

**Maximum Ratings, Total Device** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

**Maximum Ratings, NPN Transistor** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	45	V
Collector-Emitter Voltage	V <sub>CEO</sub>	18	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current (with Forced Air Cooling) (Note 5)	I <sub>C</sub>	1	A

**Maximum Ratings, Zener Element** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Forward Voltage @ I <sub>F</sub> = 10mA	V <sub>F</sub>	0.9	V

**Electrical Characteristics, NPN Transistor** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>					
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	45	—	V	I <sub>C</sub> = 100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	18	—	V	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	5	—	V	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	1	μA	V <sub>CB</sub> = 40V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EBO</sub>	—	1	μA	V <sub>EB</sub> = 4V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 6)</b>					
DC Current Gain	h <sub>FE</sub>	150	800	—	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 1V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	0.5	V	I <sub>C</sub> = 300mA, I <sub>B</sub> = 30mA
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	C <sub>obo</sub>	—	8	pF	V <sub>CB</sub> = 10V, f = 1.0MHz, I <sub>E</sub> = 0
Current Gain-Bandwidth Product	f <sub>T</sub>	100	—	MHz	V <sub>CB</sub> = 10V, I <sub>E</sub> = 50mA, f = 100MHz

**Electrical Characteristics, Zener Element** @T<sub>A</sub> = 25°C unless otherwise specified

Zener Voltage Range (Note 7)				Maximum Reverse Leakage Current (Note 6)	
V <sub>Z</sub> @ I <sub>ZT</sub>			I <sub>ZT</sub>	I <sub>R</sub> @ V <sub>R</sub>	
Nom (V)	Min (V)	Max (V)	mA	μA	V
5.1	4.85	5.36	0.05	5	3

- Notes:
- Part mounted on FR-4 substrate PC board, with 1 inch square, 2oz copper pad layout.
  - Short duration pulse test used to minimize self-heating effect.
  - Nominal Zener voltage is measured with the device junction in thermal equilibrium at T<sub>J</sub> = 30°C ± 1°C.

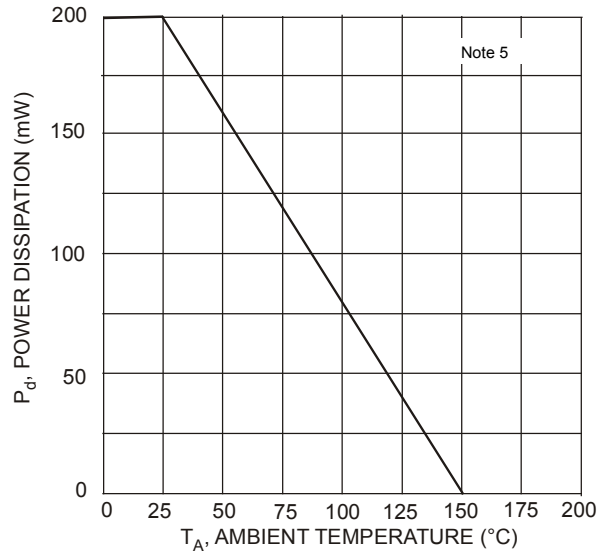


Fig. 1 Max Power Dissipation vs. Ambient Temperature (Total Device)

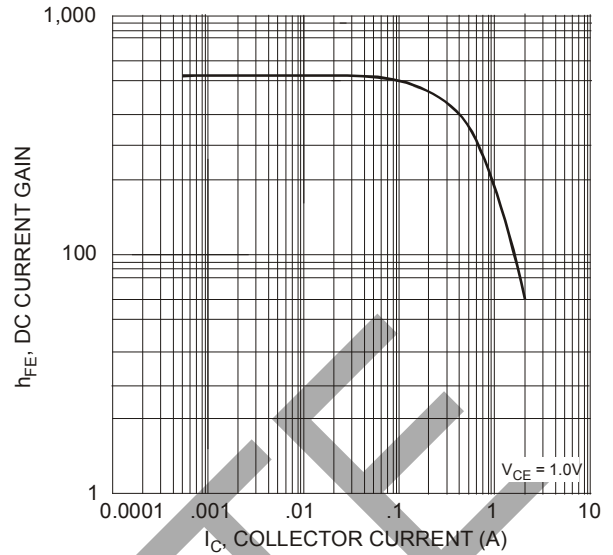


Fig. 2 Typical DC Current Gain vs. Collector Current (NPN Transistor)

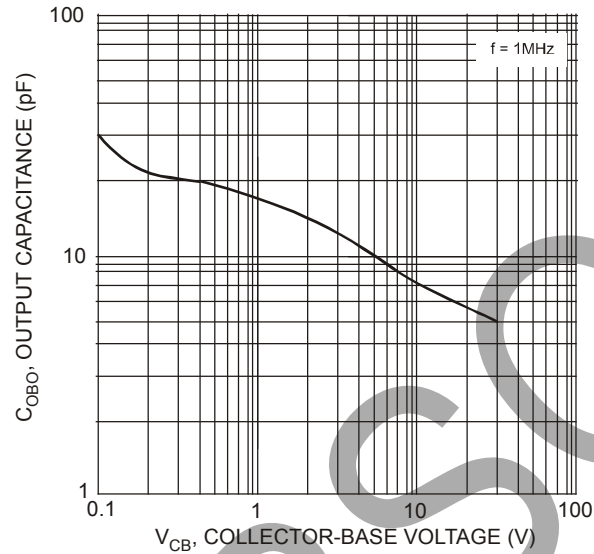


Fig. 3 Typical Output Capacitance vs. Collector-Base Voltage (NPN Transistor)

