ITC100P
Integrated Telecom Circuits

	ITC100P	Units
Hook Switch Breakdown Voltage	350	V
Bridge Rectifier Reverse Voltage	350	V
Darlington Collector Current	120	mA

Features
- Small 16 Pin SOIC Package (PCMCIA Compatible)
- Board Space and Cost Savings
- No Moving Parts
- 3750V_{RMS} Input/Output Isolation
- FCC Compatible Part 68
- Photodarlington Hook Switch
- Full-Wave Bridge Rectifier
- Darlington Transistor for Electronic Inductor “Dry” Circuits
- Half Wave Current Detector for Ring Signal or Loop Current Detect
- JEDEC Standard Pin Out

Applications
- Data/Fax Modem
- Voice Mail Systems
- Telephone Sets
- Computer Telephony Integration
- Set Top Box Modems

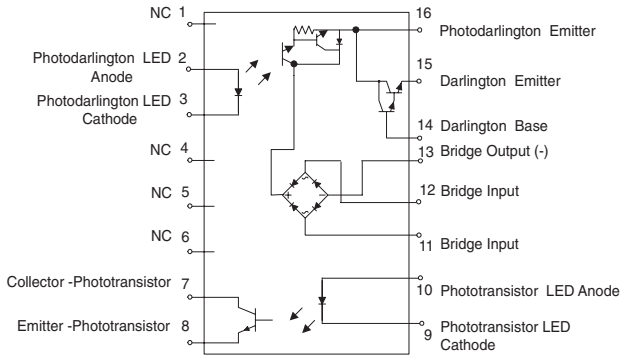
Description
The Integrated Telecom Circuit combines a high voltage optically isolated photodarlington, bridge rectifier, Darlington transistor and optocoupler into one 16 pin SOIC package, consolidating designs and reducing component count in telecom applications. The ITC100’s optocoupler provides for half wave detection of ring signals.

Approvals
- UL Recognized
- EN 60950

Ordering Information

Part #	Description
ITC100P	16 Pin SOIC (50/Tube)
ITC100PTR	16 Pin SOIC (1000/Reel)

Pin Configuration



Absolute Maximum Ratings (@ 25˚ C)

Parameter	Min	Typ	Max	Units
Total Package Dissipation	-	-	1[1]	W
Isolation Voltage Input to Output	3750	-	-	V_{RMS}
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 Seconds Max.)	-	-	+220	°C

[1] Above 25˚ derate linerity 8.33mw/°C

Total Power Dissipation (PD):

$P_D=P_{HOOKSWITCH} + P_{BRIDGE} + P_{DARLINGTON} + P_{LED}$

$P_D=(R_{DS}(on))\ (I^2_L) + 2(V_F)(I_L) + (V_{CE})(I_L) + (V_{LED})(I_F)$

WHERE:

$R_{DS}(on)$ = Maximum realy on resistance

I_L = Maximum loop current

V_F = Maximum diode forward voltage

V_{CE} = Maximum voltage collector to emitter

V_{LED} = Maximum LED forward voltage

I_F = Maximum LED current

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics

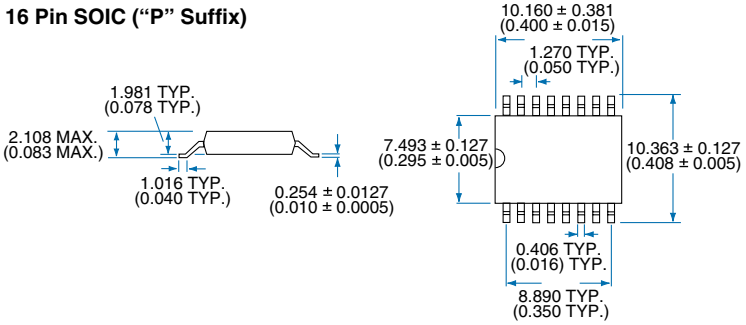
Parameter	Condition	Symbol	Min	Typ	Max	Units
Photodarlington Portion						
Collector-Emitter Breakdown voltage	I_C = 100uA	B_{VCEO}	350	-	-	V
Collector Dark Current	V_{CE} = 200V	I_{CEO}	-	-	100	nA
Collector Emitter Saturation Voltage	I_C = 100mA I_B = 150uA	$V_{CE(S)}$	-	-	1.2	V
Current Gain	Hfe	I_C= 40mA V_{CE} =2V	2500	-	40000	-
LED Input control Current	-	I_F	5	-	50	mA
LED input Voltage Drop	I_F = 5mA	V_F	0.9	1.2	1.4	V
LED Reverse Input Voltage	-	V_R	-	-	5	V
LED Reverse Input Current	I_R = 5V	I_R	-	-	10	mA
Phototransistor Portion						
Phototransitor Blocking Voltage	I_C = 10uA	B_{VCEO}	20	50	-	V
Phototransistor Dark Current	V_{CC} = 5V I_F = 0mA	I_{CEO}	-	50	500	mA
Saturation Voltage	I_C = 2mA I_F = 16mA	V_{SAT}	-	0.3	0.5	V
Current Transfer Ratio	V_{CE} = 0.5V I_F = 6mA	CTR	33	400	-	%
LED Input control Current	V_{CE} = 0.5V I_C = 2mA	I_F	6	2	100	mA
LED input Voltage Drop	I_F = 5mA	V_F	0.9	1.2	1.4	V
LED Input Current (Detector must be off)	V_{CE} = 5V I_C = 10uA	I_F	5	25	-	uA
Bridge Rectifier Portion						
Reverse Voltage	-	V_{RD}	-	-	350	V
Forward Voltage Drop	I_{FD} = 120mA	V_{FD}	-	-	1.1	V

