

Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

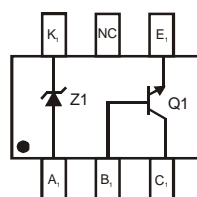
Mechanical Data

- Case: SOT26 (SC74R)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (Approximate)

SOT26 (SC74R)



Top View



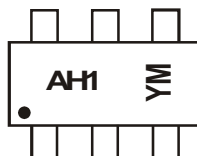
Device Schematic

Ordering Information (Note 4)

Part Number	Case	Packaging
DVRN6056-7-F	SOT26 (SC74R)	3,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3).compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



AH1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: F = 2018)
 M = Month (ex: 9 = September)

Date Code Key

Year Code	2003	2004	2005	2012	2013	2014	2015	2016	2017	2018	2019	2020
	P	R	S	Z	A	B	C	D	E	F	G	H

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

Maximum Ratings, NPN Transistor Element (Q1) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current - Continuous (Note 5)	I_C	600	mA

Maximum Ratings, Zener Element (Z1) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Forward Voltage @ $I_F = 10\text{mA}$	V_F	0.9	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Note: 5. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.

Electrical Characteristics, NPN Transistor Element (Q1) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	—	V	$I_C = 1.0\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	—	V	$I_E = 100\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CEX}	—	100	nA	$V_{CE} = 35\text{V}, V_{EB(OFF)} = 0.4\text{V}$
Base Cutoff Current	I_{BL}	—	100	nA	$V_{CE} = 35\text{V}, V_{EB(OFF)} = 0.4\text{V}$
ON CHARACTERISTICS (Note 6)					
DC Current Gain	h_{FE}	20	—	—	$I_C = 100\mu\text{A}, V_{CE} = 1.0\text{V}$
		40	—		$I_C = 1.0\text{mA}, V_{CE} = 1.0\text{V}$
		80	—		$I_C = 10\text{mA}, V_{CE} = 1.0\text{V}$
		100	300		$I_C = 150\text{mA}, V_{CE} = 1.0\text{V}$
		40	—		$I_C = 500\text{mA}, V_{CE} = 2.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.40 0.75	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.75	0.95 1.2	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$

Electrical Characteristics, Zener Element (Z1) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Zener Voltage Range (Note 6)				Maximum Zener Impedance		Maximum Reverse Leakage Current (Note 6)	
$V_Z @ I_{ZT}$		I_{ZT}	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK} = 0.5\text{mA}$		I_R	@ V_R
Nom (V)	Min (V)	Max (V)	mA	Ω		μA	V
5.6	5.49	5.73	5	60	200	1.0	2.5

Note: 6. Short duration pulse test used to minimize self-heating effect.

NPN Transistor (Q1)

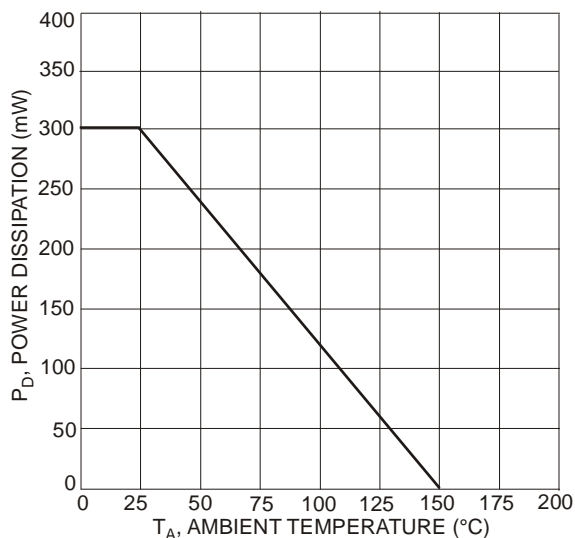


Fig. 1 Power Dissipation vs. Ambient Temperature (Total Device)

