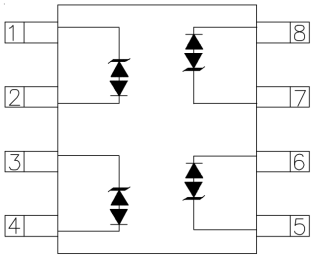
Description

The AU2804S8 is designed to protect low voltage, CMOS semiconductors from transients caused by electrostatic discharge (ESD), cable discharge events (CDE), lightning and other induced voltage surges. Low capacitance compensation diode is integrated into the TVS to lower the typical capacitance to 5pF per line. The AU2804S8 complies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. The AU2804S8 is assembled into a 8-pin lead-free SO-8 package, The combination of low leakage, signal integrity and flow through design makes the AU2804S8 an ideal application such as 10/100/1000 Ethernet.

Features

- 100W peak pulse power (8/20μs)
- Protects two line pairs (four lines)
- Ultra low leakage: nA level
- Low operating voltage: 2.8V
- Low capacitance
- Ultra low clamping voltage
- JEDEC SO-8 package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 10A (8/20μs)
- RoHS Compliant

Dimensions and Pin Configuration



Circuit and Pin Schematic

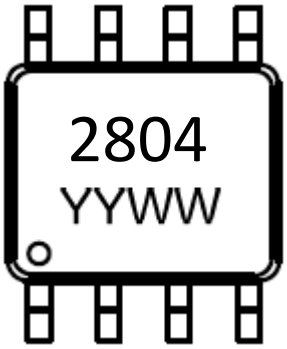
Mechanical Characteristics

- Package: SO-8
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Base Station
- Analog Inputs
- Switch Systems
- 10/100/1000 Ethernet
- WAN/LAN Equipment
- Desktops, Servers, and Notebooks
- Low Voltage Interfaces

Marking Information



2804 = Device Marking Code

Dot denotes Pin1

Ordering Information

Part Number	Packaging	Reel Size
AU2804S8	2500/Tape & Reel	13 inch

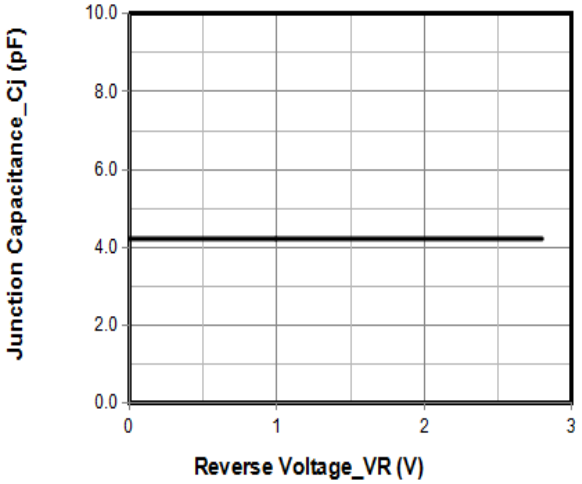
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	100	W
Peak Pulse Current (8/20μs)	I_{PP}	10	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

