



## Interrupter

MODEL NO : \_\_\_\_\_ DS-2-55MM \_\_\_\_\_

### ■ Features :

- Fast response time
- High analytic
- Cut-off visible wavelength  $\lambda p=840nm$
- High sensitivity
- Pd free

### ■ Description :

The **DS-2-55MM** consist of an infrared emitting diode and an NPN silicon phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing. The phototransistor could not receive radiation from the IRED. This is the normal situation. But when an reflecting object close to ITR, phototransistor receives the reflecting radiation. For additional component information, please refer to **DR2424-3C** and **DT2424-6B**.

### ■ Applications :

- Copier
- Switch Scanner
- Non-contact Switching
- For Direct PC Board

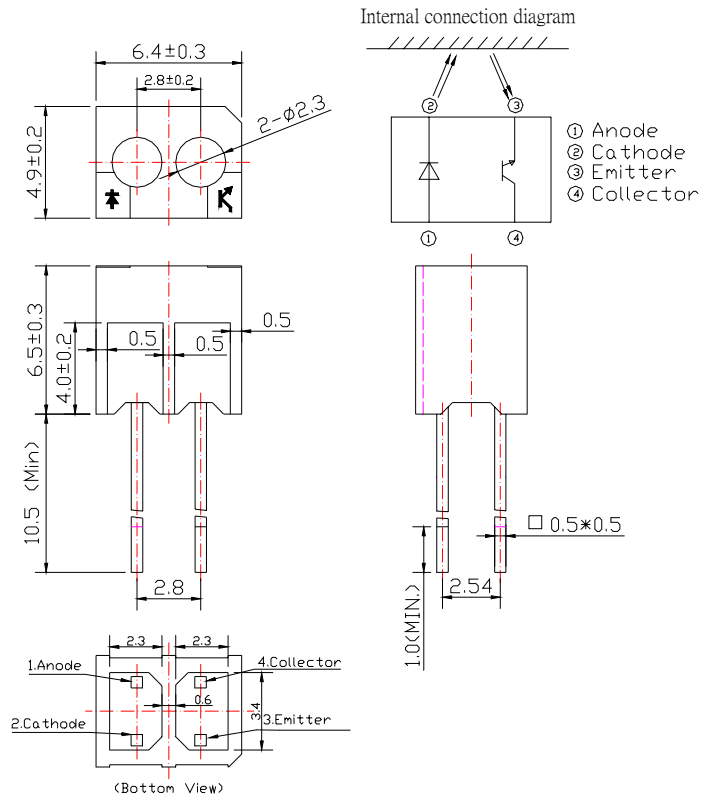
PART NO.	CHIP	LENS COLOR
	MATERIAL	
DR	GaAlAs	Water clear
DT	Silicon	Black



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### Package Dimension :



### Notes :

1. All dimensions are in millimeter.
2. General tolerance:  $\pm 0.3$  mm
3. Lead spacing is measured where the lead emerge from the package.
4. Above specification may be changed without notice. TAT will reserve authority on material change for above specification.
5. These specification sheets include materials protected under copyright of TAT corporation . Please don't reproduce or cause anyone to reproduce them without TAT's consent.
6. When using this product , please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. TAT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.



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### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

Parameter		Symbol	Rating	Unit
Input	Power Dissipation	P <sub>D</sub>	100	mW
	Reverse Voltage	V <sub>R</sub>	5	V
	Forward Current	I <sub>F</sub>	50	mA
	Peak Forward Current(*1)	I <sub>FP</sub>	1	A
Output	Collect Power Dissipation	P <sub>C</sub>	75	mW
	Collect Current	I <sub>C</sub>	20	mA
	Collector-Emitter Voltage	V <sub>CE</sub>	30	V
	Emitter-Collector Voltage	V <sub>EC</sub>	5	V
Operating Temperature		Topr	-25~+85	°C
Storage Temperature		Tstg	-40~+85	°C
Soldering Temperature(*2)		Tsol	260	°C

