

SDP8105

Silicon Photodarlington

FEATURES

- T-1 plastic package
- 20° (nominal) acceptance angle
- Consistent optical properties
- Mechanically and spectrally matched to SEP8505 and SEP8705 infrared emitting diodes



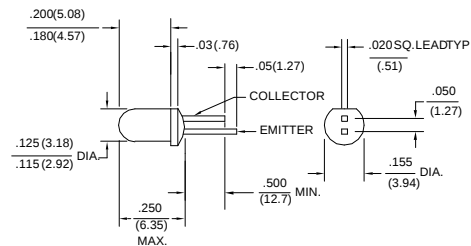
INFRA-55.TIF

DESCRIPTION

The SDP8105 is an NPN silicon photodarlington transfer molded in a T-1 black plastic package to minimize effect of visible ambient light. Transfer molding of this device assures superior optical centerline performance compared to other molding processes. Lead lengths are staggered to provide a simple method of polarity identification.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals $\pm 0.005(0.12)$
2 plc decimals $\pm 0.020(0.51)$



DIM_100.ds4

SDP8105

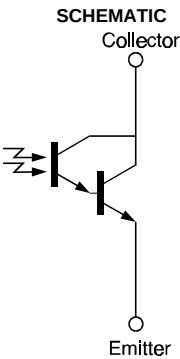
Silicon Photodarlington

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SDP8105-001	I _L	0.5			mA	V _{CE} =5 V H=0.025 mW/cm ² (1)
Collector Dark Current	I _{CEO}		250		nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	15			V	I _C =100 µA
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0			V	I _E =100 µA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		1.1		V	I _C =I _L /8 H=0.025 mW/cm ²
Angular Response (2)	Ø		20		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		75		µs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is an IRED with a peak wavelength of 935 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5 V
Power Dissipation	70 mW (1)
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.18 mW/°C.



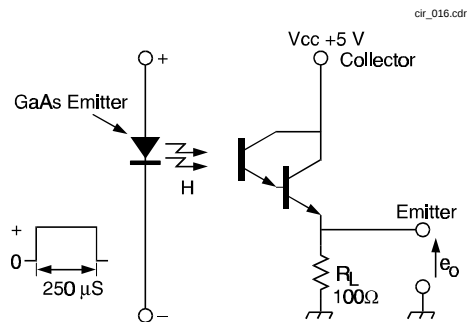
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SDP8105

Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

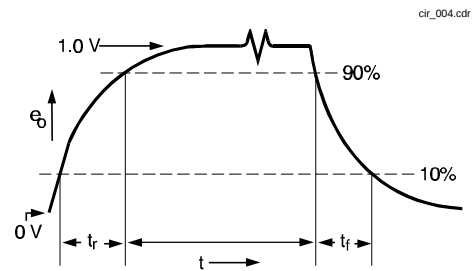


Fig. 1 Responsivity vs Angular Displacement

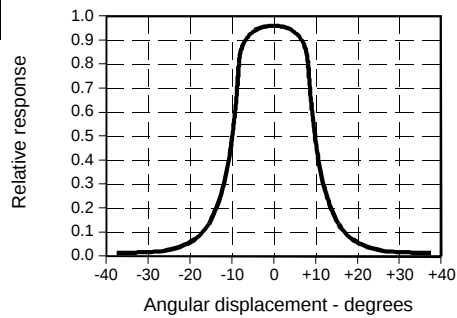


Fig. 2 Non-Saturated Switching Time vs Load Resistance

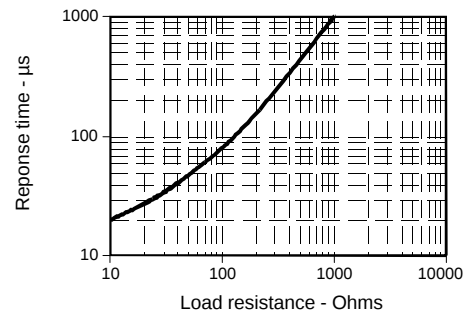
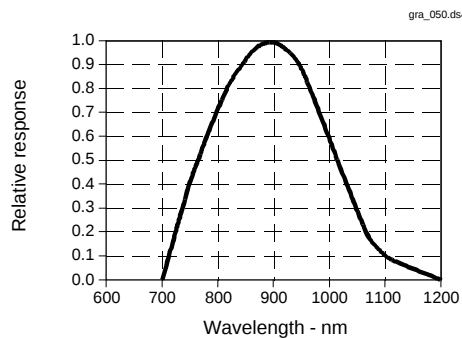


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values



SDP8105

Silicon Photodarlington

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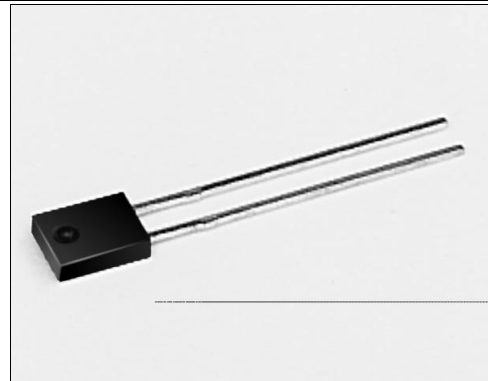


SDP8106

Silicon Photodarlington

FEATURES

- Side-looking plastic package
- 50° (nominal) acceptance angle
- Mechanically and spectrally matched to SEP8506 and SEP8706 infrared emitting diodes



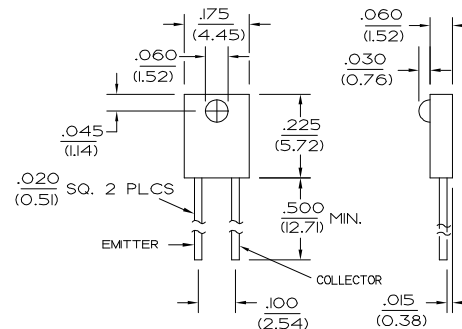
INFRA-79.TIF

DESCRIPTION

The SDP8106 is an NPN silicon photodarlington molded in a side-looking black plastic package to minimize effect of visible ambient light. The chip is positioned to accept radiation through a plastic lens from the side of the package.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals $\pm 0.005(0.12)$
2 plc decimals $\pm 0.020(0.51)$



DIM_023.cdr

SDP8106

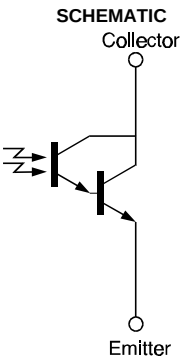
Silicon Photodarlington

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SDP8106-001	I _L	1.0			mA	V _{CE} =5 V H=1 mW/cm ² (1)
Collector Dark Current	I _{CEO}		250		nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	15			V	I _C =100 µA
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0			V	I _E =100 µA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		1.1		V	I _C =1 mA H=5 mW/cm ²
Angular Response (2)	Ø		50		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		75		µs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is an IRED with a peak wavelength of 935 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW (1)
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.78 mW/°C.



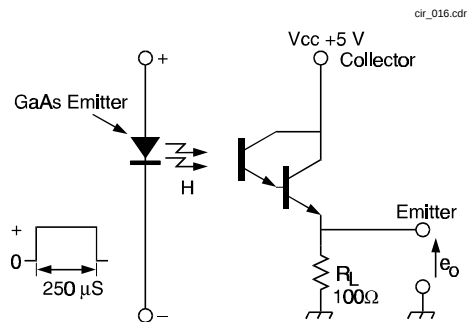
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SDP8106

Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

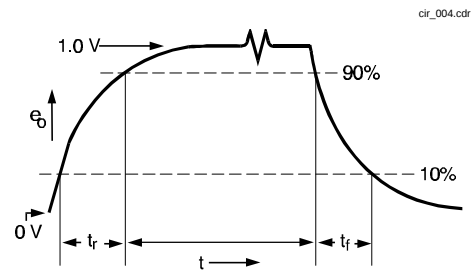


Fig. 1 Responsivity vs Angular Displacement

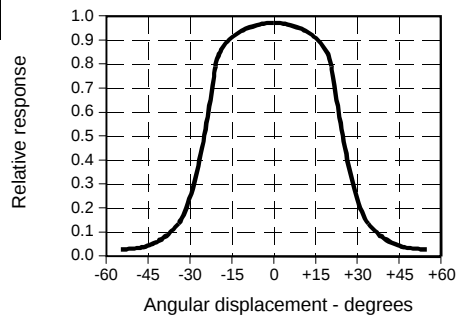


Fig. 2 Non-Saturated Switching Time vs Load Resistance

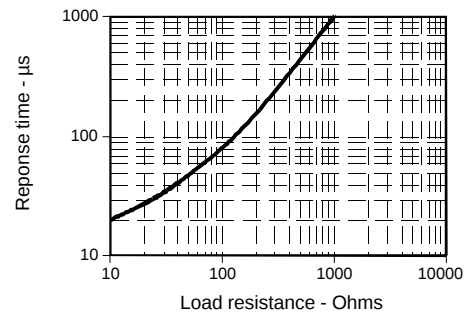
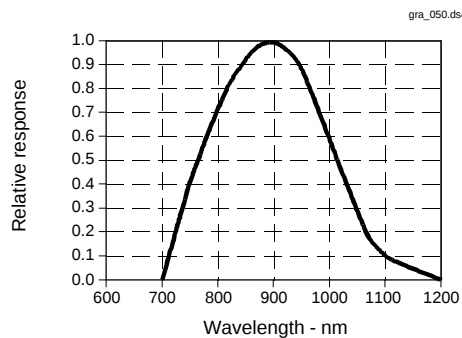


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values



SDP8106

Silicon Photodarlington

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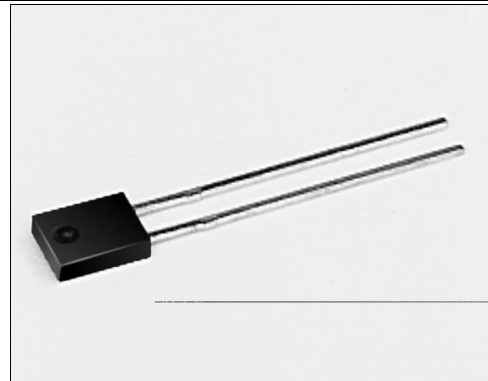


SDP8276

Silicon Photodiode

FEATURES

- Side-looking plastic package
- Linear response
- Fast response time
- Internal visible light rejection filter
- 50° (nominal) acceptance angle
- Mechanically and spectrally matched to SEP8506 and SEP8706 infrared emitting diodes



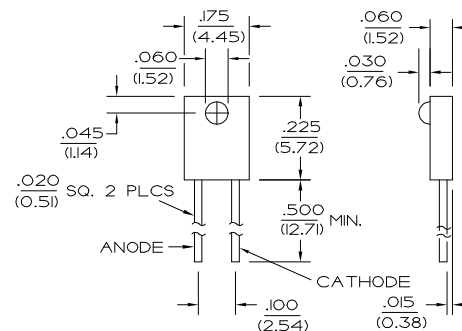
INFRA-79.TIF

DESCRIPTION

The SDP8276 is a PN silicon photodiode, transfer molded in a side- looking black plastic package, to minimize the effects of visible ambient light. The chip is positioned to accept radiant energy through a lens on the side of the package. The SDP8276 photodiode offers fast response time and a linear output. It is ideal for battery powered systems or anywhere power is at a premium.

