

9/10 CHANNEL LIVE ESD PROTECTION ARRAY

Features

- Live ESD protection up to 10KV
- EMI noise filter for very high frequencies

Applications

- EMI/RFI filtering
- Protection of sensitive devices against latch-up
- Protection of IC terminals which are exposed to ESD discharge during operation

Pin Assignments

1	GND	VDD	20	1	GND	VDD	24
2	IN1	OUT1	19	2	IN1	OUT1	23
3	IN2	OUT2	18	3	IN2	OUT2	22
4	IN3	OUT3	17	4	IN3	OUT3	21
5	IN4	OUT4	16	5	IN4	OUT4	20
6	IN5	OUT5	15	6	IN5	OUT5	19
7	IN6	OUT6	14	7	IN6	OUT6	18
8	IN7	OUT7	13	8	IN7	OUT7	17
9	IN8	OUT8	12	9	IN8	OUT8	16
10	IN9	OUT9	11	10	IN9	OUT9	15
				11	IN10	OUT10	14
				12	GND	VDD	13

PDN 27A90
PDN 27A91

Product Description

With VDD connected to the positive rail and VSS connected to the negative rail of a power supply and the lines from an integrated circuit to be protected from ESD discharges connected to the outputs of the PDN 27A90/91, and the inputs of the PDN 27A90/91 connected to an external connector, this IC will effectively protect the other IC from ESD discharges up to 10KV (human body model, 100pF through 1.5KΩ MIL-STD-883), which also includes prevention of ESD induced latch-up. The CMD PDN 27A90/91 9/10 Channel Live ESD Protection Array will also present a low pass filter to the signals coming from the logic circuitry to the connector which attenuates or eliminates the high frequency components (EMI/RFI). In which case only the negative rail, e.g. ground, is accessible for the PDN 27A90/91, the use of a single, discrete zener diode from the VDD pin to the VSS pin will effectively replace the positive supply and protect the driver chip from positive ESD discharges as well.

Another alternative, in case only the negative rail is available, is to connect a capacitor from the VDD pin to the VSS pin with least 1μF value.

ABSOLUTE MAXIMUM RATINGS

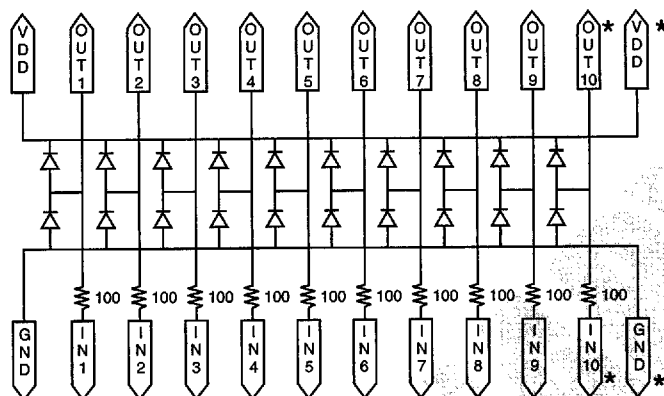
Parameter	Symbol	Rating
Supply Voltage	VDD-GND	V-0.3V to +7V
DC-Voltage at any channel input	V _{IN}	-5V to VDD +5V
DC-Voltage at any channel output	V _{OUT}	-0.8V to VDD +0.8V
Channel clamp current (continuous)	I _{IN}	±50mA
Power Dissipation, IF ≤ 50 mA/channel, TA=75°C		600mW
Operating Temperature Range	TA	-65°C to +150°C
Storage Temperature	T _{stg}	0°C to 70°C
Package Power Rating		1.00W, max.

The absolute maximum ratings are limiting values, to be applied individually, beyond which the device may be permanently damaged. Functional operation under any of these conditions is not guaranteed. Exposing the device to its absolute maximum rating may affect its reliability.

ELECTRICAL CHARACTERISTICS (TA=0°C to 70°C)

Parameter	Conditions	Typ
Resistance (IN - OUT)		100Ω
Diode clamping voltage	I _{OUT} =100mA I _{OUT} =-100mA	VDD+1.2V -1.0V
Channel leakage	0 ≤ V _{IN} ≤ V _{DD}	100nA
Output capacitance	V _{OUT} =0V	8pF

