

FEATURES

- Solid state relay and AC input
- Optocoupler Package-Single 18 Pin
- I/O Isolation, 2500 V_{RMS}
- Surface Mountable
- Optocoupler
 - Bidirectional Current Detection
- Solid-state Relay
 - Typical R_{ON} 25 Ω
 - Load Voltage 400 V
 - Load Current 100 mA
 - Current Limit Protection
 - High Surge Capability
 - Linear, AC/DC Operation
 - Clean Bounce Free Switching
 - Low Power Consumption
 - High Reliability Monolithic Receptor
- Available in Tape and Reel (suffix T)

Applications

- General Telecom Switching
 - On/off Hook Control
 - Dial Pulse
 - Ring Current Detection
 - Loop Current Sensing

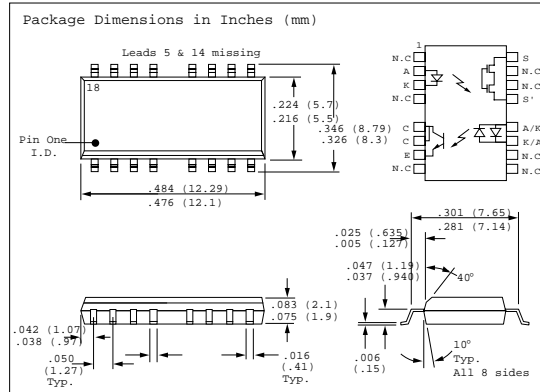
DESCRIPTION

The IL329T Telecom switch consists of an optically coupled solid state relay (SSR) and a bidirectional input optocoupler. The SSR is ideal for performing switchhook and dial-pulse switching while the optocoupler performs ring detection and loop current sensing functions. Both the SSR and opto coupler provide 2500 V input to output isolation.

The SSR is integrated on a monolithic receptor die using high voltage BCDMOS technology. The SSR features low ON-resistance, high breakdown voltage and current-limit circuitry that protects the relay from telephone line induced lightning surges.

The optocoupler provides bidirectional current sensing via two antiparallel GaAs infrared emitting diodes. The opto channel provides a minimum CTR of 33% at 6 mA.

The IL329T comes in a 18 pin, plastic surface mount package.



Absolute Maximum Ratings

Package	Rating	Unit
Ambient Temperature Range	-40 to +85	°C
Storage Temperature Range	-40 to +150	°C
Soldering Temperature (t=10 sec. max.)	260	°C
Input/Output Isolation Voltage (t=60 sec. min.)	2500	V _{RMS}
Total Power Dissipation	150	mW
Isolation Test Voltage (between emitter and detector)	2500	VAC
Isolation Resistance	≥10 ¹²	Ω
V _{IO} =500 V, TA=25	≥10 ¹¹	Ω
V _{IO} =500 V, TA=100	≥10 ¹¹	Ω
Storage Temperature Range	-55 to +125	°C
Ambient Temperature Range	-55 to +100	°C
Soldering Temperature (max sec.)	260	°C
dip solder (20 g mm from case bottom)	260	°C
LED Continuous Forward Current	50	mA
LED Reverse Voltage	5	V
DC or Peak AC Load Voltage	400	V
Continuous DC Load Current	100	mA
Power Dissipation	150	mW
LED Continuous Forward Current	±50	mA
Collector to Emitter Breakdown Voltage	30	V
Collector Power Dissipation	150	mW

Electrical Characteristics (T_A=25°)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
SSR						
LED Forward Current for Switch Turn-on	I _{ON}	I	0.2	0.5	mA	I _F =100 mA, t=10 ms
LED Forward Current for Switch Turn-off	I _{OFF}	D.001			mA	V _F =±350 V
LED Forward Voltage	V _F	0.8	1.20	1.45	V	I _F =1.5 mA
ON-Resistance	R _{ON}	17	2.5	33	Ω	I _F =1.5 mA, I _L ±50 mA
OFF-Resistance	R _{OFF}		5000		GΩ	I _F =0 mA, V _F ±100 V
Current Limit	I _{lim}	170	210	270	mA	I _F =1.5 mA, t=5 ms
Output Off-state Leakage Current				0.1 1	200nA μA	I _F =0 mA, V _F ±100 V I _F =0 mA, V _F ±400 V
Output Capacitance Pins 15 to 18			55 10		pF pF	I _F =0 mA, V _F 1 V I _F =0 mA, V _F 50 V
Turn-on Time	t _{on}		1.0		ms	I _F =1.5 mA, I _L ±50 mA
				0.8	ms	I _F =5.0 mA, I _L ±50 mA
Turn-off Time	t _{off}		0.1		ms	I _F =1.5 mA, I _L ±50 V
				0.2	ms	I _F =5.0 mA, I _L ±50 mA
Optocoupler						
LED Forward Voltage	V _F	0.9	1.25	1.5	V	I _F =10 mA
DC Current Transfer Ratio	CTR	33	165		%	I _F =6.0 mA, V _F 0.5 V
Saturation Voltage	V _{CEsat}		.07	0.5	V	I _F ±16.0 mA, I _C ±2 mA
Dark Current Leakage	I _{CEO}			500	nA	I _F =0 mA, V _{CE} =5 V
Trickle Current Leakage	I _{CEO}			1	μA	I _F =5 μA, V _{CE} =5 V

