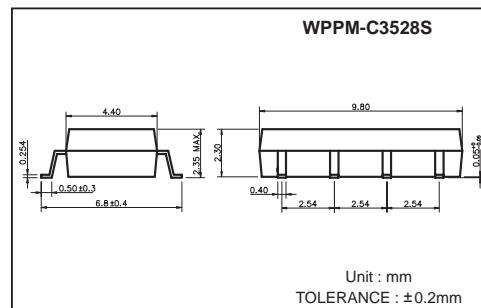


Features

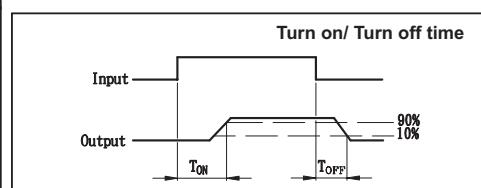
1. Photo MOS relay and optocoupler in one package.
2. Control 350VAC or DC voltage.
3. Switch 130mA loads.
4. LED control current, 5mA.
5. Low ON-resistance.
6. dv/dt, >500V/mS.
7. Isolation test voltage, 1500VRMS.

Part Numbering System & Part Marking System: Page 3 & 4.



MOS Relay Absolute Maximum Ratings (Ta=25°C)

Emitter (Input)	Detector (Output)
Reverse Voltage.....5.0V	Output Breakdown Voltage±350V
Continuous Forward Current50mA	Continuous Load Current±130mA
Peak Forward Current1A	Power Dissipation500mW
Power Dissipation100mW	
Derate Linearly from 25°C1.3mW/°C	
General Characteristics	
Isolation Test Voltage.....1500VRMS	Storage Temperature Range ...-40°C to +125°C
Isolation Resistance	Operating Temperature Range...-30°C to +85°C
VIO = 500V, TA = 25°C≥10 ¹⁰ Ω	Junction Temperature.....100°C
Total Power Dissipation550mW	Soldering Temperature,
Derate Linearly from 25°C2.5mW/°C	2mm from case, 10 sec260°C



MOS Relay Electro-optical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Emitter (Input)						
Forward Voltage	VF	IF = 10mA		1.2	1.5	V
Operation Input Current	I _{FON}	VL = ±20V, IL = 100mA, t = 10mS			5	mA
Recovery Input Current	I _{FOFF}	VL = ±20V, IL ≤ 5µA	0.2			mA
Detector (Output)						
Output Breakdown Voltage	VB	IB = 50µA	350			V
Output Off-State Leakage	I _{TOFF}	VT = 100V, IF = 0mA	0.2	1		µA
I/O Capacitance	C _{IISO}	IF = 0, f = 1MHz	6			pF
ON Resistance	R _{ON}	IL = 100mA, IF = 10mA	20	30		Ω
Turn-On Time	T _{ON}	IF = 10mA, VL = ±20V	0.3	1.0		mS
Turn-Off Time	T _{OFF}	t = 10mS, IL = ±100mA	0.7	1.5		mS

MOS Relay Schematic and Wiring Diagrams

Type	Schematic	Output configuration	Load	Connection	Wiring Diagrams
C3528S		1a	AC/DC	-	

MOS Relay Data Curve

Fig.1 Load current vs. ambient temperature
Allowable ambient temperature:
-40°C to +85°C

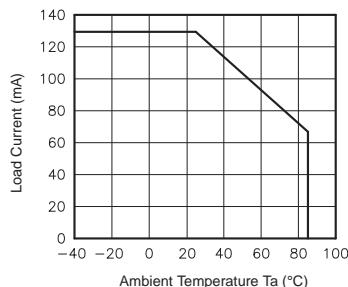


Fig.2 On resistance vs. ambient temperature
Across terminals 7 and 8 pin
LED current: 5mA
Continuous load current: 130mA(DC)

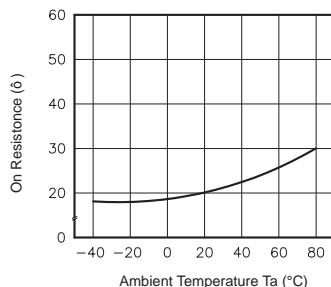


Fig.3 Turn on time vs. ambient temperature
Load voltage 400V(DC)
LED current: 5mA
Continuous load current: 130mA(DC)

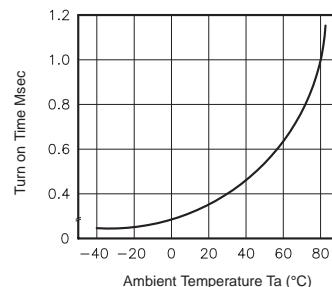


Fig.4 Turn off time vs. ambient temperature
LED current: 5mA; Load voltage:
400V(DC)
Continuous load current: 130mA(DC)