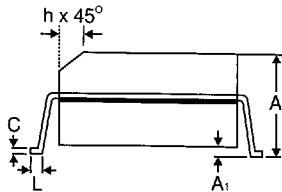
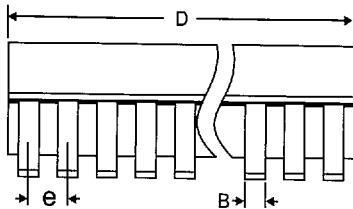
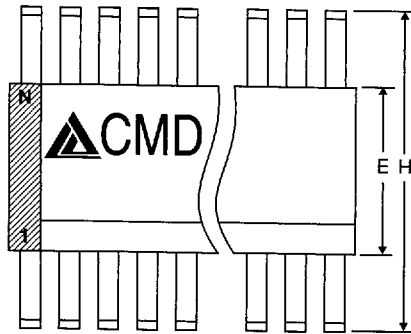
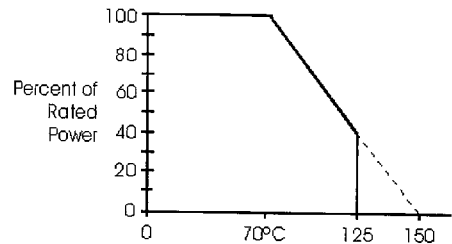
Block Diagram



* Applicable to 10 channel array type.

STANDARD PART ORDERING INFORMATION

Array	Package		Ordering Part Number		
Type	Pins	Style	Tubes	Tape & Reel	Part Marking
9 Channel	20	SOIC	PDN27A90/T	PDN27A90/R	PDN27A90
10 Channel	24	QSOP	PDN27A91/T	PDN27A91/R	PDN27A91

TOP

Power Derating Curve

Mechanical Specifications

Lead Plating	Tin-Lead
Lead Material	Copper Alloy
Lead Coplanarity	0.004" (0.102mm)
Substrate Material	Silicon
Body Material	Molded Epoxy
Flammability	UL94V-0

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Package Dimensions, Power Dissipation & Ordering Information

Package	SOIC Narrow								SOIC Wide				SOIC Wide				SOIC Wide			
Pins #	16				16				20				24							
	mm		inches		mm		inches		mm		inches		mm		inches					
A	1.35	1.75	0.053	0.069	2.35	2.65	0.093	0.104	2.35	2.85	0.093	0.104	2.35	2.85	0.093	0.104				
A ₁	0.10	0.25	0.004	0.010	0.10	0.30	0.004	0.012	0.10	0.30	0.004	0.012	0.10	0.30	0.004	0.012				
B	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020	0.33	0.51	0.013	0.020				
C	0.19	0.25	0.007	0.010	0.23	0.32	0.009	0.013	0.23	0.32	0.009	0.013	0.23	0.32	0.009	0.013				
D	9.80	10.29	0.385	0.405	10.11	10.50	0.398	0.413	12.60	13.21	0.496	0.520	15.20	15.60	0.598	0.614				
E	3.80	4.19	0.150	0.165	7.40	7.87	0.291	0.310	7.40	7.87	0.291	0.310	7.40	7.60	0.291	0.300				
e	1.27 BSC		0.500 BSC		1.27 BSC		0.500 BSC		1.27 BSC		0.500 BSC		1.27 BSC		0.500 BSC					
H	5.80	6.20	0.228	0.244	10.00	10.65	0.394	0.419	10.00	10.65	0.394	0.419	10.00	10.65	0.394	0.419				
h	0.25	0.50	0.010	0.020	0.25	0.75	0.010	0.030	0.25	0.75	0.010	0.030	0.25	0.75	0.010	0.030				
L	0.40	1.27	0.016	0.050	0.40	1.27	0.015	0.050	0.40	1.27	0.015	0.050	0.40	1.27	0.015	0.050				
P _D @ 70°C	0.8W				1W				1.2W				1.2W							
# / tube	48 pcs				38 pcs				38 pcs				38 pcs							
# / tape & reel	2,500 pcs				1,000 pcs				1,000 pcs				1,000 pcs							

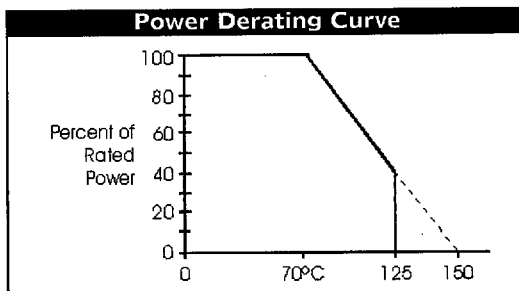
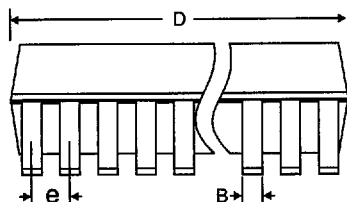
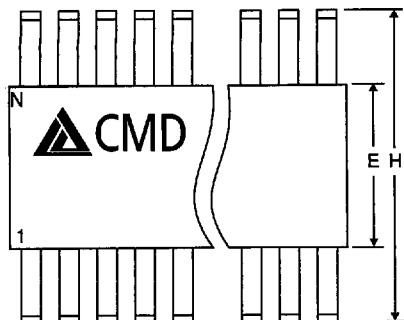
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TOP

