



THE DATASHEET OF DEMD48-7



Features

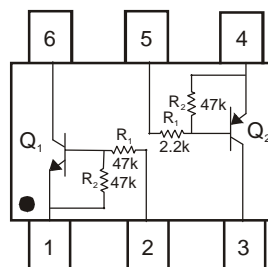
- Epitaxial Planar Die Construction
- Surface Mount Package Suited for Automated Assembly
- Simplifies Circuit Design and Reduces Board Space
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



SOT-563

Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.005 grams (approximate)



Reference	Device Type	R1(Nom)	R2(Nom)
Q ₁	NPN	47kΩ	47kΩ
Q ₂	PNP	2.2 kΩ	47kΩ

Maximum Ratings, Total Device @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P _D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Maximum Ratings, Pre-Biased NPN Transistor, Q₁ @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	10	V
Input Voltage	V _{IN}	-10 to +40	V
Output Current (DC)	I _O	100	mA
Peak Collector Current	I _{CM}	100	mA

Maximum Ratings, Pre-Biased PNP Transistor, Q₂ @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-50	V
Collector-Emitter Voltage	V _{CEO}	-50	V
Emitter-Base Voltage	V _{EBO}	-10	V
Input Voltage	V _{IN}	-12 to +5	V
Output Current (DC)	I _O	-100	mA
Peak Collector Current	I _{CM}	-100	mA

- 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; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics, Pre-Biased NPN Transistor, Q₁ @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Cut-Off Current	I _{CBO}	-	-	100	nA	V _{CB} = 50V, I _E = 0A
Collector-Emitter Cut-Off Current	I _{CEO}	-	-	1 50	μA	V _{CE} = 30V, I _B = 0A V _{CE} = 30V, I _B = 0A, T _A = 150°C
Emitter-Base Cut-Off Current	I _{EBO}	-	-	90	μA	V _{EB} = 5V, I _C = 0A
Input Voltage	V _{I(off)}	-	1.2	0.8	V	V _{CE} = 5V, I _O = 100μA
	V _{I(on)}	3	1.6	-	V	V _{CE} = 0.3V, I _O = 2mA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	-	-	0.15	V	I _C /I _B = 10mA/0.5mA
DC Current Gain	h _{FE}	80	-	-	-	V _{CE} = 5V, I _C = 5mA
Input Resistance	R ₁	33	47	61	kΩ	-
Resistance Ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Collector Capacitance	C _C	-	-	2.5	pF	V _{CB} = 10V, I _E = 0, f = 1MHz

Electrical Characteristics, Pre-Biased PNP Transistor, Q₂ @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Cut-Off Current	I _{CBO}	-	-	-100	nA	V _{CB} = -50V, I _E = 0A
Collector-Emitter Cut-Off Current	I _{CEO}	-	-	-1 -50	μA	V _{CE} = -30V, I _B = 0A V _{CE} = -30V, I _B = 0A, T _A = 150°C
Emitter-Base Cut-Off Current	I _{EBO}	-	-	-180	μA	V _{EB} = -5V, I _C = 0A
Input Voltage	V _{I(off)}	-	-0.6	-0.5	V	V _{CC} = -5V, I _O = -100μA
	V _{I(on)}	-1.1	-0.75	-	V	V _O = -0.3V, I _O = -5mA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	-	-	-0.1	V	I _C /I _B = -5mA/-0.25mA
DC Current Gain	h _{FE}	100	-	-	-	V _{CE} = -5V, I _C = -10mA
Input Resistance	R ₁	1.54	2.2	2.86	kΩ	-
Resistance Ratio	R ₂ /R ₁	17	21	26	-	-
Collector Capacitance	C _C	-	-	3.0	pF	V _{CB} = -10V, I _E = 0, f = 1MHz

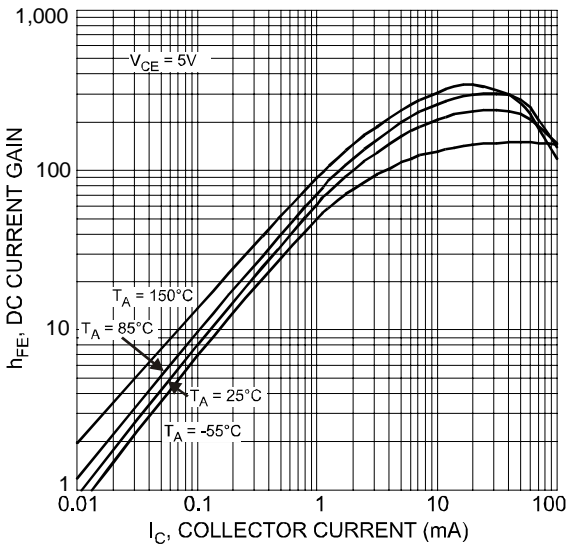


Fig. 1 Typical DC Current Gain vs. Collector Current (Q1, NPN)

