

DR264-12

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2 Segment String LED Open Reactivate IC with 0.2V voltage drop



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DR264-12

2 Segment String LED Open Reactivate IC with 0.2V voltage drop

General Description

The DR264-12 is a 2 segments open reactivate IC, designed for protecting continuous current switching mode inductive buck LED lighting systems. If any LED in the a continuous current switching mode inductive buck LED lighting system broke down and leave the system open, the DR264-12 will take the place of the LED that broke down and reactivate the entire string of LEDs while consuming less voltage drop than an average LED. The maximum bypass current value of DR264-12 in is 1A. The DR264-12 also provides low voltage drop with 1A bypass current. Built-in OVP and reverse connection protection circuits to avoid protector and LED burnt out.

Features

- 2 serial bypass segments
- Maximum bypass current: 1 A
- The voltage drop of one bypass segment at 1A bybass current: 0.2V
- The total voltage drop of all segments simultaneous bypass at 1A bybass current: 1.6V (only for TO-252 package)
- Reverse protection current of TO-252 package: 1A
- Reverse protection current of SOT-23 package: 400mA

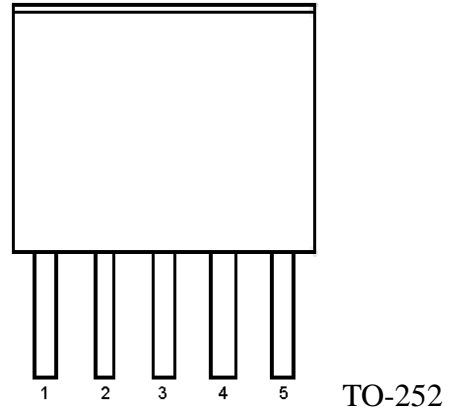
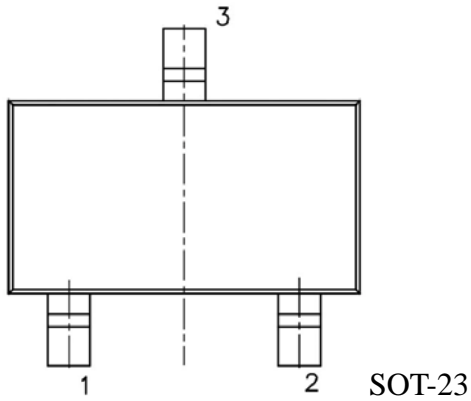
Applications

- LED string lighting

Package Types

- SOT-23; TO-252

Pin Connection



Pin Description

PIN No.	PIN NAME	FUNCTION
SOT-23: 1; TO-252: 2	TERMINAL1	Supply voltage terminal
SOT-23: 2; TO-252: 3	TERMINAL2	Terminal between the first segment and the second segment
SOT-23: 3; TO-252: 4	TERMINAL3	Ground terminal

Maximum Ratings (Ta=25°C, Tj(max) = 150°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Local supply voltage between terminal 1 and terminal 3	VLV	8	V
DC voltage of Segment	VDS	4	V
Bypass current	IBP	1000	mA
Reverse protection current	IRP	400 (SOT-23)	mA
		1000 (TO-252)	
Power Dissipation	Pd	0.69 (SOT-23 : Ta=25°C)	W
		2.01 (TO-252 : Ta=25°C)	
Thermal Resistance	Rth(j-c)	100 (SOT-23)	°C/W
		2(TO-252)	
	Rth(j-a)	180 (SOT-23)	
		62(TO-252)	
Operating Temperature	Top	-15 ~ 125	°C
Storage Temperature	Tstg	-55 ~ 150	°C

Recommended Operating Condition

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Local supply voltage between terminal 1 and terminal 3	VLV	—	4	6	8	V
DC Voltage of Segment	VDS	—	2	3	4	V
Bypass current	IBP	—	150	350	1000	mA

Electrical Characteristics (Ta = 25°C unless otherwise noted)

