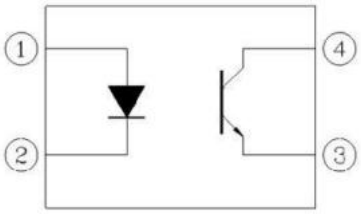
PHOTO TRANSISTOR

SOP4

Product features

- Halogens free
  (Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)
- Current transfer ratio
  (CTR: 50~600% at IF =5mA, VCE =5V)
- High isolation voltage between inputs and output
  (Viso=3750 V rms)
- Compact 4 Pin SOP with a 2.0 mm profile
- Compliance with EU REACH
- Pb free and RoHS compliant

Schematic



PinConfiguration
1. Anode
2. Cathode
3. Emitter
4. Collector

Product Description

- EX357 series devices consist of an infrared emitting diode, optically coupled to a phototransistor detector encapsulated with green compound.
- They are packaged in a 4-pin small outline SMD package.

Product Applications

- DC-DC Converters
- Programmable controllers
- Telecommunication equipments
- Signal transmission between circuits of different potentials and impedances

Ordering Information

Part Number	Package	Units/ Reel
EX357	SOP4	3500

Electrical-Optical characteristics

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rated Value	Unit
Input	Forward current	I_F	50	mA
	Peak forward current(1us pulse)	I_{FP}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	70	mW
	Derating factor (above Ta=90°C)		2.9	mW/℃
Output	Power dissipation	P_c	150	mW
	Derating factor (above Ta = 70°C)		3.7	mW/℃
	Collector current	I_C	50	mA
	Collector and emitter Voltage	V_{CEO}	80	V
	Emitter and Collector Voltage	V_{ECO}	7	V
Total Power Dissipation		P_{TOT}	200	mW
Isolation Voltage(1*)		V_{iso}	3750	Vrms
Operating temperature		T_{OPR}	-55 to +110	℃
Storage temperature		T_{STG}	-55 to +125	℃
Soldering temperature(1*)		T_{SOL}	260	℃

Notes:

1* AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

2* Soldering time is 10 seconds

Electro-Optical Characteristics(Ta=25℃ unless specified otherwise)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
In put	Forward voltage	V_F	-	1.2	1.4	V	I_F=20mA
	Reverse current	I_R	-	-	10	μA	V_R=4V
	Input capacitance	C_{in}	-	30	250	pF	V=0,f=1kHz
Out put	Collector-Emitter dark current	I_{CEO}	-	-	100	nA	V_{CE}=20V I_F=0mA
	Collector-Emitter breakdown voltage	BV_{CEO}	80	-	-	V	Ic=0.1mA
	Emitter-Collector breakdown voltage	BV_{ECO}	7	-	-	V	I_E=0.1mA

Transfer Characteristics (Ta=25℃ unless specified otherwise)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Current Transferratio	EX357	CTR	50	-	600	%	I_F=5mA V_{CE}=5V
	EX357A		80	-	160		
	EX357B		130	-	260		
	EX357C		200	-	400		
	EX357D		300	-	600		
	EX357E		100	-	200		
	EX357F		150	-	300		
Collector-Emitter saturation voltage		$V_{CE(sat)}$	-	0.1	0.2	V	I_F=10mA Ic=1mA
Isolation resistance		R_{IO}	$5x10^{10}$	-	-		V_{IO}=500Vdc 40~60% RH.
Floating capacitance		C_{IO}	-	0.6	1.0	pF	V_{IO}=0,f=1MHz
Rise time		t_r	-	3	18	μs	V_{CE}=2V, Ic=2mA, R_L=100
Fall time		t_f	-	4	18	μs	