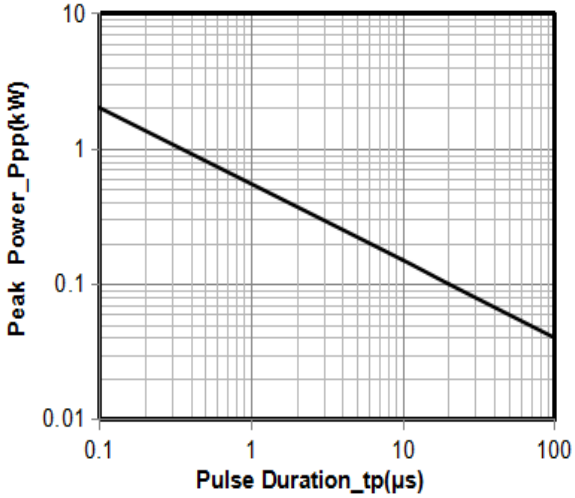
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			2.8	V	
Punch-Through Voltage	V_{PT}	3.5	3.8		V	I_T = 2μA
Snap-Back Voltage	V_{SB}	2.8			V	I_T = 50mA
Reverse Leakage Current	I_R			0.05	μA	V_{RWM} = 2.8V
Clamping Voltage	V_C			5.5	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			10	V	I_{PP} = 10A (8 x 20μs pulse)
Variation in Capacitance With reverse bias			1.3		pF	Pin 1,8 to 2,7 and Pin 3,6 to 4,5 VR=0 to 2.8V f=1MHZ
Junction Capacitance	C_J		4.5	6	pF	Pin 1,8 to 2,7 and Pin 3,6 to 4,5 VR=2.8V f=1MHZ

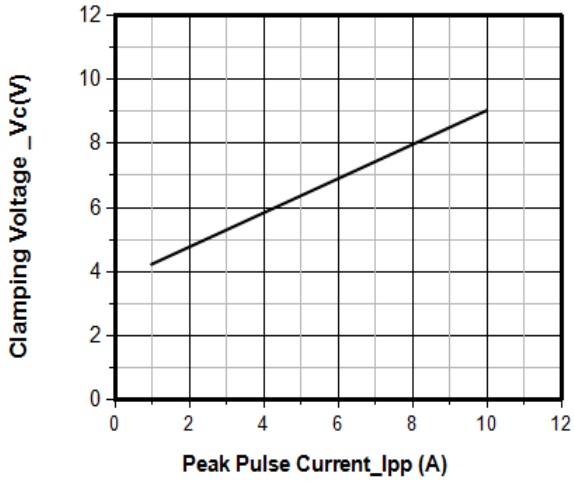
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)