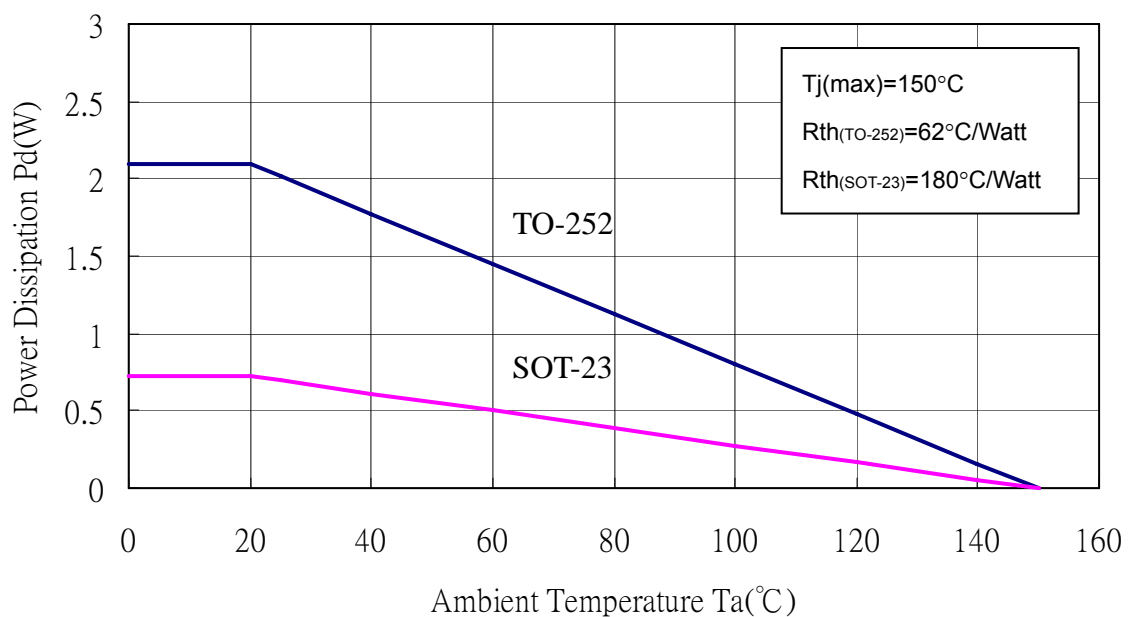
CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
The voltage drop of one bypass segment	VDV(one)	IBP=150mA	0.02	0.06	0.1	V
		IBP=350mA	0.06	0.13	0.2	
		IBP=1A	0.2	0.35	0.5	
The total voltage drop of all segments simultaneous bypass	VDV(all)	IBP=150mA	0.8	1	1.2	V
		IBP=350mA	1	1.2	1.4	
		IBP=1A	1.6	1.75	1.9	
Reverse voltage drop	VRV	IRP=400mA	1.15	1.4	1.65	V
		IRP=1A	1.6	1.75	1.9	
Activating voltage	VAV		6	7	8	V
Supply current	IDD	VLV =8V	1	5	10	uA