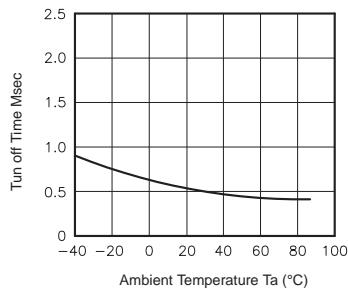


Fig.5 LED operate vs. ambient temperature
Load voltage 400V(DC)
Continuous load current: 130mA(DC)

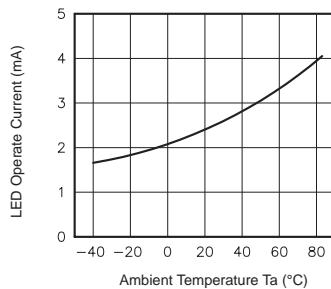


Fig.6 LED turn off current vs. ambient temperature
Load voltage 400V(DC)
Continuous load current: 130mA(DC)

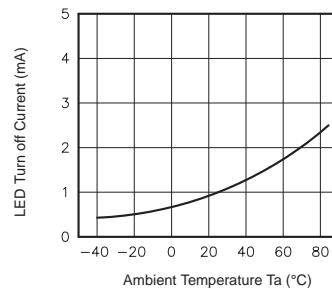


Fig.7 LED dropout voltage vs. ambient temperature
LED current: 5 to 50mA

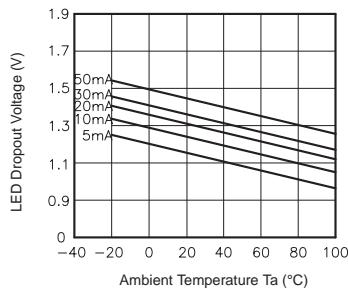


Fig.8 Voltage vs. current characteristics of output at MOS FET portion
Measured portion: across terminals 7 and 8 pin
Ambient temperature: 25°C

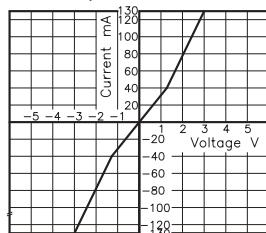


Fig.9 Off state leakage current
Across terminals 7 and 8 pin
Ambient temperature: 25°C

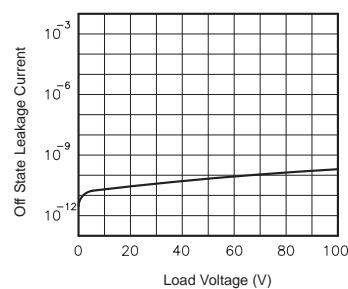


Fig.10 LED forward current vs. turn on time
Across terminals 7 and 8 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

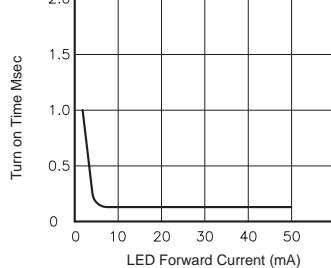


Fig.11 LED forward current vs. turn off time
Across terminals 7 and 8 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

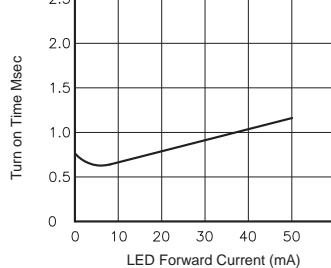


Fig.12 Applied voltage vs. output capacitance
Across terminals 7 and 8 pin
Frequency: 1MHz
Ambient temperature: 25°C

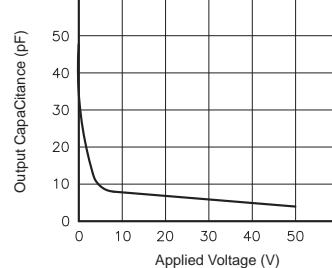




Photo Coupler Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	IF	±50	mA
	Peak forward current	IFM	±1	A
	Power dissipation	PD	70	mW
Output	Collector-emitter voltage	VCEO	60	V
	Emitter-collector voltage	VECO	6	V
	Collector current	Ic	50	mA
	Collector power dissipation	Pc	150	mW
Total power dissipation		Ptot	200	mW
Isolation voltage 1 minute		Viso	1500	VRMS
Operating temperature		Topr	-30 to +100	°C
Storage temperature		Tstg	-55 to +125	°C
Soldering temperature 10 second		Tsol	260	°C

