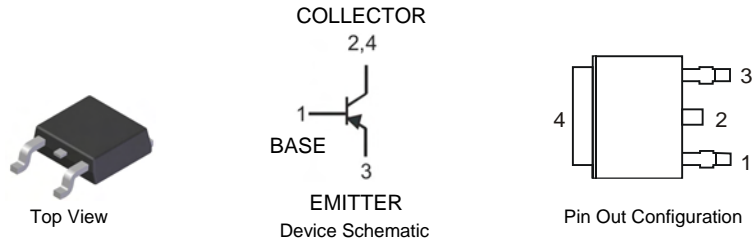


Features

- Epitaxial Planar Die Construction
- Low Collector-Emitter Saturation Voltage
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Mechanical Data

- Case: TO252-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.34 grams (approximate)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-3	A
Peak Pulse Collector Current	I_{CM}	-4.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	15	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	8.3	$^\circ\text{C/W}$
Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 3)	P_D	1.2	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	104	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-60	—	—	V	$I_C = -50\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-50	—	—	V	$I_C = -1\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	—	—	V	$I_E = -50\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CBO}	—	—	-1	μA	$V_{CB} = -40\text{V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}	—	—	-1	μA	$V_{EB} = -4\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 4)						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-1	V	$I_C = -2\text{A}, I_B = -0.2\text{A}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	-1.2	V	$I_C = -1.5\text{A}, I_B = -0.15\text{A}$
DC Current Gain	h_{FE}	120	—	270	—	$V_{CE} = -3\text{V}, I_C = -0.5\text{A}$
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	—	110	—	MHz	$V_{CE} = -5\text{V}, I_C = -0.1\text{A}, f = 30\text{MHz}$
Output Capacitance	C_{obo}	—	26	—	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$

- 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. Device mounted on FR-4 PCB with minimum pad size recommended.
 4. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

