



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Features

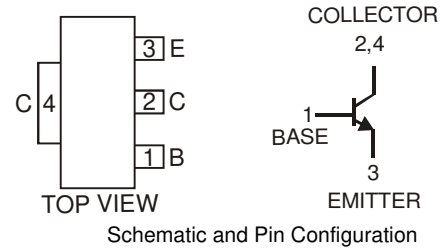
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (2DB1188)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



SOT89-3L

Mechanical Data

- Case: SOT89-3L
- 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 annealed over Copper leadframe
(Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



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
Peak Pulse Current	I _{CM}	2.5	A
Continuous Collector Current	I _C	2	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T _A = 25°C	P _D	1	W
Thermal Resistance, Junction to Ambient Air (Note 3) @ T _A = 25°C	R _{θJA}	125	°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	Conditions
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	V _{(BR)CBO}	40	—	—	V	I _C = 50μA, I _E = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	32	—	—	V	I _C = 1mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5	—	—	V	I _E = 50μA, I _C = 0
Collector Cut-Off Current	I _{CBO}	—	—	1	μA	V _{CB} = 20V, I _E = 0
Emitter Cut-Off Current	I _{EBO}	—	—	1	μA	V _{EB} = 4V, I _C = 0
ON CHARACTERISTICS (Note 4)						
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	0.3	0.8	V	I _C = 2A, I _B = 0.2A
DC Current Gain	2DD1766P	82	—	180	—	V _{CE} = 3V, I _C = 0.5A
	2DD1766Q	120	—	270	—	
	2DD1766R	180	—	390	—	
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f _T	—	220	—	MHz	V _{CE} = 5V, I _E = -50mA, f = 100MHz
Output Capacitance	C _{ob}	—	13	—	pF	V _{CB} = 10V, I _E = 0, f = 1MHz

- 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 page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

