



DESCRIPTION

The STS700 is a multi-function telecommunications switch. It combines a 1 Form A solid state relay, optocoupler, darlington transistor and a bridge rectifier in a 16-pin SOIC package. The solid state relay is comprised of an infrared LED optically coupled to a Photo Diode Array that drives two back-to-back MOSFETs. The optocoupler consists of back-to-back infrared LEDs coupled to a Photo-Transistor. Its small outline and low height make the STS700 an ideal choice in telecom circuits where function integration and reduction of board space are essential.

FEATURES

- Miniature 16pin SOIC package
- Function integration (1 relay, 1 optocoupler, bridge rectifier and darlington transistor in 1 package)
- High Blocking Voltage (400V, relay portion)
- Low input control current (2.5mA TYP, relay portion)
- Low On-Resistance (30 ohms MAX, relay portion)
- High Load Current (120mA MAX, relay portion)
- High Input - Output Isolation (1.5kV MIN, relay portion)
- Long life / high reliability

APPLICATIONS

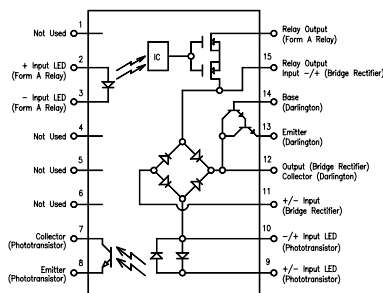
- Telecom switching
- PCMCIA cards
- Fax/modem modules
- Set-top boxes
- DAA arrangements
- Hookswitch
- Loop current detect
- Pulse dialing

OPTIONS/SUFFIXES*

- -TR Tape and Reel (1,000 pcs / reel)

NOTE: Suffixes listed above are not included in marking on device for part number identification.

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS*

PARAMETER	UNIT	MIN	TYP	MAX
Storage Temperature	°C	-55		120
Operating Temperature	°C	-40		85
Continuous Input Current	mA			40
Transient Input Current	mA			400
Reverse Input Control Voltage	V	6		
Output Power Dissipation	mW			500

*The values indicated are absolute stress ratings. Functional operation of the device is not implied at these or any conditions in excess of those defined in electrical characteristics section of this document. Exposure to Absolute Ratings may cause permanent damage to the device and may adversely affect reliability.

