SOLID STATE OPTRONICS

STS100



Multifunction
Telecommunications Switch

RoHS compliant

DESCRIPTION

The STS100 combines two 1 Form A solid state relays and one optocoupler in a 16-pin SOIC package. Each relay is composed of an Infrared LED optically coupled to a Photo Diode Array that drives two back-to-back DMOS transistors. The optocoupler consists of back-to-back Infrared LEDs optically coupled to a Photo-Transistor. The small outline and low height make the STS100 an ideal choice in telecom circuits where function integration and reduction of board space are essential.

FEATURES

- Miniature 16pin SOIC package
- Function integration (2 relays+1 optocoupler in one 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
- RoHS / Pb-Free / REACH Compliant

APPLICATIONS

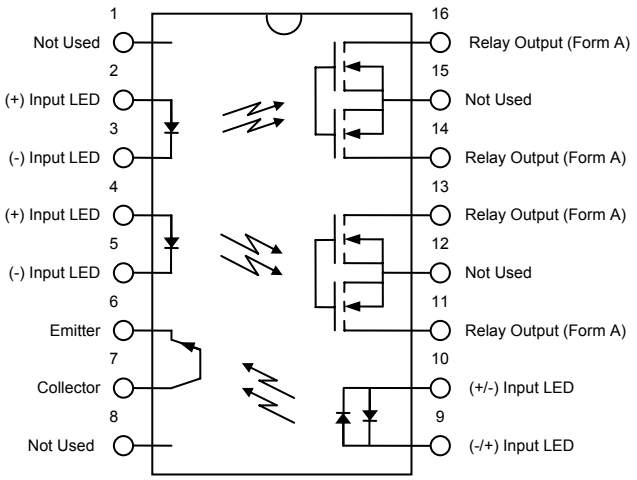
- Telecom switching
- PCMCIA cards
- Fax/modem modules
- Set-top boxes
- DAA arrangements
- Hookswitch
- Loop current detect
- Pulse dialing

OPTIONS/SUFFIXES*

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

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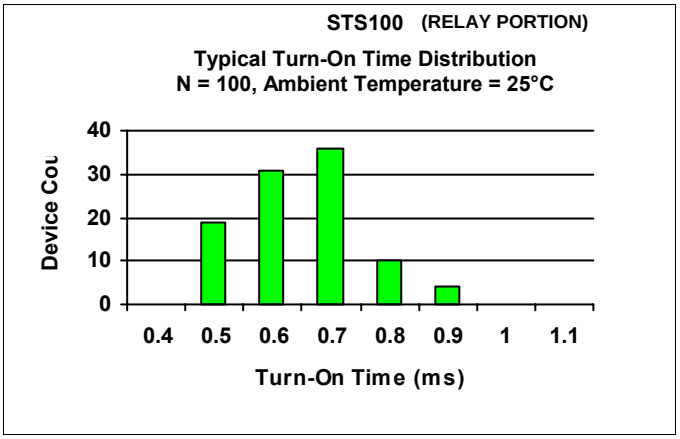
ELECTRICAL CHARACTERISTICS - 25°C

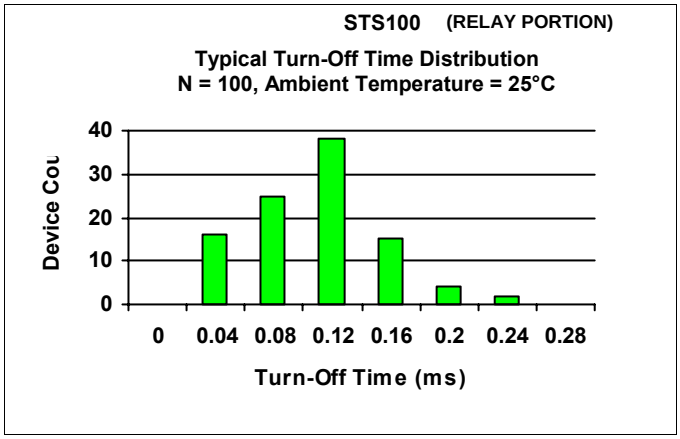
PARAMETER	UNIT	MIN	TYP	MAX	TEST CONDITIONS
RELAY PORTION INPUT SPECIFICATIONS					
LED Forward Voltage	V		1.2	1.5	If = 10mA
LED Reverse Voltage	V	6	12		Ir = 10uA
Turn-On Current	m A		2.5	5	Io = 120mA
Turn-Off Current	m A		0.5		
RELAY PORTION OUTPUT SPECIFICATIONS					
Blocking Voltage	V	400			Io = 1uA
Continuous Load Current	m A			120	If = 5mA
On-Resistance	Ω		18	30	If = 5mA, Io = 120mA
Leakage Current	μ A		0.21	1	Vo = 400V
Output Capacitance	p F		25	50	Vo = 25V, f = 1.0MHz
Offset Voltage	m V			0.2	If = 5mA
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			If = 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
Isolation Resistance	G Ω	50			DC500V
Coupled Capacitance	p F			2	
Contact Transient Ratio	V / μs	2000	7000		DV = 50V

