2DC4617Q/R/S

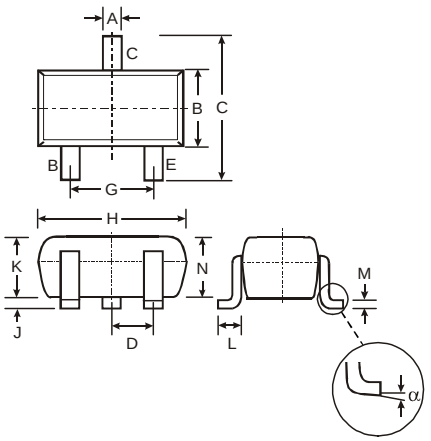
NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Ultra Miniature Surface Mount Package
- Complementary PNP Type Available (2DA1774Q,R,S)
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin annealed over Alloy 42 leadframe).
- Marking Information: (See Page 3): 2DC4617Q: 8D
2DC4617R: 8E
2DC4617S: 8F
- Ordering Information: See Page 3
- Weight: 0.002 grams (approximate)



SOT-523			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

Maximum Ratings @T_A = 25°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}	7.0	V
Collector Current - Continuous (Note 1)	I_C	150	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P_d	150	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)							
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	60	—	—	V	I_C = 50μA, I_E = 0
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	50	—	—	V	I_C = 1.0mA, I_B = 0
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	7.0	—	—	V	I_E = 50μA, I_C = 0
Collector Cutoff Current		I_{CBO}	—	—	100	nA	V_{CB} = 60V
Emitter Cutoff Current		I_{EBO}	—	—	100	nA	V_{EB} = 7.0V
ON CHARACTERISTICS (Note 2)							
DC Current Gain	2DC4617Q 2DC4617R 2DC4617S	h_{FE}	120 180 270	— — —	270 390 560	—	V_{CE} = 6.0V, I_C = 1.0mA
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	—	0.4	V	I_C = 50mA, I_B = 5.0mA
SMALL SIGNAL CHARACTERISTICS							
Output Capacitance		C_{obo}	—	2.0	3.5	pF	V_{CB} = 12V, f = 1.0MHz, I_E = 0
Current Gain-Bandwidth Product		f_T	—	180	—	MHz	V_{CE} = 12V, I_E = -2mA, f = 1MHz
Current Gain-Bandwidth Product		f_T	180 Typ.		—	MHz	V_{CE} = 12V, I_E = 0A, f = 1MHz
Current Gain-Bandwidth Product		f_T	180 Typ.		—	MHz	V_{CE} = 12V, I_C = -2.0mA, f = 100MHz

Notes:
1. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. Short duration pulse test used to minimize self-heating effect.
3. No purposefully added lead.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

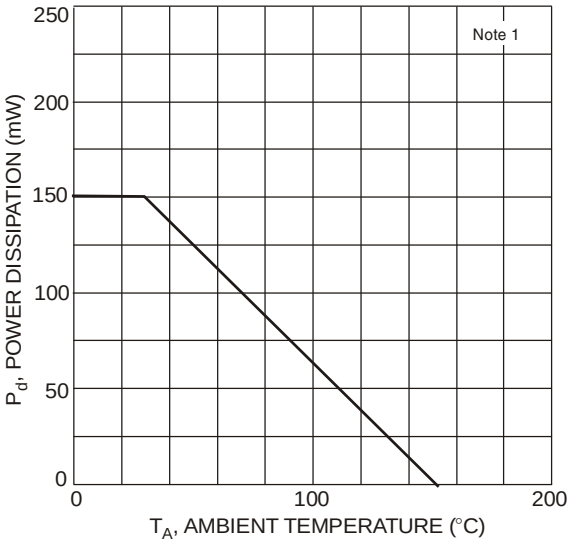


Fig. 1 Power Derating Curve

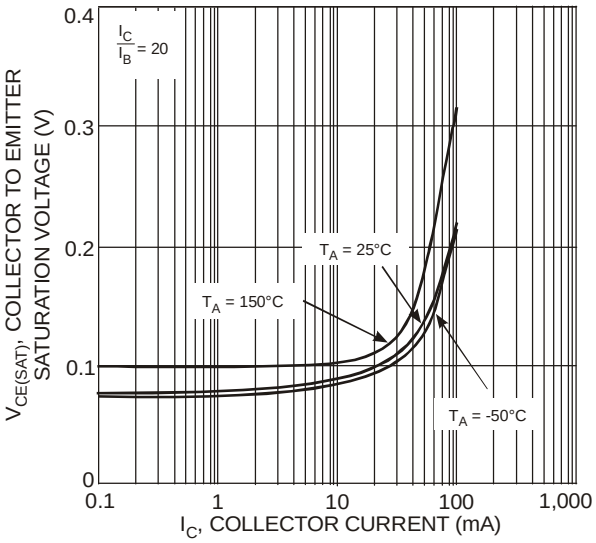


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

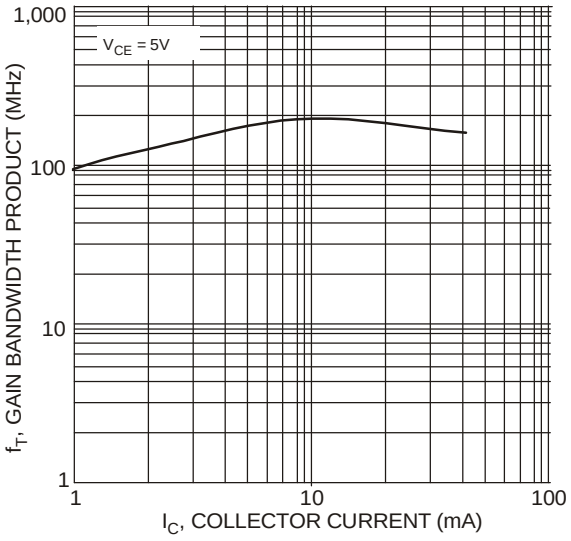


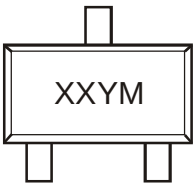
Fig. 3 Gain Bandwidth Product vs. Collector Current

Ordering Information (Note 6)

Device	Packaging	Shipping
2DC4617Q-7-F	SOT-523	3000/Tape & Reel
2DC4617R-7-F	SOT-523	3000/Tape & Reel
2DC4617S-7-F	SOT-523	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



XX = Product Type Marking Code (See Page 1, e.g. 8D = 2DC4617Q)
YM = Date Code Marking
Y = Year (ex: N = 2002)
M = Month (ex: 9 = September)

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	M	N	P	R	S	T	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