APPROVALS

- UL / C-UL Approved: File E201932

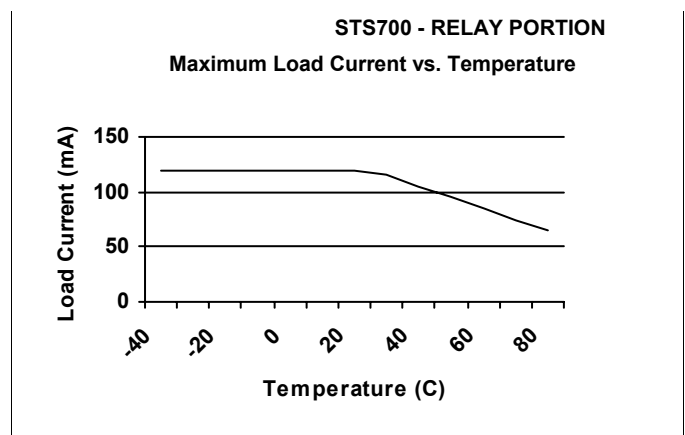
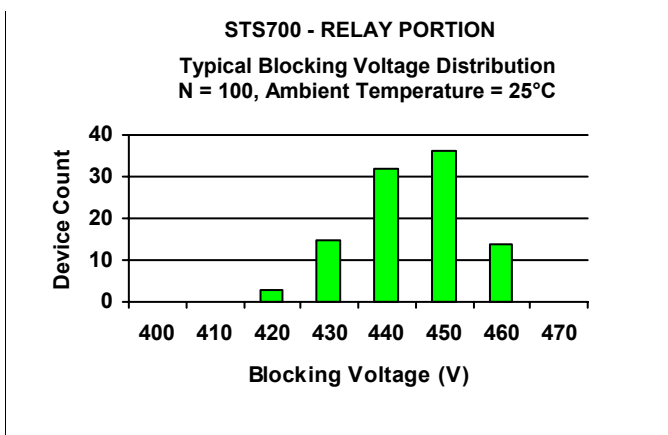
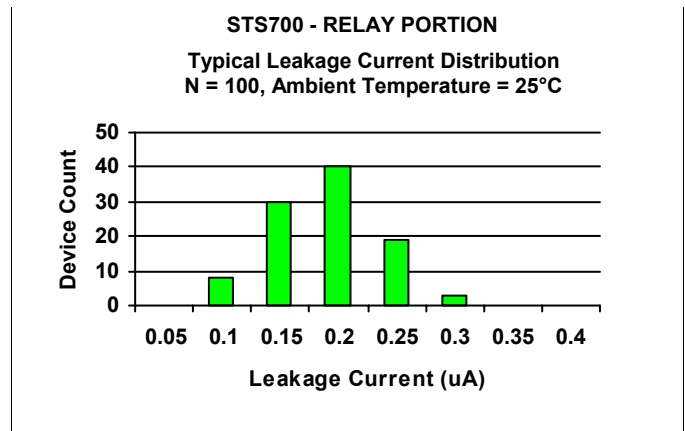
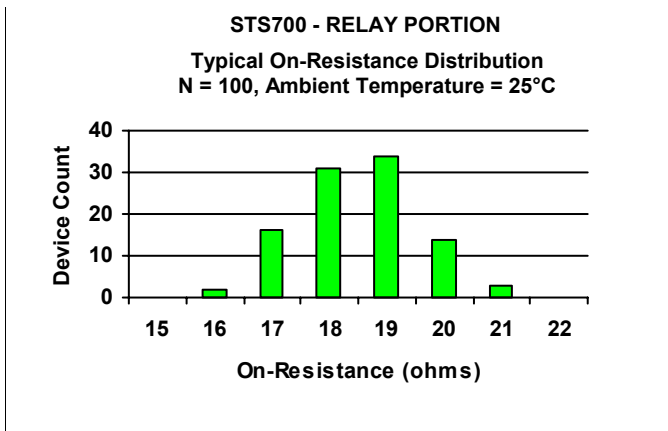
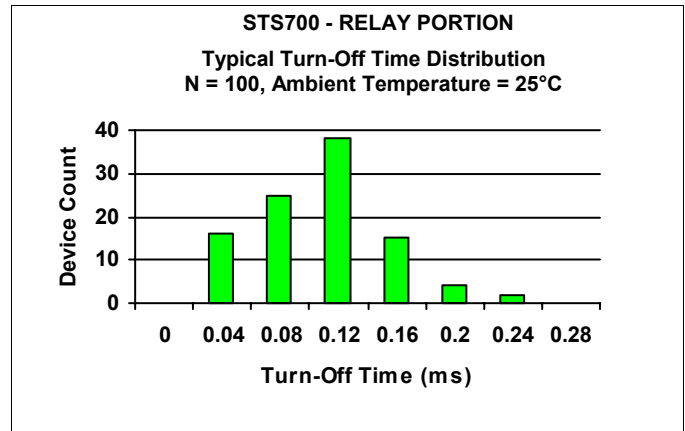
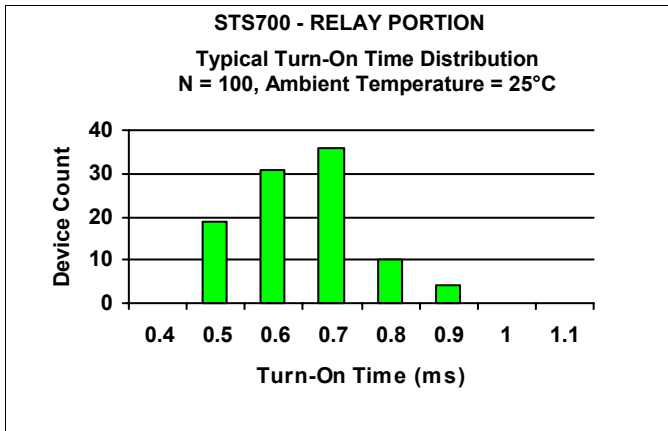
ELECTRICAL CHARACTERISTICS - 25°C

