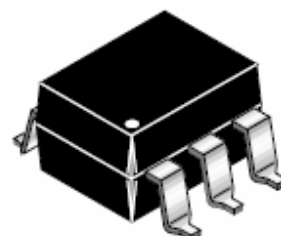


Photo SCR Optocouplers

Features

- High efficiency, low degradation, liquid epitaxial LED
- 10A, T²L compatible, solid state relay
- 25W logic indicator lamp driver
- 400V symmetrical transistor coupler
- RoHS compliant



Applications

- Low power logic circuits
- Telecommunications equipment
- Portable electronics
- Solid state relays
- Interfacing coupling systems of different potentials and impedances

Absolute Maximum Ratings (T_a=25°C)

Total Package	Symbol	Rating	Unit
*Storage Temperature	TSTG	-55 to +150	° C
*Operating Temperature	TOPR	-55 to +100	° C
*Lead Solder Temperature	TSOL	260 for 10 sec.	° C
*Total Device Power Dissipation (-55 to +50° C)	PD	450	mW
Derate Linearly (above +50° C)		9.0	mW/° C
Input Diode	Symbol	Rating	Unit
*Power Dissipation (-55 to +50° C)	PD	100	mW
Derate Linearly (above +50° C)		2	mW/° C
*Continuous Forward Current (-55 to +50° C)	IF	60	mA
*Peak Forward Current (-55 to +50° C)	IF(PK)	1	A
*Reverse Voltage (-55 to +50° C)	VR	6	V
Detector	Symbol	Rating	Unit
*Power Dissipation (-55 to +50° C)	PD	400	mW
Derate Linearly (above +50° C)		8	mW/° C
*Off-state and Reverse Voltage (-55 to +100° C)		200	V
*Peak Reverse Gate Voltage (-55 to +50° C)		6	V
*Direct on-state Current (-55 to +50° C)		300	mA
*Surge on-state Current (-55 to +50° C) (100µS)		10	A
*Peak Gate Current (-55 to +50° C)		10	mA

*Indicates JEDEC Registered Data

Photo SCR Optocouplers

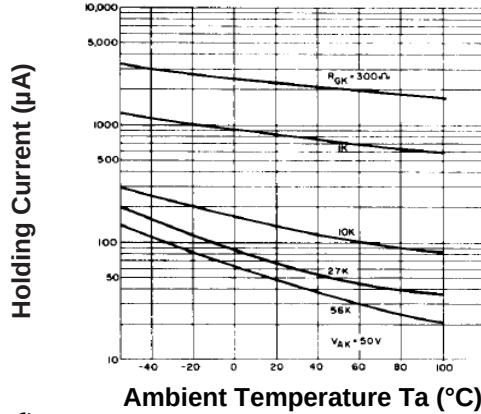
4N39.SD

Electrical Characteristics (T_a=25°C) (*Indicates JEDEC Registered Data)

Individual Component Characteristics							
Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	*Forward Voltage	V _F	----	1.1	1.5	V	I _F =10mA
	*Reverse Leakage Current	I _R	----	----	10	μA	V _R =3V
	Capacitance	C _J	----	50	----	pF	V=0, f=1MHz
Output	*Peak Off-state Voltage	V _{DM}	200	----	----	V	R _{GK} =10kΩ, T _A =100° C
	*Peak Reverse Voltage	V _{RM}	200	----	----	V	T _A =100° C
	*On-state Voltage	V _T	----	----	1.3	V	I _T =300mA
	*Off-state Current	I _{DM}	----	----	50	μA	V _{DM} =200V, T _A =100° C, I _F =0, R _{GK} =10kΩ
	*Reverse Current	I _R	----	----	50	μA	V _R =200V, T _A =100° C, I _F =0
	*Holding Current	I _R	----	----	1.0	mA	V _{FX} =50V, R _{GK} =27kΩ
Transfer Characteristics							
Characteristic		Symbol	Min.	Typ.	Max.	Unit	Condition
*Input Current to Trigger	I _{FT}		----	----	30	mA	V _{AK} =50V, R _{GK} =10kΩ
			----	----	14		V _{AK} =100V, R _{GK} =27kΩ
*Turn-on Time	ton		----	----	50	μS	V _{AK} =50V, I _F =30mA, R _{GK} =10kΩ, R _L =200Ω
Package Capacitance (input to output)			----	----	2	pF	Input to Output Voltage=0, f=1MHz
Coupled dv/dt, input to output (Fig.3)			500	----	----	V/μS	
Isolation Characteristics							
Characteristic		Symbol	Min.	Typ.	Max.	Unit	Condition
Surge Isolation Voltage		V _{iso}	7500	----	----	V	1 Minute
Isolation Voltage		V _{iso}	5300	----	----	V	1 Minute
*Isolation Resistance		R _{iso}	10 ¹¹	----	----	Ohms	V _{I-O} =500VDC

