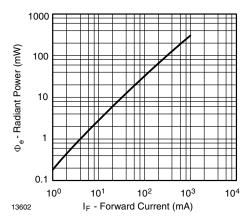


Fig. 6 - Radiant Power vs. Forward Current

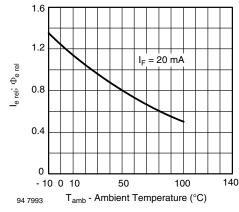


Fig. 7 - Rel. Radiant Intensity/Power vs. Ambient Temperature

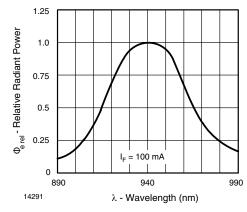


Fig. 8 - Relative Radiant Power vs. Wavelength





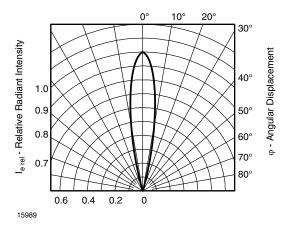
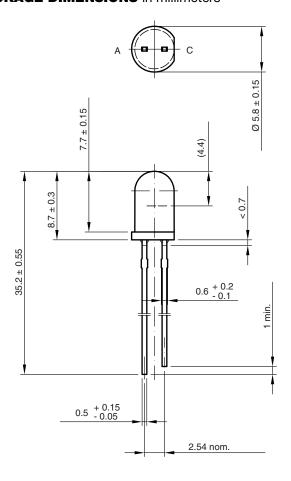
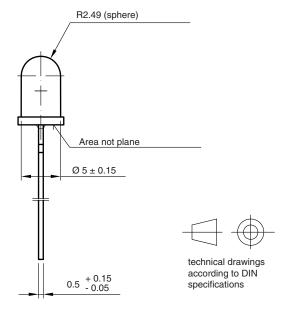


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





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