Characteristic Curves

Figure1. Forward Current vs Forward Voltage

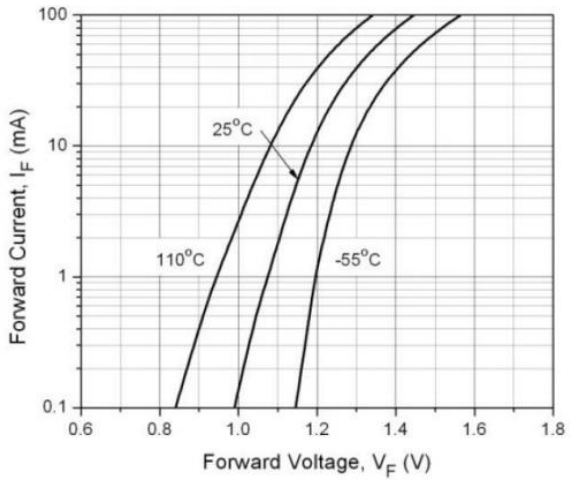


Figure2. Normalized Collector Current vs Forward Current

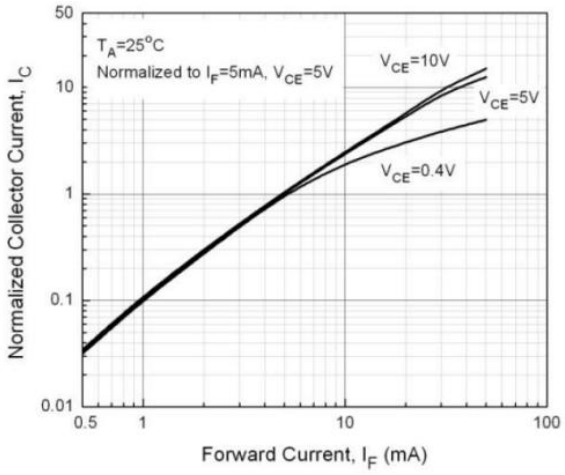


Figure3. Normalized Current Transfer Ratio vs Forward Current

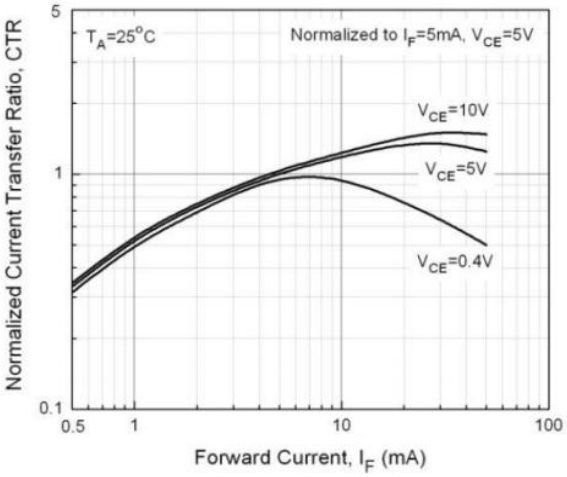


Figure4. Normalized Collector Current vs Ambient Temperature