OUTLINE DIMENSIONS in inches (mm)

Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)



DIM_074.cdr

SDP8276

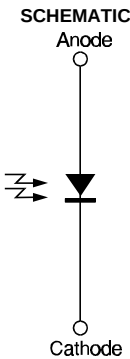
Silicon Photodiode

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current	I _L	4	7		μA	V _R =20 V H=1 mW/cm ² (1)
Dark Current	I _D			50	nA	H=0, V _R =20 VDC
Reverse Breakdown Voltage	V _{BR}	50			V	I _R =10 μA, H=0
Angular Response (2)	Ø		50		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		50		ns	V _R =20 V, R _L =50 Ω

Notes
1. The radiation source is an IRED with a peak wavelength of 935 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Operating Temperature Range	-40 to +85°C
Storage Temperature Range	-40 to +85°C
Soldering Temperature (5 sec)	240°C
Cathode Anode Voltage	50 V
Power Dissipation	100 mW (1)

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.78 mW/°C.



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SDP8276

Silicon Photodiode

SWITCHING TIME TEST CIRCUIT

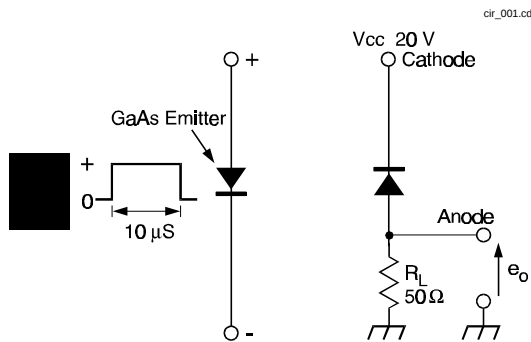


Fig. 1 Responsivity vs Angular Displacement

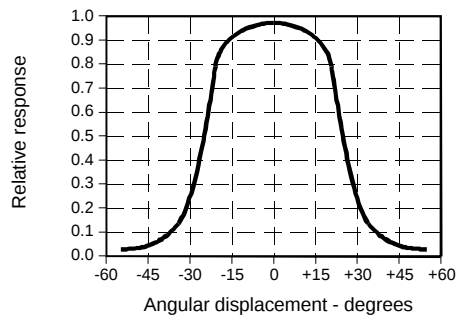
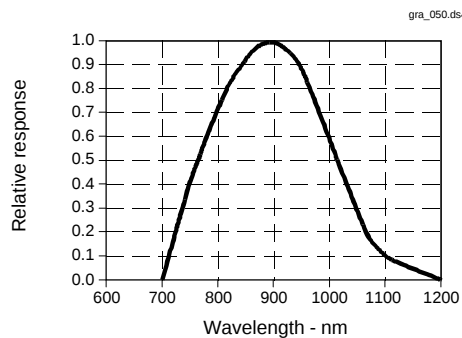


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values

SWITCHING WAVEFORM

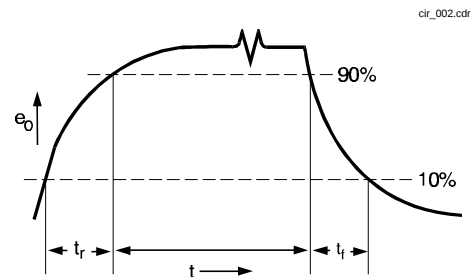
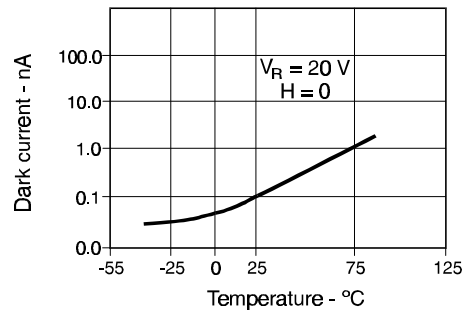


Fig. 2 Dark Current vs Temperature



SDP8276

Silicon Photodiode



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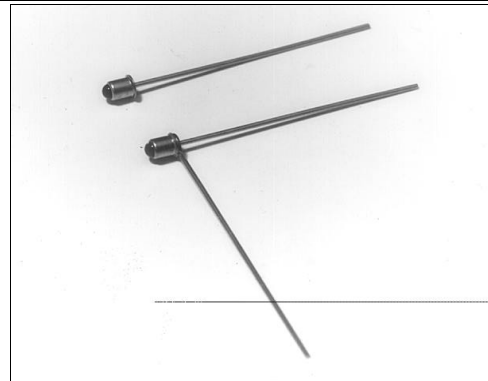
95

SD1410

Silicon Photodarlington

FEATURES

- Compact metal can coaxial package
- 24° (nominal) acceptance angle
- High output currents
- Wide sensitivity ranges
- Wide operating temperature range (-55°C to +125°C)
- Mechanically and spectrally matched to SE1450 and SE1470 infrared emitting diodes



INFRA-63.TIF

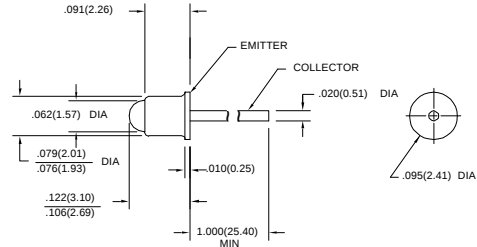
DESCRIPTION

The SD1410 is an NPN silicon photodarlington mounted in a glass lensed metal can coaxial package. The package may have a tab or second lead welded to the can as an optional feature (SD1410-XXXL). Both leads are flexible and may be formed as required to fit various mounting configurations.

OUTLINE DIMENSIONS in inches (mm)

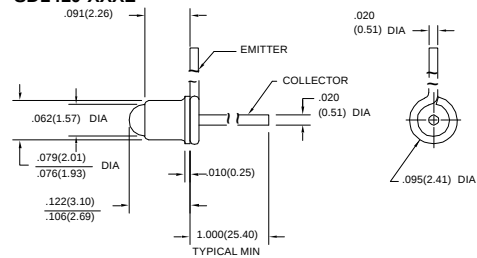
Tolerance 3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)

SD1410-XXX



DIM_20a.ds4

SD1410-XXXL



DIM_20b.ds4

SD1410

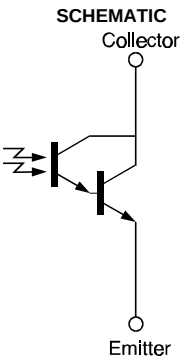
Silicon Photodarlington

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD1410-001, SD1410-001 L SD1410-002, SD1410-002 L SD1410-003, SD1410-003 L SD1410-004, SD1410-004 L	I _L	0.6 2.0 4.0 8.0			mA	V _{CE} =5 V H=0.2 mW/cm ² (1)
Collector Dark Current	I _{CEO}			250	nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage	V(BR)CEO	15			V	I _C =100 μA
Emitter-Collector Breakdown Voltage	V(BR)ECO	5.0			V	I _E =100 μA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			1.1	V	I _C =1 mA H=1 mW/cm ²
Angular Response (2)	Ø		24		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		75		μs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5 V
Power Dissipation	75 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.71 mW/°C.



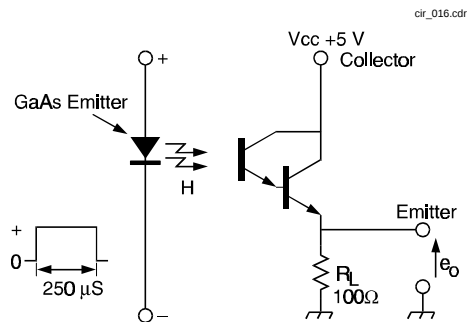
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SD1410

Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

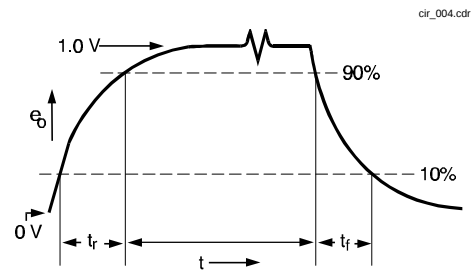


Fig. 1 Responsivity vs Angular Displacement

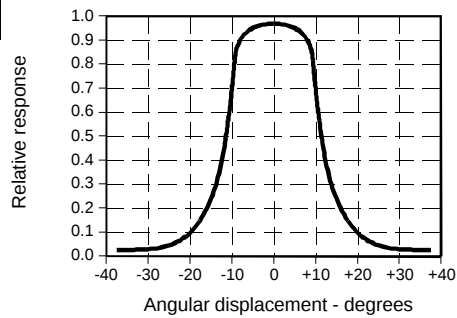


Fig. 2 Spectral Responsivity

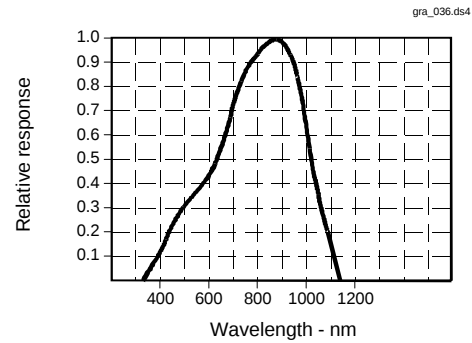
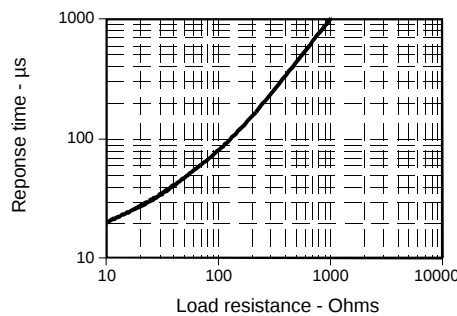