PARAMETER	UNIT	MIN	TYP	MAX	TEST CONDITIONS
RELAY PORTION INPUT SPECIFICATIONS					
LED Forward Voltage	V		1.2	1.5	If = 10mA
LED Reverse Voltage	V	6	12		Ir = 10uA
Turn-On Current	m A		2.5	10	Io = 120mA
Turn-Off Current	m A		0.5		
RELAY PORTION OUTPUT SPECIFICATIONS					
Blocking Voltage	V	400			Io = 1uA
Continuous Load Current	m A			120	If = 10mA
On-Resistance	Ω		18	30	Io = 120mA
Leakage Current	μ A		0.2	1	Vo = 350V
Output Capacitance	p F		25	50	Vo = 25V, f = 1.0MHz
Offset Voltage	m V			0.2	If = 10mA
Turn-On Time	m s		2	5	If = 10mA, Io = 120mA
Turn-Off Time	m s		0.5	1	If = 10mA, Io = 120mA
RELAY PORTION COUPLED SPECIFICATIONS					
Turn-On Time	m s		2	5	If = 5mA, Io = 120mA
Turn-Off Time	m s		0.5	1	If = 0mA, Io = 120mA
OPTOCOUPLER PORTION INPUT SPECIFICATIONS					
LED Forward Voltage	V		1.2	1.5	If = 10mA
Turn-On Current	m A	2			Io = 0.5mA
Reverse Current	μ A			10	Vr = 4V
Terminal Capacitance	p F		30	250	V = 0, f = 1kHz
OPTOCOUPLER PORTION OUTPUT SPECIFICATIONS					
Collector - Emitter Breakdown Voltage	V	60			Io = 10uA, If = 0
Emitter - Collector Breakdown Voltage	V	5			Io = 100uA, If = 0
Collector Dark Current	μ A			0.1	Vce = 20V, If = 0
Floating Capacitance	p F		0.6	1	V = 0V, f = 1.0MHz
Vce Saturation Voltage	V		0.1	0.3	If = 20mA, Ic = 1mA
Current Transfer Ratio	%	30	100	800	If = 5mA, Vce = 5V
Rise Time	μ s		5	20	Ic = 2mA, Vce = 2V, RL = 100 ohms
Fall Time	μ s		4	20	Ic = 2mA, Vce = 2V, RL = 100 ohms
COUPLED SPECIFICATIONS					
Isolation Voltage	V	1500			T = 1 minute
-H Suffix	V	2500			T = 1 minute
Coupled Capacitance	p F			2	
Contact Transient Ratio	V / μ s	2000	7000		dV = 50V

ELECTRICAL CHARACTERISTICS - 25°C

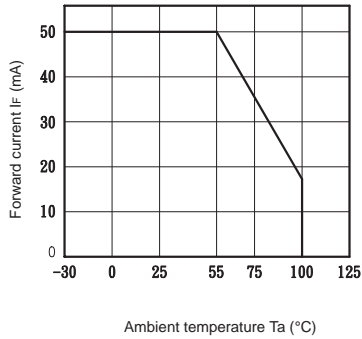
FULL WAVE BRIDGE RECTIFIER SPECIFICATIONS					
Reverse Voltage	V	100			Io = 10uA
Forward Voltage Drop	V		1.5	1.8	Io = 120mA
Reverse Leakage Current	μ A			10	Vr = 100V
Continuous Load Current	m A			140	
Peak Forward Current	m A			500	T = 10us
DARLINGTON TRANSISTOR SPECIFICATIONS					
Collector-Emitter Breakdown Voltage	V	40			Ic = 10uA, Ib = 0
Continuous Collector Current	m A			120	Vce = 5V
Collector-Emitter Leakage Current	μ A		0.5	1	Vce = 10V
Saturation Voltage	V			1.5	Ic = 120mA, Ib = 10mA

