Excellent Integrated System Limited

Stocking Distributor

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Diodes Incorporated
DVR1V8W-7

For any questions, you can email us directly:
sales@integrated-circuit.com

Lead-free Green

DVR5V0W

COMPLEX ARRAY FOR VOLTAGE REGULATORS

Features

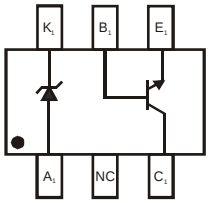
- Epitaxial Planar Die Construction
- Selectively Paired NPN Transistors & Zener Diodes for Series Pass Voltage Regulator Circuits
- Ideally Suited for Automated Assembly Processes
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.006 grams (approximate)

SOT363

Top View



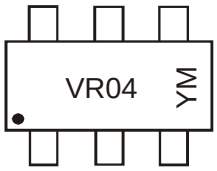
Top View
Pin Configuration

Ordering Information (Note 3)

Device	Packaging	Shipping
DVR5V0W-7	SOT363	3000/Tape & Reel

Notes:
1. No purposefully added lead.
2. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
3. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



VR04 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: Y = 2011
M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	R	S	T	U	V	W	X	Y	Z	A	B	C

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings, Total Device

@T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 4)	P_d	200	mW
Thermal Resistance, Junction to Ambient	(Note 4)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range		T_j, T_{STG}	-55 to +150	°C

Maximum Ratings, NPN Transistor

@T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Collector-Base Voltage		V_{CBO}	45	V
Collector-Emitter Voltage		V_{CEO}	18	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current - Continuous	(Note 4)	I_C	1	A

Maximum Ratings, Zener Element

@T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Forward Voltage	@ I_F = 10mA	V_F	0.9	V

Electrical Characteristics, NPN Transistor

@T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	18	—	V	I_C = 1mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	V	I_E = 100μA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	1	μA	V_{CB} = 40V, I_E = 0
Emitter Cutoff Current	I_{EBO}	—	1	μA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 5)					
DC Current Gain	h_{FE}	150	800	—	I_C = 100mA, V_{CE} = 1V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.5	V	I_C = 300mA, I_B = 30mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	—	8	pF	V_{CB} = 10V, f = 1.0MHz, I_E = 0
Current Gain-Bandwidth Product	f_T	100	—	MHz	V_{CB} = 10V, I_E = 50mA, f = 100MHz

Electrical Characteristics, Zener Element

@T_A = 25°C unless otherwise specified

Zener Voltage Range (Note 6)				Maximum Reverse Leakage Current (Note 5)	
V_Z @ I_{ZT}			I_{ZT}	I_R @ V_R	
Nom (V)	Min (V)	Max (V)	mA	μA	V
5.1	4.85	5.36	0.05	5	3

Notes:
4. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
5. Short duration pulse test used to minimize self-heating effect.
6. Nominal Zener voltage is measured with the device junction in thermal equilibrium at T_T = 30°C ±1°C.

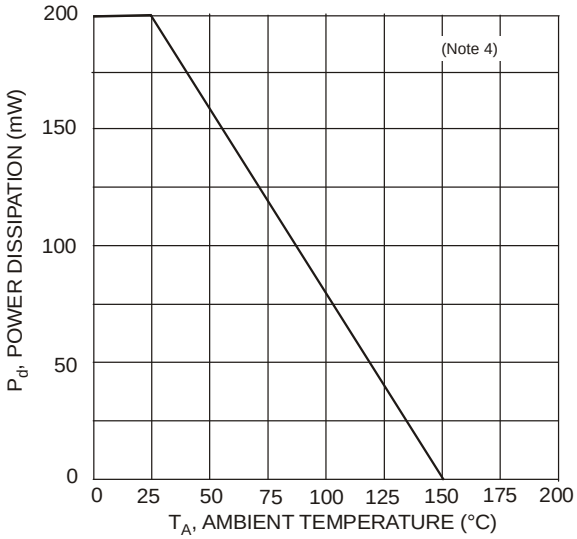


Fig. 1 Max Power Dissipation vs. Ambient Temperature (Total Device)

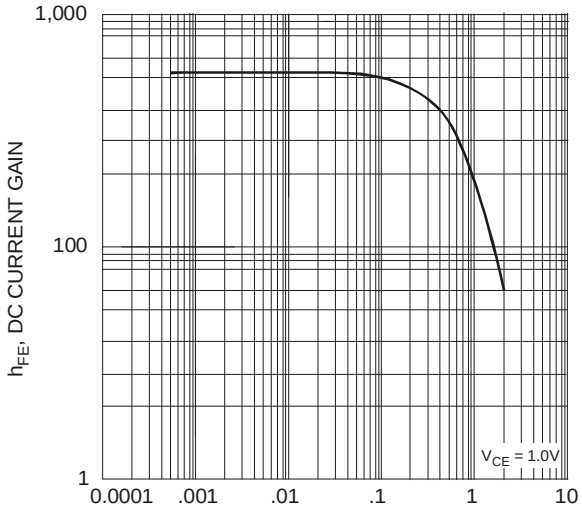


Fig. 2 Typical DC Current Gain vs. Collector Current (NPN Transistor)