Fig. 3 Non-Saturated Switching Time vs Load Resistance



All Performance Curves Show Typical Values



SD1410

Silicon Photodarlington

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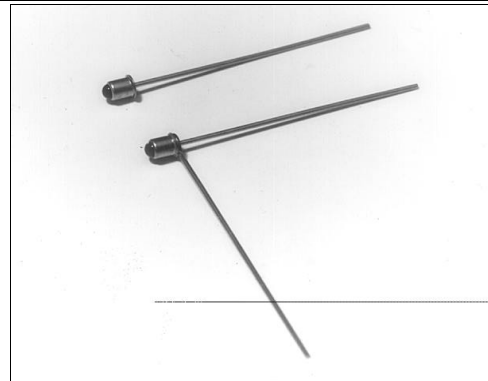
155

SD1420

Silicon Photodiode

FEATURES

- Compact, metal can coaxial package
- 24° (nominal) acceptance angle
- Wide operating temperature range (-55°C to +125°C)
- Mechanically and spectrally matched to SE1450 and SE1470 infrared emitting diodes



INFRA-63.TIF

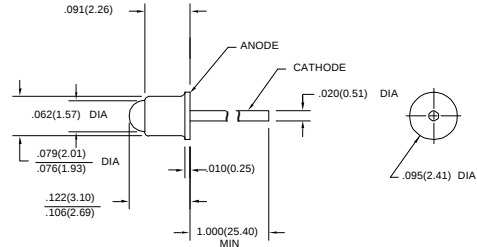
DESCRIPTION

The SD1420 is a PN junction silicon photodiode mounted in a glass lensed metal can coaxial package. The package may have a tab or second lead welded to the can as an optional feature (SD1420-XXXL). Both leads are flexible and may be formed as required to fit various mounting configurations.

OUTLINE DIMENSIONS in inches (mm)

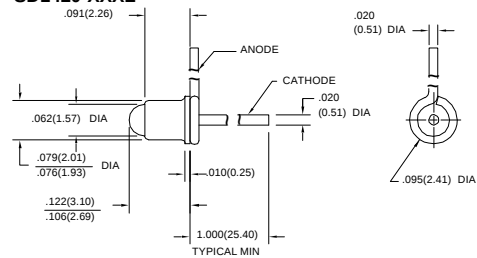
Tolerance 3 plc decimals $\pm 0.005(0.12)$
2 plc decimals $\pm 0.020(0.51)$

SD1420-XXX



DIM_10a.ds4

SD1420-XXXL



DIM_10b.ds4

SD1420

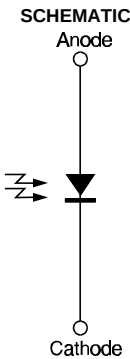
Silicon Photodiode

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD1420-002, SD1420-002L	I _L	5.0			μA	V _R =20 V H=5 mW/cm ² (1)
Dark Current	I _D			5.0	nA	V _R =20 V H=0
Reverse Breakdown Voltage	V _{BR}	50			V	I _R =10 μA
Angular Response (2)	Ø		24		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		50		ns	V _R =20 V R _L =50 Ω

Notes
 1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
 2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Cathode Anode Voltage	50 V
Power Dissipation	75 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
 1. Derate linearly from 25°C free-air temperature at the rate of 0.71 mW/°C.



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SD1420

Silicon Photodiode

SWITCHING TIME TEST CIRCUIT

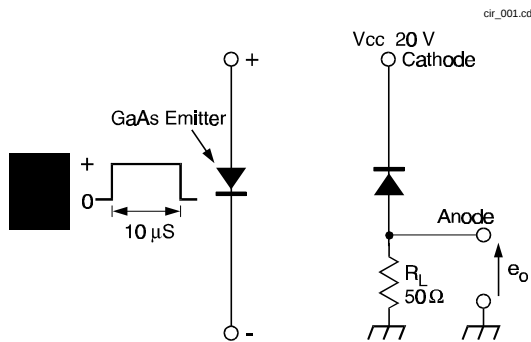
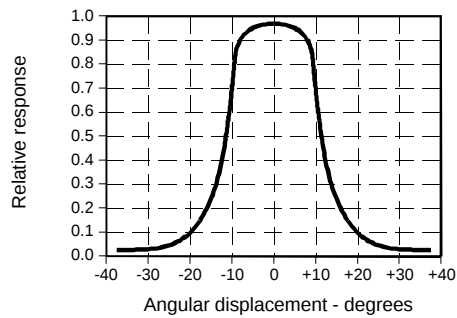


Fig. 1 Responsivity vs Angular Displacement



SWITCHING WAVEFORM

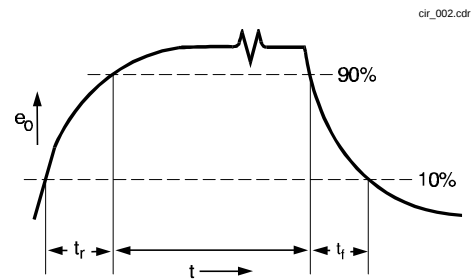


Fig. 2 Dark Current vs Temperature

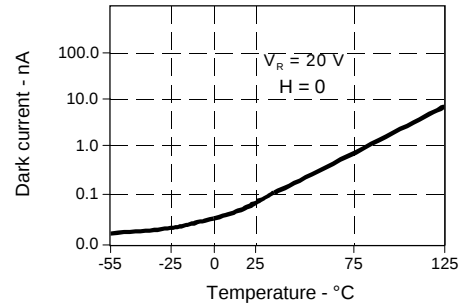
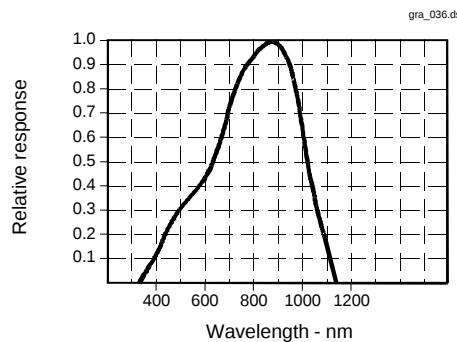


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values



SD1420

Silicon Photodiode



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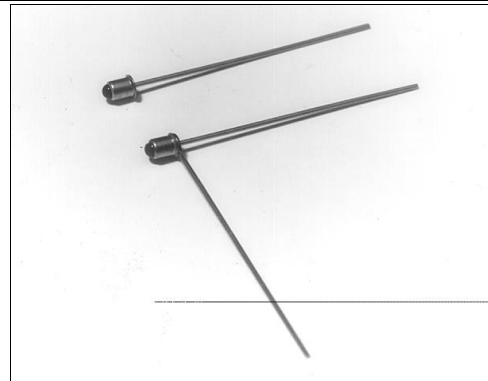


SD1440

Silicon Phototransistor

FEATURES

- Compact, metal can coaxial package
- 24° (nominal) acceptance angle
- Wide sensitivity ranges
- Wide operating temperature range (- 55°C to +125°C)
- Mechanically and spectrally matched to SE1450 and SE1470 infrared emitting diodes



INFRA-63.TIF

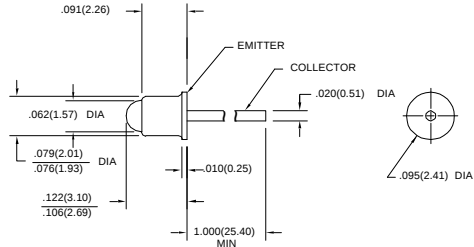
DESCRIPTION

The SD1440 is an NPN silicon phototransistor mounted in a glass lensed metal can coaxial package. The package may have a tab or second lead welded to the can as an optional feature (SD1440-XXXL). Both leads are flexible and may be formed to fit various mounting configurations.

OUTLINE DIMENSIONS in inches (mm)

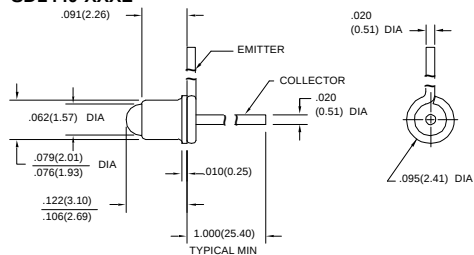
Tolerance 3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)

SD1440-XXX



DIM_12a.ds4

SD1440-XXXL



DIM_12b.ds4

SD1440

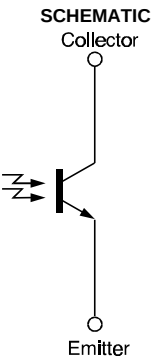
Silicon Phototransistor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD1440-001, SD1440-001 L SD1440-002, SD1440-002 L SD1440-003, SD1440-003 L SD1440-004, SD1440-004 L	I_L	0.7 1.5 3.0 6.0			mA	$V_{CE}=5\text{ V}$ $H=5\text{ mW/cm}^2$ (1)
Collector Dark Current	I_{CEO}			100	nA	$V_{CE}=10\text{ V}$, $H=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_C=0.4\text{ mA}$ $H=5\text{ mW/cm}^2$
Angular Response (2)	$\varnothing$		24		degr.	$I_F=\text{Constant}$
Rise And Fall Time	t_r, t_f		15		μs	$V_{CC}=5\text{ V}$, $I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	75 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.71 mW/°C.