PERFORMANCE DATA

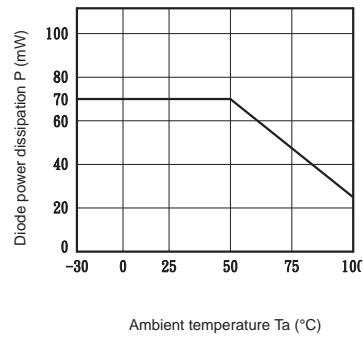


PERFORMANCE DATA

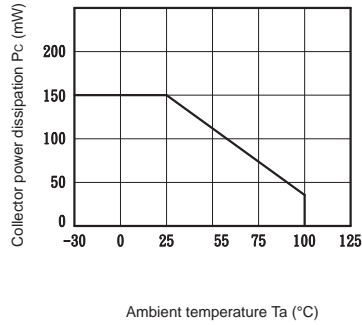
STS700 - OPTOCOUPLER PORTION
Forward Current vs. Ambient Temperature
N = 100, Ambient Temperature = 25°C



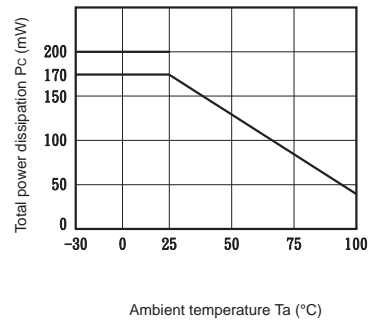
STS700 - OPTOCOUPLER PORTION
Diode Power Dissipation vs. Ambient Temperature
N = 100, Ambient Temperature = 25°C



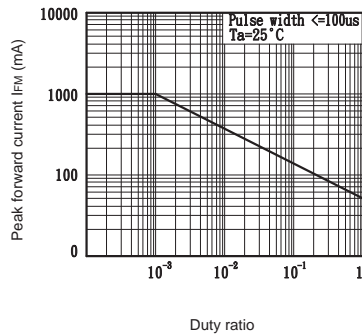
STS700 - OPTOCOUPLER PORTION
Collector Power Dissipation vs. Ambient Temperature
N = 100



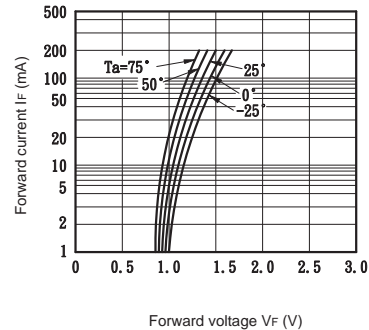
STS700 - OPTOCOUPLER PORTION
Total Power Dissipation vs. Ambient Temperature
N = 100



STS700 - OPTOCOUPLER PORTION
Peak Forward Current vs. Duty Ratio
N = 100, Ambient Temperature = 25°C

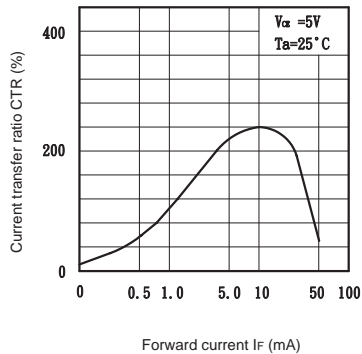


STS700 - OPTOCOUPLER PORTION
Forward Current vs. Forward Voltage
N = 100, Ambient Temperature = 25°C

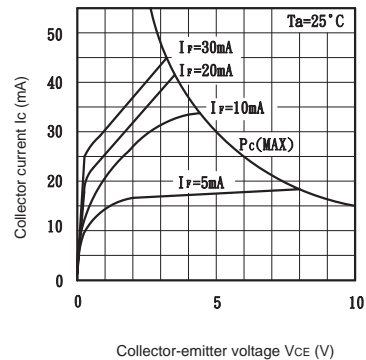


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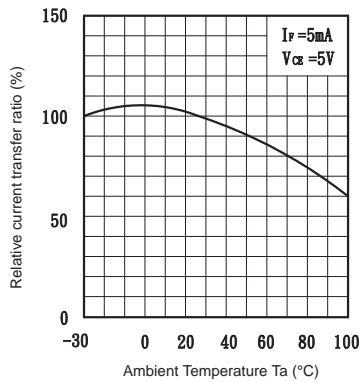
STS700 - OPTOCOUPLER PORTION
Current Transfer Ratio vs. Forward Current
N = 100, Ambient Temperature = 25°C



