TELEFUNKEN electronic
Creative Technologies

BPW 39

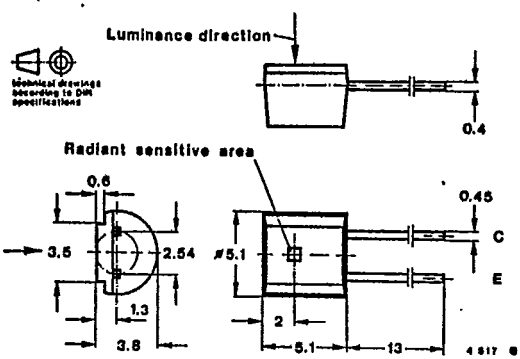
Silicon NPN Epitaxial Planar Phototransistor

Applications: Detector in electronic control and drive circuits

Features:

- Plastic case white clear
- Suitable for visible and near infrared radiation
- High sensitivity
- Wide angle of half sensitivity
- Flat window
- Irradiation direction vertical to mounting direction
- Compatible with CQX 18
- Selected in groups

Dimensions in mm



Angle of half sensitivity
$\pm\varphi = 65°$
Plastic case
≈ 10 B 3 DIN 41868
≈ JEDEC TO 92
Weight max. 0.4 g

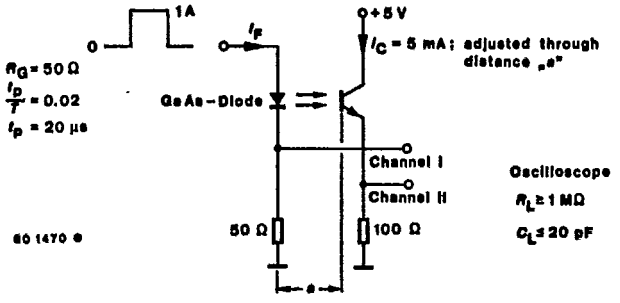
Absolute maximum ratings

Collector-emitter voltage	V_{CEO}	32	V
Emitter-collector voltage	V_{ECO}	5	V
Collector current	I_C	100	mA
Peak collector current $\frac{t_p}{T} = 0.5,\ t_p \leq 10$ ms	I_{CM}	200	mA
Total power dissipation $T_{amb} \leq 25$ °C	P_{tot}	150	mW
Junction temperature	T_j	85	°C
Storage temperature range	T_{stg}	–25...+85	°C
Soldering temperature $t \leq 3$ s	T_{sd} [1]	245	°C

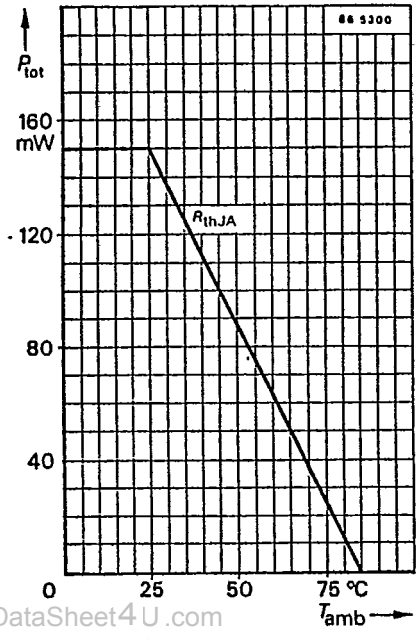
[1] Distance from the touching border ≧ 2 mm