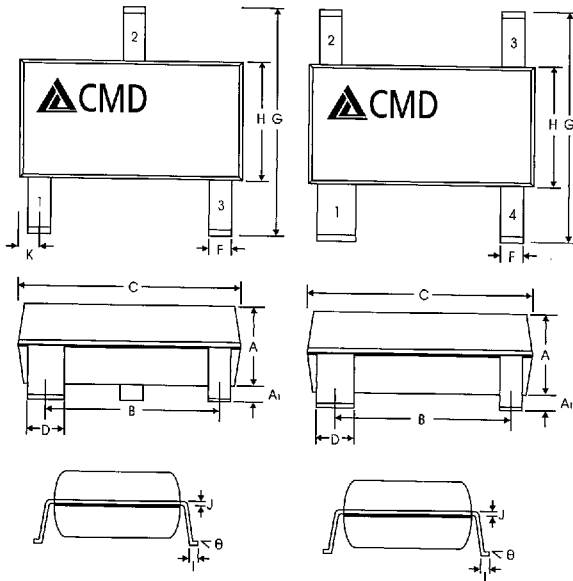
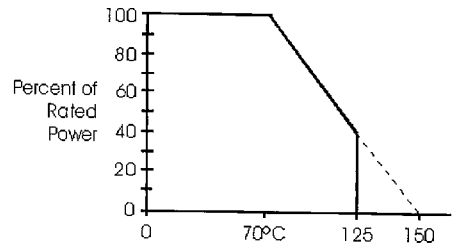


Mechanical Specifications	
Lead Plating	Tin-Lead
Lead Material	Copper Alloy
Lead Coplanarity	0.004" (0.102mm)
Substrate Material	Silicon
Body Material	Molded Epoxy
Flammability	UL94V-0

Package Dimensions, Power Dissipation & Ordering Information

Package	QSOP								TSSOP			
Pins #	16				16				20			
JEDEC	MO 137				MO 137				MO 153			
	mm		inches		mm		inches		mm		inches	
	min	max	min	max	min	max	min	max	min	max	min	max
A	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069	1.35	1.75	0.053	0.069
A ₁	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010	0.10	0.25	0.004	0.010
B	0.20	0.30	0.008	0.012	0.20	0.30	0.008	0.012	0.20	0.30	0.008	0.012
C	0.18	0.25	0.007	0.010	0.18	0.25	0.007	0.010	0.18	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197	8.56	8.73	0.337	0.344	8.56	8.73	0.337	0.344
E	3.81	3.98	0.150	0.157	3.81	3.98	0.150	0.157	3.81	3.98	0.150	0.157
e	.64	BSC	0.025	BSC	.64	BSC	0.025	BSC	.64	BSC	0.025	BSC
H	5.79	6.19	0.228	0.244	5.79	6.19	0.228	0.244	5.79	6.19	0.228	0.244
L	0.40	1.27	0.016	0.050	0.40	1.27	0.016	0.050	0.40	1.27	0.016	0.050
P _D @ 70°C	0.75W				1.00W				1.00W			
# / tube	99 pcs				56 pcs				56 pcs			
# / tape & reel	2,500 pcs				2,500 pcs				2,500 pcs			

Note: JEDEC standard call out QSOP as SSOP.

TOP
TOP

SOT-23
SOT-143
Power Derating Curve

Mechanical Specifications

Lead Plating	Tin-Lead
Lead Material	Copper Alloy
Lead Coplanarity	0.004" (0.102mm)
Substrate Material	Silicon
Body Material	Molded Epoxy
Flammability	UL94V-0

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Package Dimensions, Power Dissipation & Ordering Information

Package Pins#	SOT-23				SOT-143			
	3		3		4		4	
	mm		inches		mm		inches	
	min	max	min	max	min	max	min	max
A	0.79	1.097	0.031	0.043	0.79	1.097	0.031	0.043
A ₁	0.013	0.10	0.0005	0.004	0.013	0.10	0.0005	0.004
B	0.38*	0.54	0.015*	0.021*	1.7	2.03	0.067	0.080
C	2.67	3.05	0.105	0.120	2.82	3.02	0.111	0.119
D	-	-	-	-	0.77	0.94	0.030	0.037
E	1.80	2.00	0.071	0.079	-	-	-	-
F	-	-	-	-	0.38*	0.54*	0.015*	0.021*
G	2.10	2.50	0.083	0.098	2.10	2.50	0.083	0.098
H	1.20	1.40	0.047	0.055	1.20	1.40	0.047	0.055
I	0.21	0.41	0.008	0.016	0.21	0.41	0.008	0.016
J	0.089	0.15	0.0035	0.0059	0.089	0.15	0.0035	0.0059
K	0.44	0.55	0.017	0.022	-	-	-	-
0	0	8	0	8	0	8	0	8
P _D @ 70°C	0.225W				0.225W			
# / bag	1,000 pcs				1,000 pcs			
# / tape & reel	2,500 pcs				2,500 pcs			

* All three/four pins