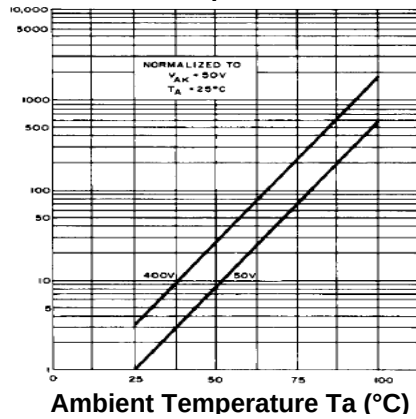
Typical Characteristics of Output (SCR)

Fig.1 Holding Current vs. Temperature



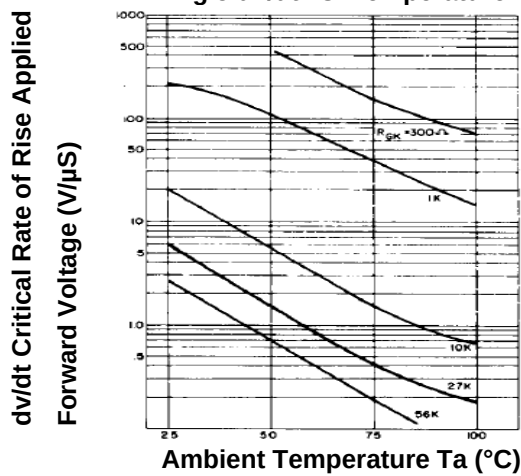
Holding Current (μA)

Fig.3 Off-State Forward Current vs. Temperature



Normalized Forward Current Off-State

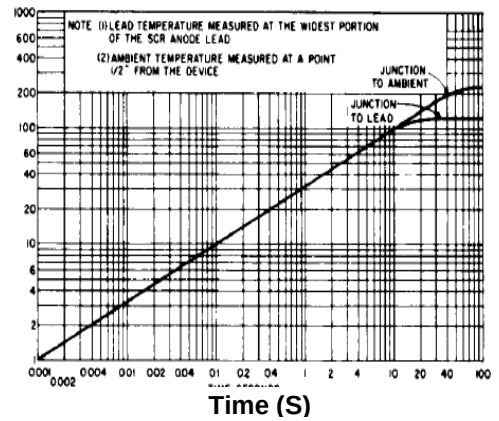
Fig.5 dv/dt vs. Temperature



dv/dt Critical Rate of Rise Applied Forward Voltage ($V/\mu S$)

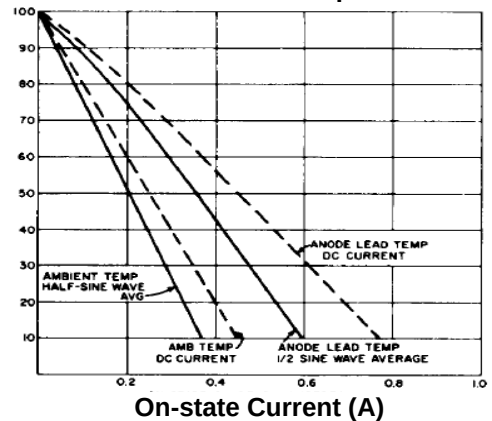
Transient Thermal Impedance ($^{\circ}C/W$)

