


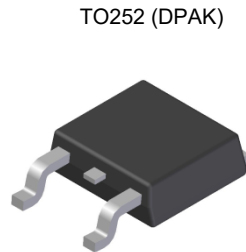
## Features

- $BV_{CEO} > -32V$
- $I_C = -2A$  High Continuous Collector Current
- $I_{CM} = -3A$  Peak Pulse Current
- Epitaxial Planar Die Construction
- Low Collector-Emitter Saturation Voltage
- Ideal for Medium Power Switching or Amplification Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The 2DB1182Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

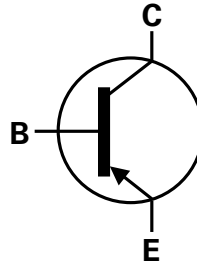
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

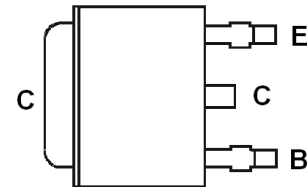
- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.34 grams (Approximate)



Top View



Device Schematic



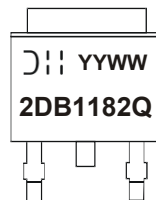
Pinout Configuration  
Top view

## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
2DB1182Q-13	TO252 (DPAK)	2DB1182Q	13	16	3,000	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



2DB1182Q = Product Type Marking Code  
 311 = Manufacturer's Code Marking  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 25 = 2025)  
 WW = Week Code (01 to 52)

## Absolute Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-32	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Continuous Collector Current	I <sub>C</sub>	-2	A
Peak Pulse Collector Current	I <sub>CM</sub>	-3	A

## Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

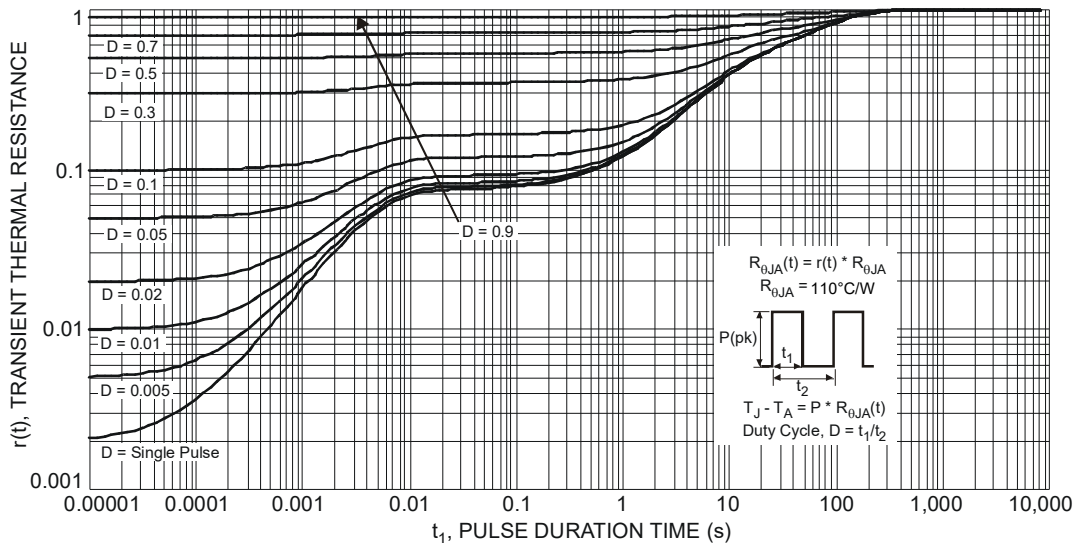
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1.2	W
Power Dissipation @T <sub>L</sub> = +25°C (Note 6)	P <sub>D</sub>	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	104	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R <sub>θJL</sub>	8.3	°C/W
Thermal Resistance, Junction to Case (Note 5)	R <sub>θJC</sub>	18	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

## ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the exposed collector pad on minimum recommended pad (MRP) layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady state.
  - Same as Note 5 except the device is mounted on 15mm × 15mm 1oz copper.
  - Thermal resistance from junction to solder-point at the end of the collector lead.
  - Refer to JEDEC specifications JESD22-A114 and JESD22-A115.