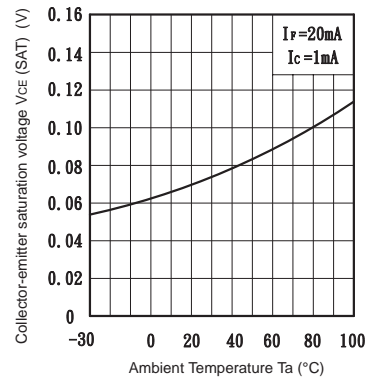
STS700 - OPTOCOUPLER PORTION
Collector Current vs. Collector-Emitter Voltage
N = 100, Ambient Temperature = 25°C



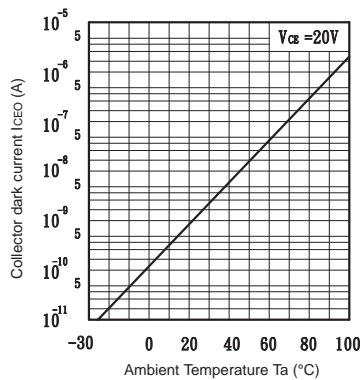
STS700 - OPTOCOUPLER PORTION
Relative Current Transfer Ratio vs. Ambient Temperature
N = 100



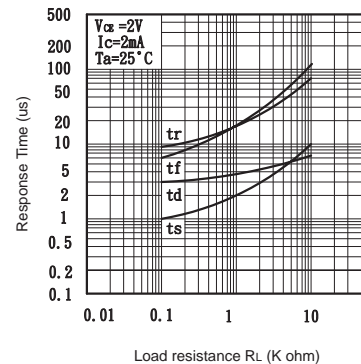
STS700 - OPTOCOUPLER PORTION
Collector-Emitter Saturation Voltage vs. Ambient Temperature
N = 100



STS700 - OPTOCOUPLER PORTION
Collector Dark Current vs. Ambient Temperature
N = 100

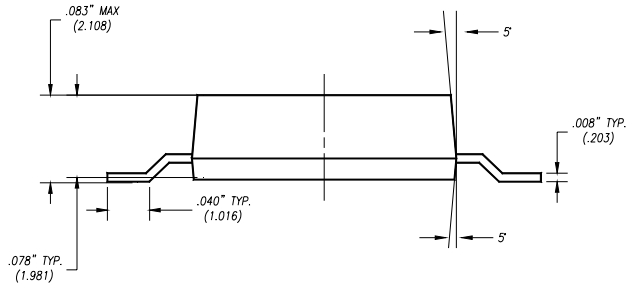


STS700 - OPTOCOUPLER PORTION
Response Time vs. Load Resistance
N = 100, Ambient Temperature = 25°C

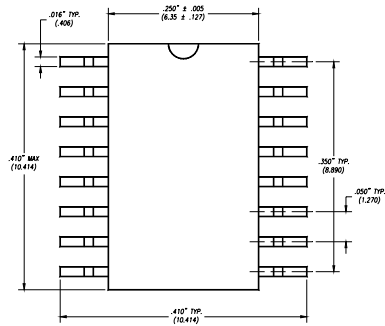


MECHANICAL DIMENSIONS

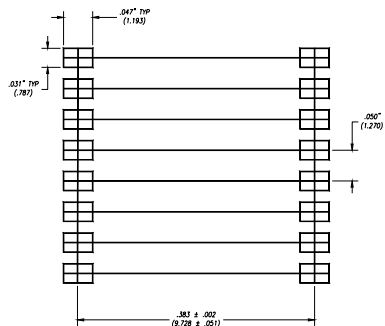
16 PIN SMALL OUTLINE INTEGRATED CIRCUIT



END VIEW



TOP VIEW



BOTTOM VIEW/
BOARD PATTERN

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