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SD1440

Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

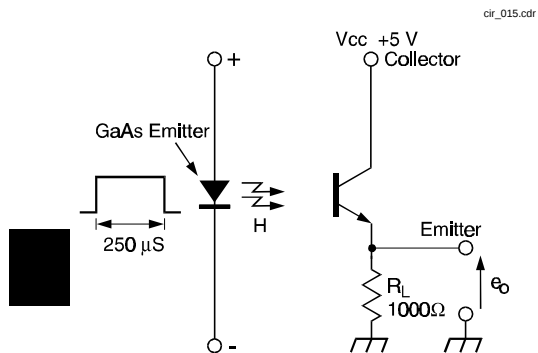
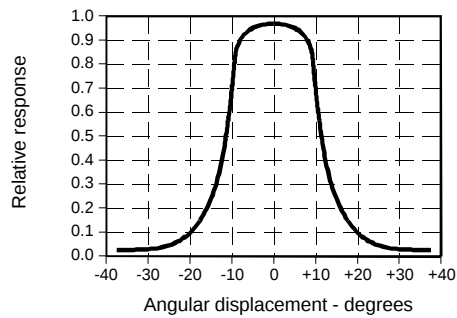


Fig. 1 Responsivity vs Angular Displacement



SWITCHING WAVEFORM

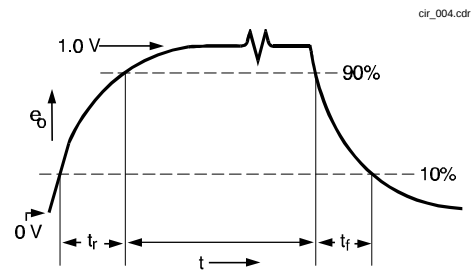


Fig. 2 Collector Current vs Ambient Temperature

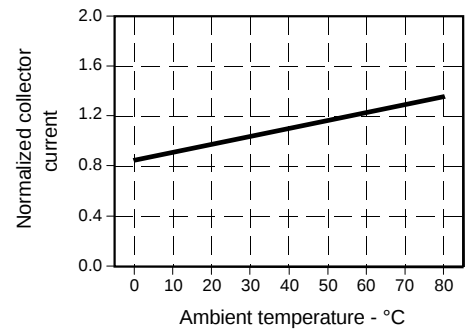


Fig. 3 Dark Current vs Temperature

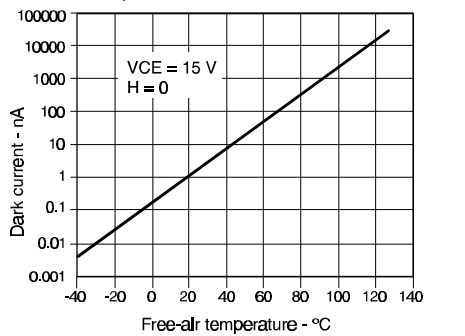
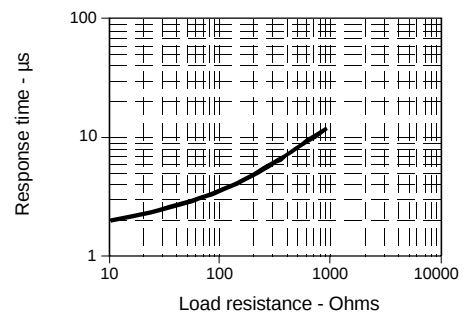


Fig. 4 Non-Saturated Switching Time vs Load Resistance



SD1440

Silicon Phototransistor

Fig. 5 Spectral Responsivity

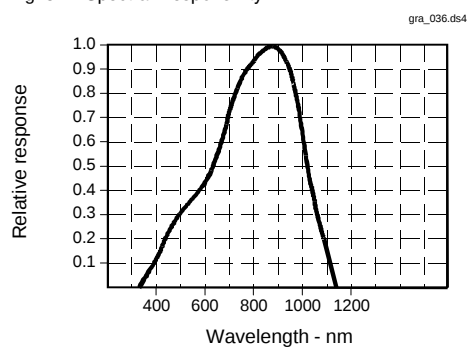
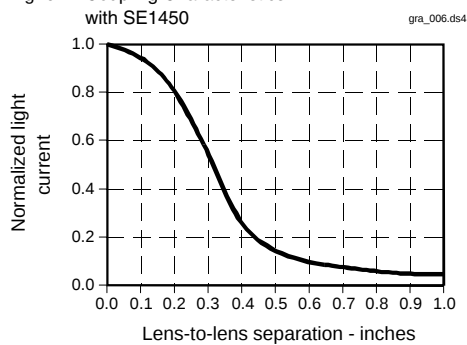


Fig. 6 Coupling Characteristics with SE1450



All Performance Curves Show Typical Values

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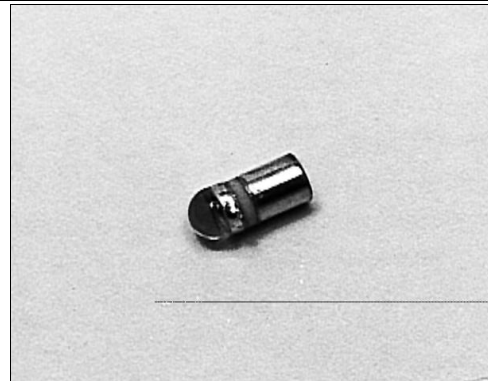
Honeywell

SD2410

Silicon Photodarlington

FEATURES

- Miniature, hermetically sealed, pill style, metal can package
- 48° (nominal) acceptance angle
- Wide operating temperature range (- 55°C to +125°C)
- Ideal for direct mounting to printed circuit boards
- Wide sensitivity ranges
- Mechanically and spectrally matched to SE2460 and SE2470 infrared emitting diodes



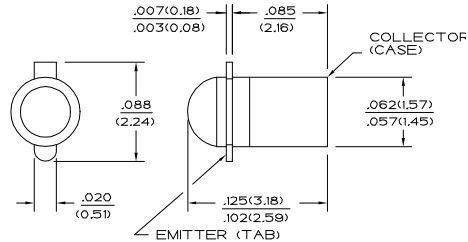
INFRA-1.TIF

DESCRIPTION

The SD2410 is an NPN silicon photodarlington mounted in a hermetically sealed glass lensed metal can package. This package directly mounts in double sided PC boards.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals $\pm 0.005(0.12)$
2 plc decimals $\pm 0.020(0.51)$



DIM_013.cdr

SD2410

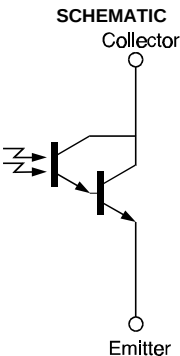
Silicon Photodarlington

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD2410-001 SD2410-002 SD2410-003	I _L	1.0 3.0 6.0			mA	V _{CE} =5 V H=1 mW/cm ² (1)
Collector Dark Current	I _{CEO}			250	nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	15			V	I _C =100 μA
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0			V	I _E =100 μA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		1.1		V	I _C =1 mA H=5 mW/cm ²
Angular Response (2)	Ø		48		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		75		μs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5 V
Power Dissipation	125 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.19 mW/°C.



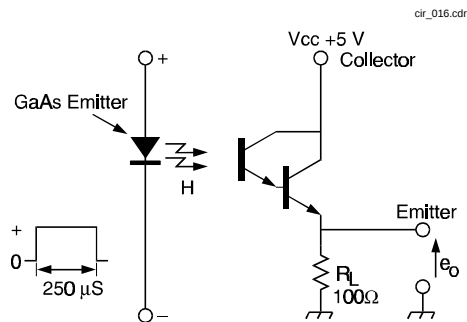
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SD2410

Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

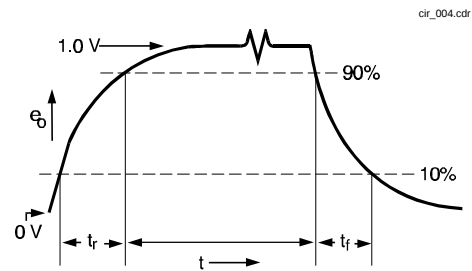


Fig. 1 Responsivity vs Angular Displacement

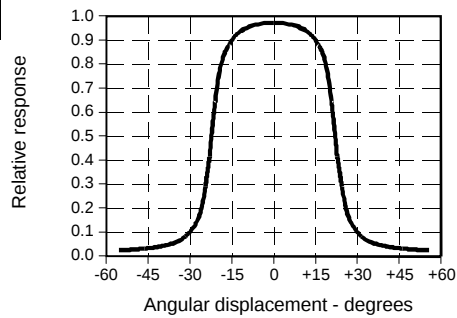


Fig. 2 Non-Saturated Switching Time vs Load Resistance

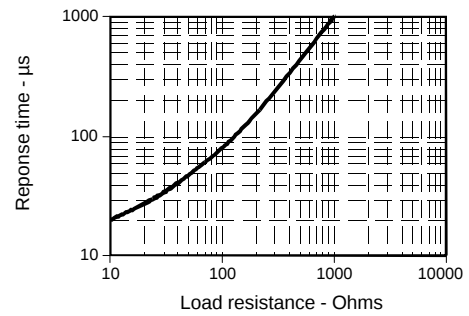
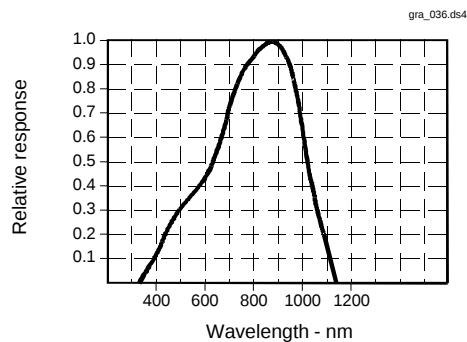


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values



SD2410

Silicon Photodarlington

Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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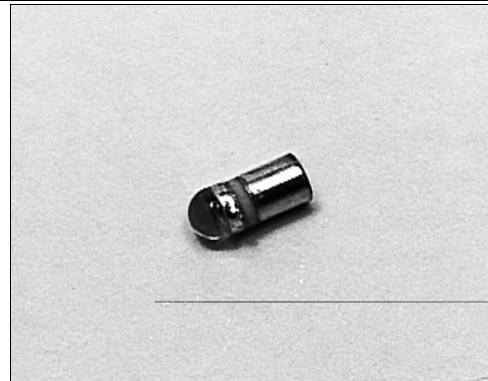


SD2420

Silicon Photodiode

FEATURES

- Miniature, hermetically sealed, pill style, metal can package
- 48° (nominal) acceptance angle
- Wide operating temperature range (- 55°C to +125°C)
- Ideal for direct mounting to printed circuit boards
- Mechanically and spectrally matched to SE2460 and SE2470 infrared emitting diodes



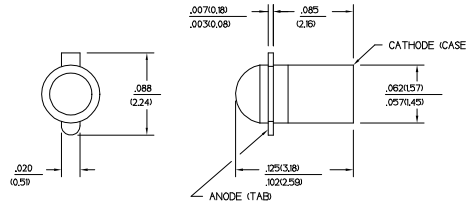
INFRA-1.TIF

DESCRIPTION

The SD2420 is a PN silicon photodiode mounted in a hermetically sealed, glass lensed, metal can package. This package directly mounts in double sided PC boards.