(\*1) Pause width= 100 μs, Duty Cycle=1%      (\*2) t=5 secs

### ■ Electronic Optical Characteristics at T<sub>A</sub> = 25°C:

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V <sub>F1</sub>	-	1.2	1.5	V	I <sub>F</sub> =20mA
		V <sub>F2</sub>	-	1.4	1.85		I <sub>F</sub> =100mA, tp=100 μs, tp/T=0.01
		V <sub>F3</sub>	-	2.6	4.0		I <sub>F</sub> =1A, tp=100 μs, tp/T=0.01
	Reverse Current	I <sub>R</sub>	-	-	10	μA	V <sub>R</sub> =5V
	Peak Wavelength	λ <sub>P</sub>	-	940	-	nm	I <sub>F</sub> =20mA
	View Angle	2θ 1/2	-	35	-	Deg	I <sub>F</sub> =20mA
Output	Dark Current	I <sub>CEO</sub>	-	-	100	nA	V <sub>CE</sub> =5V, Ee=0mW/cm <sup>2</sup>
	C-E Saturation Voltage	V <sub>CE(sat)</sub>	-	-	0.4	V	I <sub>C</sub> =0.04mA, I <sub>F</sub> =40mA
Collector Current(* 3)		I <sub>C(ON)</sub>	0.04	-	1.6	mA	V <sub>CE</sub> =5V, I <sub>F</sub> =20mA
		I <sub>C(OFF)</sub>	-	-	2	μA	
Response Time	Rise Time	t <sub>R</sub>	-	25	-	μs	V <sub>CE</sub> =5V, I <sub>C</sub> =100 μA, R <sub>L</sub> =100Ω
	Fall Time	t <sub>F</sub>	-	25	-	μs	

(\* 3) I<sub>C(on)</sub> at the testing condition—with reflector in 5mm away,

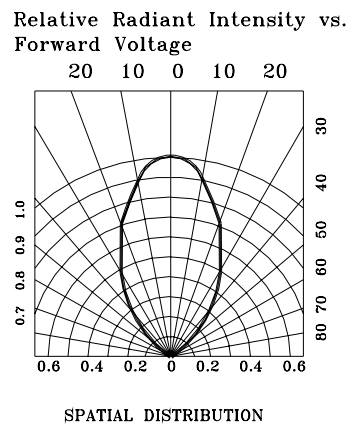
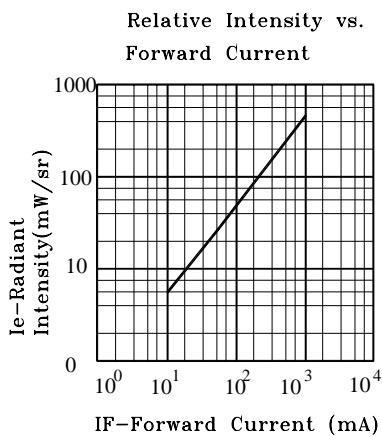
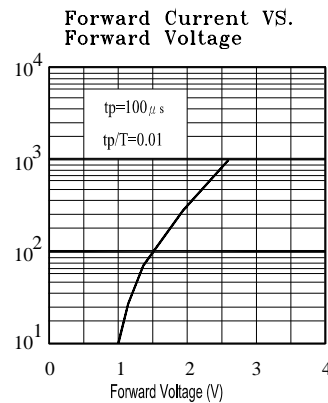
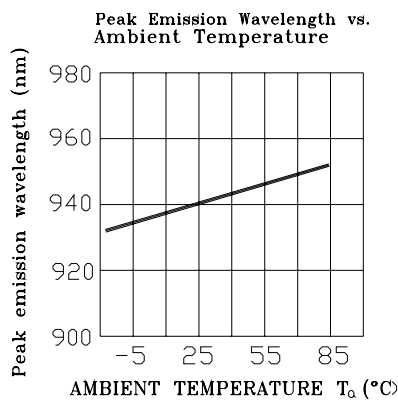
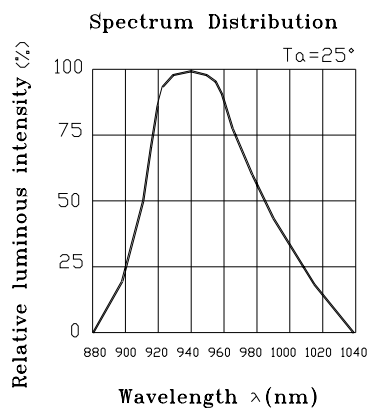
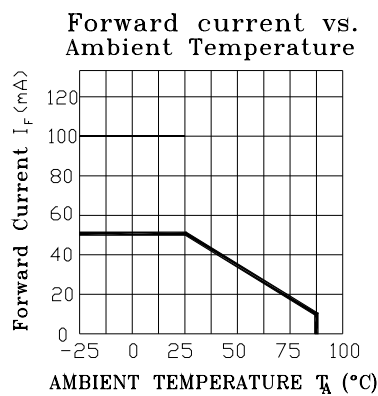
I<sub>C(off)</sub> at the testing condition—without reflector and external light less than 10 Lux at the module surface.