Power Dissipation

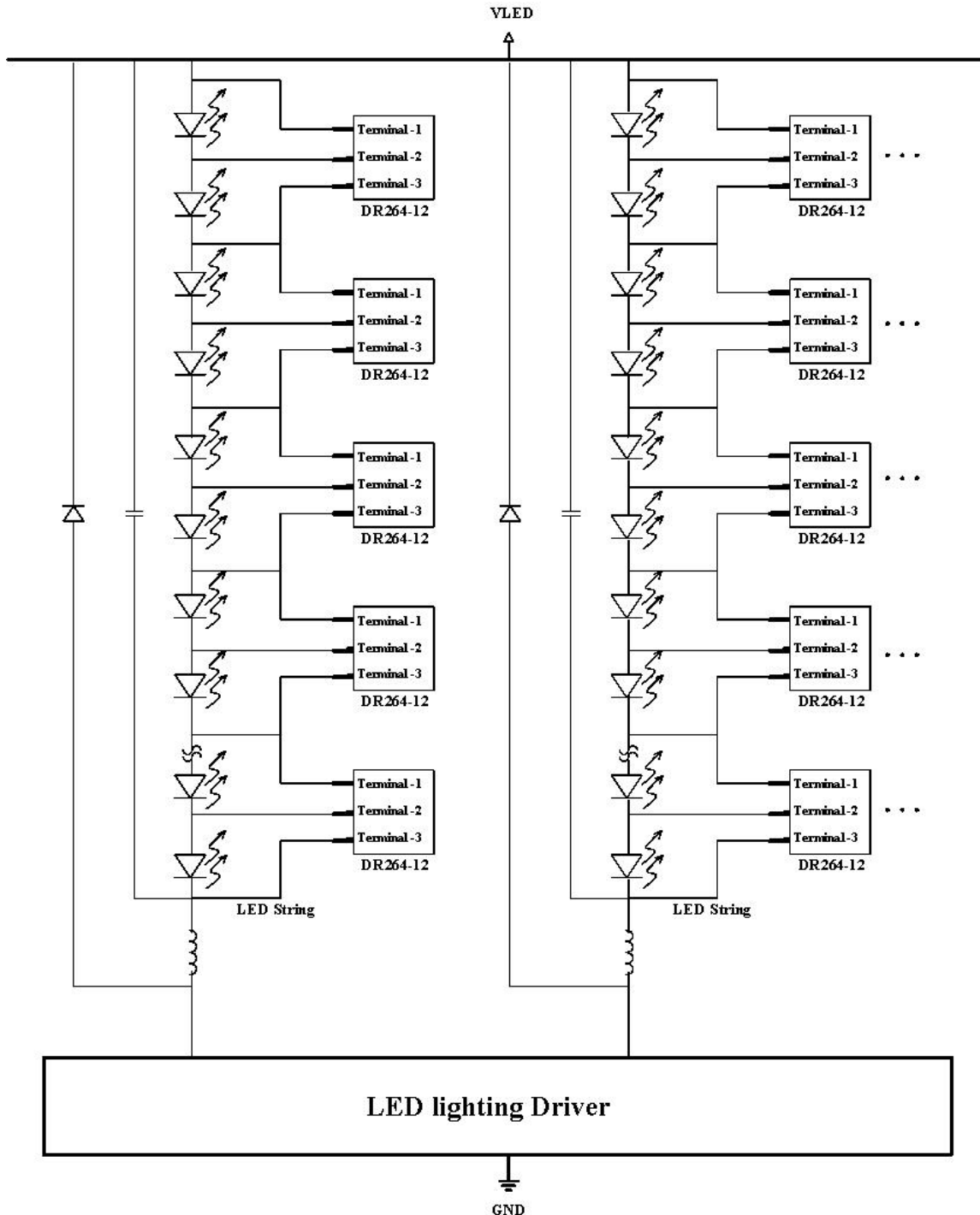
The power dissipation of a semiconductor chip is limited to its package and ambient temperature, in which the protector requires the maximum bypass current calculated for given operating conditions. The maximum allowable power consumption can be calculated by the following equation:

$$Pd(max)(Watt) = \frac{Tj(junction\ temperature)(max)(\text{ }^{\circ}C) - Ta(ambient\ temperature)(\text{ }^{\circ}C)}{Rth(junction\text{-}to\text{-}air\ thermal\ resistance)(\text{ }^{\circ}C/Watt)}$$

The relationship between power dissipation and operating temperature can be refer to the figure below:



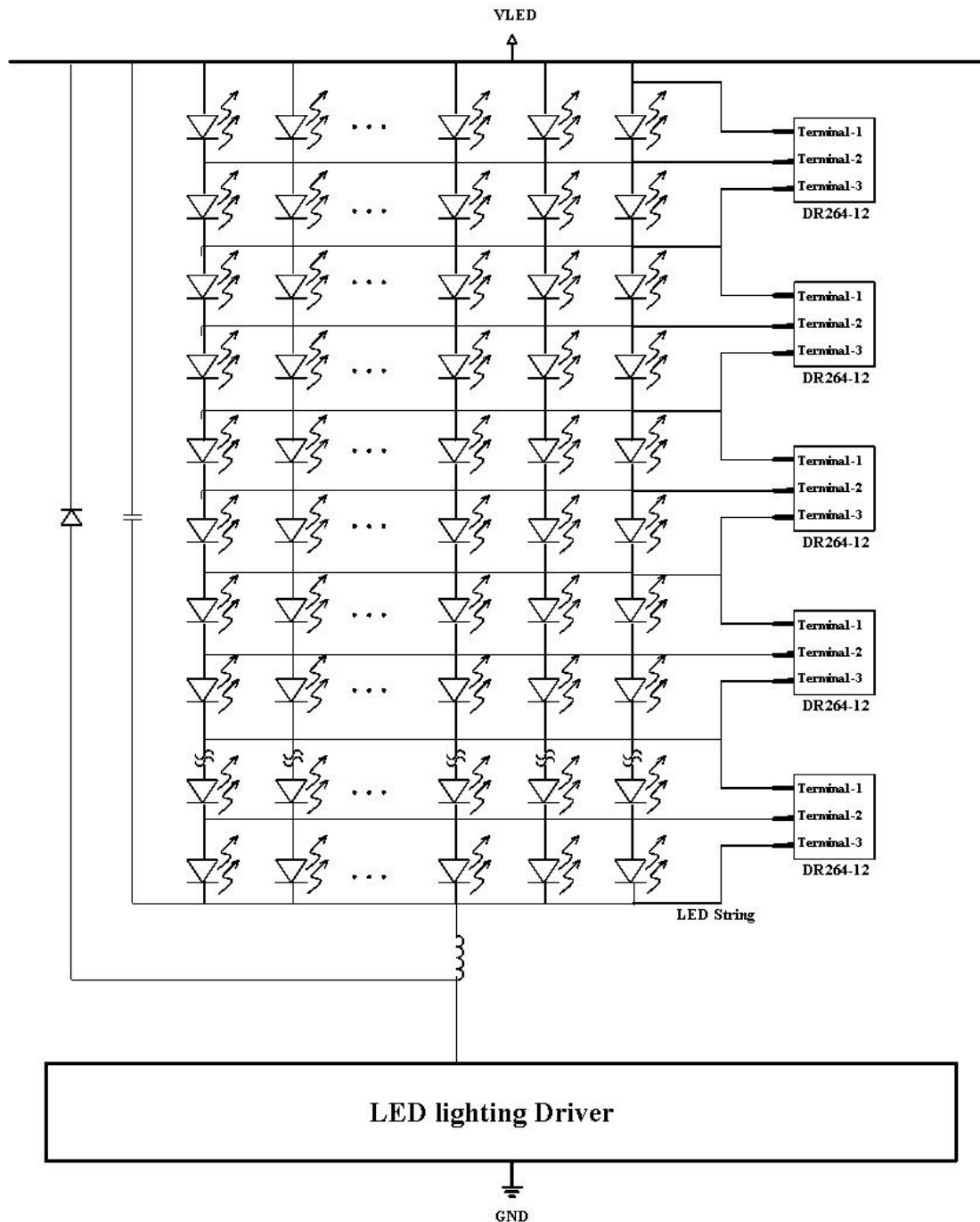
Typical Application



Note:

When an LED break down and the upper segment of DR264 becomes the alternative current passage, if the overshoot voltage generated by system parasitic inductance leads to the voltage drop of the lower segment exceeding activating voltage, will turn on the lower segment. The phenomena could be eliminated by power reset or adding a 470uH inductance on top of the LED string.

