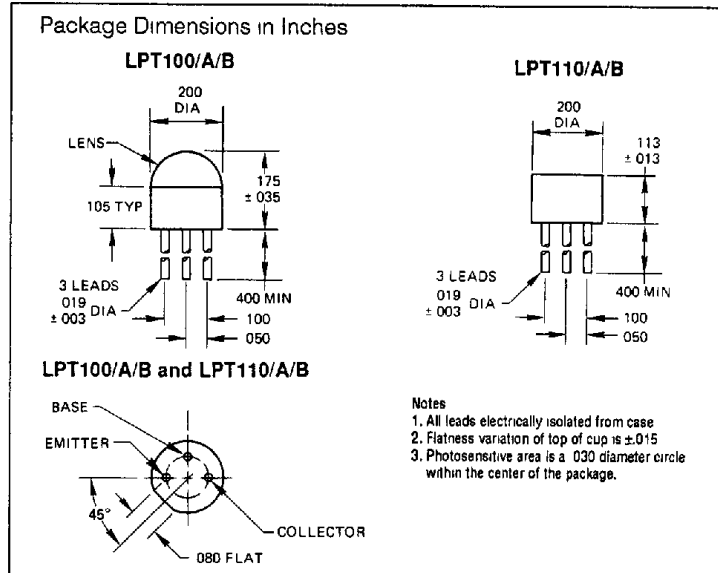
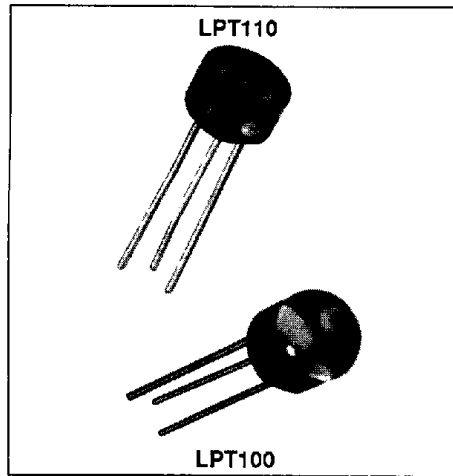


**SIEMENS**

**LPT100/100A/100B**  
**LPT110/110A/110B**  
**PHOTOTRANSISTOR**

T-41-61



**FEATURES**

- Collector Dark Current 0.25 nA Typ.
- Responsivity  
 0.6  $\mu\text{A}/\text{mW}/\text{cm}^2$  Min (Tungsten)  
 1.8  $\mu\text{A}/\text{mW}/\text{cm}^2$  Min (GaAs)
- Photo Current  
 0.2 mA Min (Tungsten)  
 0.6 mA Min (GaAs)
- Rise and Fall Time 2.8  $\mu\text{s}$  Typ
- Applications  
 Position Detector, Intrusion Alarm  
 Sensor, Optical Tachometer

**Maximum Ratings**

Maximum Temperature/Humidity	
Storage Temperature	... -55°C to +100°C
Operating Junction Temperature	... -55°C to +85°C
Relative Humidity at Temperature	... 98% at +65°C
Maximum Power Dissipation <sup>(1,2)</sup>	
Total Dissipation at +25°C	
Case Temperature	... .200 mW
Total Dissipation at +25°C	
Ambient Temperature	... .100 mW
Maximum Voltages <sup>(3)</sup>	
$BV_{CB0}$ Collector to Base Voltage	... .50 V
$LV_{CE0}$ Collector to Emitter Sustaining Voltage	... .30 V
Maximum Current	
$I_C$ Collector Current	... .100 mA

**Notes**

- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- These ratings give a maximum junction temperature of +85°C and junction to case thermal resistance of +300°C/W (derating factor of 3.33 mW/°C) and a junction to ambient thermal resistance of +600°C/W (derating factor of 1.67 mW/°C).
- Measured with radiation flux intensity of less than 0.1  $\mu\text{W}/\text{cm}^2$  over the spectrum from 100 to 1500 nm.
- Measured at noted irradiance as emitted from a tungsten filament lamp at a color temperature of 2854° K.
- No electrical connection to emitter lead.
- Measured with a tungsten lamp (2854° K) with a 950 nm filter.
- No electrical connection to base lead.
- Rise time is defined as the time required for  $I_{CE}$  to rise from 10% to 90% peak value. Fall time is defined as the time required for  $I_{CE}$  to decrease from 90% to 10% of peak value. Test conditions are  $I_C=4.0$  mA,  $V_{CE}=5.0$  V,  $R_L=100$  Ohms, GaAs Source.