Fig.2 Max. Transient Thermal Impedance



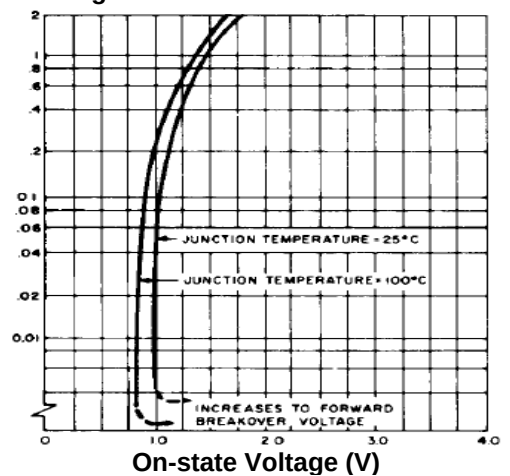
Max. Allowable Temperature ($^{\circ}C$)

Fig.4 On-state Current vs. Max. Allowable Temperature



On-State Current (A)

Fig.6 On-State Characteristics



On-State Current (A)

Typical Electro-Optical Characteristics ($T_A = 0^\circ\text{C}$ to 70°C unless otherwise Specified)

Fig.7 DC Transfer Characteristics

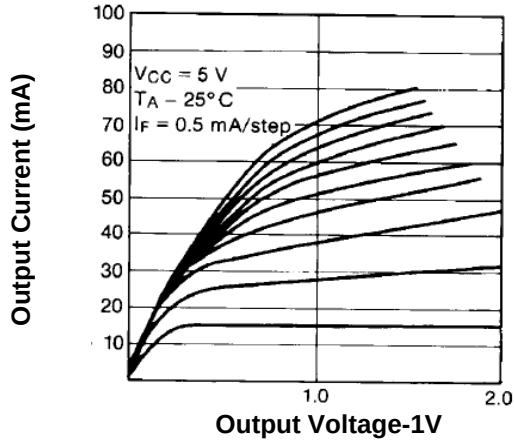


Fig.8 Current Transfer Ratio vs. Input Forward Current