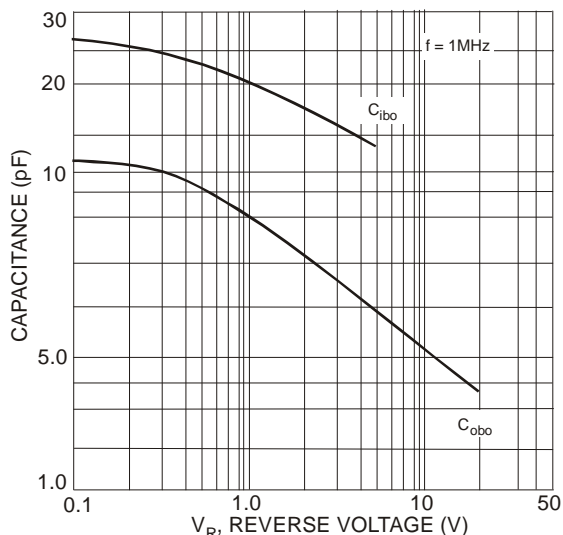


Fig. 3 Typical Capacitance Characteristics

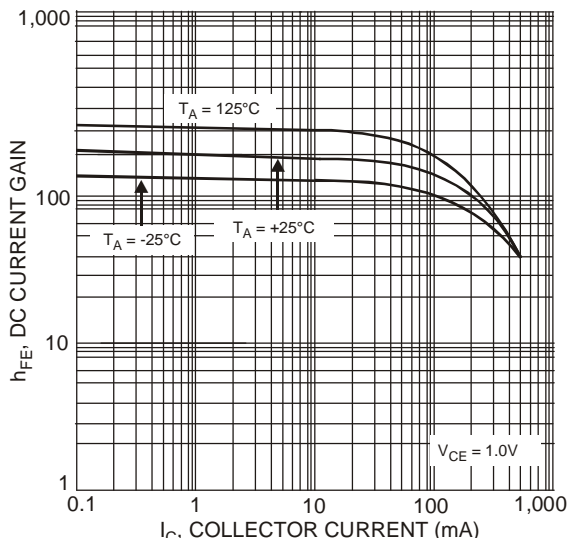


Fig. 2 Typical DC Current Gain vs. Collector Current

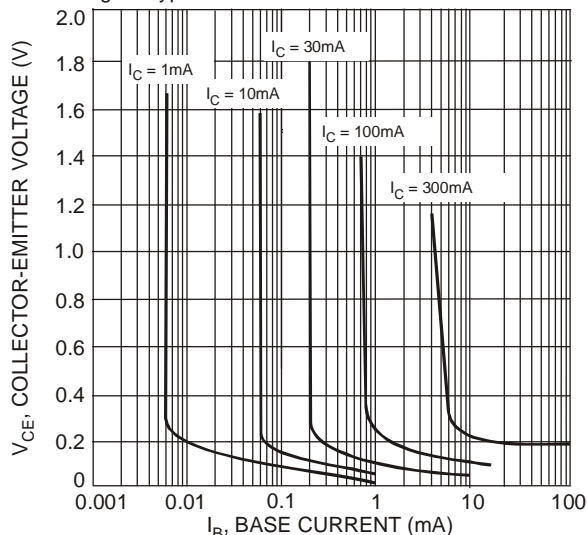


Fig. 4 Typical Collector Saturation Region

NPN Transistor (Q1) (Continued)