SSR Characteristic Curves

Figure 1. SSR recommended operating conditions

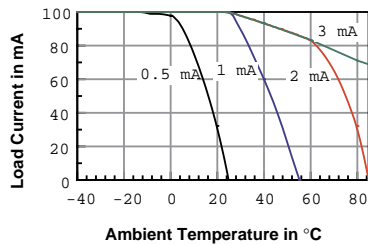


Figure 3. SSR turn-on current versus temperature

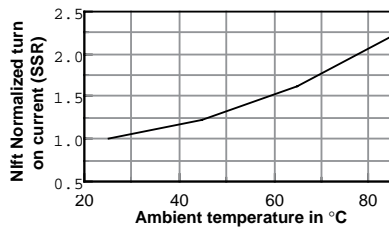


Figure 2. I_F versus V_F, typical

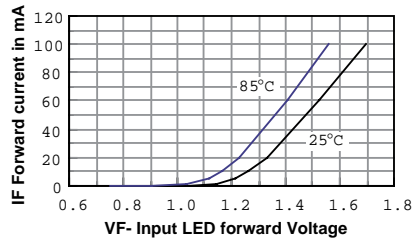


Figure 4. SSR current vs. voltage, typical

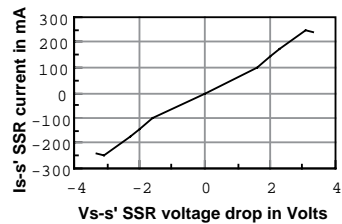


Figure 5. SSR turn on time versus resistive load

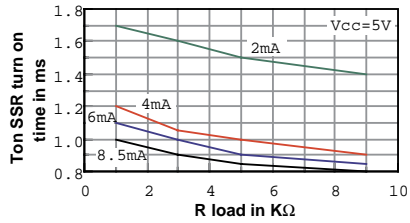
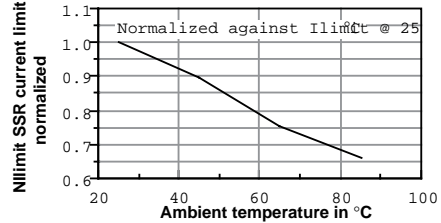


Figure 6. SSR current limit versus temperature



Typical Opto Channel Characteristic Curves
Figure 7. IC versus VCE, typical

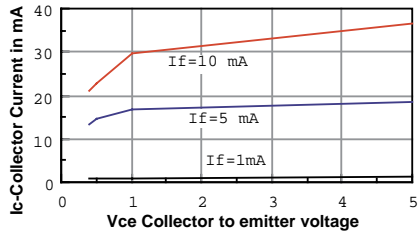


Figure 8. ICEO leakage current versus temp.

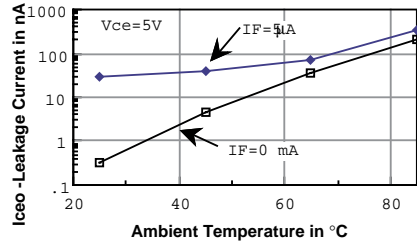


Figure 9. Saturated current transfer ratio, typical

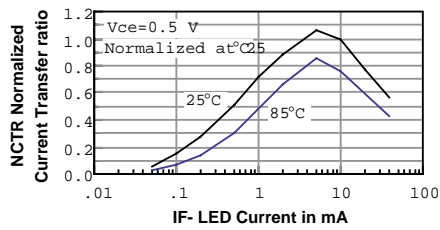


Figure 10. Non-saturated current transfer ratio, typical

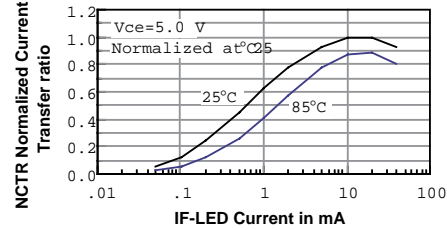


Figure 11. Switching test circuit for SSR channel

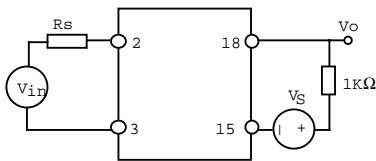


Figure 12. Switching waveform