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### ■ Typical Electrical/Optical/Characteristics Curves For DR



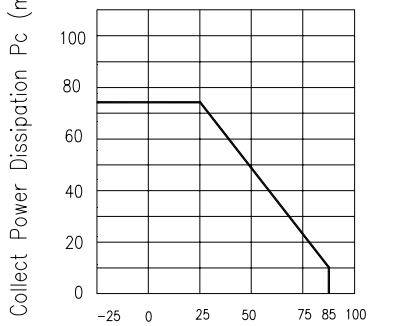


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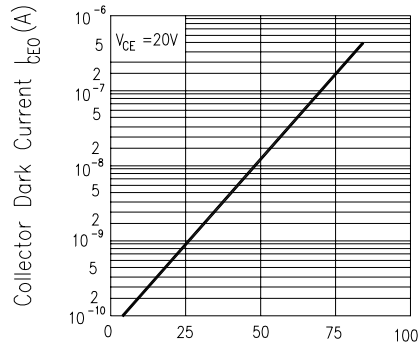
### Typical Electrical/Optical/Characteristics Curves For DT

Fig.1 Collector Power Dissipation vs. Ambient Temperature



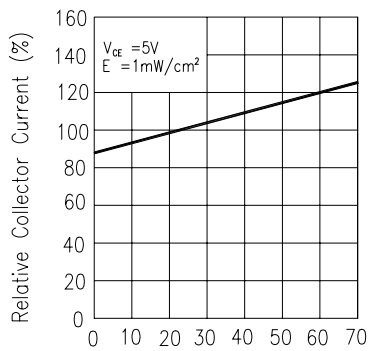
Ambient Temperature  $T_a$  (°C)

Fig.2 Collector Dark Current vs. Ambient Temperature



Ambient Temperature  $T_a$  (°C)

Fig. 3 Relative Collector Current vs. Ambient Temperature



Ambient Temperature  $T_a$  (°C)

Fig.4 Collector Current vs. Irradiance

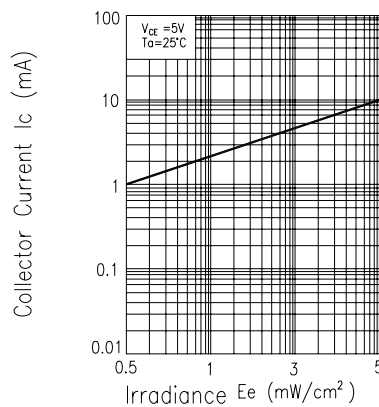
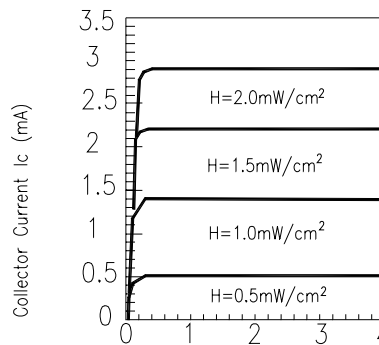
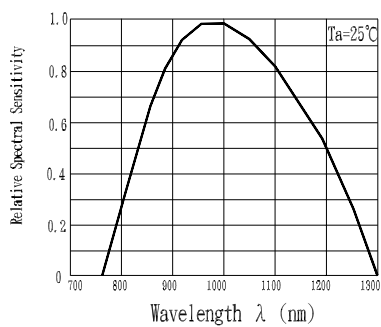