## Thermal Characteristics



**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 9)</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-40	—	—	V	I <sub>C</sub> = -50μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-32	—	—	V	I <sub>C</sub> = -1mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -50μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-1	μA	V <sub>CB</sub> = -20V, 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 9)</b>						
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	-0.8	V	I <sub>C</sub> = -2A, I <sub>B</sub> = -0.2A
DC Current Gain	h <sub>FE</sub>	120	—	270	—	V <sub>CE</sub> = -3V, I <sub>C</sub> = -0.5A
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	—	110	—	MHz	V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.1A f = 30MHz
Output Capacitance	C <sub>obo</sub>	—	26	—	pF	V <sub>CB</sub> = -10V, f = 1MHz
Turn-On Time	t <sub>on</sub>	—	109	—	ns	V <sub>CC</sub> = 30V I <sub>CC</sub> = 150mA I <sub>B1</sub> = -I <sub>B2</sub> = 15mA
Delay Time	t <sub>d</sub>	—	60	—	ns	
Rise Time	t <sub>r</sub>	—	49	—	ns	
Turn-Off Time	t <sub>off</sub>	—	280	—	ns	
Storage Time	t <sub>s</sub>	—	246	—	ns	
Fall Time	t <sub>f</sub>	—	34	—	ns	

Note: 9. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

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

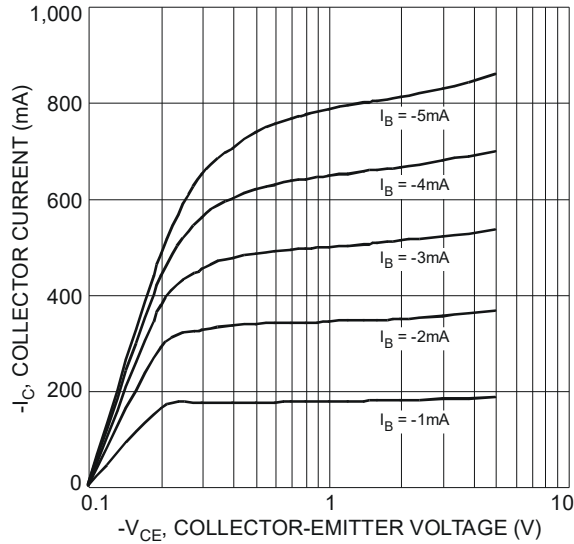


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

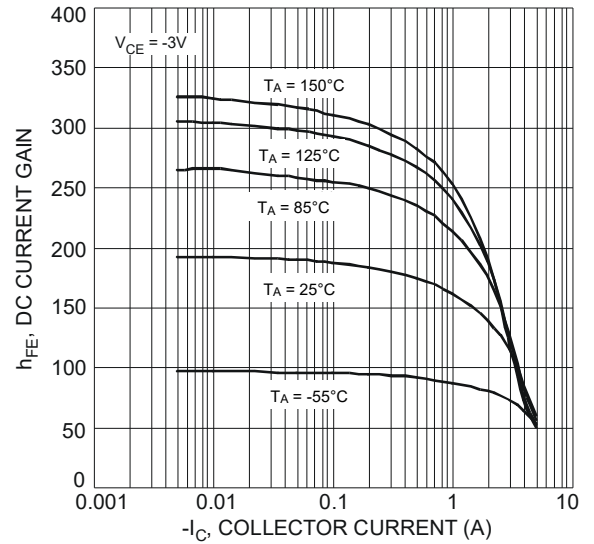


Figure 3 Typical DC Current Gain vs. Collector Current

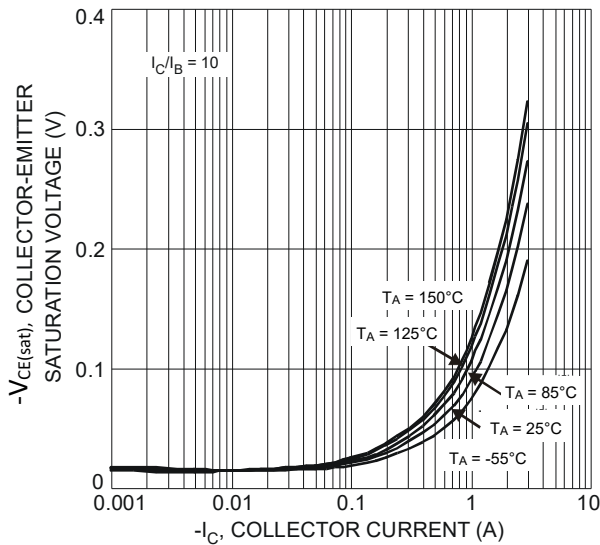


Figure 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

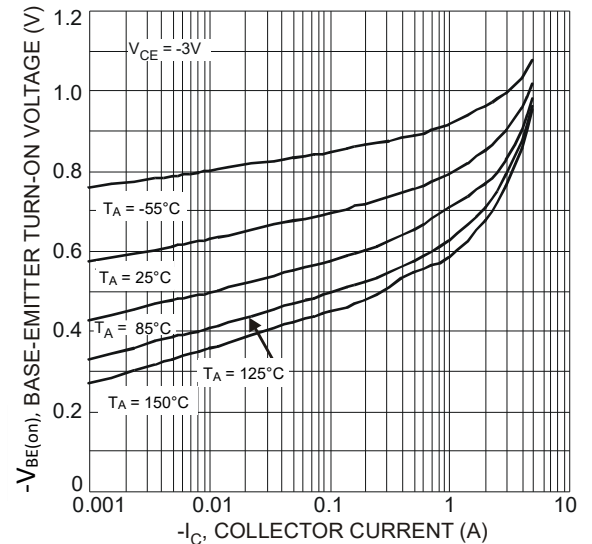


Figure 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.) (continued)

