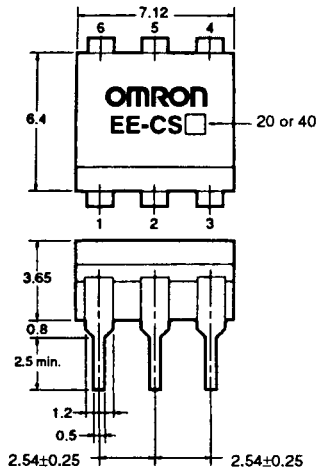
OMRON

Thyristor Photocoupler

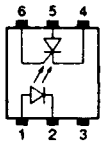
EE-CS20/-CS40

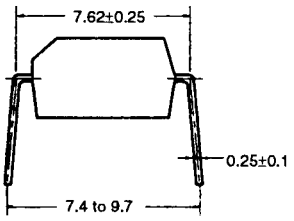
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Terminal Arrangement (Top View)





Terminal No.	Name
1	Anode
2	Cathode
3	N.C
4	Cathode (Photo-thyristor)
5	Anode (Photo-thyristor)
6	Gate (Photo-thyristor)

Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Note: Connect a resistor with a resistance of 27 kΩ maximum between terminals 4 and 6.

■ Features

- Low-power SSR of standard DIP construction.
- Switches an effective current of 200 mA.
- Ensures an AC insulation dielectric strength of 2.5 kV.
- Compact model with a small mounting area.
- OFF voltage (V_{DRM}): 200 V (EE-CS20) and 400 V (EE-CS40)

■ Absolute Maximum Ratings (Ta = 25°C, R_{GK} = 27 kΩ)

Item		Symbol	Rated value
Emitter	Forward current	I_F	70 mA (see note 1)
	Pulse forward current	I_{FP}	1 A (see note 2)
	Reverse voltage	V_R	5 V
Detector	Peak repetitive OFF voltage	V_{DRM}	CS20: 200 V CS40: 400 V
	Peak repetitive reverse voltage	V_{RRM}	CS20: 200 V CS40: 400 V
	Effective ON current	$IT_{(RMS)}$	150 mA (see note 1)
	Surge ON current	I_{TSM}	2 A (see note 3)
	Peak gate reverse voltage	V_{RGM}	5 V
Ambient temperature	Operating	Topr	–30°C to 100°C
	Storage	Tstg	–55°C to 125°C
	Junction	Tj	100°C
	Soldering	Tsol	260°C

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

2. The pulse width is 10 μs maximum with a frequency of 100 Hz.

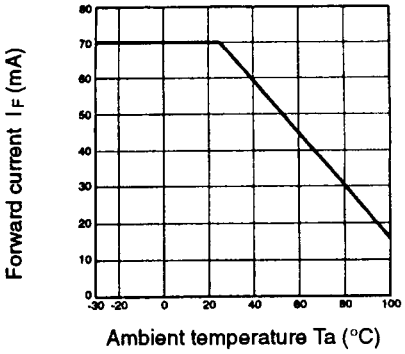
3. With a non-repetitive commercial half-sine current.

■ Electrical and Optical Characteristics (Ta = 25°C)

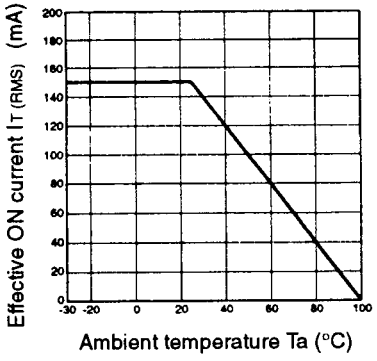
Item		Symbol	Value	Condition
Emitter	Forward voltage	V_F	1.2 V typ., 1.35 V max.	I_F = 30 mA
	Reverse current	I_R	10 μA max.	V_R = 5 V
Detector	OFF current (1)	I_{RDM} (1)	5 μA max.	V_{DRM} imposed
	ON current (2)	I_{RDM} (2)	100 μA max.	V_{DRM} imposed, Ta = 100°C
	Reverse current (1)	I_{RRM} (1)	5 μA max.	V_{RRM} imposed
	Reverse current (2)	I_{RRM} (2)	100 μA max.	V_{RRM} imposed, Ta = 100°C
	ON voltage	V_{TM}	0.9 V typ., 1.3 V max.	I_{TM} = 100 mA
	Gate non-trigger voltage	V_{GD}	0.4 V min.	V_D = 6 V
	Hold current	I_H	0.2 mA typ., 1 mA max.	RL = 100 Ω
	Critical OFF voltage rising rate	dv/dt	5 V/μs min., 10 V/μs typ.	V_{DRM} imposed
Trigger LED current		I_{FT}	1 mA min., 4 mA typ., 7 mA max.	V_D = 6 V, R_L = 100 Ω
Insulation dielectric strength		Viso	2.5 kVAC min.	Effective value, RH = 40% to 60%