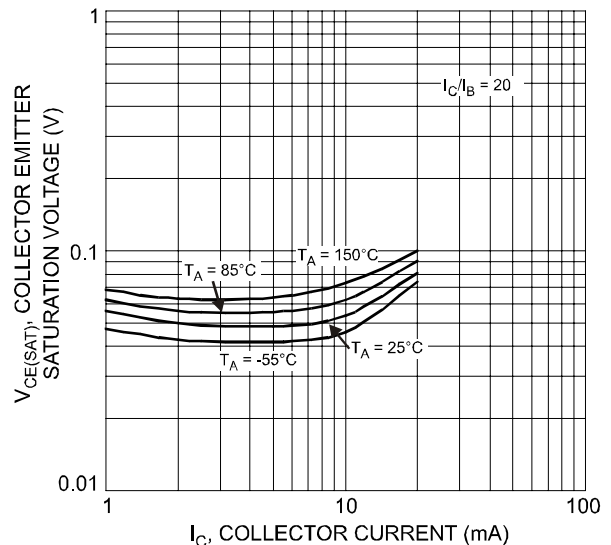


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current (Q1, NPN)

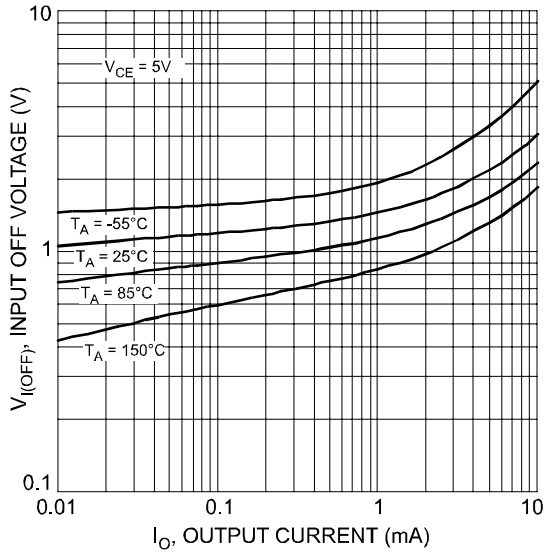


Fig. 3 Typical Input Off Voltage vs. Output Current (Q1, NPN)

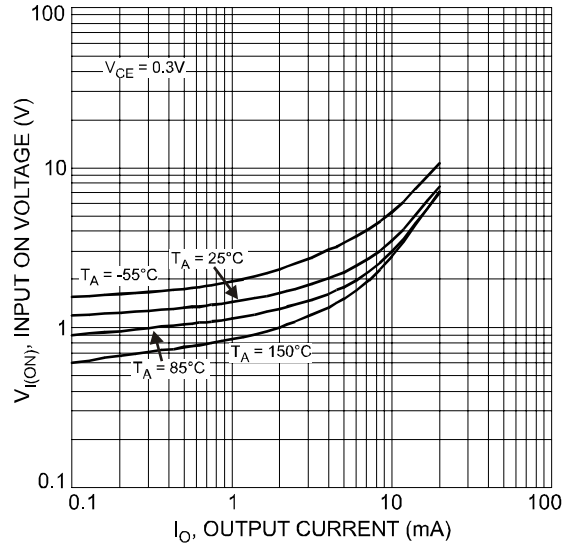


Fig. 4 Typical Input ON Voltage vs. Output Current (Q1, NPN)

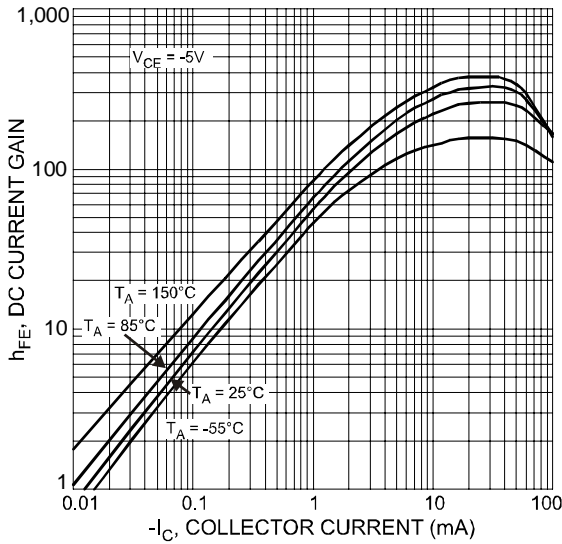


Fig. 5 Typical DC Current Gain vs. Collector Current (Q2, PNP)