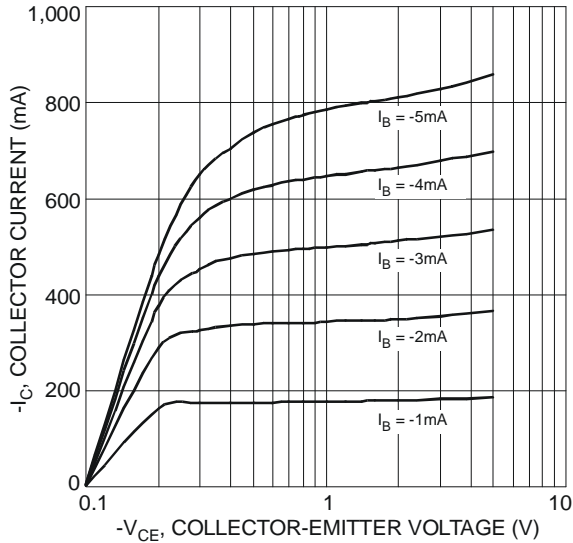


Fig. 1 Typical Collector Current vs. Collector-Emitter Voltage

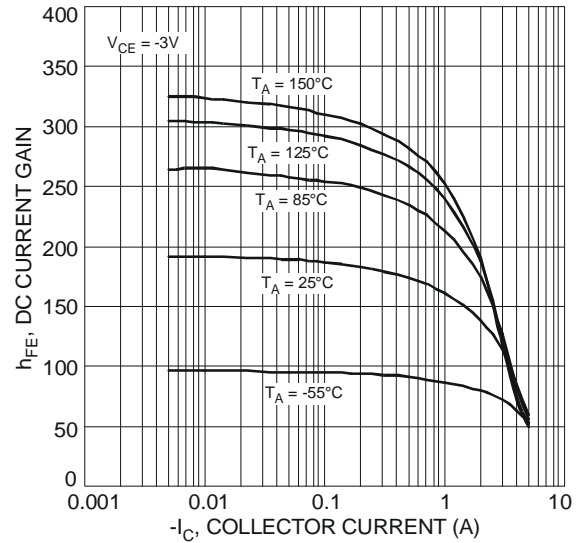


Fig. 2 Typical DC Current Gain vs. Collector Current

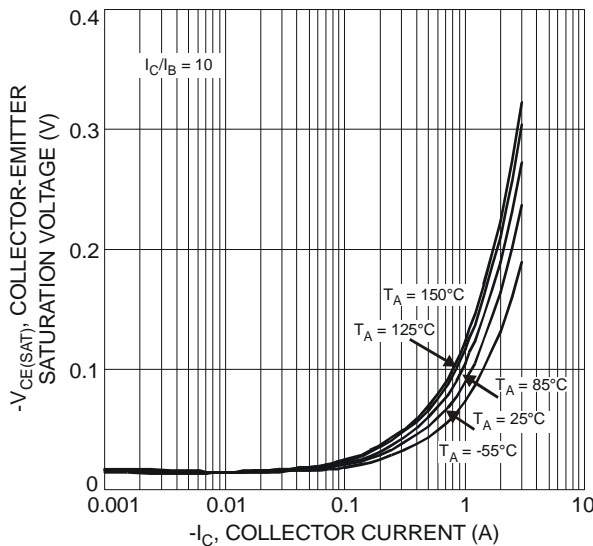


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

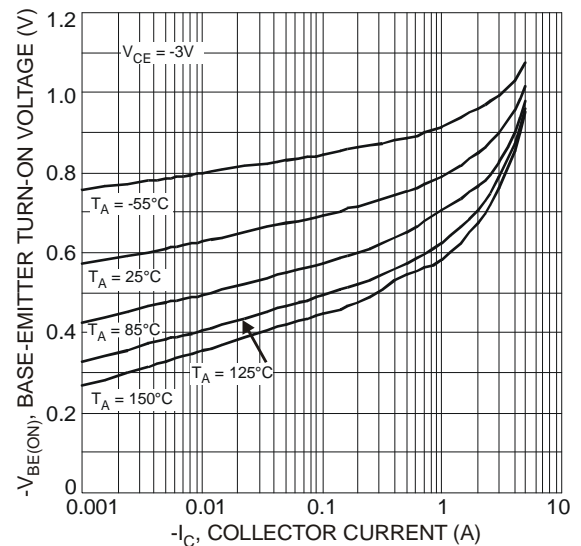


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

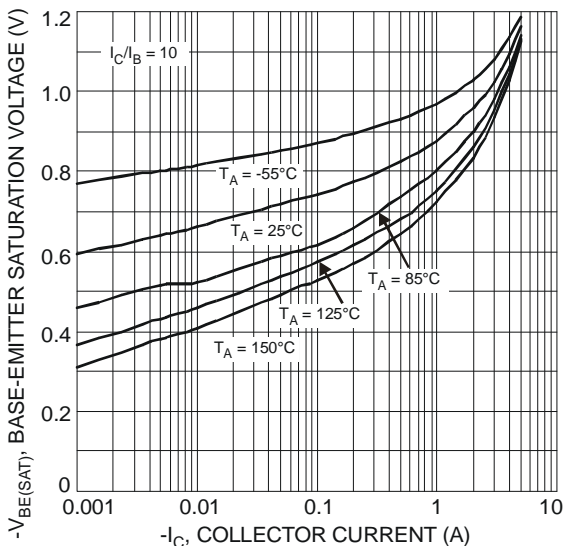


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

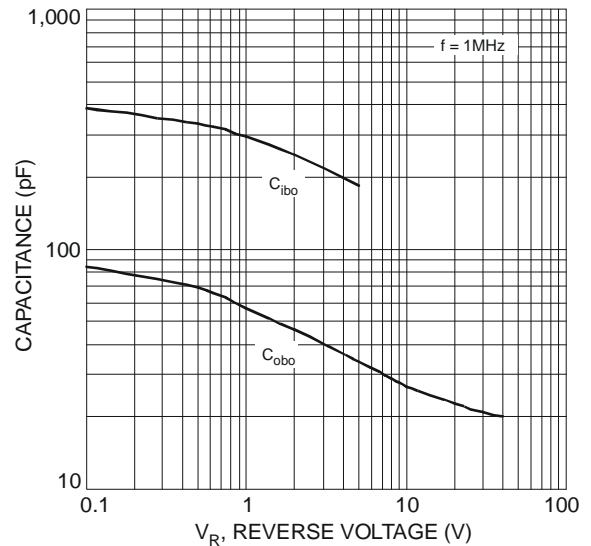


Fig. 6 Typical Capacitance Characteristics

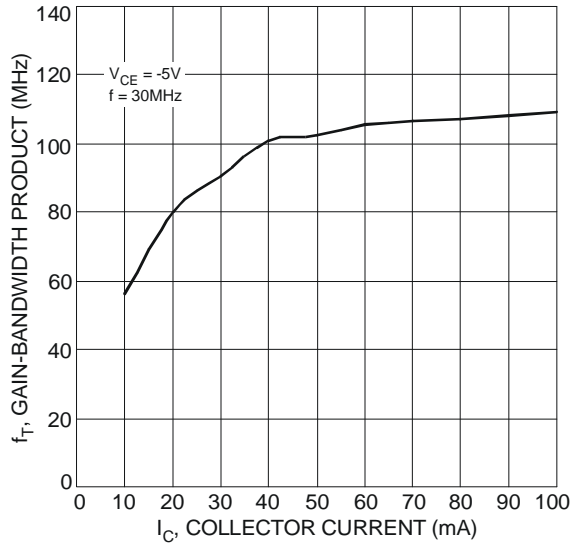


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current

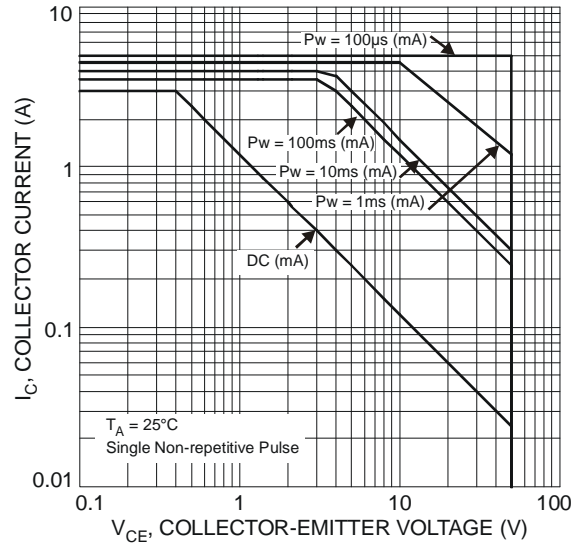


Fig. 8 Safe Operating Area (Note 3)

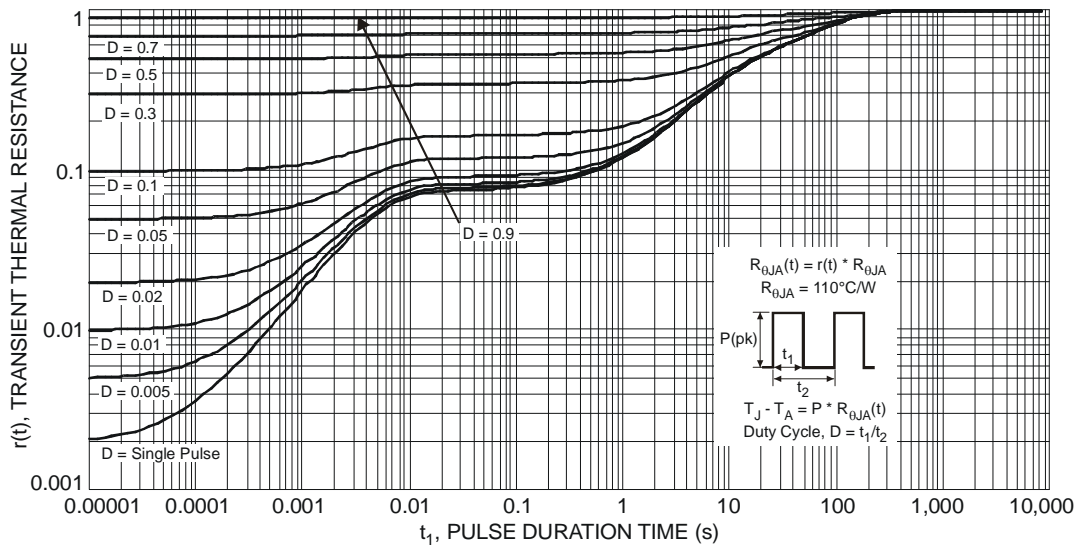


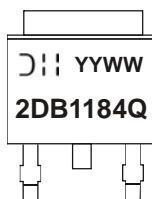
