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!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

2DD2678

LOW $V_{CE(SAT)}$ NPN SURFACE MOUNT TRANSISTOR

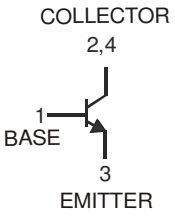
Features

- Epitaxial Planar Die Construction
- 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)**

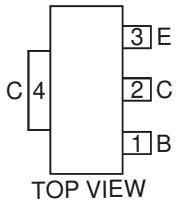
Mechanical Data

- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- 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: 0.072 grams (approximate)

Top View



Device Schematic



Pin Out Configuration

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	15	V
Collector-Emitter Voltage	V_{CEO}	12	V
Emitter-Base Voltage	V_{EBO}	6	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current	I_C	3	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T_A = 25°C	P_D	0.9	W
Thermal Resistance, Junction to Ambient Air (Note 3) @ T_A = 25°C	$R_{\theta JA}$	139	°C/W
Power Dissipation (Note 4) @ T_A = 25°C	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 4) @ T_A = 25°C	$R_{\theta JA}$	62.5	°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						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	15	—	—	V	I_C = 10μA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	12	—	—	V	I_C = 1mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	—	—	V	I_E = 10μA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	—	0.1	μA	V_{CB} = 15V, I_E = 0
Emitter Cut-Off Current	I_{EBO}	—	—	0.1	μA	V_{EB} = 6V, I_C = 0
ON CHARACTERISTICS (Note 5)						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	90	250	mV	I_C = 1.5A, I_B = 30mA
DC Current Gain	h_{FE}	270	—	680	—	V_{CE} = 2V, I_C = 500mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	26	—	pF	V_{CB} = 10V, I_E = 0, f = 1MHz
Current Gain-Bandwidth Product	f_T	—	170	—	MHz	V_{CE} = 2V, I_C = 100mA, f = 100MHz

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 recommended pad layout.
4. Device mounted on FR-4 PCB with 1 inch^2 copper pad layout.
5. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