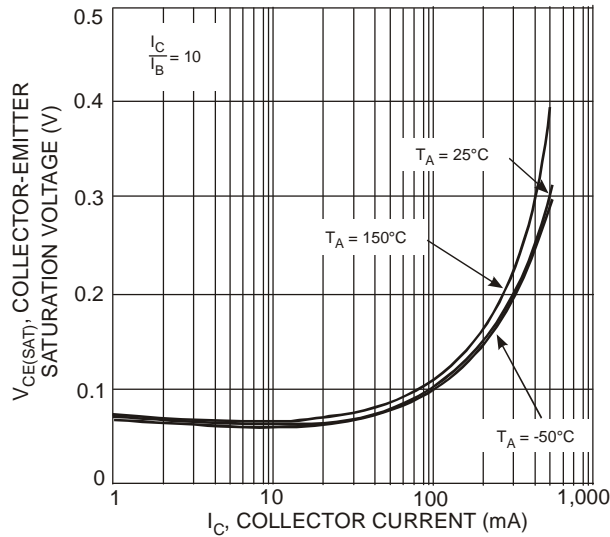


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

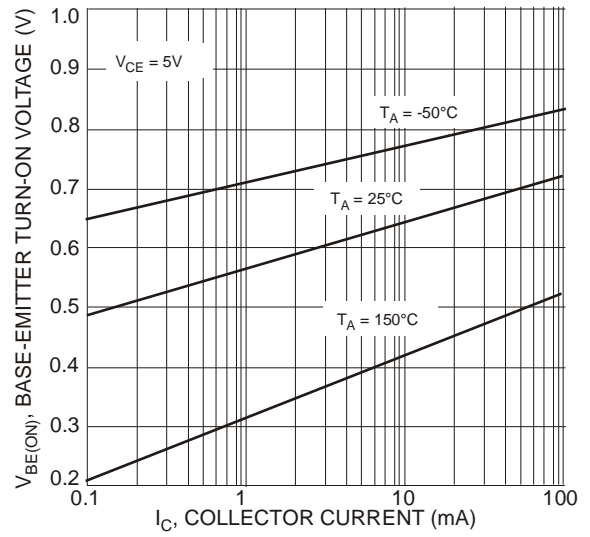


Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

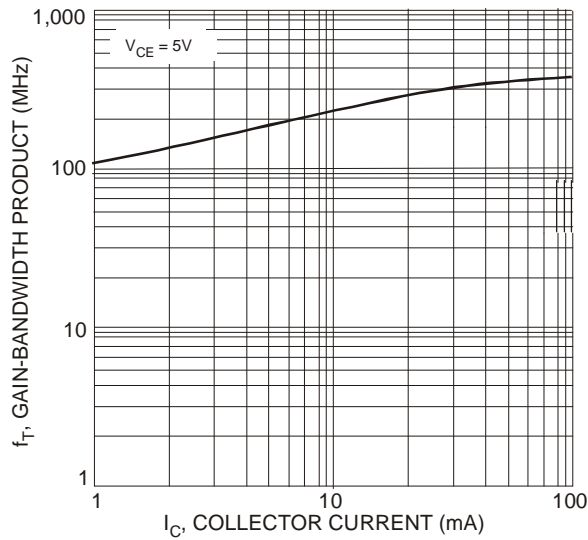


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current

Zener (Z1)

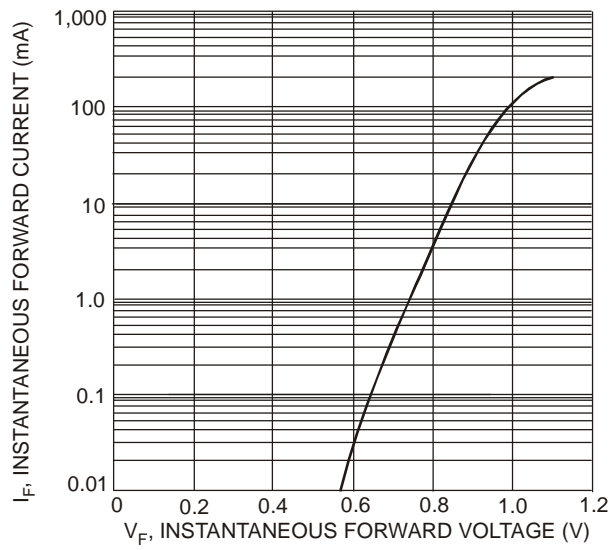
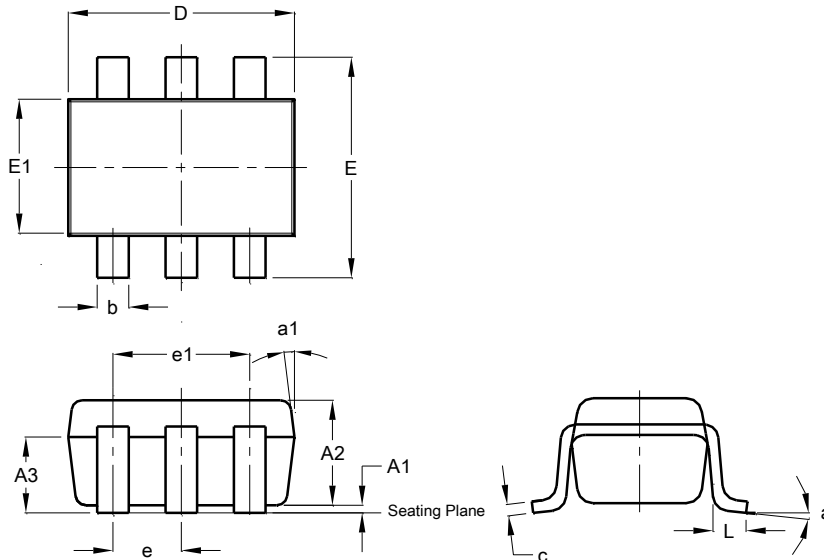


Fig. 8 Typical Forward Characteristics

Package Outline Dimensions

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

SOT26 (SC74R)

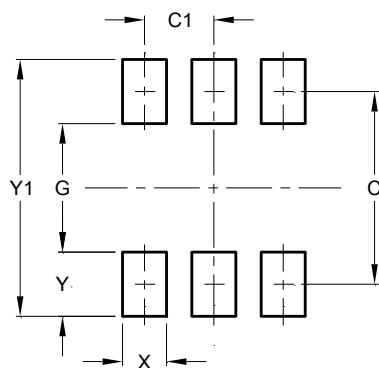


SOT26 (SC74R)			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

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

SOT26 (SC74R)



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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