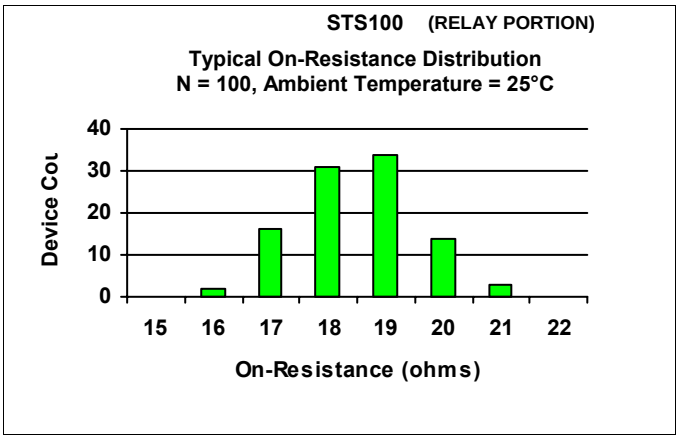
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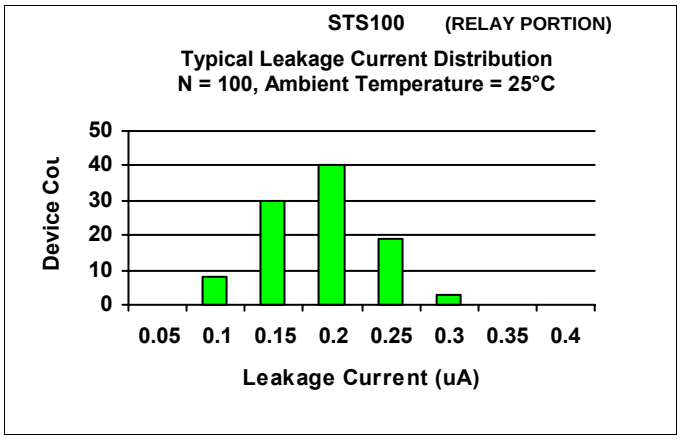
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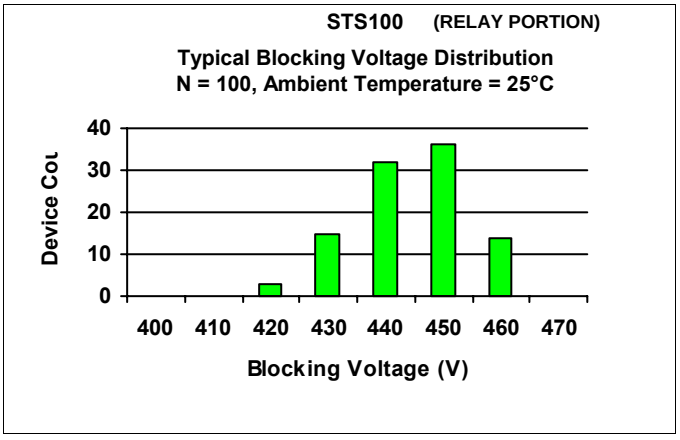
PERFORMANCE DATA