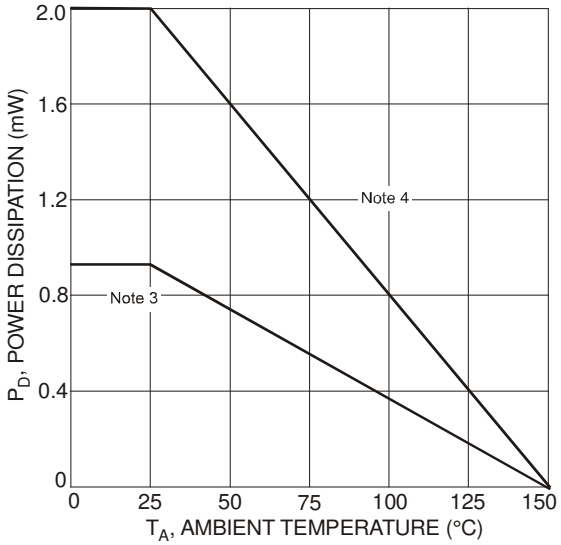


Fig. 1 Power Dissipation vs. Ambient Temperature

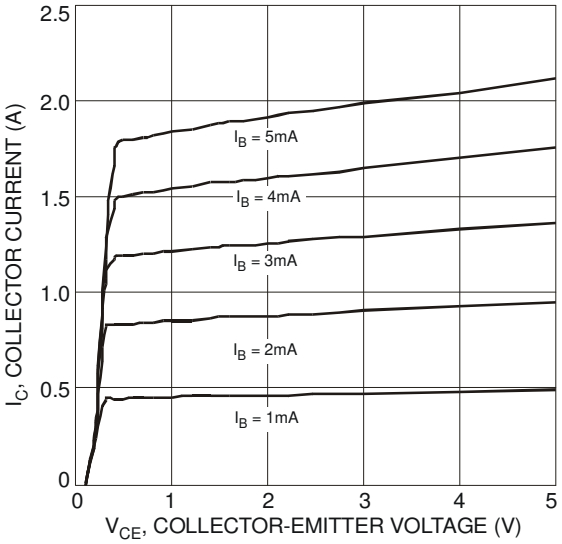


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

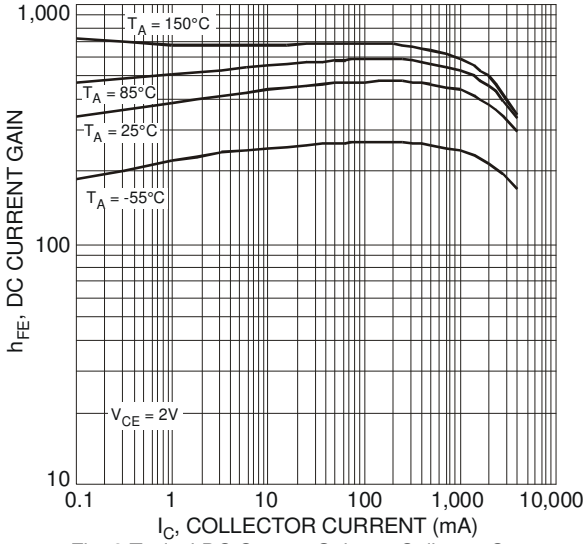


Fig. 3 Typical DC Current Gain vs. Collector Current

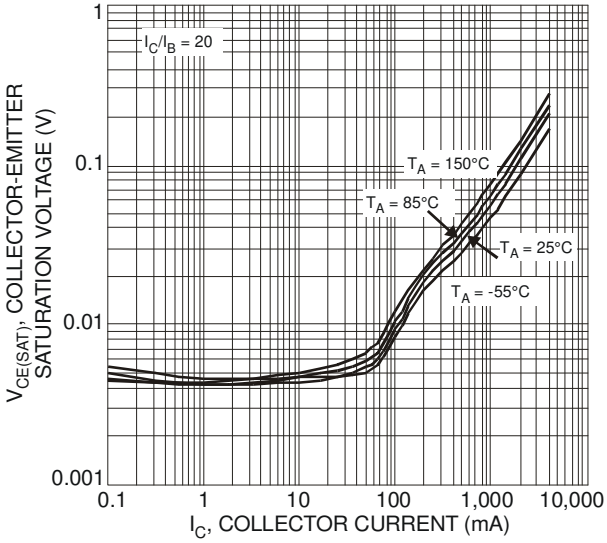


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

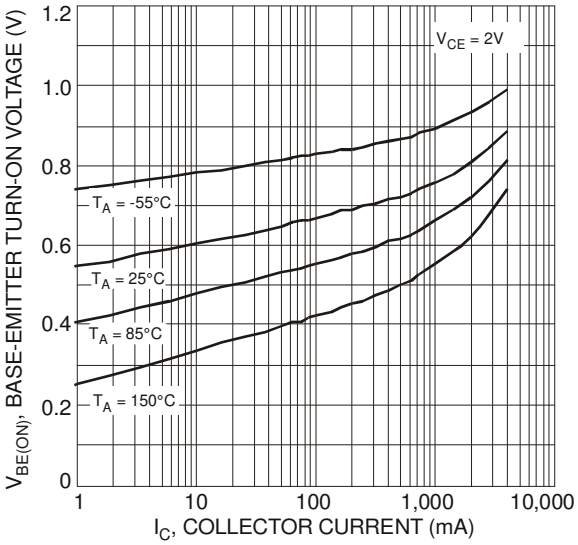


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

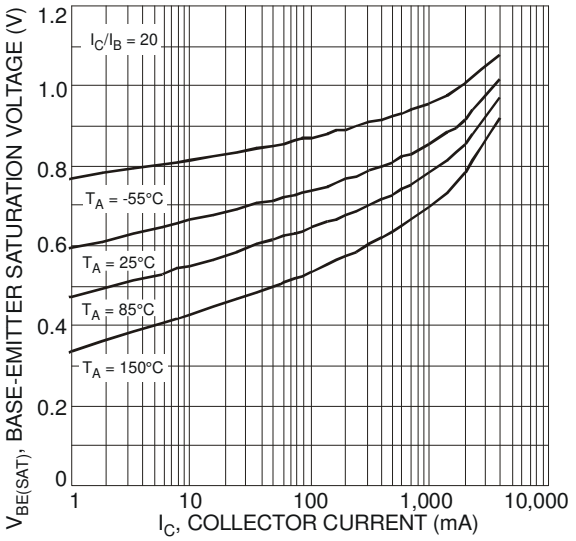


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

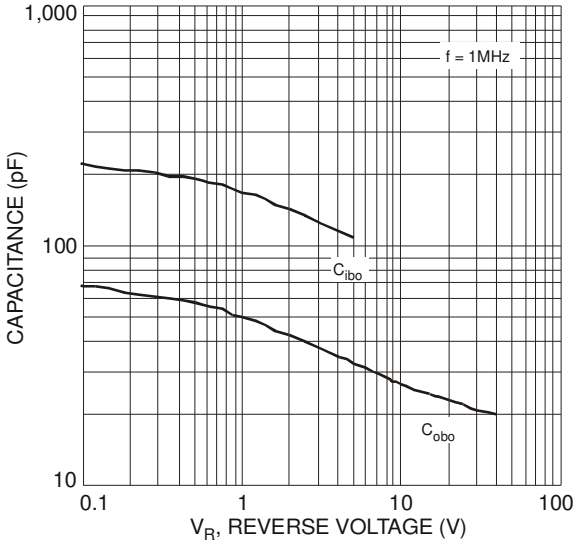