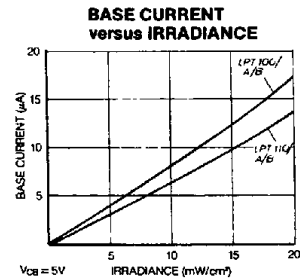
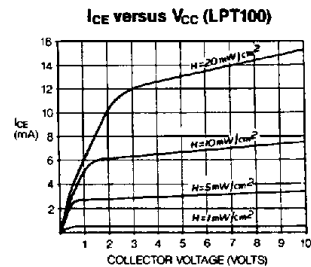
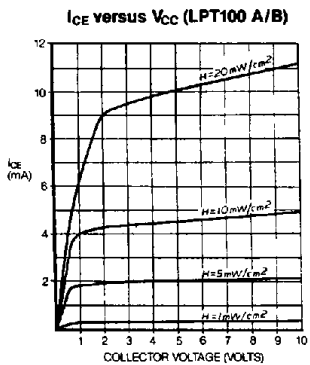
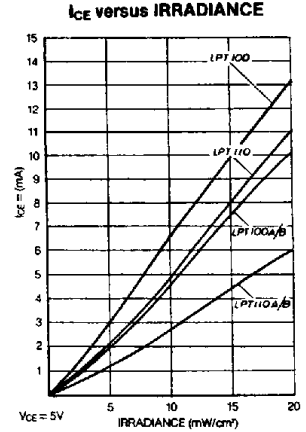
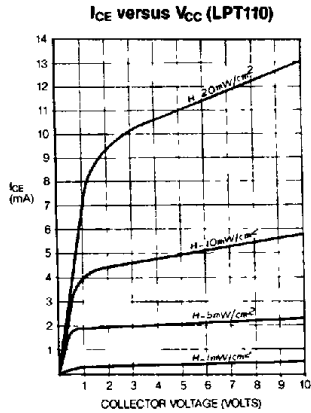
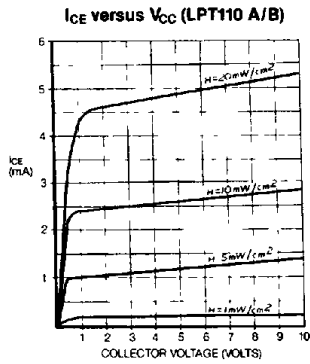
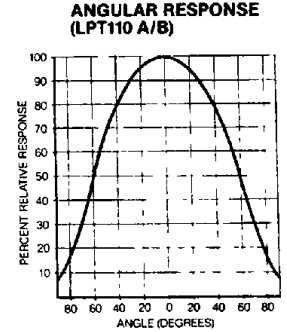
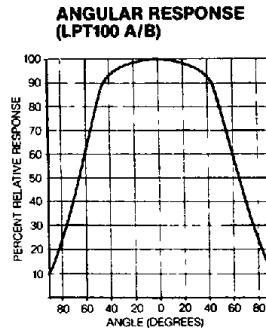
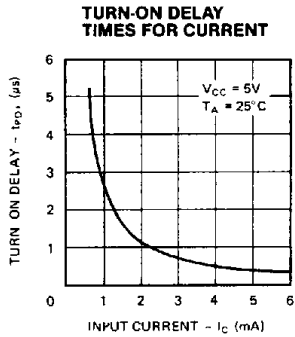
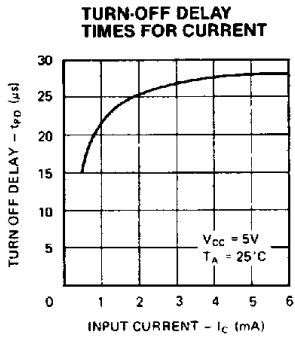
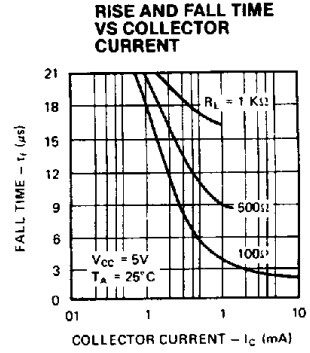
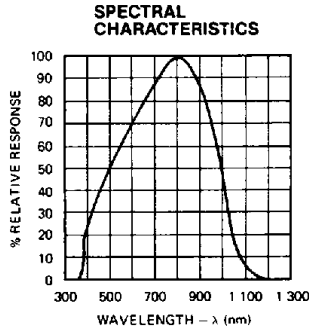
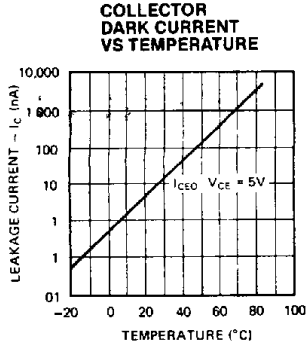
**Characteristics ( $T_{amb}=25^\circ\text{C}$ )**