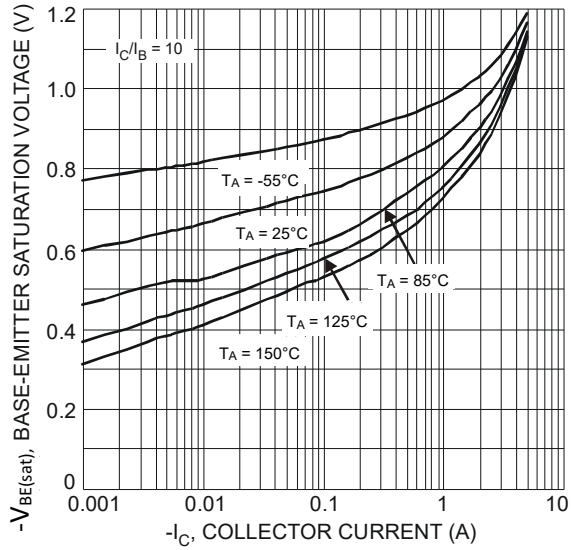


Figure 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

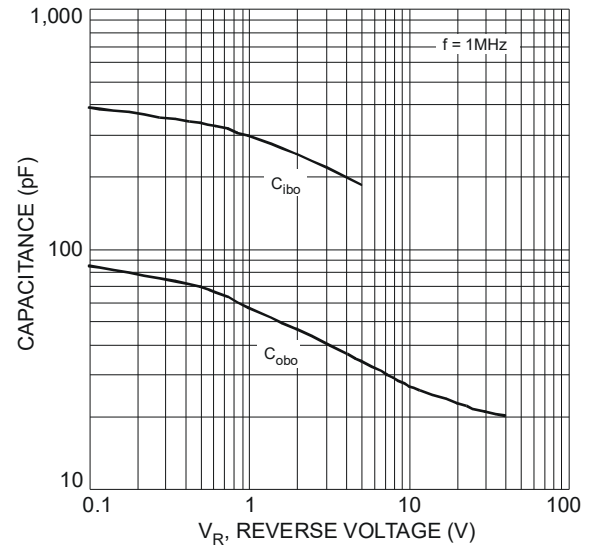


Figure 7 Typical Capacitance Characteristics

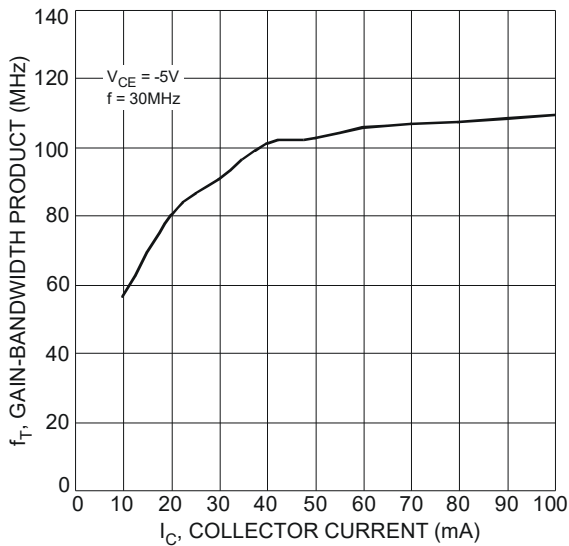
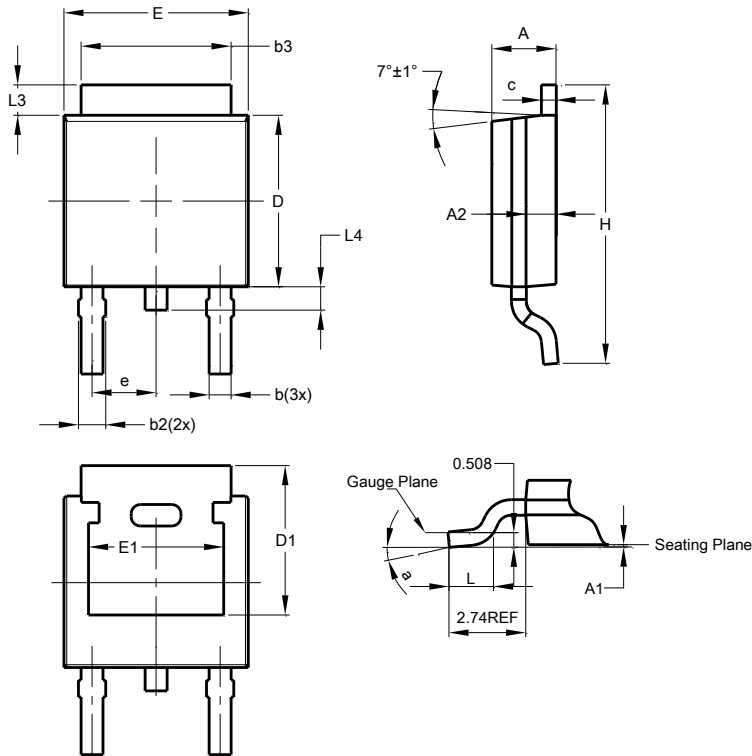


Figure 8 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

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

### TO252 (DPAK)

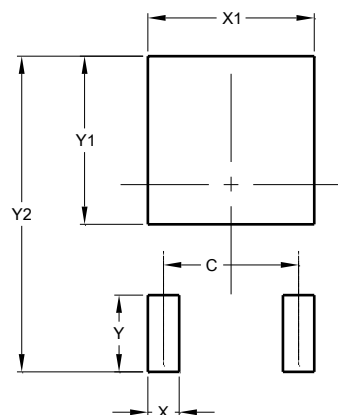


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.50	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	--	--
e	2.286 BSC		
E	6.45	6.70	6.58
E1	4.32	--	--
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	--
All Dimensions in mm			

## Suggested Pad Layout

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

### TO252 (DPAK)



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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