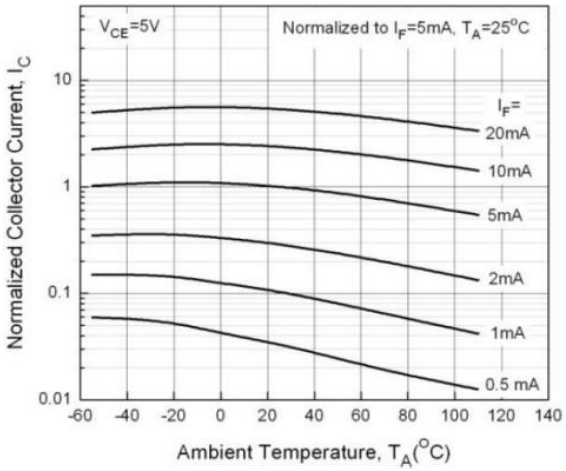


Figure5. Collector Current vs Collector-Emitter Voltage

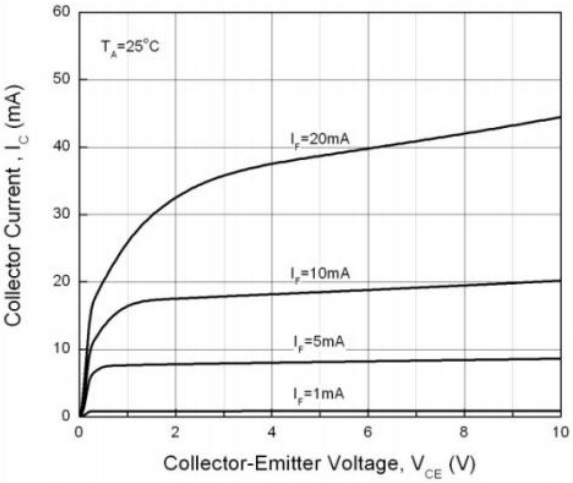


Figure6. Collector Current vs Collector-Emitter Voltage

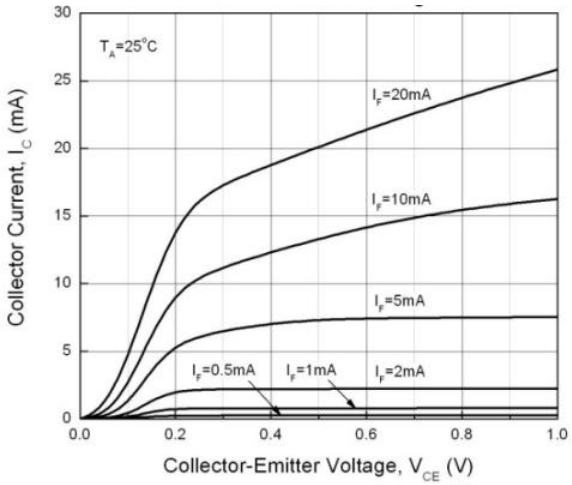


Figure7. Collector Current vs Collector-Emitter Voltage

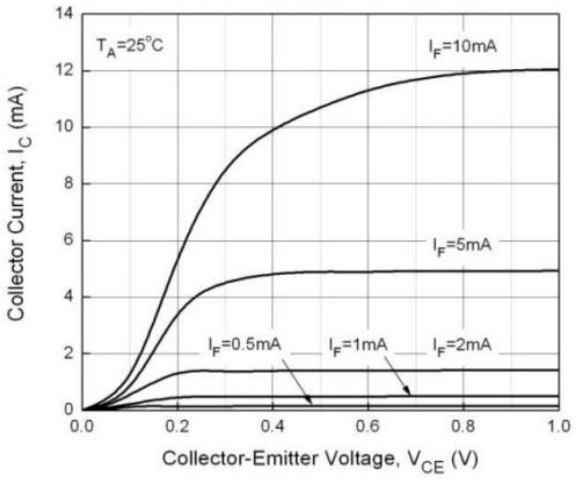