Fig. 9 Transient Thermal Response

Ordering Information (Note 5)

Part Number	Case	Packaging
2DB1184Q-13	TO252-3L	2500/Tape & Reel

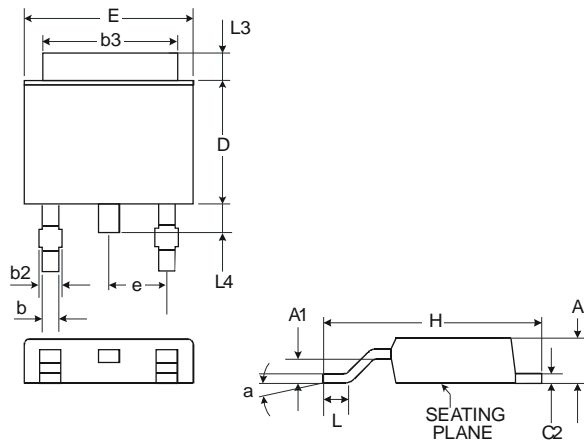
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



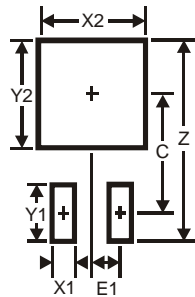
2DB1184Q = Product Type Marking Code
 DII = Manufacturers' code marking
 YYWW = Date Code Marking
 YY = Last Digit of Year, (ex: 08 = 2008)
 WW = Week Code 01-52

Package Outline Dimensions



TO252-3L			
Dim	Min	Typ	Max
A	2.19	2.29	2.39
A1	0.97	1.07	1.17
b	0.64	0.76	0.88
b2	0.76	0.95	1.14
b3	5.21	5.33	5.50
C2	0.45	0.51	0.58
D	6.00	6.10	6.20
E	6.45	6.58	6.70
e	2.286 Typ.		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L3	0.88	1.08	1.27
L4	0.64	0.83	1.02
a	0°	-	10°
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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