Fig.6 Collector Current vs. Collector-Emitter Voltage



Collector-Emitter Voltage  $V_{CE}$  (V)

Fig.5 Spectral Sensitivity



Wavelength  $\lambda$  (nm)



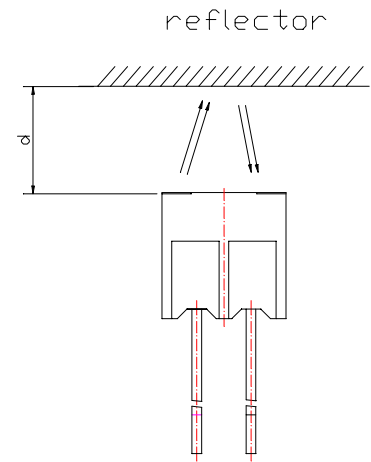
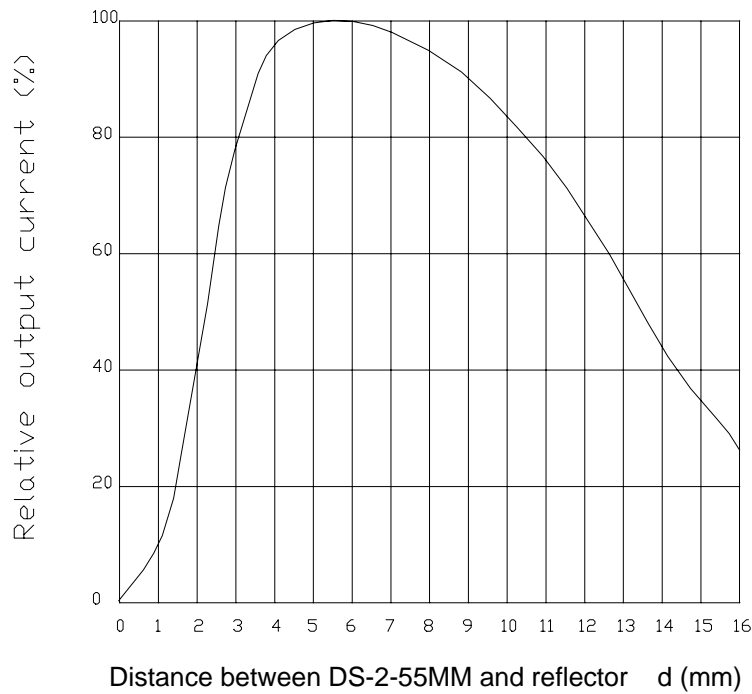
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### ■ Typical Electrical/Optical/Characteristics Curves For ITR

#### Relative output current vs. detecting distance





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### ■ Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level:90%

LTPD:10%

NO.	Item	Test Conditions	Test Hours/ Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP : 260°C ± 5 °C	5 secs	22 pcs	$I_{c(on)} \leq L \times 0.8$  L :Lower specification limit	0/1
2	Temperature Cycle	H : +85°C    30 mins ↑ 5 mins ↓ L : -55°C    30 mins	50 cycles	22 pcs		0/1
3	Thermal Shock	H : +100°C    5 mins ↑ 10 secs ↓ L : -10°C    30 mins	50 cycles	22 pcs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000 hrs	22 pcs		0/1
5	Low Temperature Storage	TEMP. : -55°C	1000 hrs	22 pcs		0/1
6	DC Operating Life	$V_{CE}=5V$ $I_F=20mA$	1000 hrs	22 pcs		0/1
7	High Temperature / High Humidity	85°C / 85% R.H.	1000 hrs	22 pcs		0/1