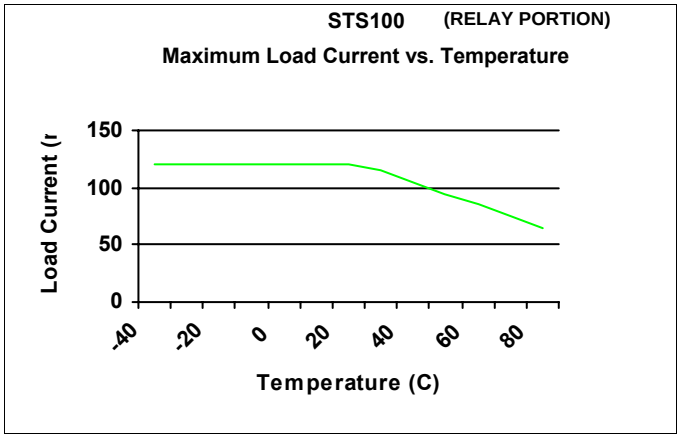








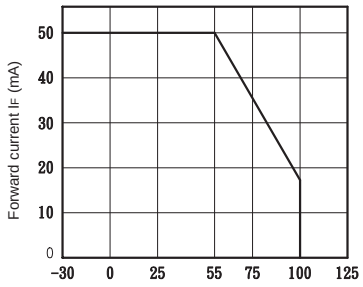




STS100 - OPTOCOUPLER PORTION

Forward Current vs. Ambient Temperature

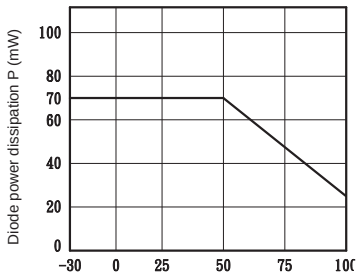
N = 100, Ambient Temperature = 25°C



STS100 - OPTOCOUPLER PORTION

Diode Power Dissipation vs. Ambient Temperture

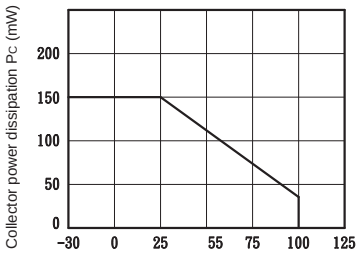
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STS100 - OPTOCOUPLER PORTION