Fig. 7 Typical Capacitance Characteristics

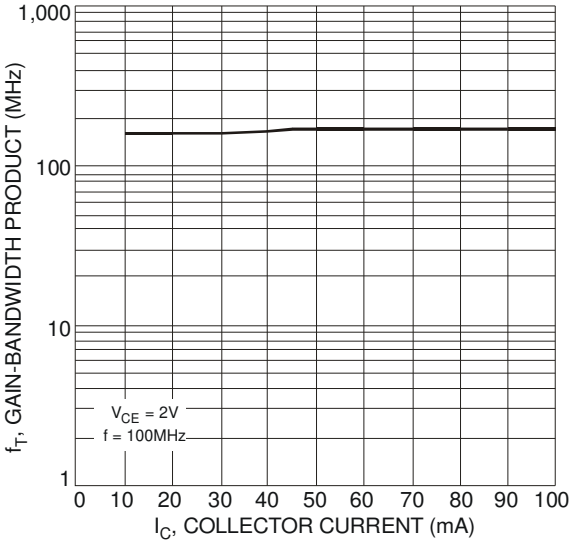


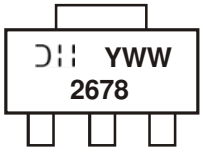
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 6)

Part Number	Case	Packaging
2DD2678-13	SOT89-3L	2500/Tape & Reel

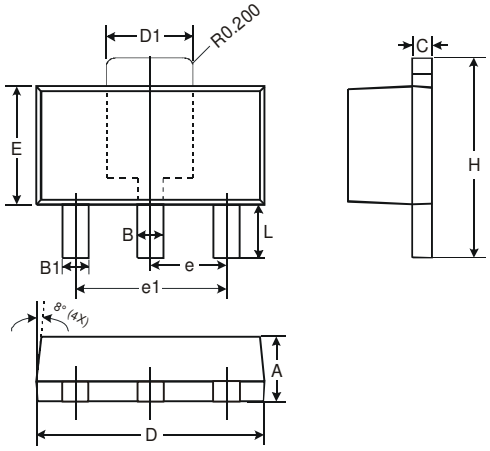
Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



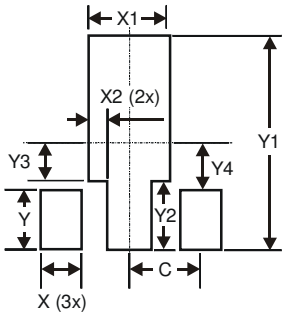
2678 = Product Type Marking Code
YWW = Date Code Marking
Y = Last digit of year (ex: 8 = 2008)
WW = Week code (01 – 53)

Package Outline Dimensions



SOT89-3L		
Dim	**Min**	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500