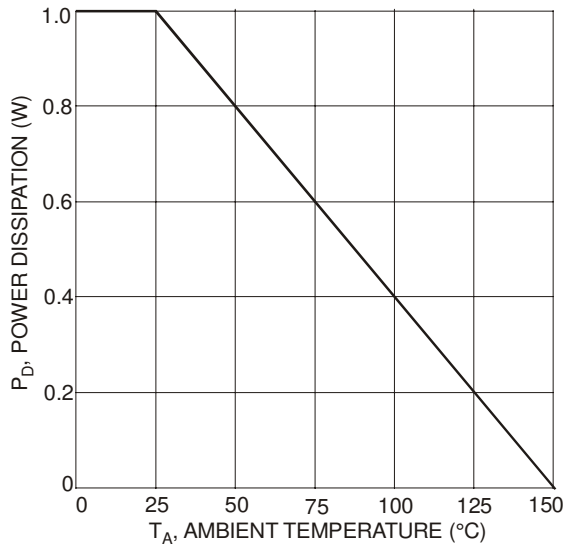


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

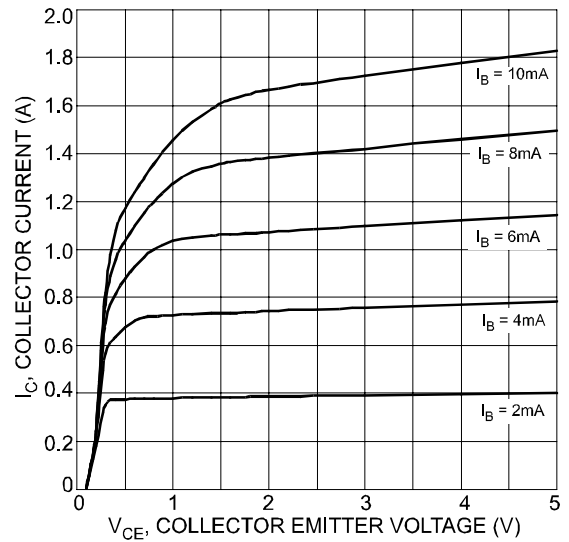


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

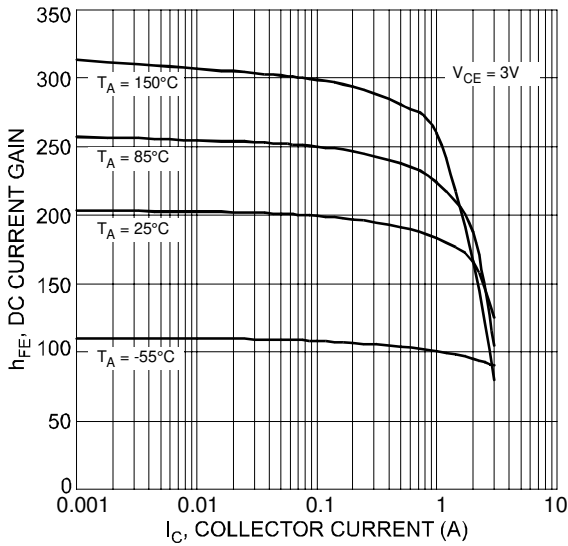


Fig. 3 Typical DC Current Gain vs. Collector Current (2DD1766Q)