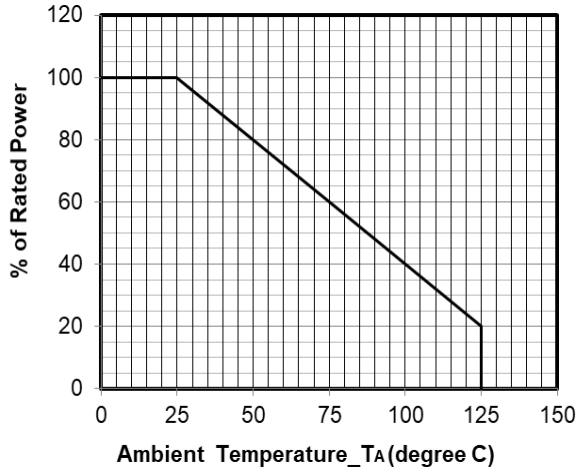


Junction Capacitance vs. Reverse Voltage

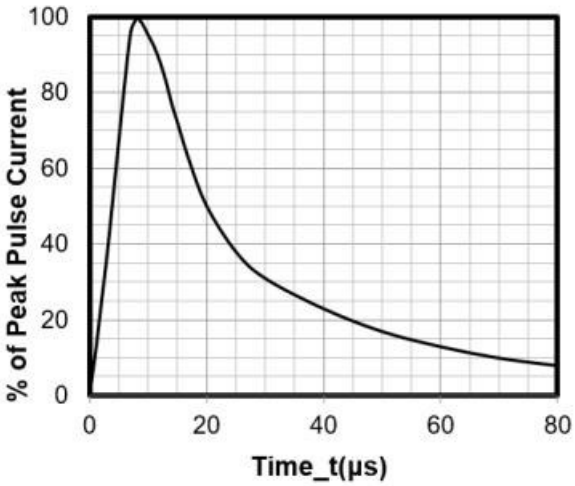


Peak Pulse Power vs. Pulse Time

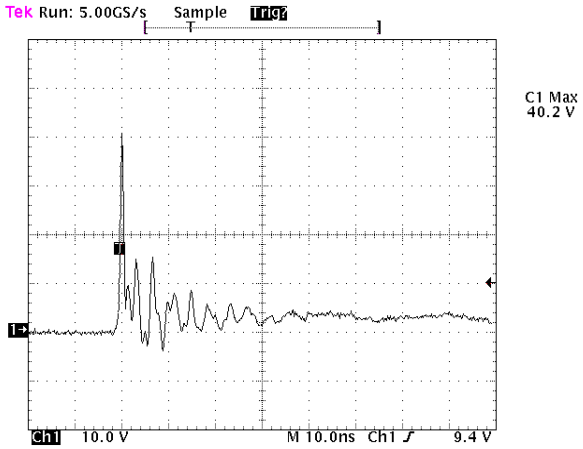




Power Derating Curve



8 X 20μs Pulse Waveform



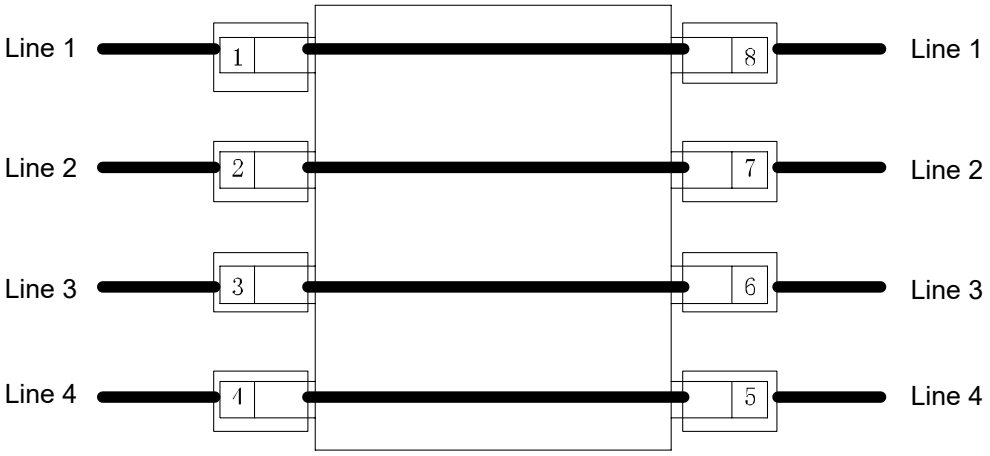
Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