OUTLINE DIMENSIONS in inches (mm)

Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)



DIM_014.cdr

SD2420

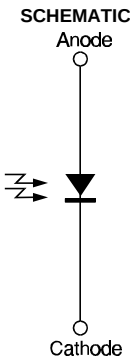
Silicon Photodiode

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)							
PARAMETER		SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD2420-002		I _L	7.0			μA	V _R =20 V H=20 mW/cm ² (1)
Dark Current		I _D			5.0	nA	V _R =20 V H=0
Reverse Breakdown Voltage		V _{BR}	50			V	I _R =10 μA
Angular Response (2)		Ø		48		degr.	I _F =Constant
Rise And Fall Time		t _r , t _f		50		ns	V _R =20 V R _L =50 Ω

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Cathode Anode Voltage	50 V
Power Dissipation	125 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.19 mW/°C.



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SD2420

Silicon Photodiode

SWITCHING TIME TEST CIRCUIT

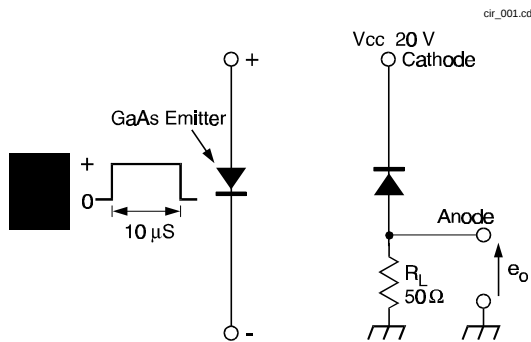
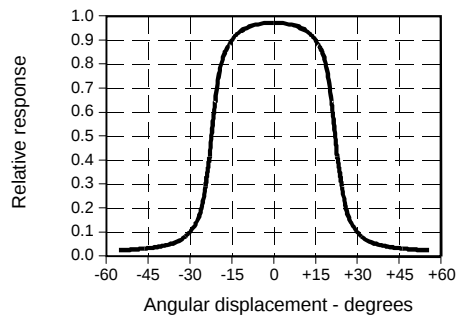


Fig. 1 Responsivity vs Angular Displacement



SWITCHING WAVEFORM

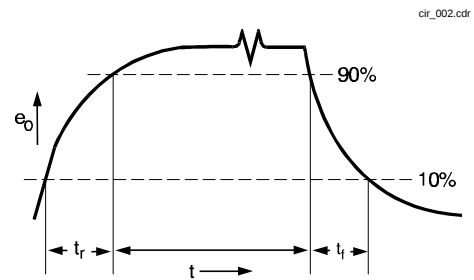


Fig. 2 Dark Current vs Temperature

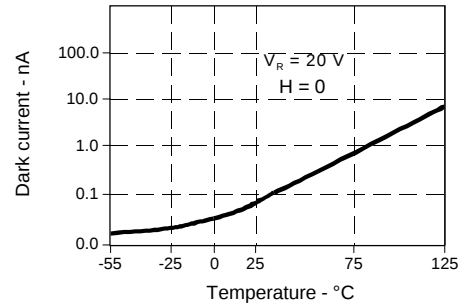
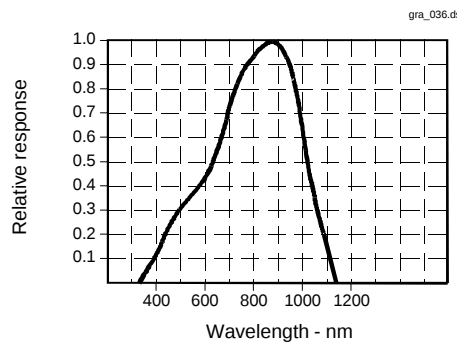


Fig. 3 Spectral Responsivity



All Performance Curves Show Typical Values



SD2420

Silicon Photodiode



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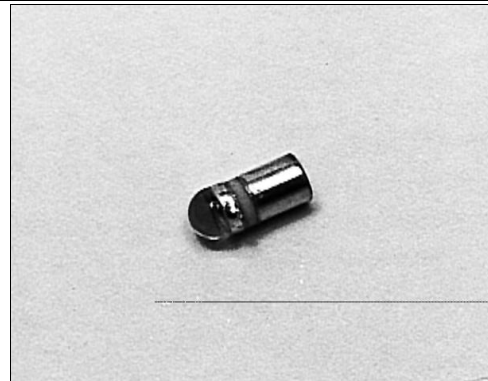


SD2440

Silicon Phototransistor

FEATURES

- Miniature, hermetically sealed, pill style, metal can package
- 48° acceptance angle
- Wide operating temperature range (- 55°C to +125°C)
- Ideal for direct mounting to printed circuit boards
- Wide sensitivity ranges
- Mechanically and spectrally matched to SE2460 and SE2470 infrared emitting diodes



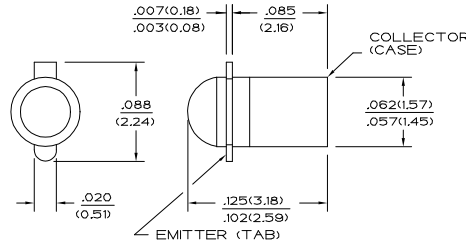
INFRA-1.TIF

DESCRIPTION

The SD2440 is an NPN silicon phototransistor mounted in a hermetically sealed glass lensed metal can package. This package directly mounts in a double sided PC board.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals $\pm 0.005(0.12)$
2 plc decimals $\pm 0.020(0.51)$



DIM_013.cdr

SD2440

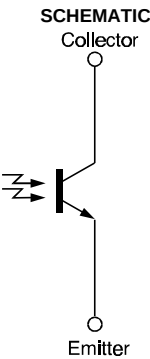
Silicon Phototransistor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD2440-001 SD2440-002 SD2440-003 SD2440-004	I_L	0.5 2.0 4.0 7.0			mA	$V_{CE}=5\text{ V}$ $H=20\text{ mW/cm}^2$ (1)
Collector Dark Current	I_{CEO}			100	nA	$V_{CE}=10\text{ V}$, $H=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_C=I_L/8$ $H=20\text{ mW/cm}^2$
Angular Response (2)	$\varnothing$		48		degr.	$I_F=\text{Constant}$
Rise And Fall Time	t_r, t_f		15		μs	$V_{CC}=5\text{ V}$, $I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	125 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.19 mW/°C.



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SD2440

Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

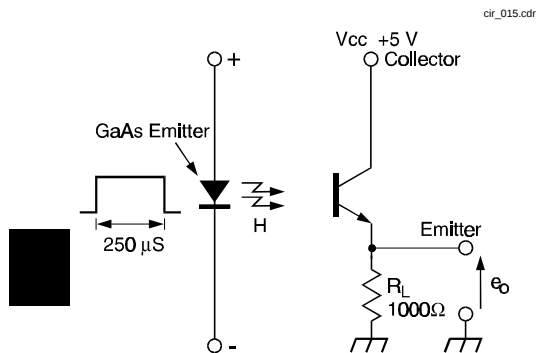


Fig. 1 Responsivity vs Angular Displacement

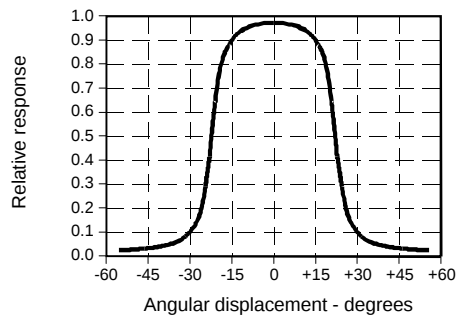
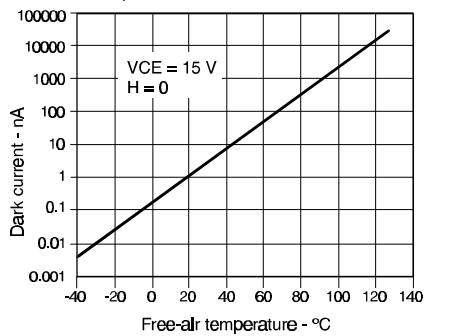


Fig. 3 Dark Current vs Temperature



SWITCHING WAVEFORM

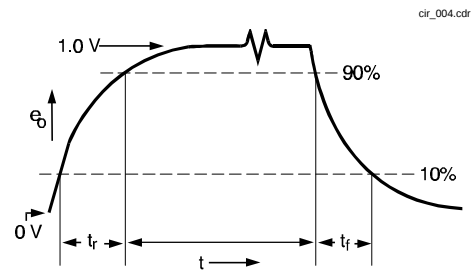


Fig. 2 Collector Current vs Ambient Temperature

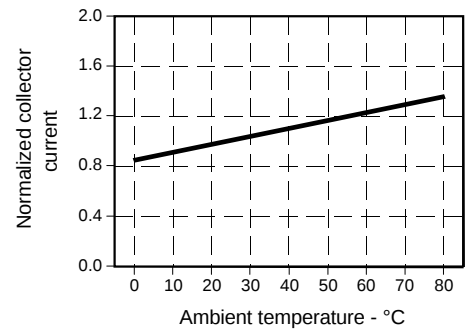
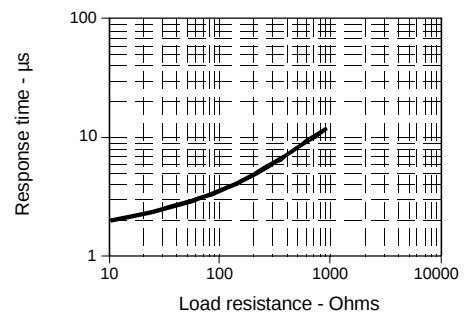


Fig. 4 Non-Saturated Switching Time vs Load Resistance



SD2440

Silicon Phototransistor

Fig. 5 Spectral Responsivity

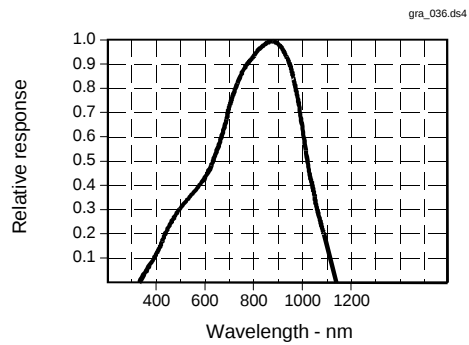
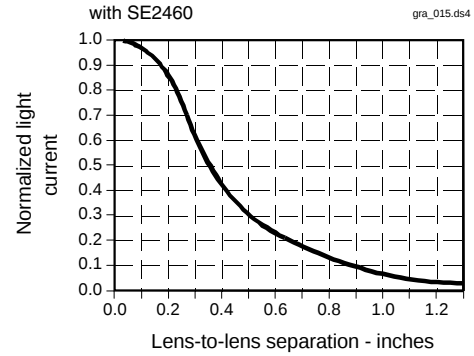


