Description

The DL7004S2 is an ultra low capacitance diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The DL7004S2 has an ultra-low capacitance with a typical value at 0.8pF(I/O to I/O), and complies with the IEC 61000-4-2 (ESD) with ±15kV air and ±8kV contact discharge. It is assembled into a 6-Pin lead-free SOT23-6 package. The low capacitance array make it ideal for four high speed data and transmission line. This device is optimized for ESD protection of portable electronics.

Features

- Ultra low capacitance: 0.8pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 70V
- Low clamping voltage
- Up to 4 data lines and one power line protects
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
- ROHS Compliant

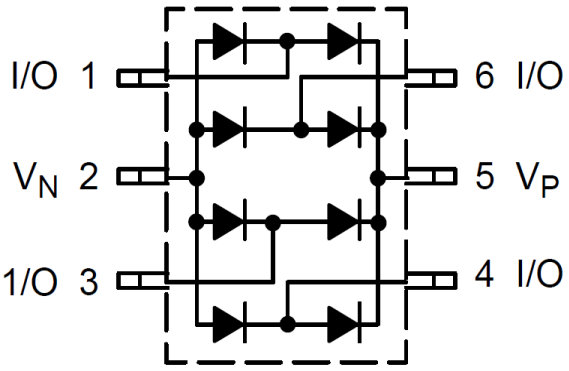
Mechanical Characteristics

- Package: SOT23-6
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

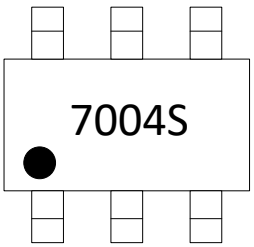
- USB 1.1 and 2.0 Data Line Protection
- T1/E1 Secondary IC Protection
- T3/E3 Secondary IC Protection
- HDSL, IDSL Secondary IC Protection
- Video Line Protection
- Microcontroller Input Protection
- Base Stations

Dimensions and Pin Configuration



Circuit and Pin Schematic

Marking Information



7004S = Device Marking Code
Dot denotes Pin1

Ordering Information

Part Number	Marking	Packaging	Reel Size
DL7004S2	7004S	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
Reverse Voltage	VR	70	Vdc
Forward Current	I_F	200	mAdc
Peak Forward Surge Current	I_{FM}	500	mAdc
Repetitive Peak Reverse Voltage	V_{RRM}	70	V
Average Rectified Forward Current （averaged over any 20 ms period）	I_F	715	mA
Repetitive Peak Forward Current	I_{FRM}	450	mA
Non−Repetitive Peak Forward Current t = 1.0 μs t = 1.0 ms t = 1.0 s	I_{FSM}	 2.0 1.0 0.5	A

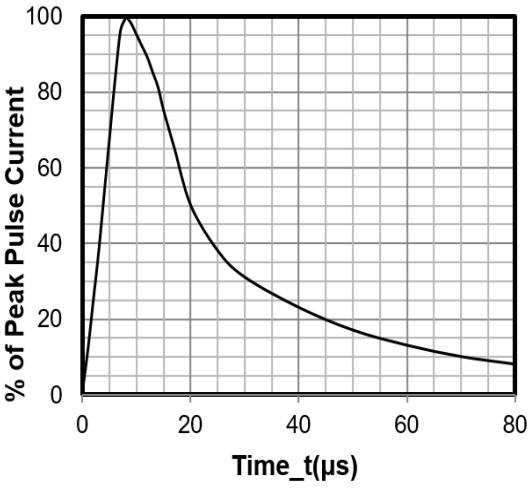
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction−to−Ambient	RθJA	556	°C/W
Lead Solder Temperature, Maximum 10 Seconds Duration	T_L	260	°C
Junction Temperature	T_J	−40 to +125	°C
Storage Temperature	Tstg	−55 to +150	°C

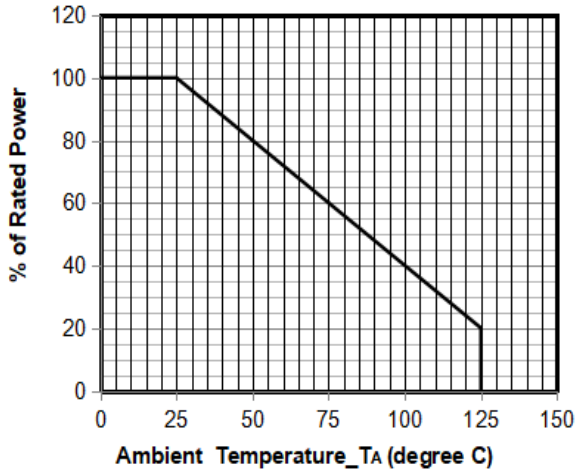
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			70	V	
Breakdown Voltage	V_{BR}	85			V	I_T=1mA
Forward Voltage	V_F			1.2	V	I_F = 10mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 70V
Junction Capacitance	C_J		0.8	1.5	pF	VR = 0V, f = 1MHz, between I/O
Junction Capacitance	C_J		1.6	3	pF	VR = 0V, f = 1MHz, any I/O to GND

Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)

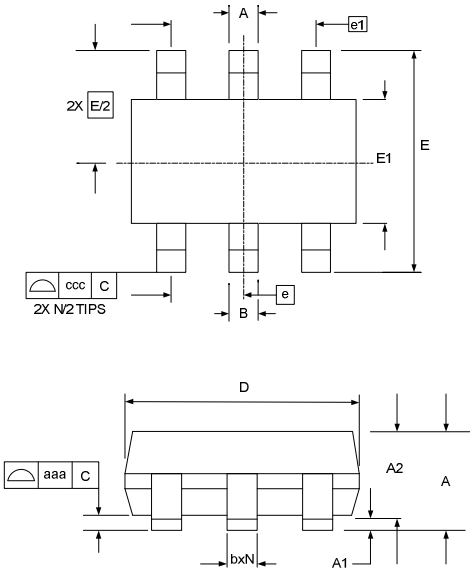


8 X 20μs Pulse Waveform



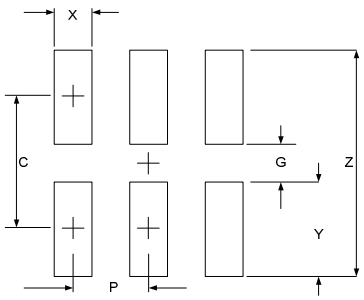
Power Derating Curve

SOT23-6 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90		1.45	0.035		0.057
A1	0.00		0.15	0.000		0.006
A2	0.90	1.15	1.30	0.035	0.045	0.051
B	0.25		0.50	0.010		0.020
C	0.08		0.22	0.003		0.009
D	2.80	2.90	3.10	0.110	0.114	0.122
E1	1.50	1.60	1.75	0.060	0.063	0.069
E	2.80 BSC			0.110 BSC		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
N	6			6		
aaa	0.10			0.004		
ccc	0.20			0.008		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.50	0.098
G	1.40	0.055
P	0.95	0.037
X	0.60	0.024
Y	1.10	0.043
Z	3.60	0.141

Contact Information

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