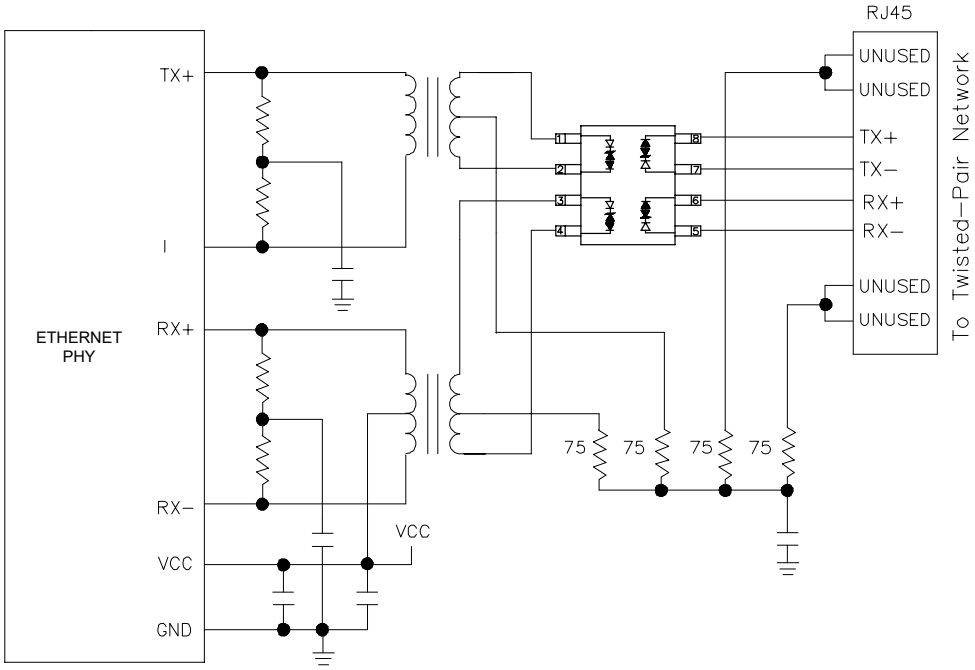
Typical Application

The AU2804S8is designed such that the data lines are routed through the device. The first line pair enters at pins 1 and 2 and exit at pins 8 and 7 respectively. The second line pair enters at pins 3 and 4 and exits at pins 6 and 5. The traces must be connected at the bottom of the device as shown.

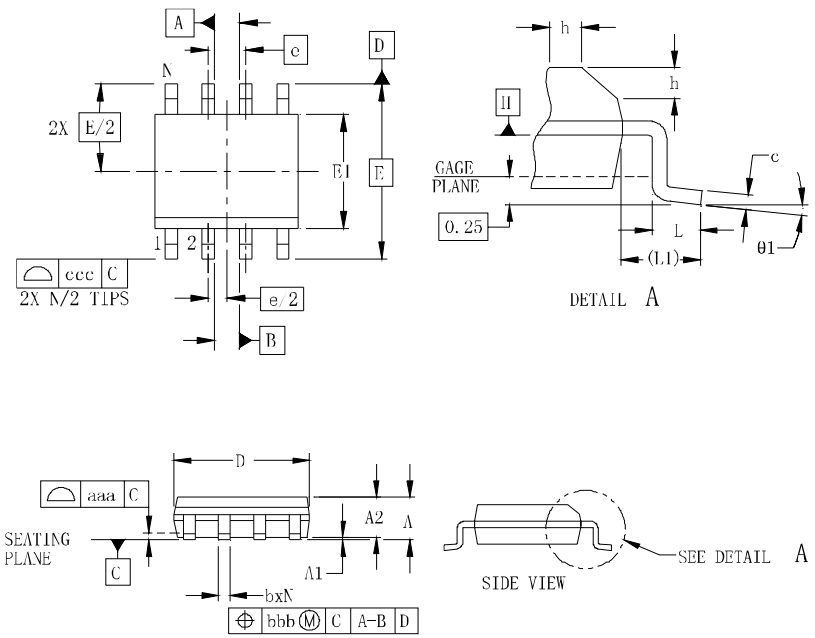


Low capacitance protection of two differential line pairs

AU2804S8 on Ethernet Application

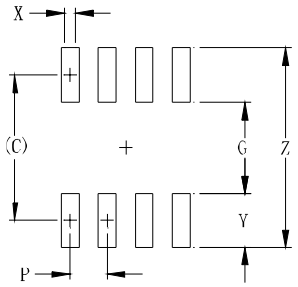


SO-8 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.004		0.010
A2	1.25		1.65	0.049		0.065
b	0.31		0.51	0.012		0.020
c	0.17		0.25	0.007		0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E1	3.80	3.90	4.00	0.150	0.154	0.157
E	6.00 BSC			0.236 BSC		
e	1.27 BSC			0.050 BSC		
h	0.25		0.50	0.010		0.020
L	0.40	0.72	1.04	0.016	0.028	0.041
L1	(1.04)			(0.041)		
N	8			8		
θ1	0°		8°	0°		8°
aaa	0.10			0.004		
bbb	0.25			0.010		
ccc	0.20			0.008		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	(5.20)	0.205
G	3.00	0.118
P	1.27	0.050
X	0.60	0.024
Y	2.20	0.087
Z	7.40	0.291

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