Fig. 6 Coupling Characteristics with SE2460



All Performance Curves Show Typical Values

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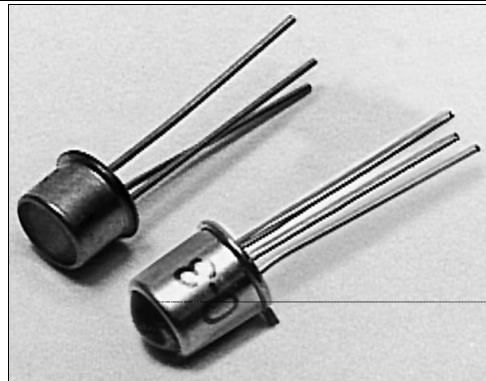
Honeywell

SD3410/5410

Silicon Photodarlington

FEATURES

- TO-46 metal can package
- Choice of flat window or lensed package
- 90° or 12° (nominal) acceptance angle option
- Wide operating temperature range (-55°C to +125°C)
- Wide sensitivity ranges
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



INFRA-17.TIF

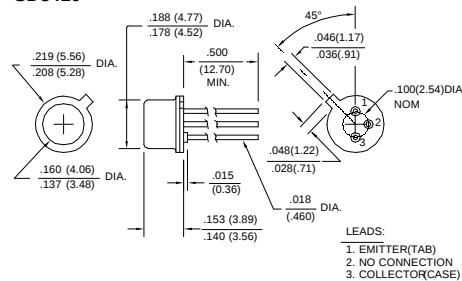
DESCRIPTION

The SD3410/5410 series consists of an NPN silicon photodarlington mounted in a TO-46 metal can package. The SD3410 has flat window cans providing a wide acceptance angle, while the SD5410 has glass lensed cans providing a narrow acceptance angle. The TO-46 packages are ideally suited for operation in hostile environments.

OUTLINE DIMENSIONS in inches (mm)

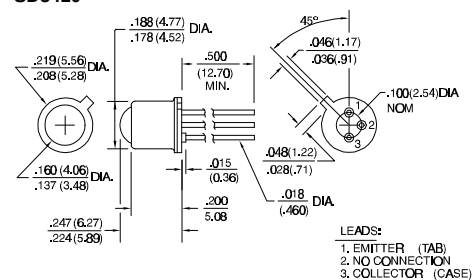
Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)

SD3410



DIM_021.ds4

SD5410



DIM_21b.ds4

SD3410/5410

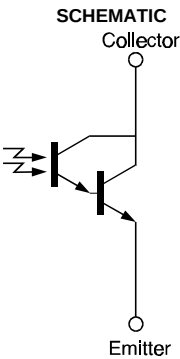
Silicon Photodarlington

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)							
PARAMETER		SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD3410-001 SD3410-002 SD3410-003 SD3410-004		I _L	0.6 2.0 4.0 8.0			mA	V _{CE} =5 V H=2 mW/cm ² (1)
Light Current SD5410-001 SD5410-002 SD5410-003		I _L	2.0 4.0 8.0			mA	V _{CE} =5 V H=0.2 mW/cm ² (1)
Collector Dark Current		I _{CEO}			250	nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage		V _{(BR)CEO}	15			V	I _C =100 μA
Emitter-Collector Breakdown Voltage		V _{(BR)ECO}	5.0			V	I _E =100 μA
Collector-Emitter Saturation Voltage SD3410 SD5410		V _{CE(SAT)}			1.1	V	I _C =1 mA H=2 mW/cm ² H=0.2 mW/cm ²
Angular Response (2) SD3410 SD5410		Ø		90 12		degr.	I _F =Constant
Rise And Fall Time		t _r , t _f		75		μs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5 V
Power Dissipation	150 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.43 mW/°C.



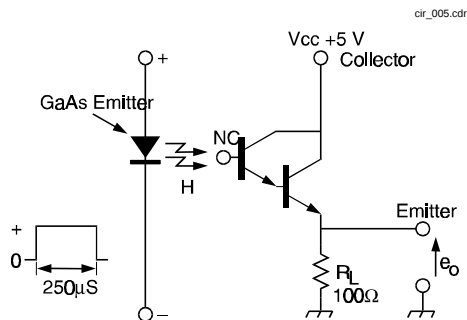
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Honeywell

SD3410/5410

Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

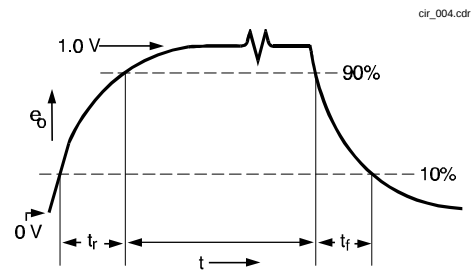


Fig. 1 Responsivity vs Angular Displacement (SD3410)

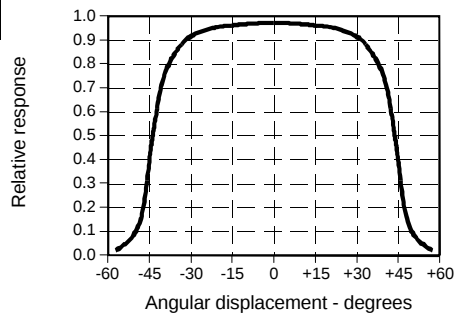


Fig. 2 Responsivity vs Angular Displacement (SD5410)

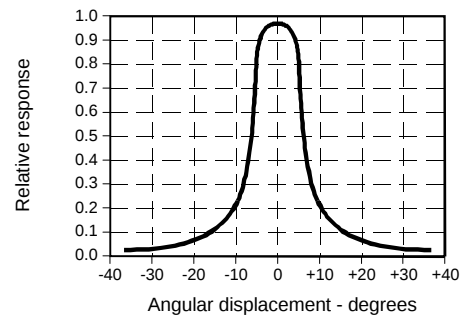


Fig. 3 Non-Saturated Switching Time vs Load Resistance

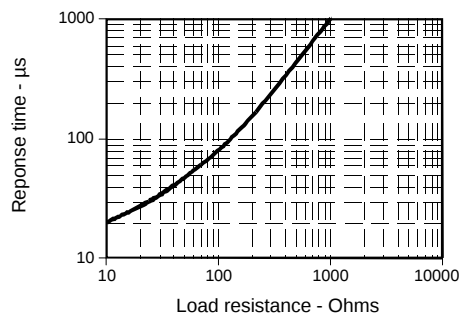
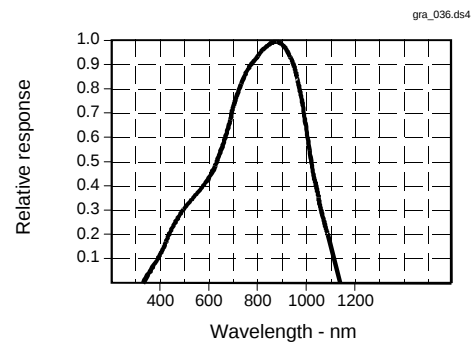


Fig. 4 Spectral Responsivity



All Performance Curves Show Typical Values

SD3410/5410

Silicon Photodarlington

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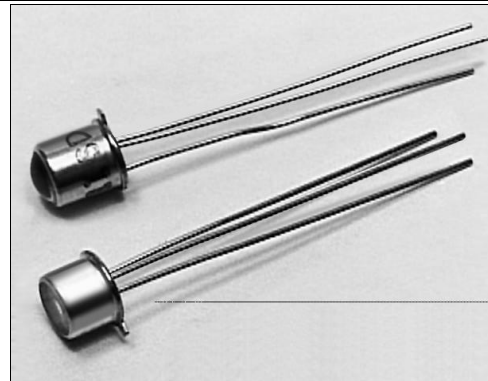
163

SD3421/5421

Silicon PIN Photodiode

FEATURES

- TO-46 metal can package
- Choice of flat window or lensed package
- 90° or 18° (nominal) acceptance angle option
- Fast response time
- Wide operating temperature range (-55°C to +125°C)
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



INFRA-57.TIF

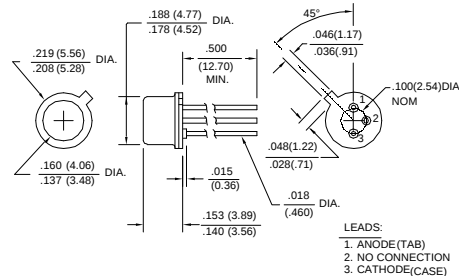
DESCRIPTION

The SD3421/5421 series consists of PIN photodiodes mounted in a TO-46 metal can package. The SD3421 utilizes flat window cans providing a wide acceptance angle, while the SD5421 employs glass lensed cans providing a narrow acceptance angle. The TO-46 packages are ideally suited for operation in hostile environments.

OUTLINE DIMENSIONS in inches (mm)

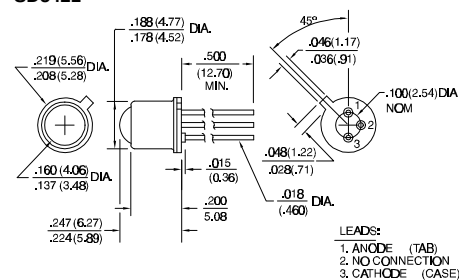
Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)

SD3421



DIM_011.ds4

SD5421



DIM_11b.cdr

SD3421/5421

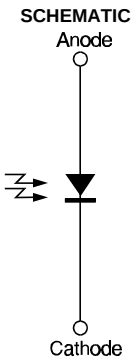
Silicon PIN Photodiode

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD3421-002 SD5421-002	I _L	10.0 40.0			μA	V _R =20 V H=5 mW/cm ² (1)
Dark Current	I _D			20	nA	V _R =20 V H=0
Reverse Breakdown Voltage	V _{BR}	75			V	I _R =10 μA
Angular Response (2) SD3421 SD5421	Ø		90 18		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		15		ns	V _R =20 V R _L =50 Ω

Notes
 1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
 2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Cathode Anode Voltage	75 V
Power Dissipation	150 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
 1. Derate linearly from 25°C free-air temperature at the rate of 1.43 mW/°C.



