32V PNP MEDIUM POWER TRANSISTOR IN TO252

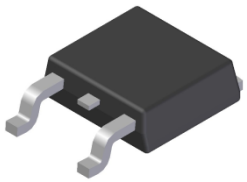
Features

- 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/

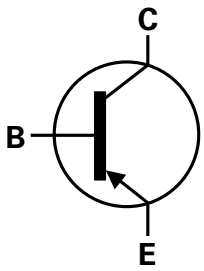
Mechanical Data

- 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 e3
- Weight: 0.34 grams (Approximate)

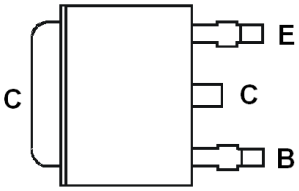
TO252 (DPAK)



Top View



Device Schematic



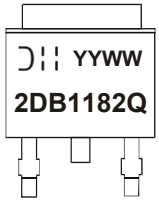
Pinout Configuration
Top view

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
= 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-32	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Collector Current	I_{CM}	-3	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1.2	W
Power Dissipation @T_L = +25°C	(Note 6)	P_D	1.5	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	104	°C/W
Thermal Resistance, Junction to Lead	(Note 7)	$R_{\theta JL}$	8.3	°C/W
Thermal Resistance, Junction to Case	(Note 5)	$R_{\theta JC}$	18	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-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:
5. 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.
6. Same as Note 5 except the device is mounted on 15mm × 15mm 1oz copper.
7. Thermal resistance from junction to solder-point at the end of the collector lead .
8. Refer to JEDEC specifications JESD22-A114 and JESD22-A115.

Thermal Characteristics

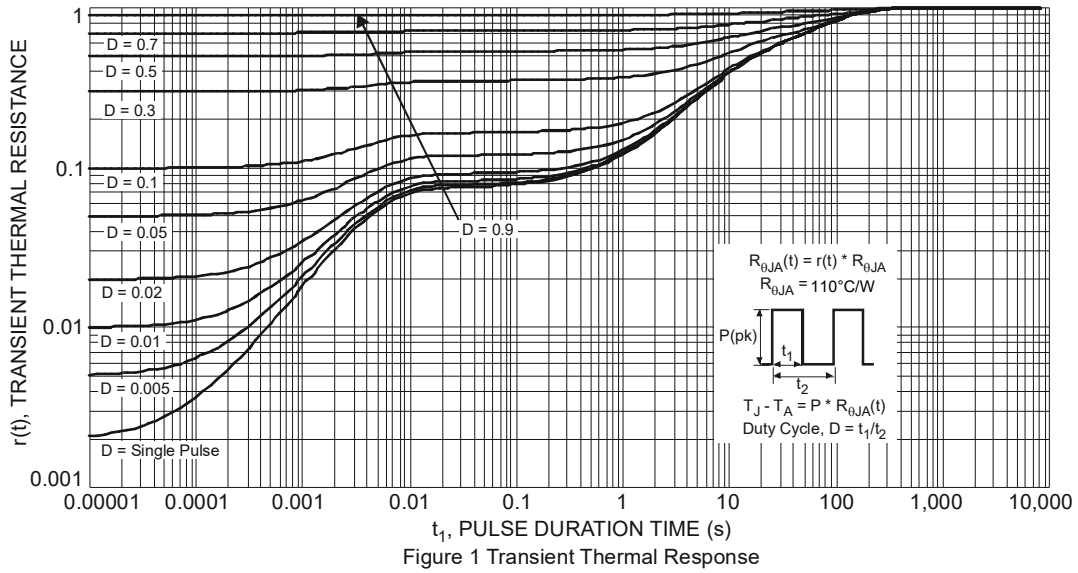


Figure 1 Transient Thermal Response

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Collector-Base Breakdown Voltage	BV_{CBO}	-40	—	—	V	I_C = -50μA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	-32	—	—	V	I_C = -1mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50μA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	—	-1	μA	V_{CB} = -20V, I_E = 0
Emitter Cutoff Current	I_{EBO}	—	—	-1	μA	V_{EB} = -4V, I_C = 0
ON CHARACTERISTICS (Note 9)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.8	V	I_C = -2A, I_B = -0.2A
DC Current Gain	h_{FE}	120	—	270	—	V_{CE} = -3V, I_C = -0.5A
SMALL-SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	—	110	—	MHz	V_{CE} = -5V, I_C = -0.1A f = 30MHz
Output Capacitance	C_{obo}	—	26	—	pF	V_{CB} = -10V, f = 1MHz
Turn-On Time	t_{on}	—	109	—	ns	V_{CC} = 30V I_{CC} = 150mA I_{B1} = -I_{B2} = 15mA
Delay Time	t_d	—	60	—	ns	
Rise Time	t_r	—	49	—	ns	
Turn-Off Time	t_{off}	—	280	—	ns	
Storage Time	t_s	—	246	—	ns	
Fall Time	t_f	—	34	—	ns	