Collector Power Dissipation vs. Ambient Temperature

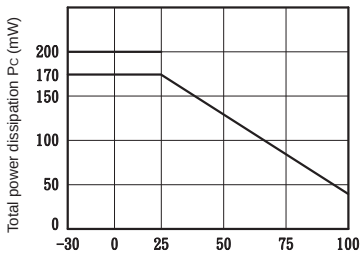
N = 100



STS100 - OPTOCOUPLER PORTION

Total Power Dissipation vs. Ambient Temperature

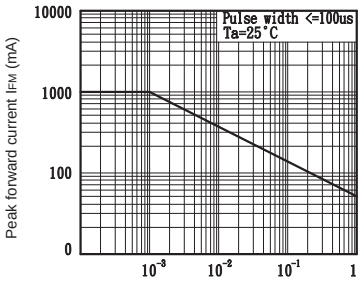
N = 100



STS100 - OPTOCOUPLER PORTION

Peak Forward Current vs. Duty Ratio

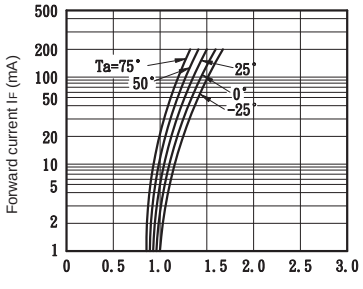
N = 100, Ambient Temperature = 25°C



STS100 - OPTOCOUPLER PORTION

Forward Current vs. Forward Voltage

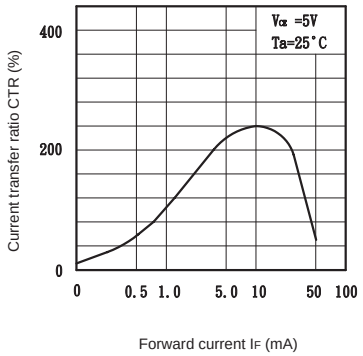
N = 100, Ambient Temperature = 25°C



STS100 - OPTOCOUPLER PORTION

Current Transfer Ratio vs. Forward Current

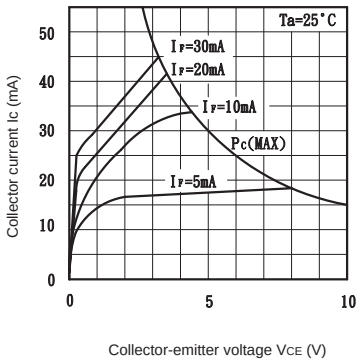
N = 100, Ambient Temperature = 25°C



STS100 -OPTOCOUPLER PORTION

Collector Current vs. Collector-Emitter Voltage

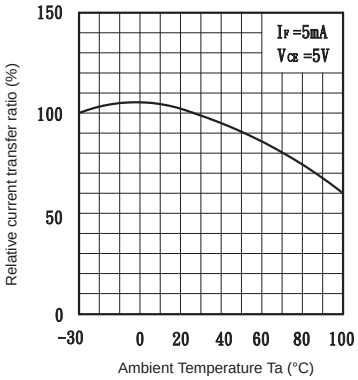
N = 100, Ambient Temperature = 25°C



STS100 - OPTOCOUPLER PORTION

Relative Current Transfer Ratio vs. Ambient Temperature

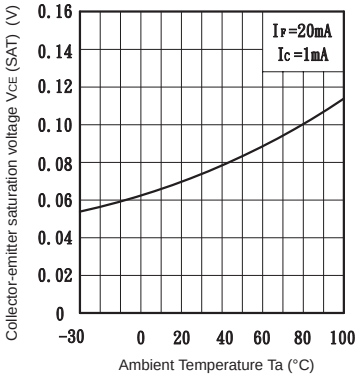
N = 100



STS100 - OPTOCOUPLER PORTION

Collector-Emitter Saturation Voltage vs. Ambient Temperature

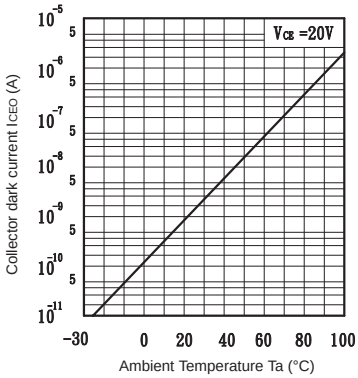
N = 100



STS100 - OPTOCOUPLER PORTION

Collector Dark Current vs. Ambient Temperature

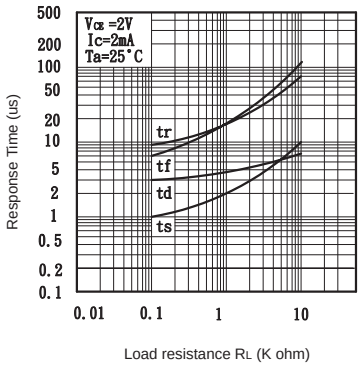
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STS100 - OPTOCOUPLER PORTION

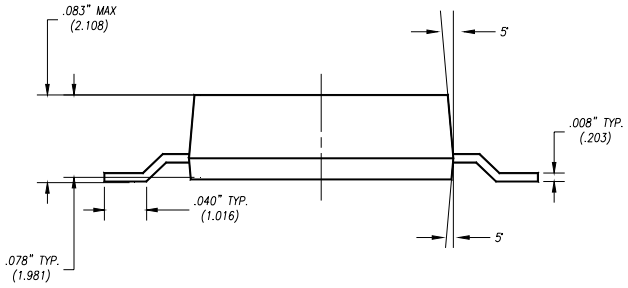
Response Time vs. Load Resistance

N = 100, Ambient Temperature = 25°C



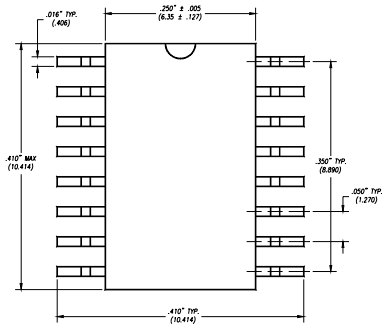
MECHANICAL DIMENSIONS

16 PIN SMALL OUTLINE INTEGRATED CIRCUIT

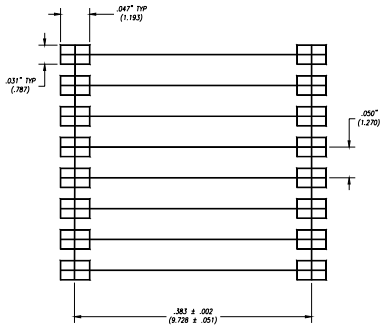


END VIEW

NOTE: MAX Co-planarity 0.003" (0.076mm)



TOP VIEW



BOTTOM VIEW/
BOARD PATTERN

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