Figure8. Collector Dark Current vs Ambient Temperature

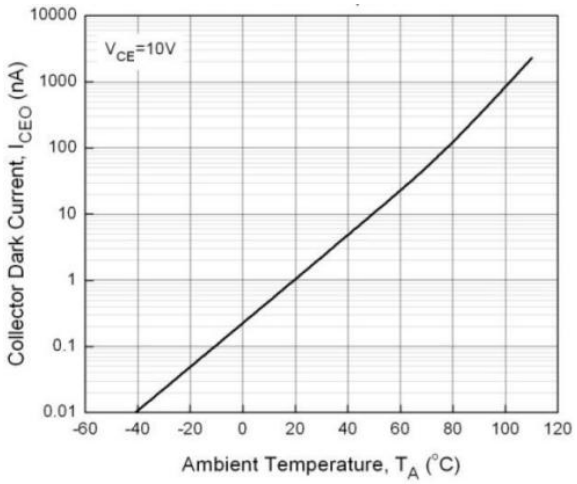


Figure9. Collector-Emitter Saturation Voltage vs Ambient Temperature

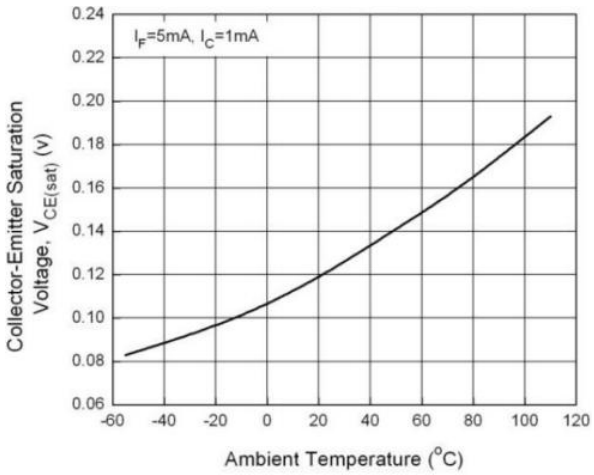


Figure10. Switching Time vs Load Resistance

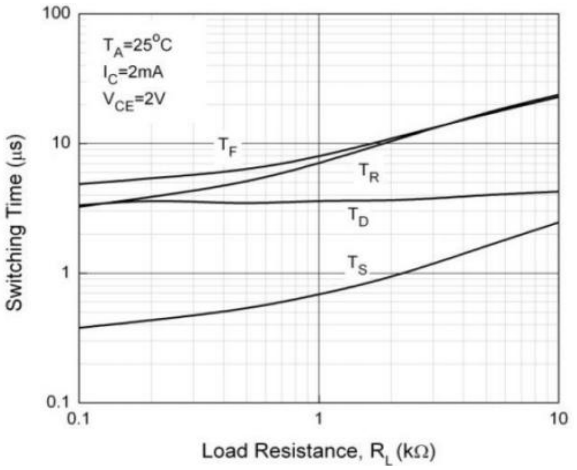
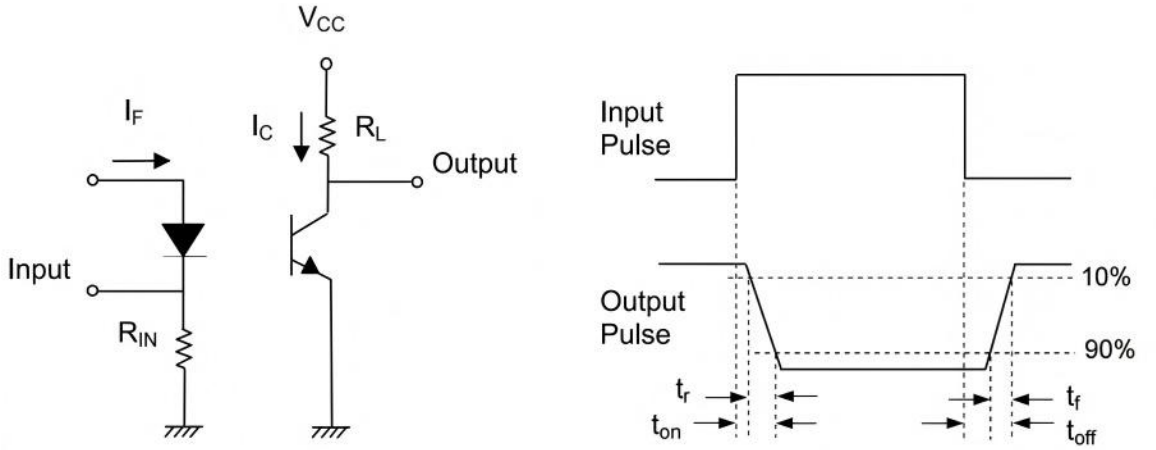
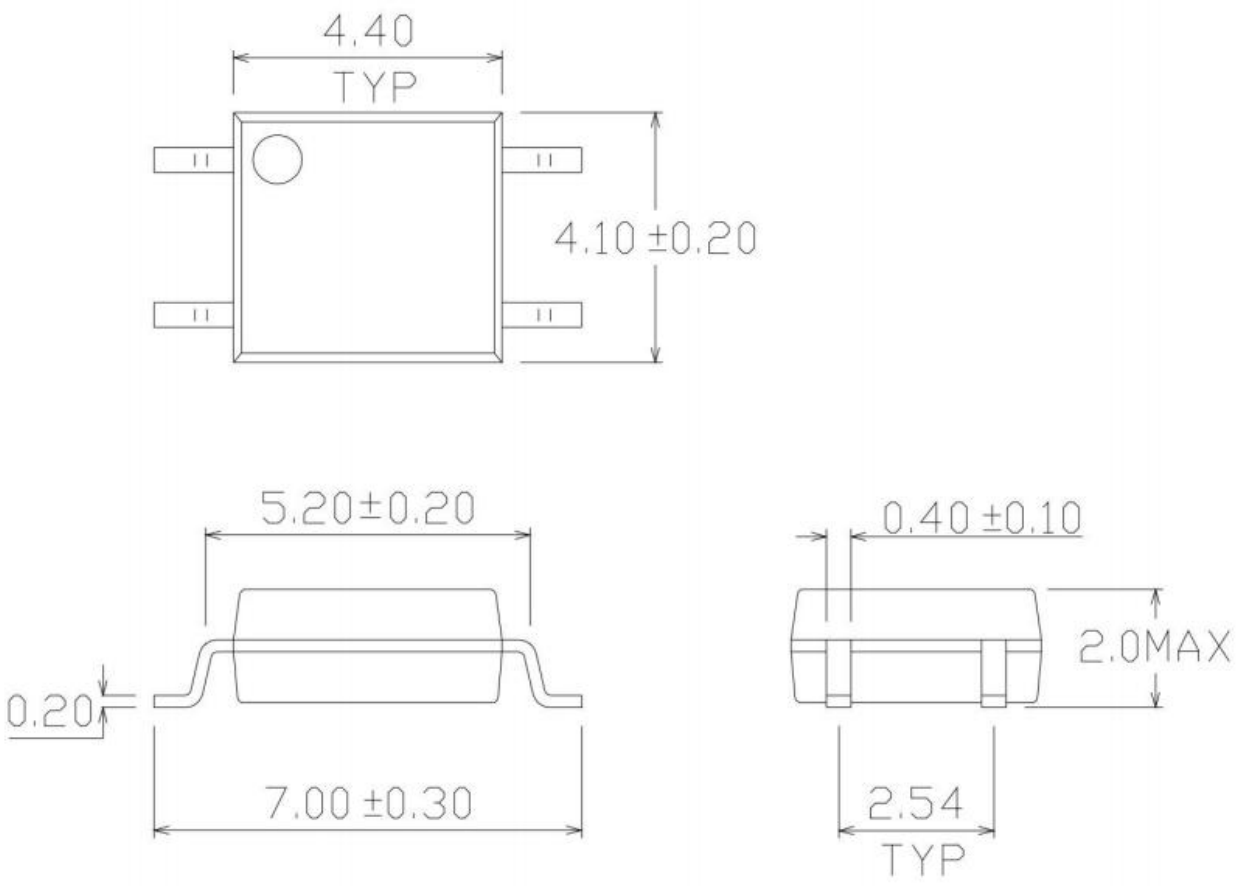