	Min.	Typ.	Max.	
Collector Dark Current <sup>(3)</sup> ( $V_{CB}=10$ V)		0.25	25	nA
Collector Dark Current <sup>(3)</sup> (65°C) ( $V_{CB}=10$ V)		0.025	0.5	$\mu\text{A}$
Collector Dark Current <sup>(3)</sup> ( $V_{CE}=5.0$ V)		2.0	100	nA
Responsivity (Tungsten) <sup>(4,5)</sup> ( $V_{CB}=10$ V)	$R_{CB}$	0.6	1.6	$\mu\text{A}/\text{mW}/\text{cm}^2$
LPT100/A/B		0.6	1.0	
LPT110/A/B				
Responsivity (GaAs) <sup>(6,7)</sup> ( $V_{CB}=10$ V)	$R_{CB}$	1.8	4.8	$\mu\text{A}/\text{mW}/\text{cm}^2$
LPT100/A/B		1.8	3.0	
LPT110/A/B				
Photocurrent (Tungsten) <sup>(4,7)</sup> ( $V_{CE}=5.0$ V, $H=5.0$ mW/cm <sup>2</sup> )	$I_{CE(L)}$	0.2	1.4	mA
LPT100		0.2	2.1	
LPT110		1.0	2.0	3.0
LPT100A		0.6	1.2	1.8
LPT100B		1.3	2.0	2.6
LPT110B		0.8	1.2	1.6
Photocurrent (GaAs) <sup>(6,7)</sup> ( $V_{CE}=5.0$ V, $H=5.0$ mW/cm <sup>2</sup> )	$I_{CE(L)}$	0.6	4.2	mA
LPT100/A/B		0.6	2.7	
LPT110/A/B				
Light Current Rise Time <sup>(8)</sup>	$t_r, t_f$	2.8		$\mu\text{s}$
Collector to Emitter <sup>(4)</sup> Saturation Voltage ( $I_C=500$ $\mu\text{A}$ , $H=20$ mW/cm <sup>2</sup> )	$V_{CE(SAT)}$	0.16	0.4	
Collector to Base Breakdown <sup>(3)</sup> Voltage ( $I_C=100$ $\mu\text{A}$ )		50	120	V
Collector to Emitter <sup>(3)</sup> Sustaining Voltage ( $I_C=1.0$ mA)	$LV_{CE0}$	30	50	V
Emitter to Collector <sup>(3)</sup> Breakdown ( $I_{EC}=100$ $\mu\text{A}$ )	$BV_{ECC}$	7.0		V

Phototransistors/  
Photodarlington

T-41-66

TYPICAL OPTOELECTRONIC CHARACTERISTICS



LPT100/A/B, LPT110/A/B