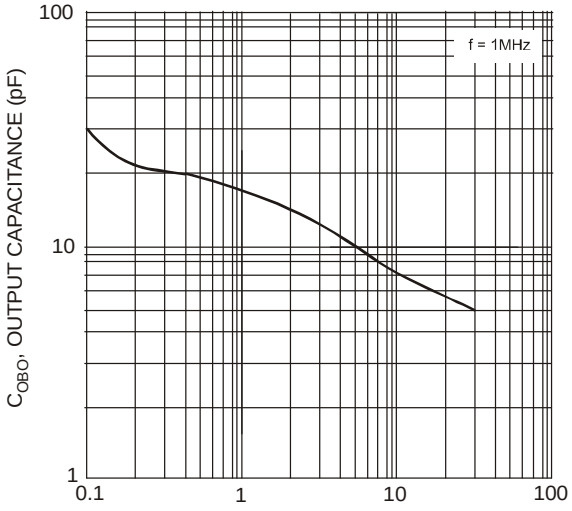


Fig. 3 Typical Output Capacitance vs. Collector-Base Voltage (NPN Transistor)

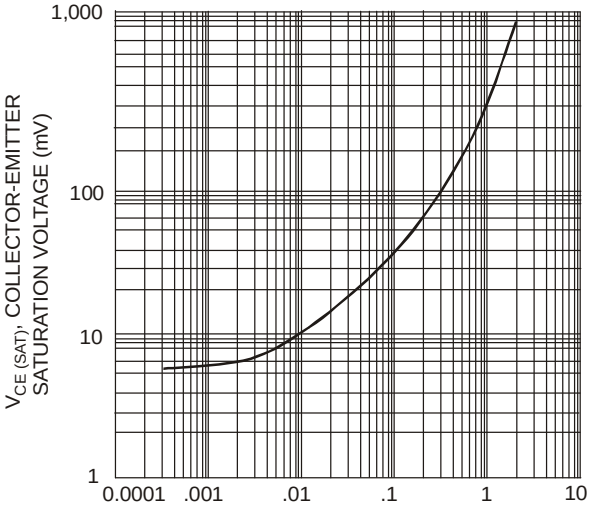


Fig. 4 Typical Collector Saturation Voltage vs. Collector Current (NPN Transistor)

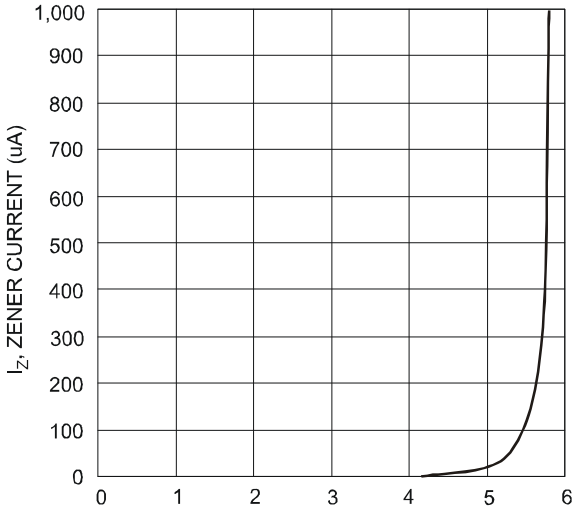
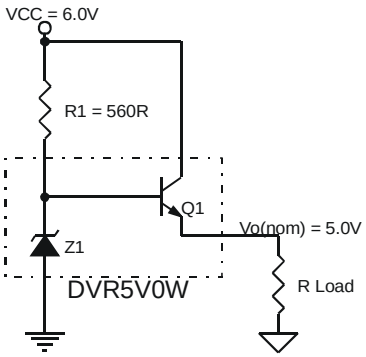


Fig. 5 Typical Zener Breakdown Characteristics

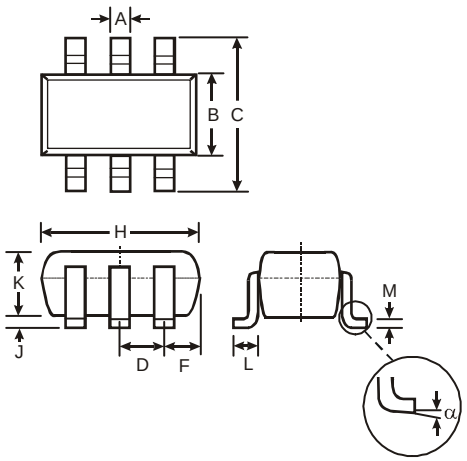
Sample Applications



Sample Application for DVR5V0W:
V_{CC} = 6.0V R1= 560Ω
Vo(nom) = 5.0V I_O = 100mA
Iq(typical) = 0.5mA @ I_O = 0mA
Typical Vreg(load) = 0.2V from Io = 100mA to 0mA

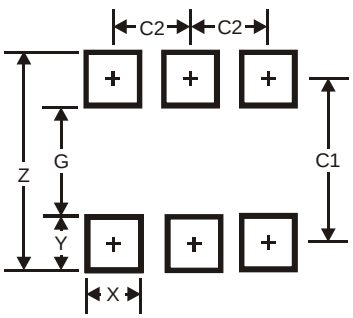
Notes:
7. Resistor R1 not included.
8. Typical performance shown is under setup and operating conditions specified in the sample applications.
9. Recommended V_{CC}(min) ~ Vo(nom) + 1V.

Package Outline Dimensions



SOT363		
Dim	**Min**	**Max**
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Typ	
F	0.40	0.45
H	1.80	2.20
J	0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.22
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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