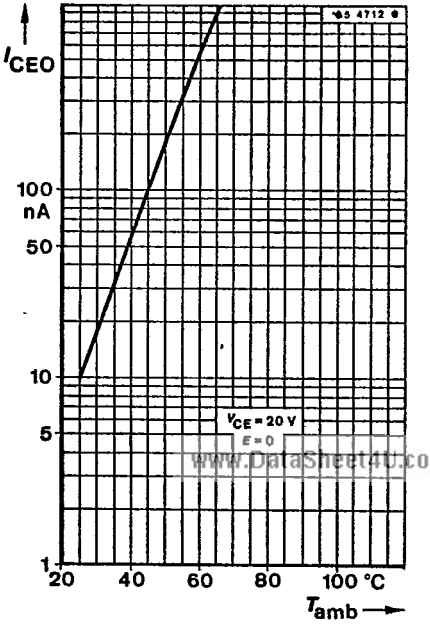
BPW 39

		Min.	Typ.	Max.	
Thermal resistance					
Junction ambient	R_{thJA}			400	K/W
Optical and electrical characteristics					
$T_{amb} = 25$ °C					
Collector dark current					
$V_{CE} = 20$ V, $E = 0$	I_{CEO} *)		10	100	nA
Collector light current					
$V_{CE} = 5$ V, $E_A = $ klx [1]					
Group A	I_{ca}		1		mA
Group B	I_{ca}		2		mA
$V_{CE} = 5$ V, $E_e = 1$ mW/cm², $\lambda_p = 950$ nm					
Group A	I_{ca_e} *)	0.15	0.3	0.5	mA
Group B	I_{ca} *)	0.4	0.6		mA
Peak wavelength sensitivity	λ_p		780		nm
Range of spectral bandwidth (50%)	$\lambda_{0.5}$		520...950		nm
Collector-emitter breakdown voltage					
$I_C = 1$ mA	$V_{(BR)CEO}$ *)	32			V
Collector-Emitter saturation voltage					
$I_C = 0.1$ mA, $E_e = 1$ mW/cm², $\lambda_p = 950$ nm	V_{CEsat} *)			0.3	V
Cut-off frequency					
$V_S = 5$ V, $I_C = 5$ mA, $R_L = 100\ \Omega$	f_c		170		kHz
Switching characteristics					
$V_S = 5$ V, $I_C = 5$ mA, $R_L = 100\ \Omega$, see test circuit					
Delay time	t_d		1.8		µs
Rise time	t_r		1.6		µs
Turn-on time	t_{on}		3.4		µs
Storage time	t_s		0.3		µs
Fall time	t_f		3		µs
Turn-off time	t_{off}		4		µs