Electrical Characteristics

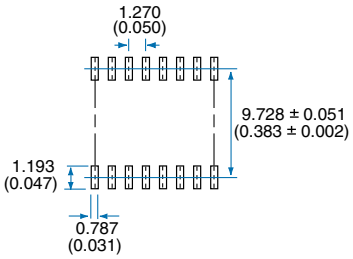
Parameter	Condition	Symbol	Min	Typ	Max	Units
Reverse Leakage Current	T_J= 25°C V_R = 350V T_J= 85°C	I_{RD}	-	-	10 50	uA uA
Forward Current Continuous		I_{FD}	-	-	140	mA
Forward Current Peak	T= 10mS	I_{FD}	-	-	0.5	A
Darlington Portion						
Collector Emitter Voltage	I_C=10mA DC I_B=0	V_{CEO}	20	-	-	V
Collector Current Continous	V_C=3.5V	I_C	-	-	120	mA
Off – State Collector Emitter Leakage Current	V_{CE}=10V I_B=0mA	I_{CEX}	-	-	1	uA
DC Gain Current	V_{CE}=5VDC I_C=100mA	h_{FE}	300	-	-	-
Saturation Voltage	I_C=120mA	$V_{CE(SAT)}$	-	-	1.5	V
Total Harmonic Distortion	F_0=300Hz @ -10dBm I_C=40mA	-	-	-	-80	dB

MECHANICAL DIMENSIONS

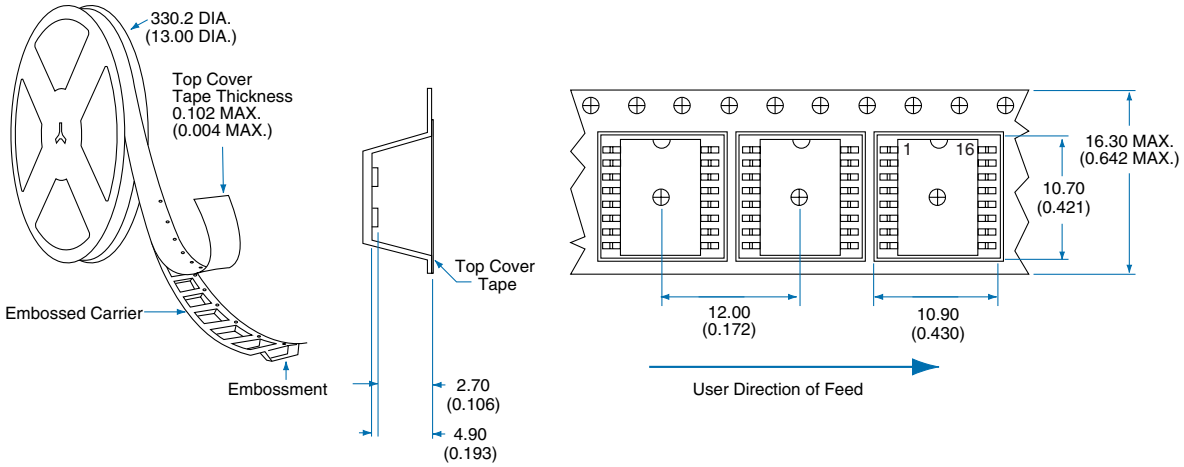
16 Pin SOIC (“P” Suffix)



PC Board Pattern (Top View)



Tape and Reel Packaging for 16 Pin SOIC Package



Dimensions
mm
(inches)

For additional information please visit our website at: www.clare.com

Specification: DS-ITC100P-R1.2

2/24/03