■ Engineering Data

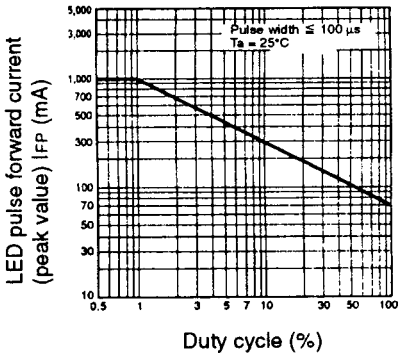
Forward Current vs. Ambient Temperature Characteristics



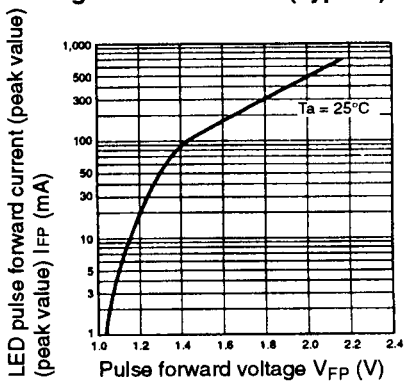
Effective ON Current Temperature Characteristics



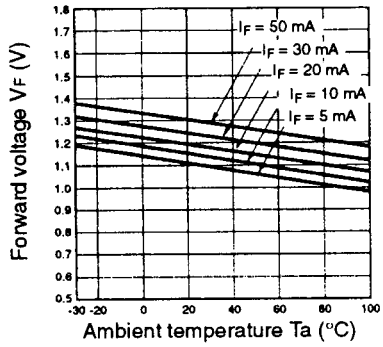
Pulse Forward Current Characteristics



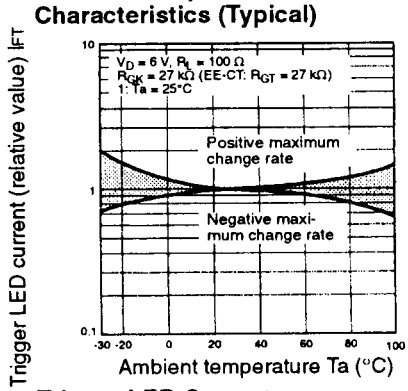
Forward Current vs. Forward Voltage Characteristics (Typical)



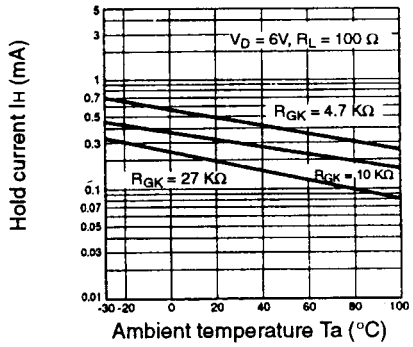
Forward Voltage vs. Ambient Temperature Characteristics (Typical)



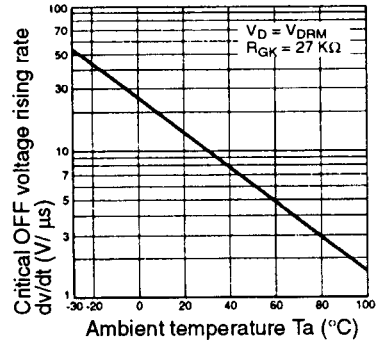
Trigger LED Current vs. Ambient Temperature Characteristics (Typical)



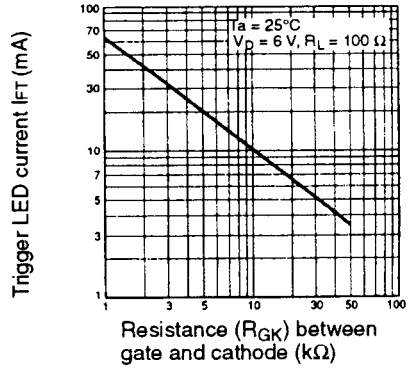
Hold Current vs. Ambient Temperature Characteristics (Typical)



Critical OFF Voltage Rising Rate vs. Ambient Temperature Characteristics (Typical)



Trigger LED Current vs. Resistance between Gate and Cathode Characteristics (Typical)



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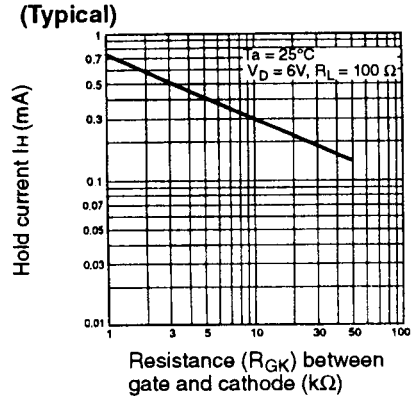
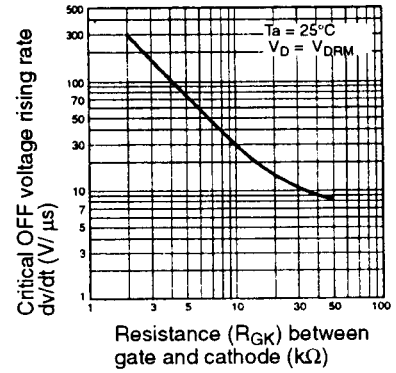


Critical OFF Voltage Rising Rate vs. Resistance between Gate and Cathode Characteristics (Typical)



Turn ON Time vs. Forward Current Characteristics (Typical)