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SD3421/5421

Silicon PIN Photodiode

SWITCHING TIME TEST CIRCUIT

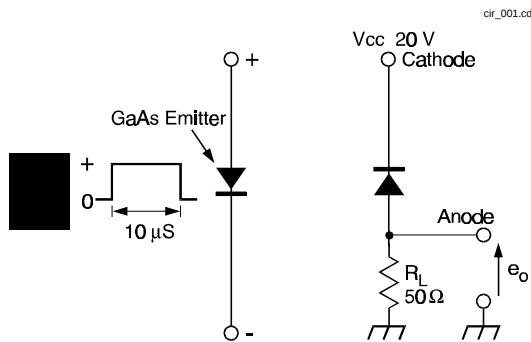
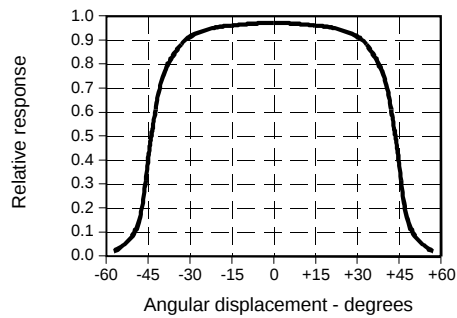


Fig. 1 Responsivity vs Angular Displacement (SD3421)



SWITCHING WAVEFORM

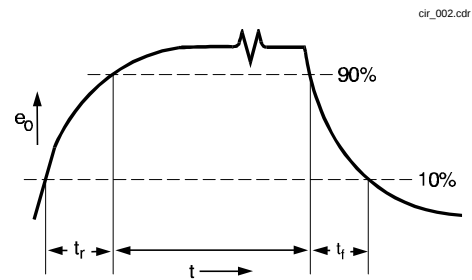


Fig. 2 Responsivity vs Angular Displacement (SD5421)

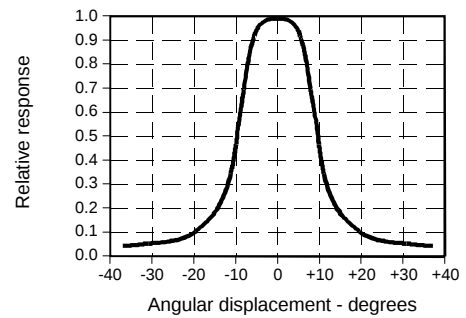


Fig. 3 Dark Current vs Temperature

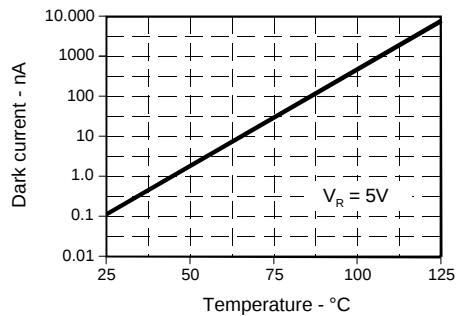
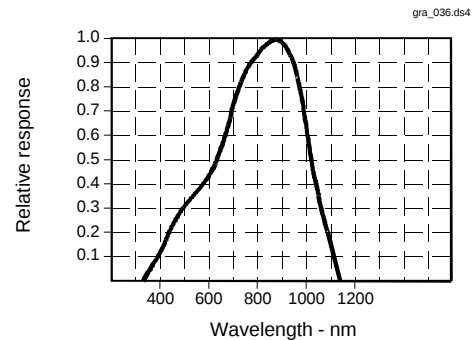


Fig. 4 Spectral Responsivity



All Performance Curves Show Typical Values

SD3421/5421

Silicon PIN Photodiode



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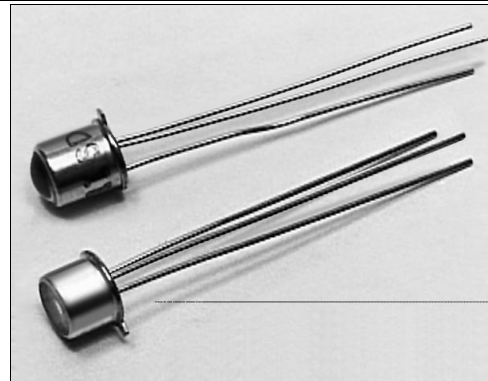
91

SD3443/5443

Silicon Phototransistor

FEATURES

- TO-46 metal can package
- Choice of flat window or lensed package
- 90° or 18° (nominal) acceptance angle option
- Wide operating temperature range (-55°C to +125°C)
- External base connection for added control
- High sensitivity
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



INFRA-57.TIF

DESCRIPTION

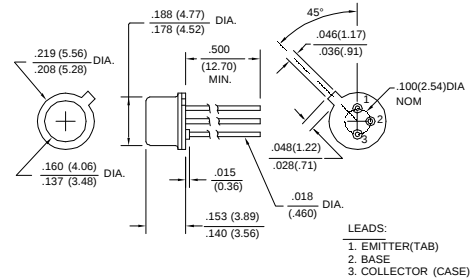
The SD3443/5443 series consists of an NPN silicon phototransistor mounted in a TO-46 metal can package. The SD3443 has flat window cans providing a wide acceptance angle, while the SD5443 has glass lensed cans providing a narrow acceptance angle. The TO-46 packages are ideally suited for operation in hostile environments.

The base is connected on all SD3443 and SD5433 standard products.

OUTLINE DIMENSIONS in inches (mm)

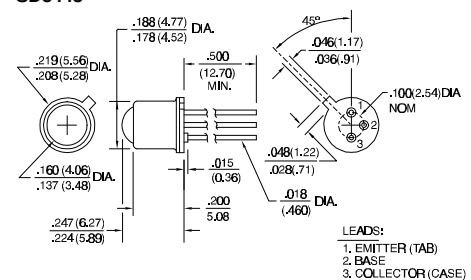
Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)

SD3443



DIM_015.ds4

SD5443



DIM_15b.ds4

SD3443/5443

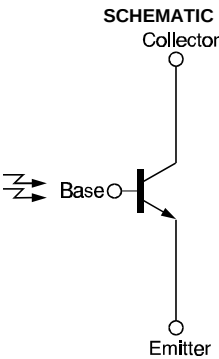
Silicon Phototransistor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SD3443-001 SD3443-002 SD3443-003 SD5443-001 SD5443-002 SD5443-003 SD5443-004	I_L	0.50 1.00 2.00 1.00 4.00 8.00 16.0			mA	$V_{CE}=5\text{ V}$ $H=5\text{ mW/cm}^2$ (1)
Collector Dark Current	I_{CEO}			100	nA	$V_{CE}=10\text{ V}$, $H=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.4		V	$I_C=0.4\text{ mA}$ $H=5\text{ mW/cm}^2$
Angular Response (2) SD3443 SD5443	$\emptyset$		90 18		degr.	$I_F=\text{Constant}$
Rise And Fall Time	t_r, t_f		15		μs	$V_{CC}=5\text{ V}$, $I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	150 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.43 mW/°C.



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SD3443/5443

Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

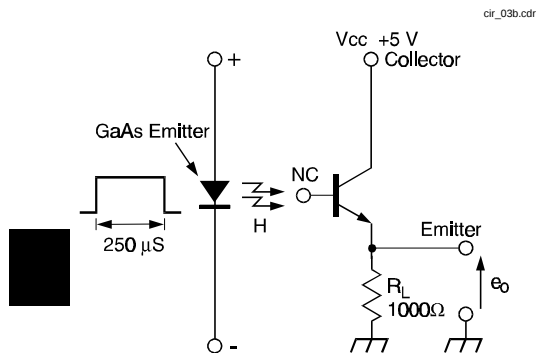
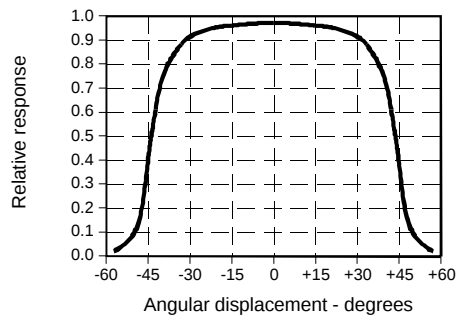


Fig. 1 Responsivity vs Angular Displacement (SD3443)



SWITCHING WAVEFORM

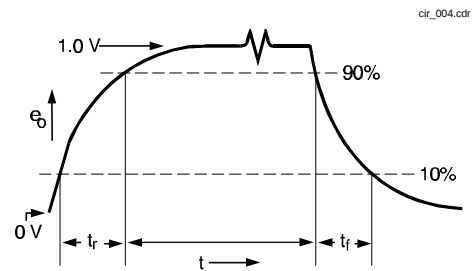


Fig. 2 Responsivity vs Angular Displacement (SD5443)

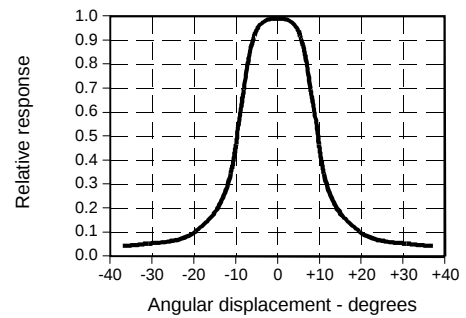


Fig. 3 Dark Current vs Temperature

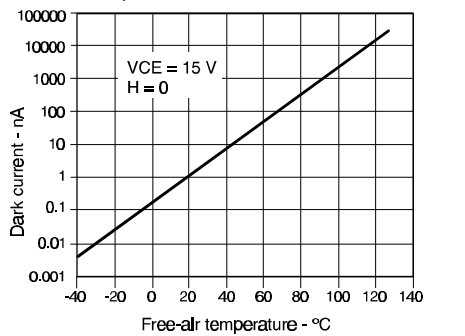
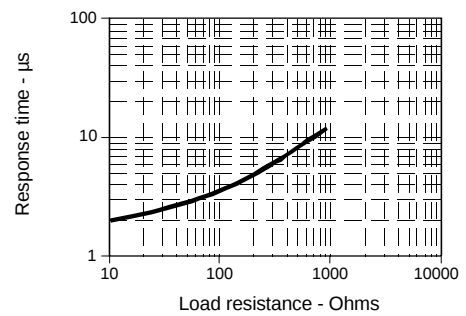


