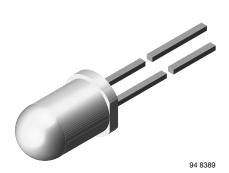
RoHS COMPLIANT



Vishay Semiconductors

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



DESCRIPTION

TSAL6100UL is an infrared, 940 nm emitting diode in GaAlAs multi quantum well (MQW) technology with high radiant power and high speed molded in a blue-gray plastic package. It is certified according to UL217 standard for smoke alarms.

FEATURES

· Package type: leaded • Package form: T-13/4

• Dimensions (in mm): Ø 5

Peak wavelength: λ_p = 940 nm

High reliability

· High radiant power

· High radiant intensity

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

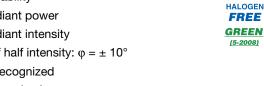
UL217 recognized

· Low forward voltage

· Suitable for high pulse current operation

· Good spectral matching with Si photodetectors

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



APPLICATIONS

· IR source for smoke detectors

PRODUCT SUMMARY				
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)
TSAL6100UL	170	± 10	940	15

Note

· Test conditions see table "Basic Characteristics"

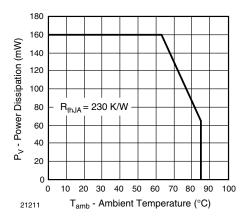
ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSAL6100UL	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-13/4

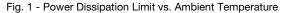
Note

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	$t_p/T = 0.5, t_p = 100 \mu s$	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 ≤ 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	

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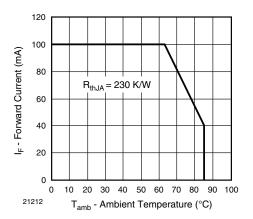


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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 A, t _p = 100 μs	V_{F}	-	2.2	-	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	$V_R = 0 \text{ V, } f = 1 \text{ MHz, } E = 0$	Cj	-	40	-	pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I _e	80	170	400	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	I _e	-	1450	-	mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фe	-	40	-	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	-	30	-	nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p	=	0.2	-	nm/K
Rise time	I _F = 100 mA	t _r	-	15	-	ns
Fall time	I _F = 100 mA	t _f	-	15	-	ns

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

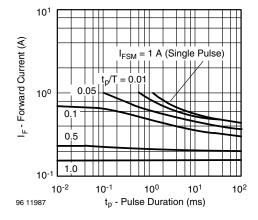


Fig. 3 - Pulse Forward Current vs. Pulse Duration

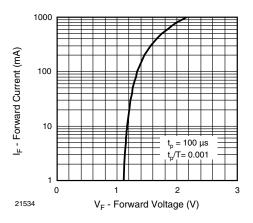


Fig. 4 - Forward Current vs. Forward Voltage



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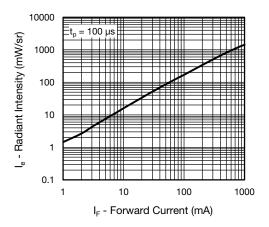


Fig. 5 - Radiant Intensity vs. Forward Current

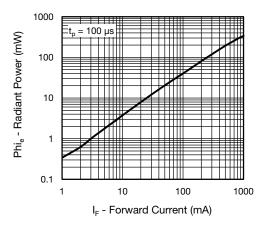


Fig. 6 - Radiant Power vs. Forward Current

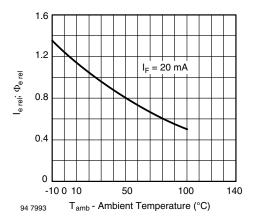


Fig. 7 - Relative Radiant Intensity / Power vs.
Ambient Temperature

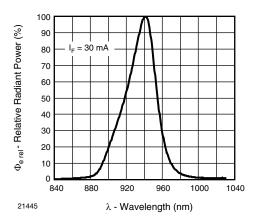


Fig. 8 - Relative Radiant Power vs. Wavelength

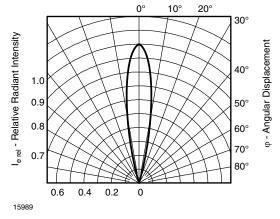
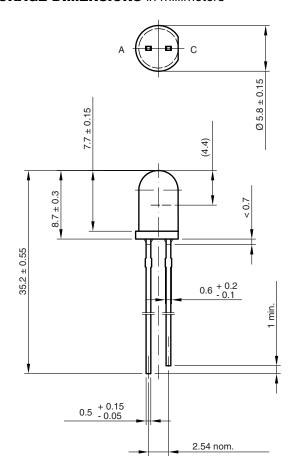


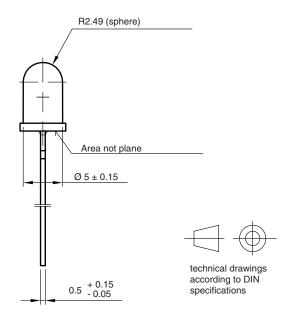
Fig. 9 - Relative Radiant Intensity vs. Angular Displacement



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PACKAGE DIMENSIONS in millimeters





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