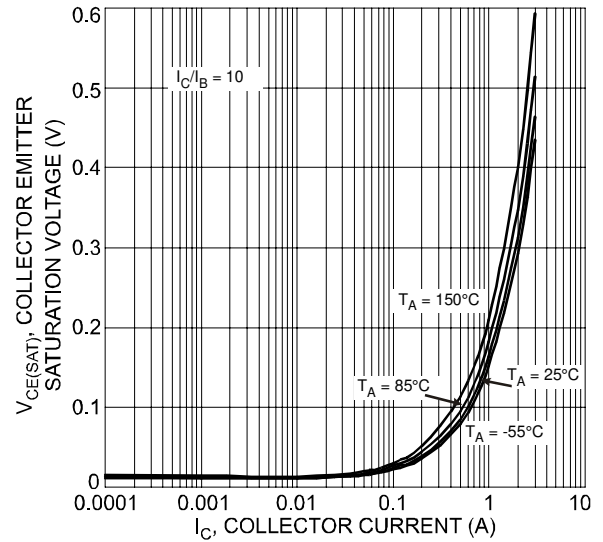


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

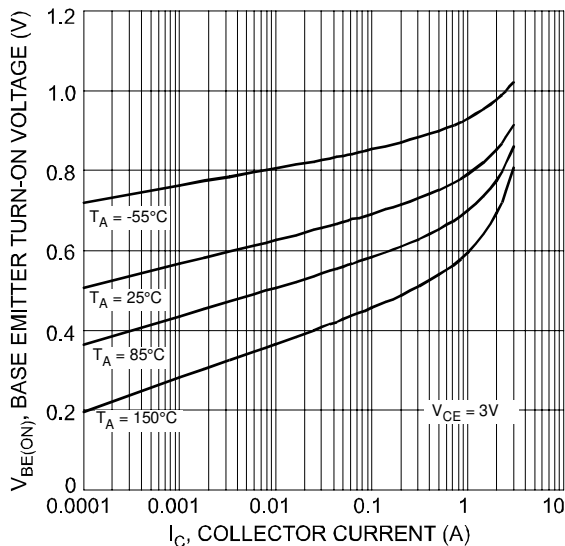


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

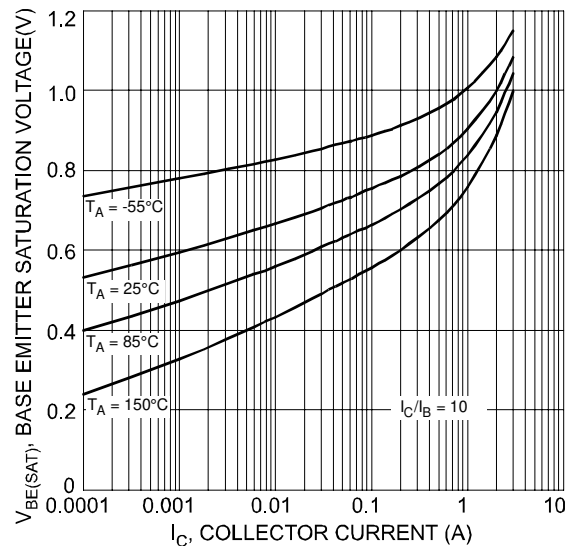
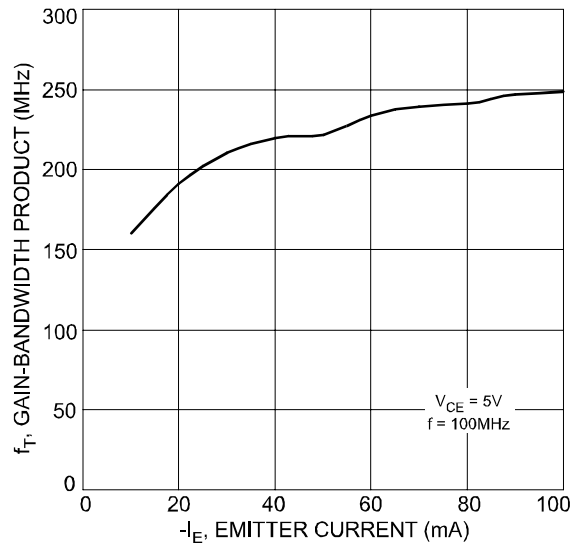
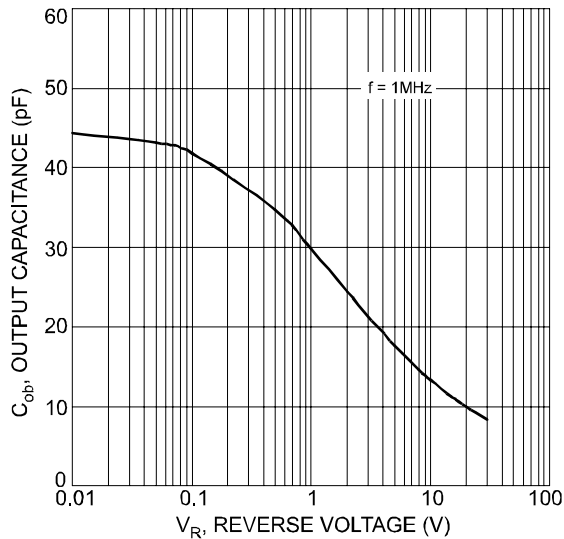


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

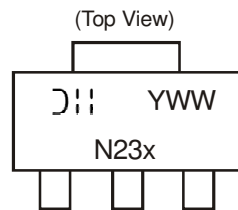


Ordering Information (Note 5)

Device	Packaging	Shipping
2DD1766P-13	SOT89-3L	2500/Tape & Reel
2DD1766Q-13	SOT89-3L	2500/Tape & Reel
2DD1766R-13	SOT89-3L	2500/Tape & Reel

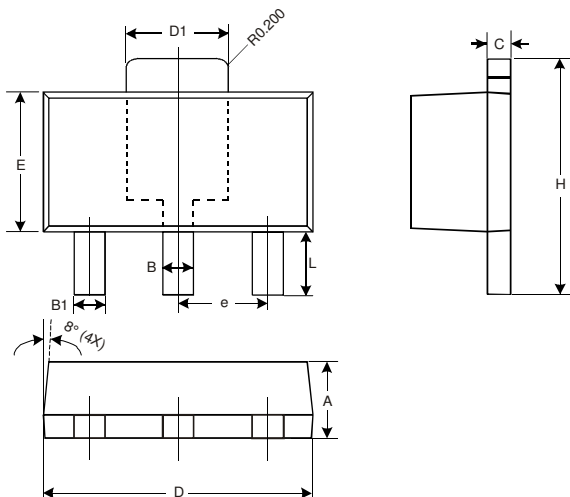
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



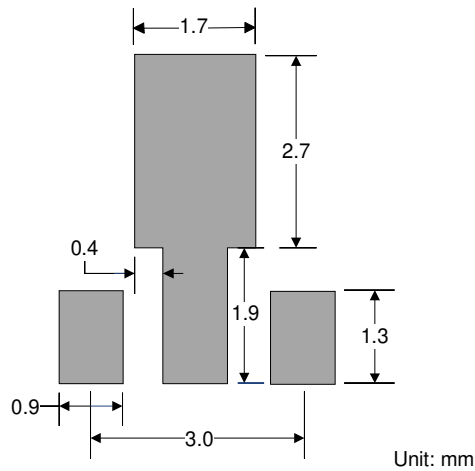
N23x = Product Type Marking Code:
 Where N23P = 2DD1766P
 N23Q = 2DD1766Q
 N23R = 2DD1766R
 YWW = Date Code Marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

Package Outline Dimensions



SOT89-3L			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.45	0.55	0.50
B1	0.37	0.47	0.42
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.50	1.70	1.60
E	2.40	2.60	2.50
e	—	—	1.50
H	3.95	4.25	4.10
L	0.90	1.20	1.05
All Dimensions in mm			

Suggested Pad Layout



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