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

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

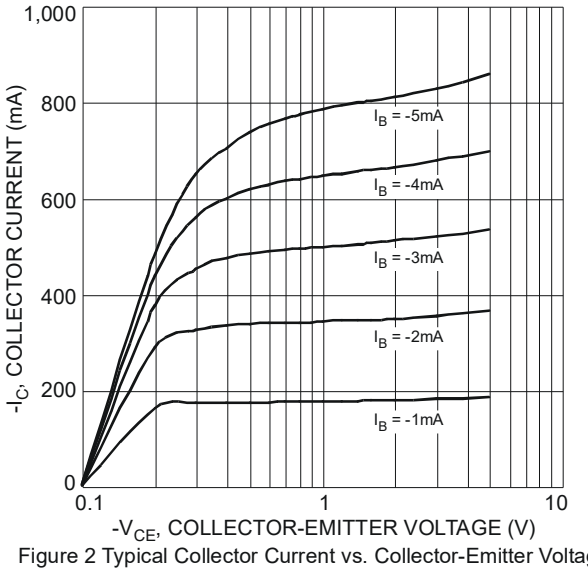


Figure 2 Typical Collector Current vs. Collector-Emitter Voltage

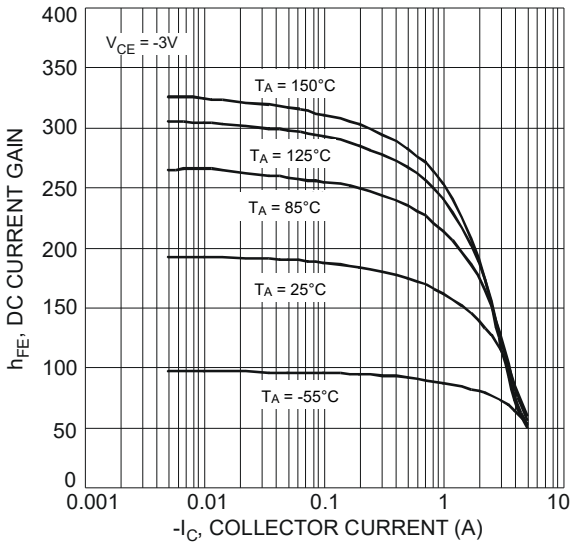


Figure 3 Typical DC Current Gain vs. Collector Current

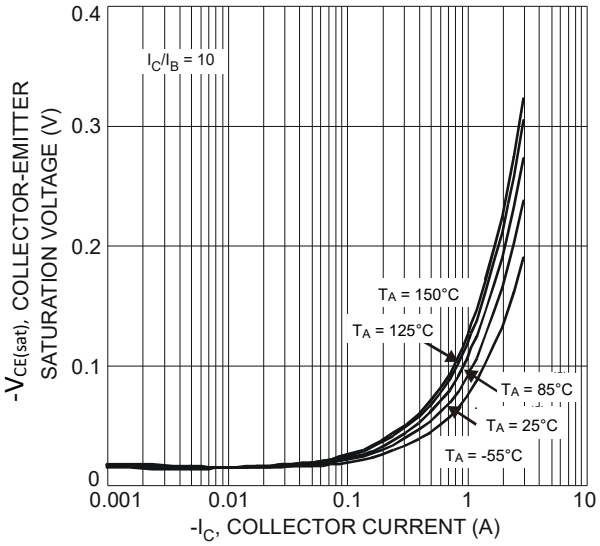


Figure 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

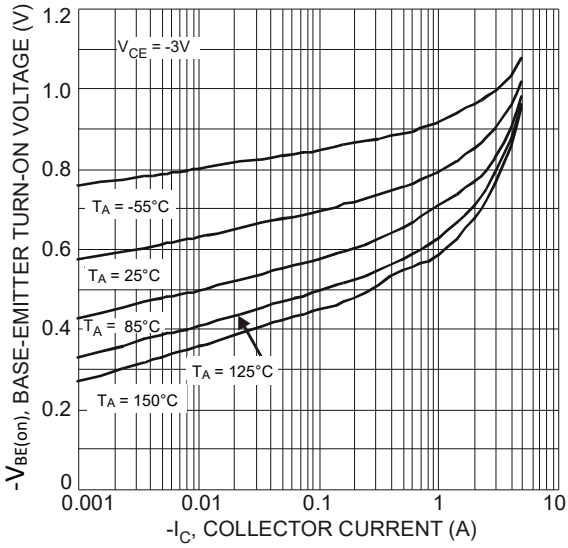


Figure 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.) (continued)