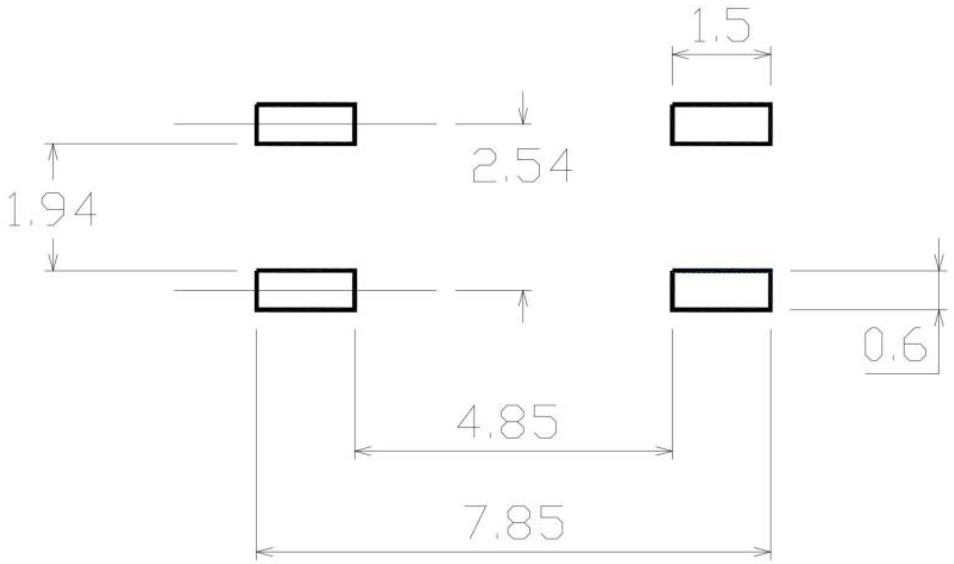
Figure11. Switching Time Test Circuit vs Waveforms



Package Drawing(Unit:mm)



Recommended pad layout for surface mount leadform



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