.050" NPN Phototransistor Chip — VTT-C50

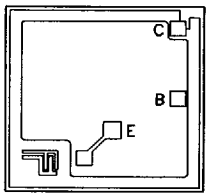
DESCRIPTION

EG&G Vactec fabricates its silicon photosensor chips using state-of-the-art planar diffusion technology. All chips are nitride passivated to ensure long term stability. Collector contact can be made through the backside of the chip. With some devices an additional collector contact is available on the top surface. Base and emitter contacts are available on the top surface of the chip.

A chromium/nickel metallization system, suitable for conductive epoxy die attach, is employed on the backside of the chip. Aluminum metallization is used for the bond pads on the top surface of the die.

Chips can be specially probed for current gain, breakdown voltage, dark current, etc., to satisfy a specific application. Please contact Vactec with your requirements.

CHIP DIMENSIONS inch (mm)



CHIP 50T
.050 (1.27) x .050 (1.27) x .017 (0.43) Thick
.00152 in^2 (0.981 mm^2) Exposed Sensitive Area
Collector Contact Is Also Back Side Of Chip

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures
Storage Temperature: -65°C to 150°C
Operating Temperature: -65°C to 125°C

Nominal Maximum Continuous
Power Dissipation @ 25°C: 50 mW *

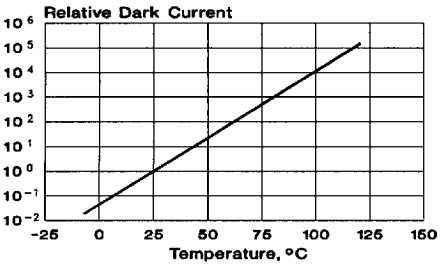
* Exact maximum power dissipation capabilities are determined by customer packaging and are not guaranteed by Vactec.

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also 50T curves, pg. 29)

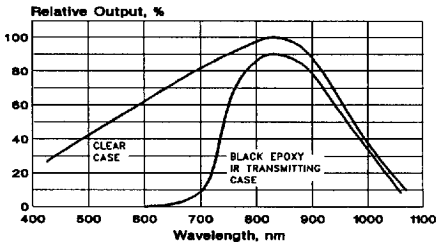
Symbol	Characteristic	Test Condition	Specification			Units
			Min.	Typ.	Max.	
H_{FE} (Beta)	dc Current Gain	I_B = 6.0 μA, V_{CE} = 5.0 V	200	350		
I_D	Dark Current	V_{CE} = 10 V, I_B = 0			100	nA
$V_{BR(CEO)}$	Collector Breakdown Voltage	I_C = 100 μA	30			Volts
$V_{BR(ECO)}$	Emitter Breakdown Voltage	I_E = 100 μA	6.0			Volts
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	I_C = 1.0 mA, I_B = 50 μA			0.4	Volts
t_R, t_F	Rise / Fall Time	I_C = 1.0 mA, R_L = 100 Ω		5		μsec
$S_{P(CBO)}$	Collector-Base Photometric Sensitivity	V_{CB} = 5.0 V, 2850 K		70		nA / fc
$S_{R(CBO)}$	Collector-Base Radiometric Sensitivity	V_{CB} = 5.0 V, 940 nm		4.0		nA /(μW/cm^2)
C_J	Collector-Base Capacitance	V_{CB} = 5.0 V, 1 MHz		23		pF

50T Phototransistor Typical Characteristic Curves

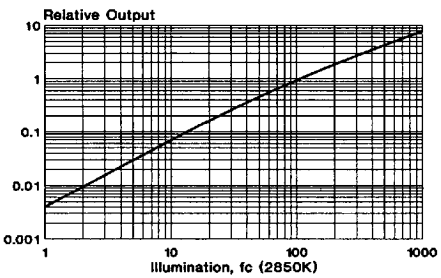
DARK CURRENT vs TEMPERATURE
(REFERRED TO 25°C)



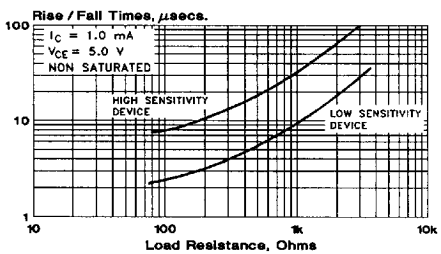
RELATIVE SPECTRAL RESPONSE
(REFERRED TO PEAK RESPONSE OF CLEAR CASE)



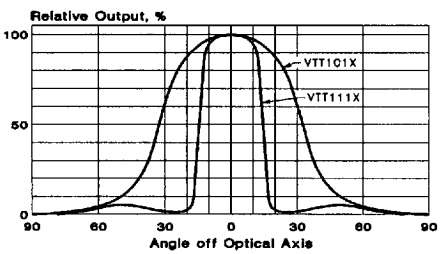
RELATIVE OUTPUT vs ILLUMINATION
(NORMALIZED AT 100 fc)



RESPONSE TIME



ANGULAR RESPONSE
TO-46 PACKAGES



ANGULAR RESPONSE
CERAMIC PACKAGES