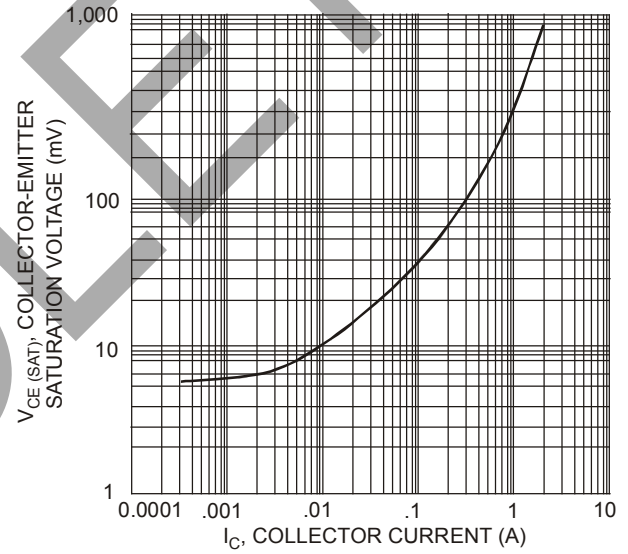


Fig. 4 Typical Collector Saturation Voltage vs. Collector Current (NPN Transistor)

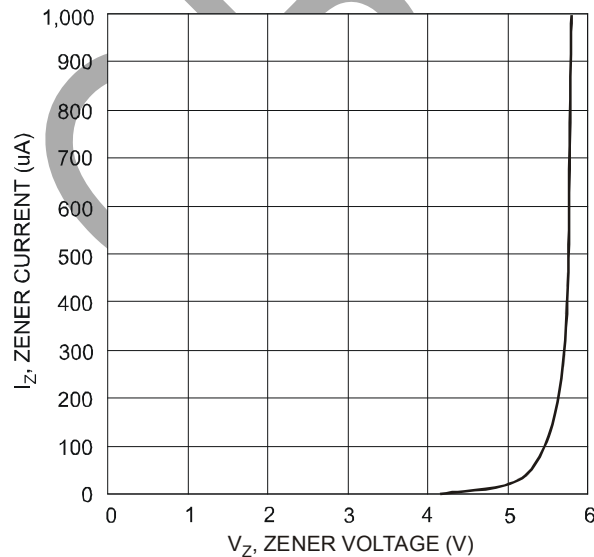
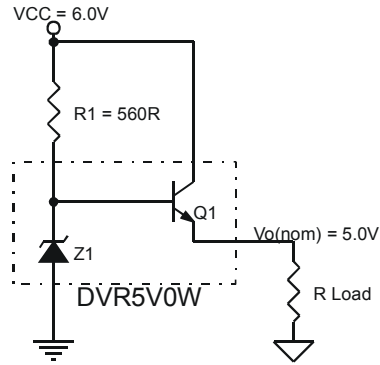


Fig. 5 Typical Zener Breakdown Characteristics

## Sample Applications



Sample Application for DVR5V0W:  
 $V_{CC} = 6.0V$        $R1 = 560\Omega$   
 $V_o(nom) = 5.0V$        $I_o = 100mA$   
 $I_q(\text{typical}) = 0.5mA$  @  $I_o = 0mA$   
 Typical  $V_{reg}(\text{load}) = 0.2V$  from  $I_o = 100mA$  to  $0mA$

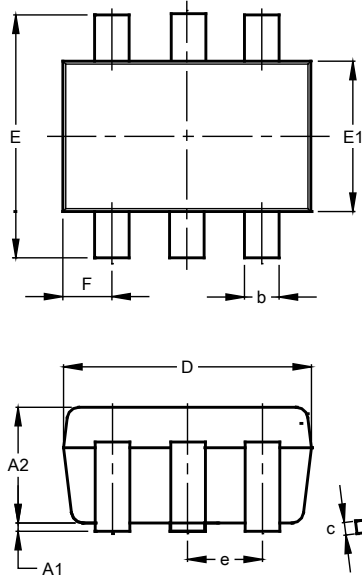
- Notes:
- 8. Resistor R1 not included.
  - 9. Typical performance shown is under setup and operating conditions specified in the sample applications.
  - 10. Recommended  $V_{CC}(\text{min}) \sim V_o(\text{nom}) + 1V$ .

OBSOLETE

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT363

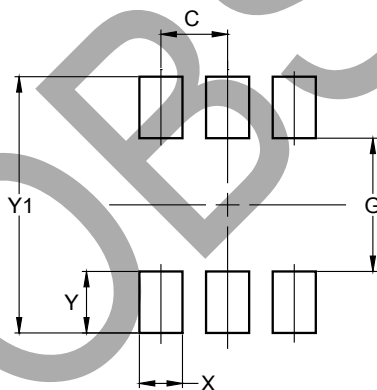


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Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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