

# Infrared LED

## L1939 series

$\phi 300 \mu\text{m}$  emission spot, no electrode in emission area



### Features

- Small emission spot:  $\phi 300 \mu\text{m}$
- Wide directivity
- High reliability, long life

### Applications

- Auto-focus
- Optical switches
- Mark sensors

#### ■ Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

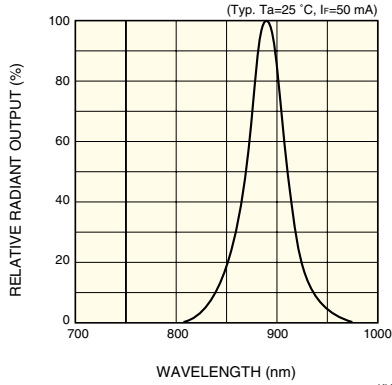
Parameter	Symbol	Condition	Value	Unit
Forward current	$I_F$		100	mA
Reverse voltage	$V_R$		5	V
Pulse forward current	$I_{FP}$	Pulse width=10 $\mu\text{s}$ Duty ratio=1 %	1.5	A
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +100 *	$^\circ\text{C}$

\* L1939 is guaranteed to resist temperature cycle test of up to 5 cycles.

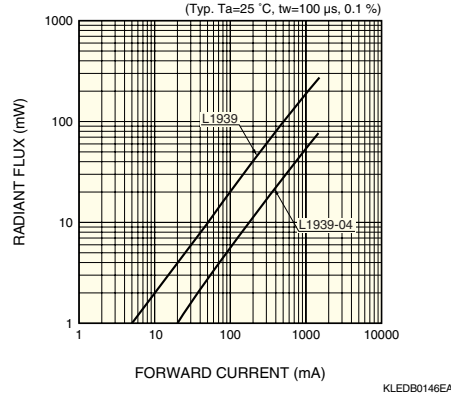
#### ■ Electrical and optical characteristics ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Condition	L1939			L1939-04			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak emission wavelength	$\lambda_p$	$I_F=50 \text{ mA}$	870	890	920	870	890	920	nm
Spectral half width	$\Delta\lambda$	$I_F=50 \text{ mA}$	-	50	-	-	50	-	nm
Forward voltage	$V_F$	$I_F=50 \text{ mA}$	-	1.4	1.5	-	1.4	1.5	V
Pulse forward voltage	$V_{FP}$	$I_F=1.5 \text{ A}$	-	2.7	3.4	-	2.7	3.4	V
Reverse current	$I_R$	$V_R=5 \text{ V}$	-	-	5	-	-	5	$\mu\text{A}$
Radiant flux	$\phi_e$	$I_F=50 \text{ mA}$	8.0	10.0	-	2.0	2.8	-	mW
Radiant illuminance	$P_E$	$I_F=50 \text{ mA}$	-	0.4	-	-	0.35	-	$\text{mW}/\text{cm}^2$
Rise time	$t_r$	$I_F=50 \text{ mA}$ , 10 to 90 %	-	0.45	0.7	-	0.45	0.7	$\mu\text{s}$
Fall time	$t_f$	$I_F=50 \text{ mA}$ , 90 to 10 %	-	0.45	0.7	-	0.45	0.7	$\mu\text{s}$

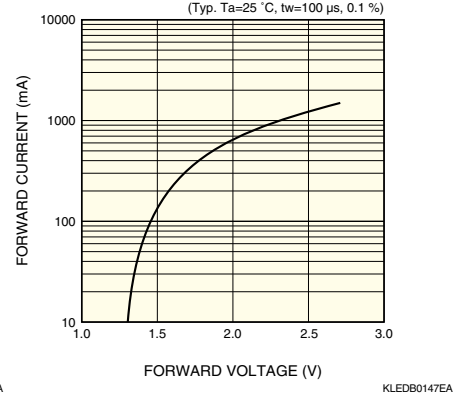
## Emission spectrum



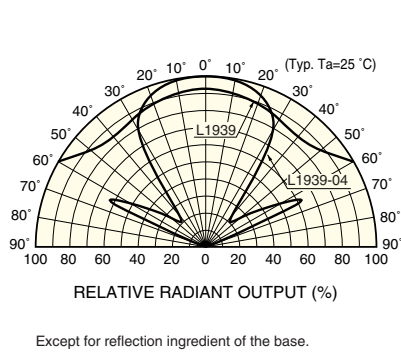
## Radiant flux vs. forward current



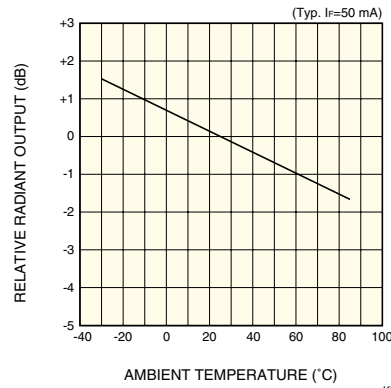
## Forward current vs. forward voltage



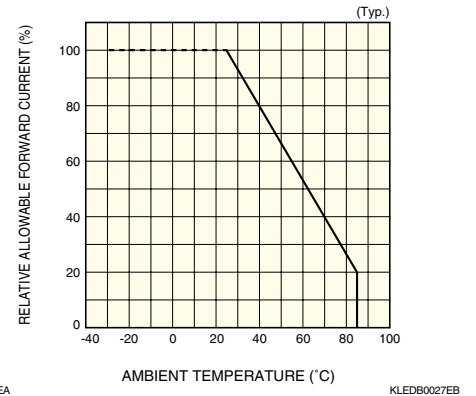
## Directivity



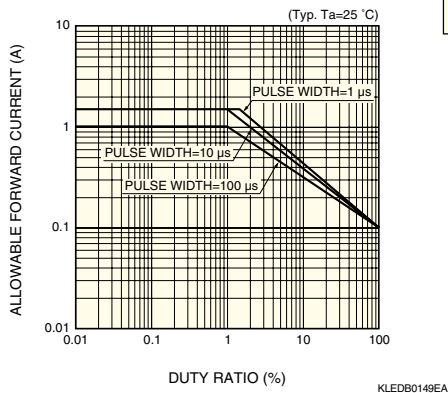
## Radiant output vs. ambient temperature



## Allowable forward current vs. ambient temperature



## Allowable forward current vs. duty ratio



## Dimensional outlines (unit: mm)