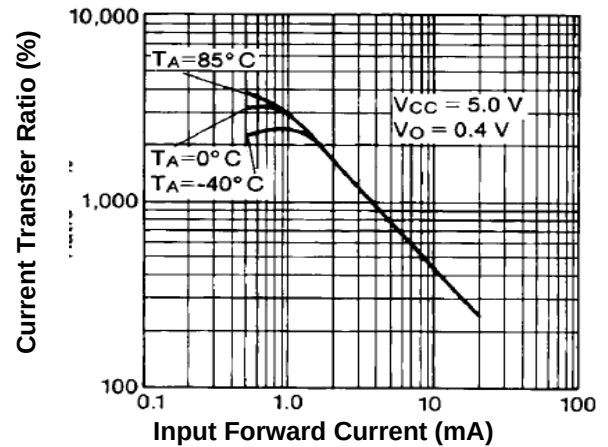


Fig.9 Input Current vs. Input Forward Current

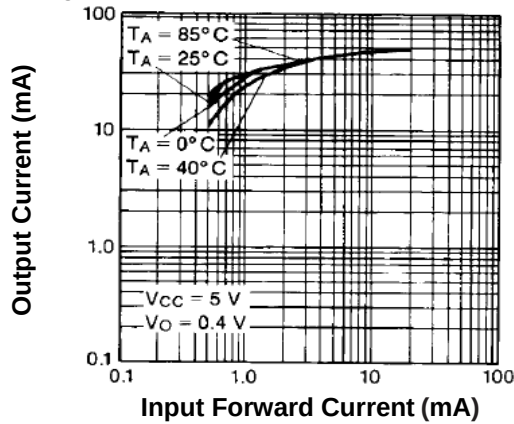


Fig.10 Forward Input Current vs. Forward Input Voltage

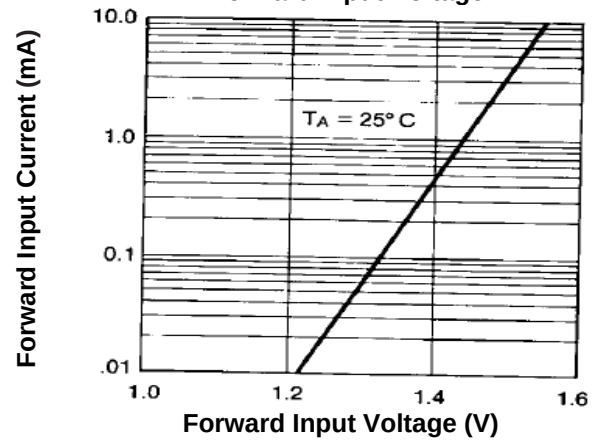
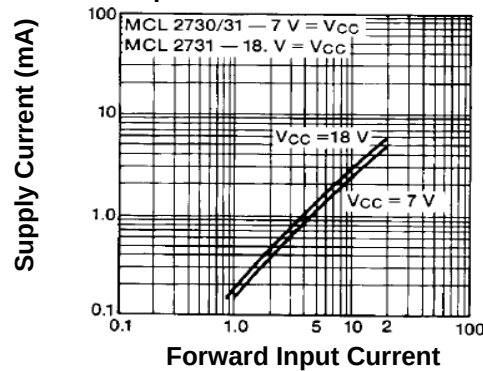
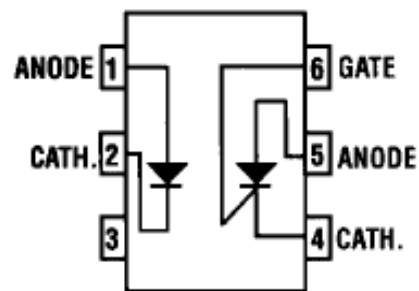
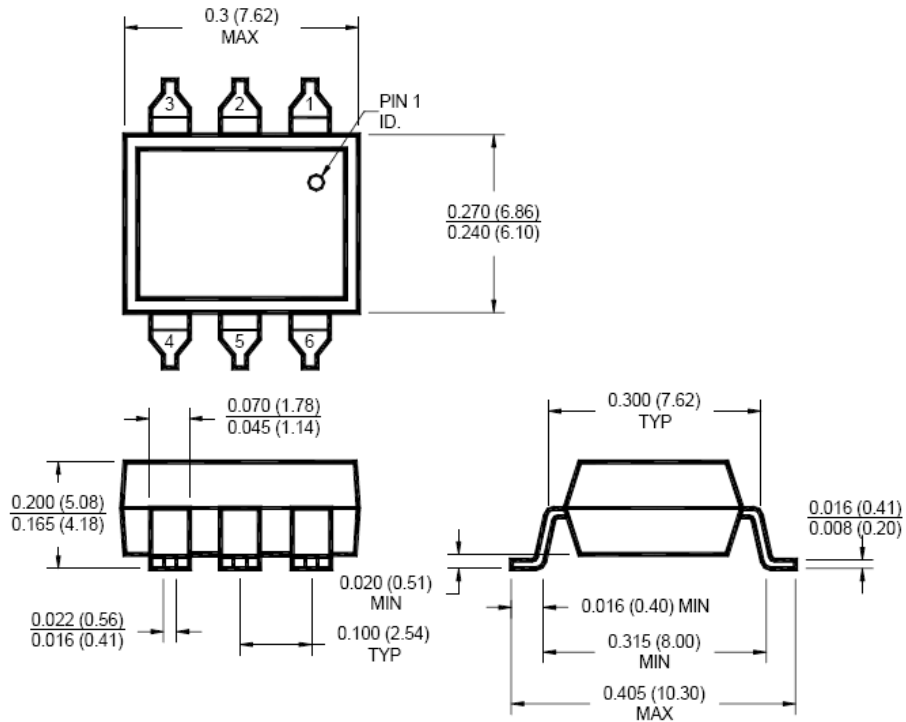


Fig.11 Supply Current per Channel vs. Input Forward Current



Package Dimensions in inch (mm)



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