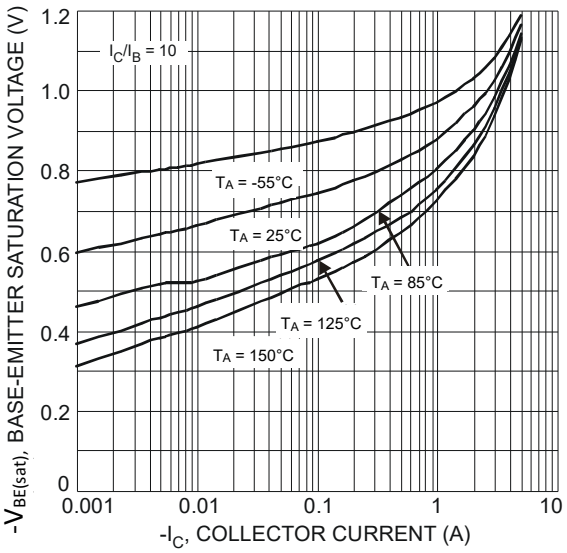


Figure 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

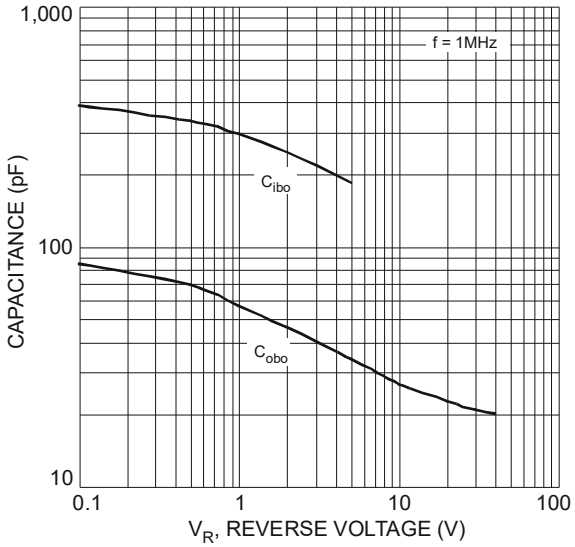


Figure 7 Typical Capacitance Characteristics

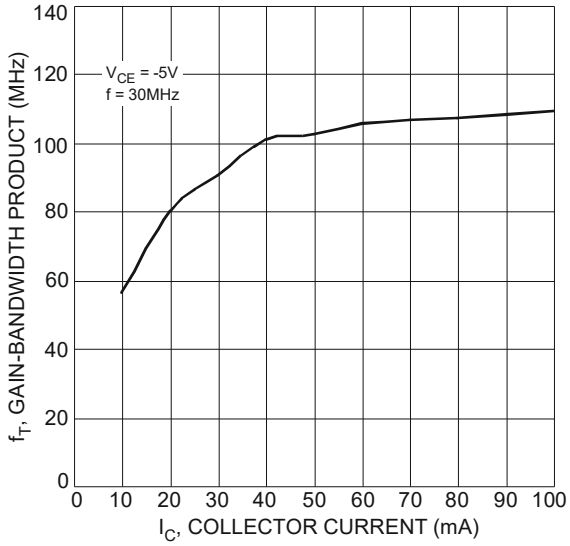
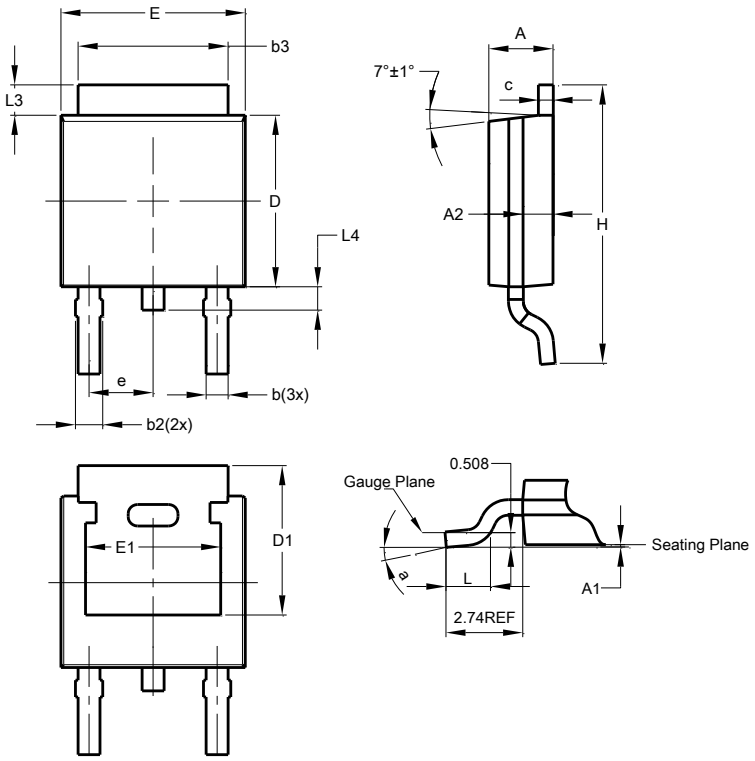


Figure 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

TO252 (DPAK)

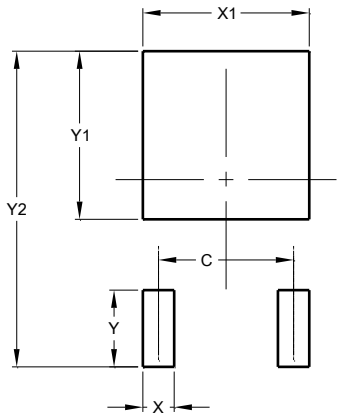


TO252 (DPAK)			
Dim	**Min**	**Max**	**Typ**
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.50	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	--	--
e	2.286 BSC		
E	6.45	6.70	6.58
E1	4.32	--	--
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4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