Photo Coupler Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	VF	IF =± 20mA	—	1.2	1.4	V
	Peak forward voltage	VFM	IFM =± 0.5A	—	—	3.5	V
	Terminal capacitance	Ct	V=0, f=1kHz	—	30	—	pF
Output	Collector dark current	ICEO	VCE =20V, IF =0	—	—	0.1	uA
Transfer characteristics	Current transfer ratio	CTR	IF =± 1mA, VCE =5V	30	100	—	%
	Collector-emitter saturation voltage	VCE (sat)	IF =± 20mA, IC =1mA	—	0.1	0.3	V
	Isolation resistance	Riso	DC500V	5X10 ¹⁰	10 ¹¹	—	ohm
	Floating capacitance	Cf	V=0, f=1MHz	—	0.6	1.0	pF
	Cut-off frequency	fc	VCC =5V, IC=2mA, RL =100ohm	—	80	—	kHz
	Response time (Rise)	tr	VCE=2V, IC=2mA, RL=100ohm	—	5	20	us
	Response time (Fall)	tf		—	4	20	us

Photo Coupler Data Curve

Fig.1 Current Transfer Ratio vs. Forward Current

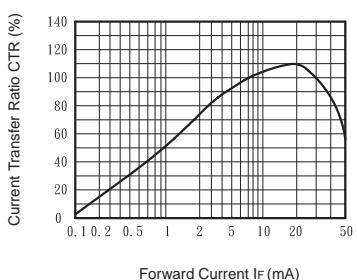


Fig.2 Collector Power Dissipation vs. Ambient Temperature

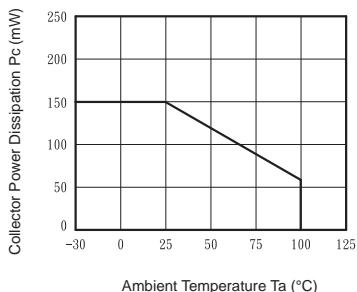


Fig.3 Collector Dark Current vs. Ambient Temperature

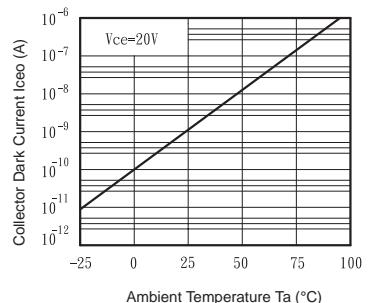


Fig.4 Forward Current vs. Ambient Temperature

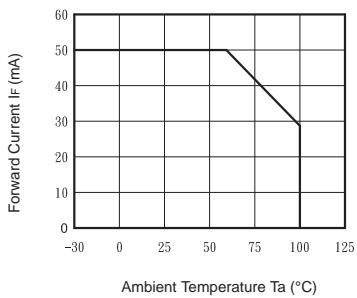


Fig.5 Forward Current vs. Forward Voltage

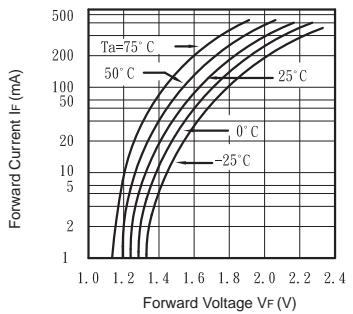


Fig.6 Collector Current vs. Collector-emitter Voltage

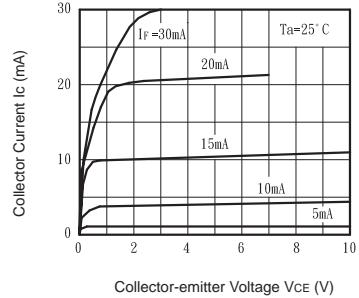


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

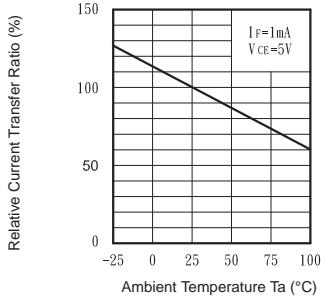


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

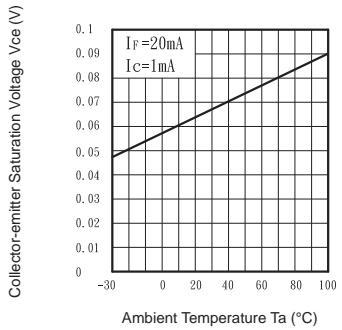


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

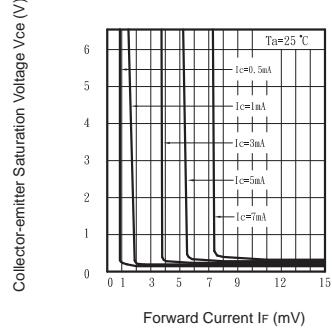


Fig.10 Response Time vs. Load Resistance

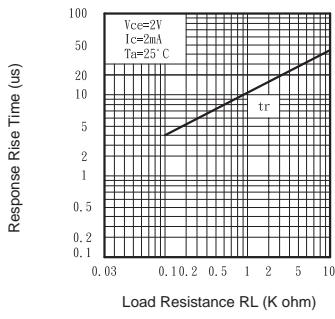


Fig.11 Response Time vs. Load Resistance