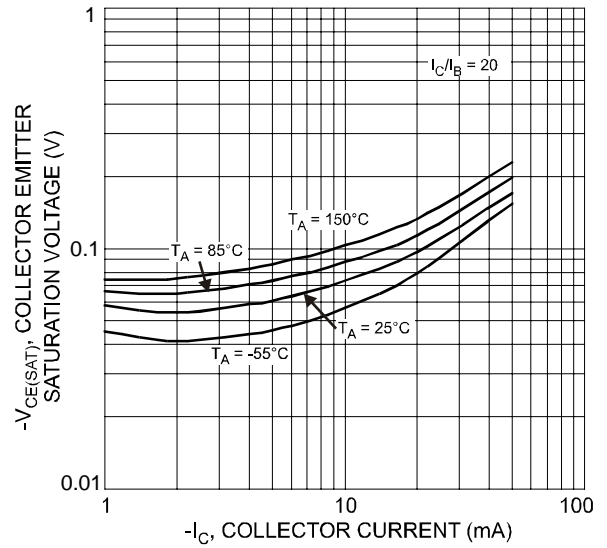


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current (Q2, PNP)

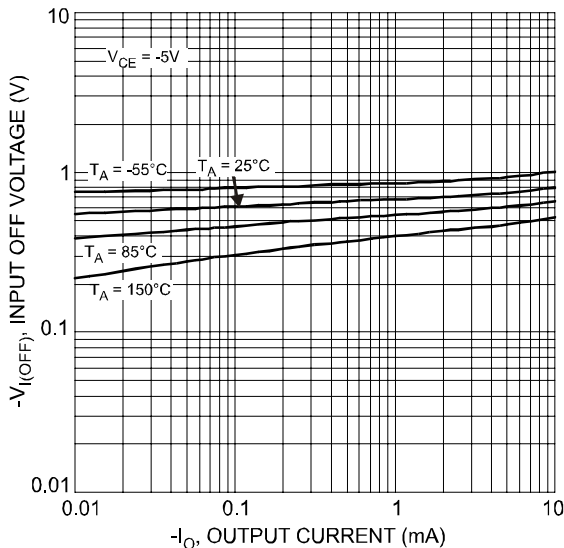


Fig. 7 Typical Input Off Voltage vs. Output Current (Q2, PNP)

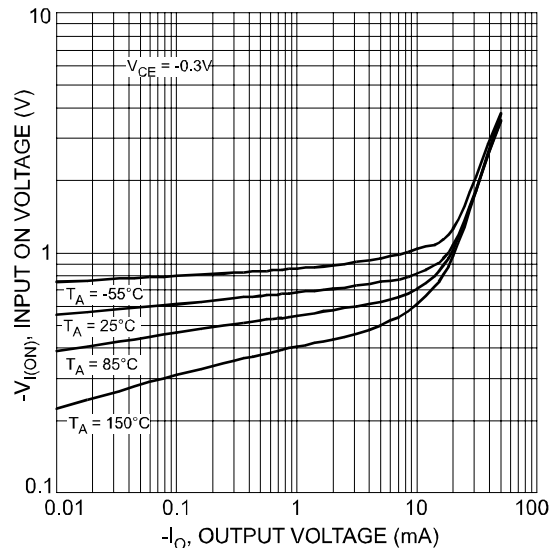


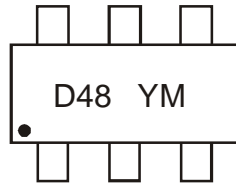
Fig. 8 Typical Input ON Voltage vs. Output Current (Q2, PNP)

Ordering Information (Note 4)

Device	Packaging	Shipping
DEMD48-7	SOT-563	3000/Tape & Reel

Note: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



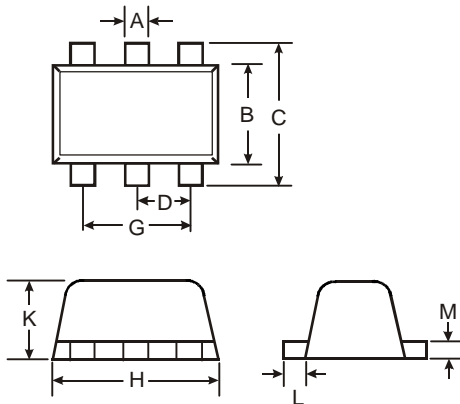
D48 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: U = 2007
 M = Month ex: 9 = September

Date Code Key

Year	2007	2008	2009	2010	2011	2012
Code	U	V	W	X	Y	Z

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

Package Outline Dimensions



SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

IMPORTANT NOTICE



Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View DEMD48-7 on WIN SOURCE](#)
-  [Diodes Incorporated Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management