Typical Application

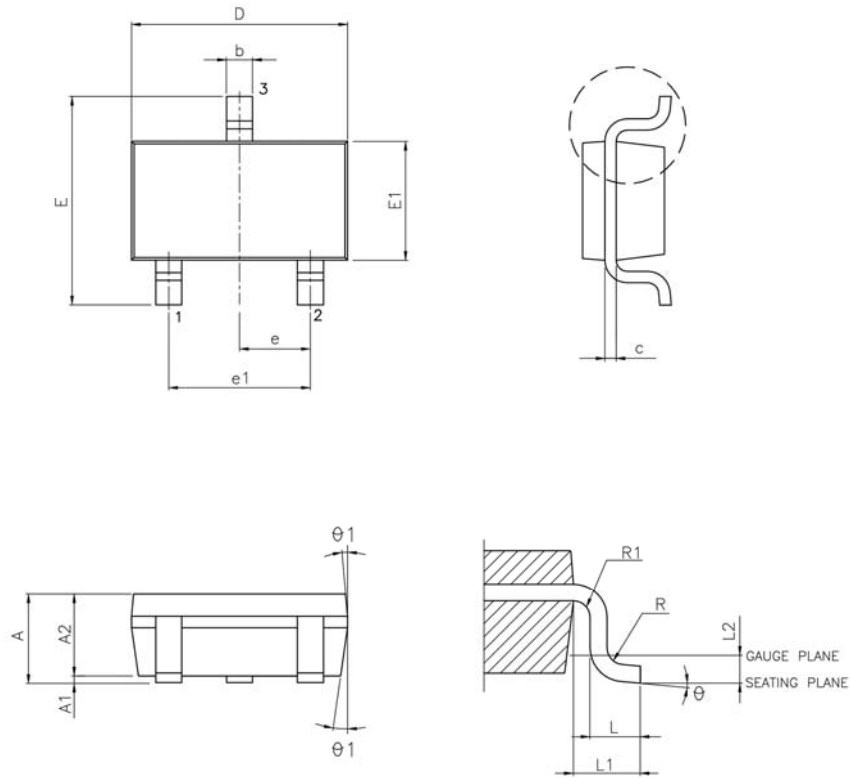


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Package Outline Dimension

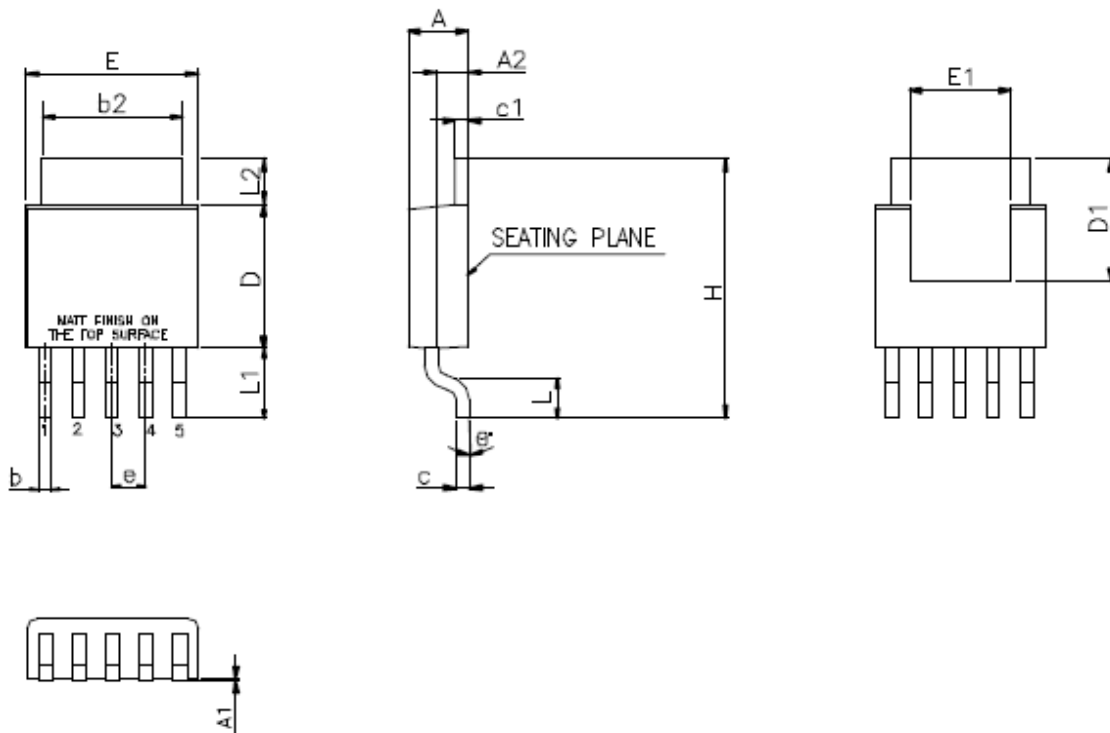
SOT-23



DIMENSIONS IN MM

SYMBOLS	MIN.	TYP.	MAX.	SYMBOLS	MIN.	TYP.	MAX.
A	-	-	1.450	E1	1.60 BSC		
A1	0.000	-	0.150	L	0.300	0.450	0.600
A2	0.900	1.15	1.300	L1	0.600 REF		
b	0.300	-	0.500	L2	0.250 BSC		
c	0.080	-	0.220	R	0.100	-	-
D	2.90 BSC			R1	0.100	-	0.250
E	2.80 BSC			θ°	0	4	8
e	0.95 BSC			θ_1°	5	10	15
e1	1.90 BSC						

TO-252



DIMENSIONS IN MM

SYMBOLS	MIN.	TYP.	MAX.	SYMBOLS	MIN.	TYP.	MAX.
A	2.184	-	2.388	E	6.350	-	6.731
A1	0.000	-	0.127	E1	3.810	-	-
A2	1.016	-	1.270	e	1.270 BSC.		
b	0.508 TYP			H	9.398	-	10.414
b2	5.207	-	5.461	L	1.397	-	1.778
c	0.457	-	0.584	L1	2.667 REF.		
c1	0.457	-	0.584	L2	1.270	-	2.032
D	5.334	-	5.588	θ°	0	-	4
D1	4.572	-	-				

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