Fig. 4 Non-Saturated Switching Time vs Load Resistance



SD3443/5443

Silicon Phototransistor

Fig. 5 Spectral Responsivity

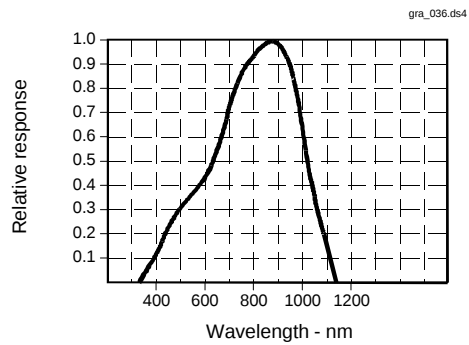


Fig. 6 Coupling Characteristics
SE3450 with SD3443

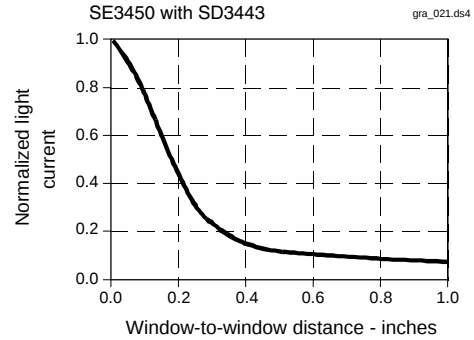


Fig. 7 Coupling Characteristics
SE5450 with SD5443

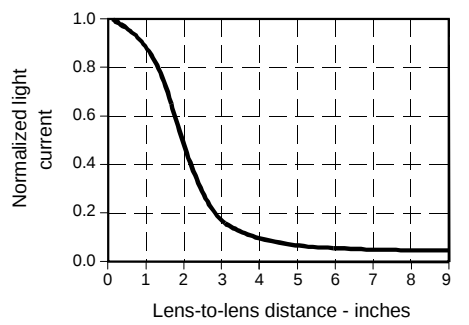
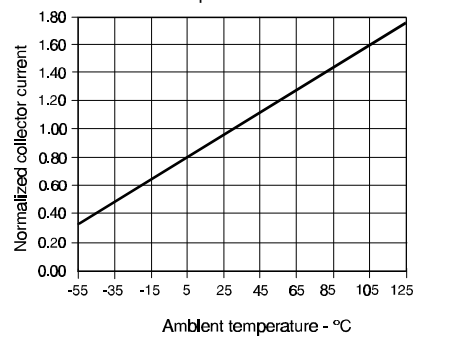


Fig. 8 Collector Current vs
Ambient Temperature



All Performance Curves Show Typical Values

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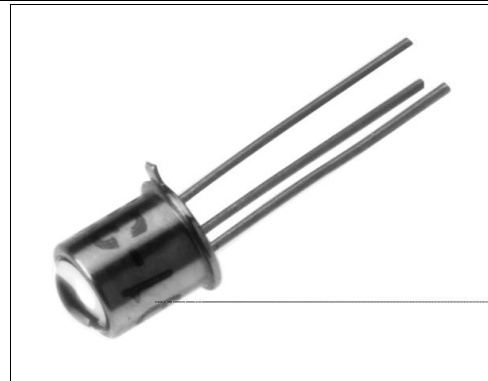
Honeywell

SD5491

Silicon Phototransistor

FEATURES

- TO-18 metal can package
- 12° (nominal) acceptance angle
- Wide operating temperature range (-55°C to +125°C)
- Fast response time
- Wide sensitivity ranges
- External base connection for added control
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



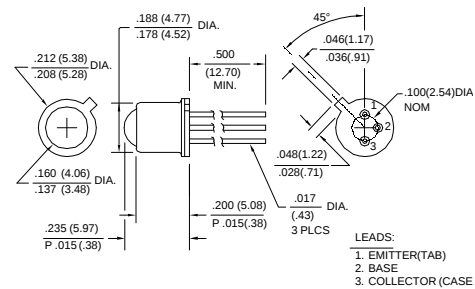
INFRA-70.TIF

DESCRIPTION

The SD5491 is an NPN silicon phototransistor mounted in a TO-18 metal can package. A biconvex lens provides high optical sensitivity with a narrow acceptance angle to enable maximum radiation coupling. The TO-18 package offers protection against harsh environments as well as excellent thermal characteristics.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)



DIM_016.dwg

SD5491

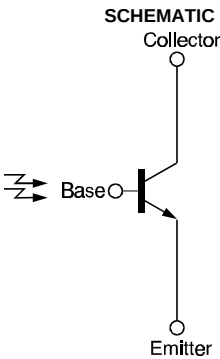
Silicon Phototransistor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)						
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current	I _L				mA	V _{CE} =5 V H=1.5 mW/cm ² (1)
SD5491-001		0.50				
SD5491-002		0.50	3.00			
SD5491-003		2.00	5.00			
SD5491-004		4.00	8.00			
SD5491-005		7.00	22.0			
SD5491-006		15.0				
Collector Dark Current	I _{CEO}			100	nA	V _{CE} =10 V, H=0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	30			V	I _C =100 µA
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0			V	I _E =100 µA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.4	V	I _C =0.4 mA H=1.5 mW/cm ²
Angular Response (2)	Ø		12		degr.	I _F =Constant
Rise And Fall Time	t _r , t _f		2.0		µs	V _{CC} =5 V, I _L =1 mA R _L =100 Ω

Notes
1. The radiation source is an IRED with a peak wavelength of 935 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

ABSOLUTE MAXIMUM RATINGS	
(25°C Free-Air Temperature unless otherwise noted)	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	150 mW (1)
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 sec)	260°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 1.43 mW/°C.



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SD5491

Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

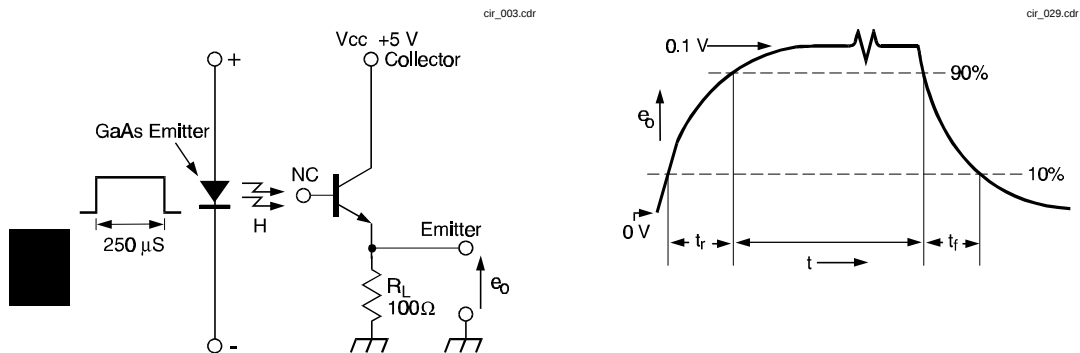


Fig. 1 Responsivity vs Angular Displacement

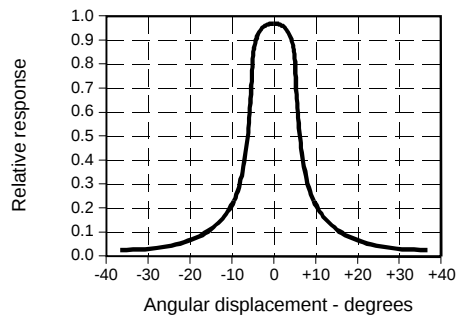


Fig. 2 Collector Current vs Irradiance

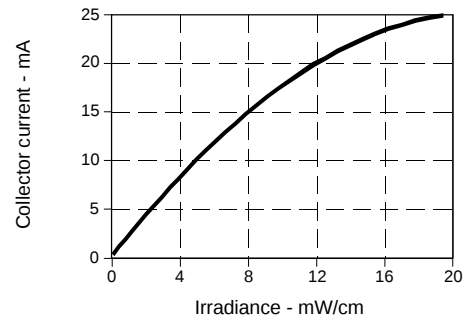


Fig. 3 Dark Current vs Temperature

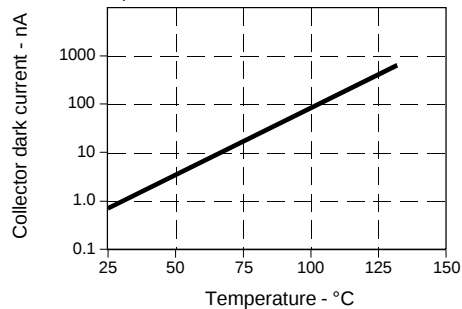
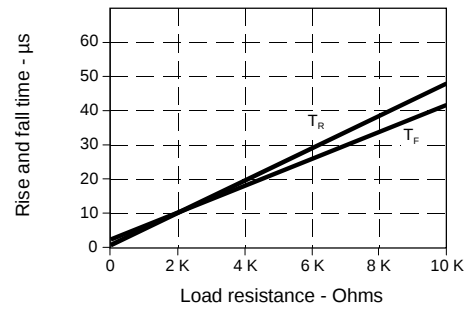


Fig. 4 Rise and Fall Time vs Load Resistance



SD5491

Silicon Phototransistor

Fig. 5 Spectral Responsivity

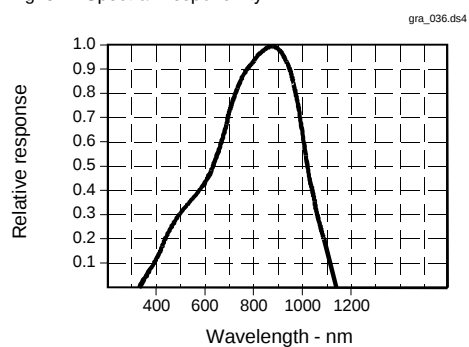


Fig. 6 Coupling Characteristics with SE5470

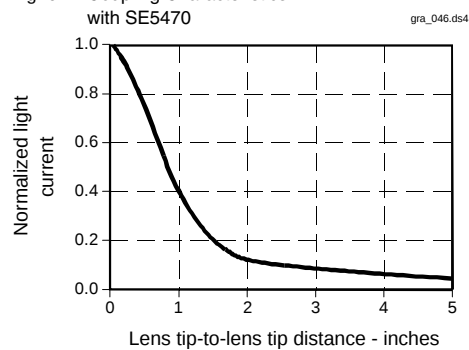
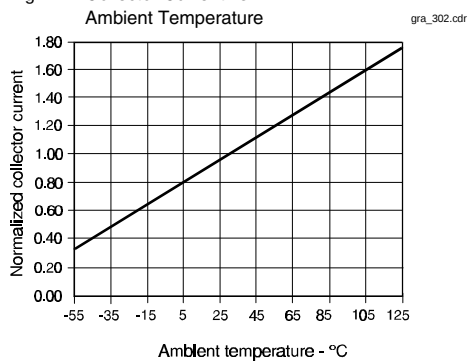


Fig. 7 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values

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