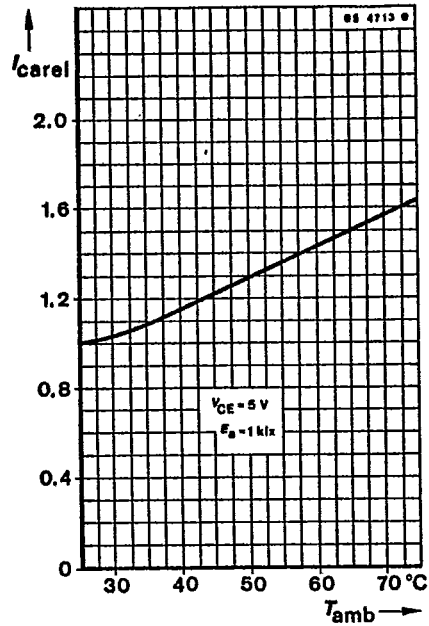


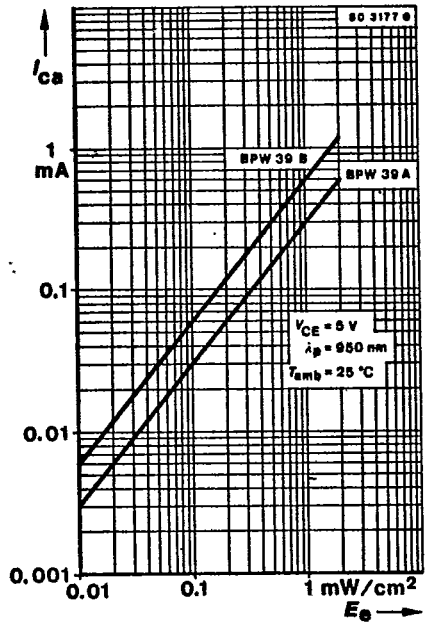
Test circuit

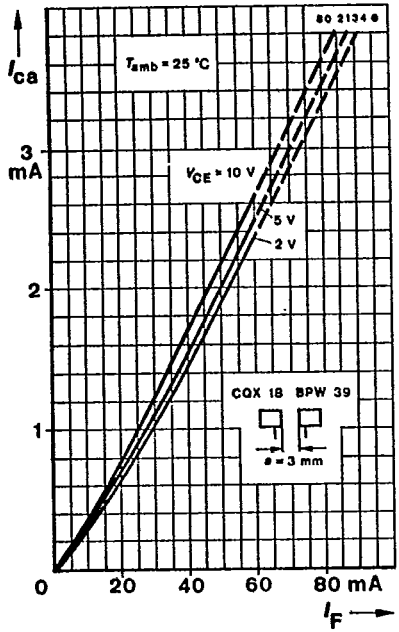


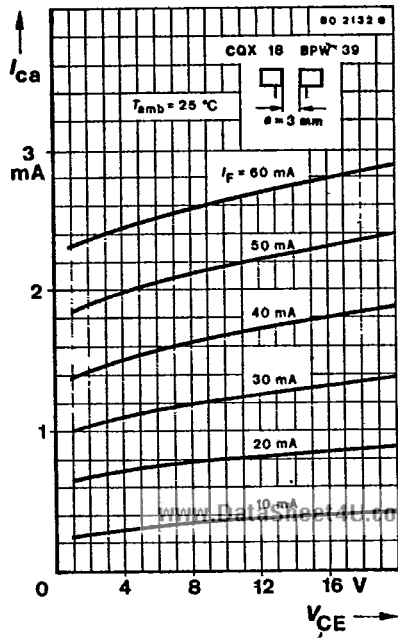


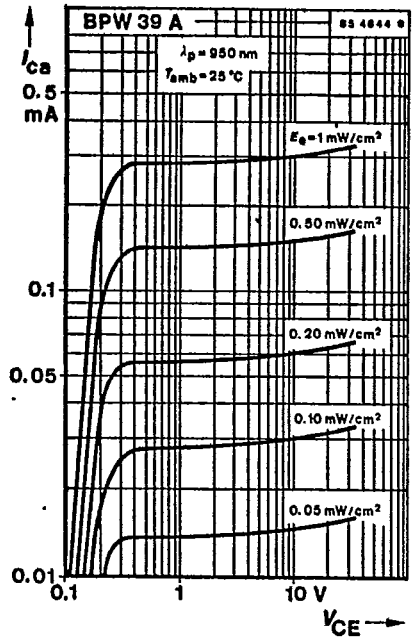
BPW 39

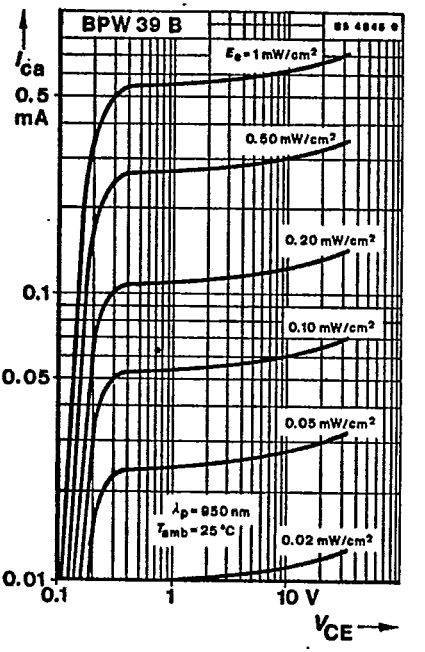


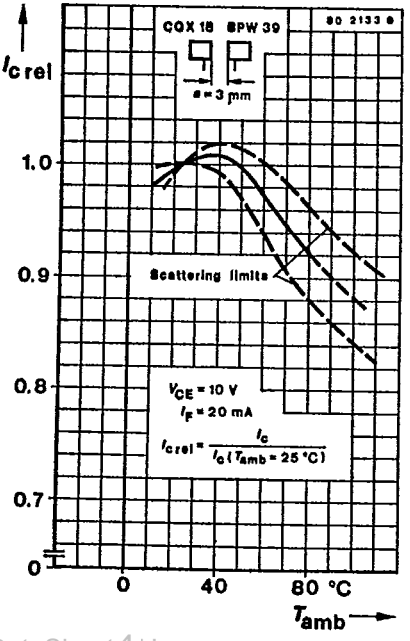


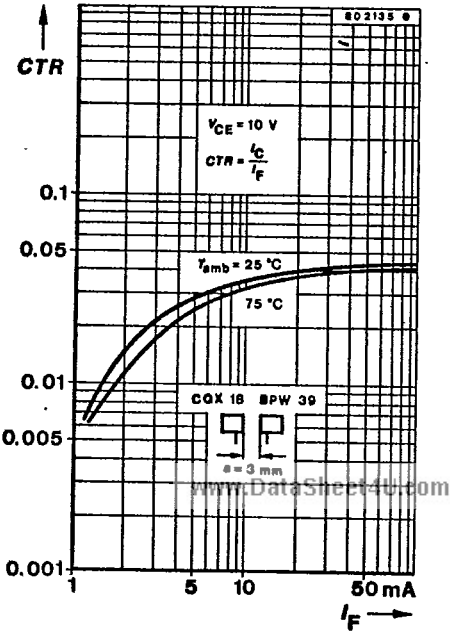












BPW 39