LOW VCE(SAT) NPN SURFACE MOUNT TRANSISTOR

Features

- BV_{CEO} > 50V
- I_C = 3.0A Continuous Current
- Complementary PNP Type Available (DPLS350Y)
- Ideally Suited for Automated Assembly Processes
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

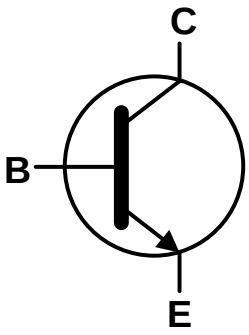
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.052 grams (Approximate)

Applications

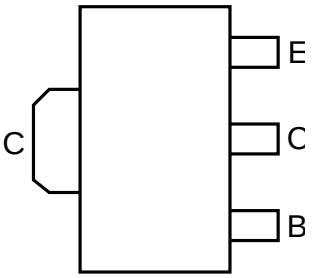
- Ideal for Medium Power Switching or Amplification Applications

SOT89

Top View



Device Symbol



Top View
Pin-Out

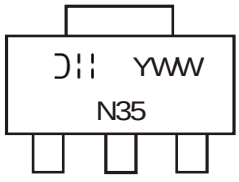
Ordering Information (Note 4)

Device	Package	Shipping
DNLS350Y-13	SOT89	2500/Tape & Reel

Notes::
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

(Top View)



= Manufacturer's Marking
N35 = Product Type Marking Code
YWW = Date Code Marking
Y = Last Digit of Year (ex: 7 = 2017)
WW = Week Code (01 to 52)

Absolute Maximum Ratings (@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}	5	V
Peak Pulse Collector Current	I_{CM}	5	A
Continuous Collector Current	I_C	3	A
Base Current	I_B	0.5	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) @ T_A = 25°C	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5) @ T_A = +25°C	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes: 5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.

6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

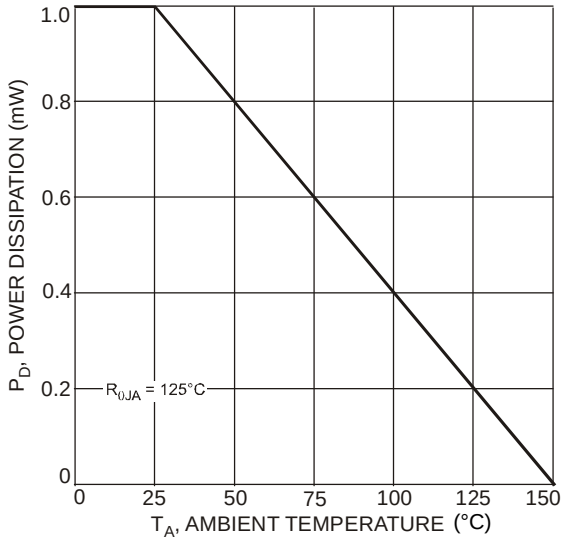


Fig. 1 Max Power Dissipation vs. Ambient Temperature

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 50V, I_E = 0
		—	—	50	μA	V_{CB} = 50V, I_E = 0, T_A = +150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 5V, I_C = 0
Collector-Emitter Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 50V, V_{BE} = 0
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	50	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100μA
ON CHARACTERISTICS (Note 7)						
DC Current Gain	h_{FE}	300	—	—	—	V_{CE} = 2V, I_C = 0.1A
		300	—	—		V_{CE} = 2V, I_C = 0.5A
		300	—	700		V_{CE} = 2V, I_C = 1A
		200	—	—		V_{CE} = 2V, I_C = 2A
		100	—	—		V_{CE} = 2V, I_C = 3A
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	38	80	mV	I_C = 0.5A, I_B = 50mA
		—	70	160		I_C = 1A, I_B = 50mA
		—	130	280		I_C = 2A, I_B = 100mA
		—	124	260		I_C = 2A, I_B = 200mA
		—	180	370		I_C = 3A, I_B = 300mA
Equivalent On-Resistance	$R_{CE(SAT)}$	—	62	130	mΩ	I_E = 2A, I_B = 200mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.1	V	I_C = 2A, I_B = 100mA
		—	—	1.2	V	I_C = 3A, I_B = 300mA
Base-Emitter Turn-on Voltage	$V_{BE(ON)}$	—	—	1.1	V	V_{CE} = 2V, I_C = 1A
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 5V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{obo}	—	—	25	pF	V_{CB} = 10V, f = 1MHz

Notes: 7. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

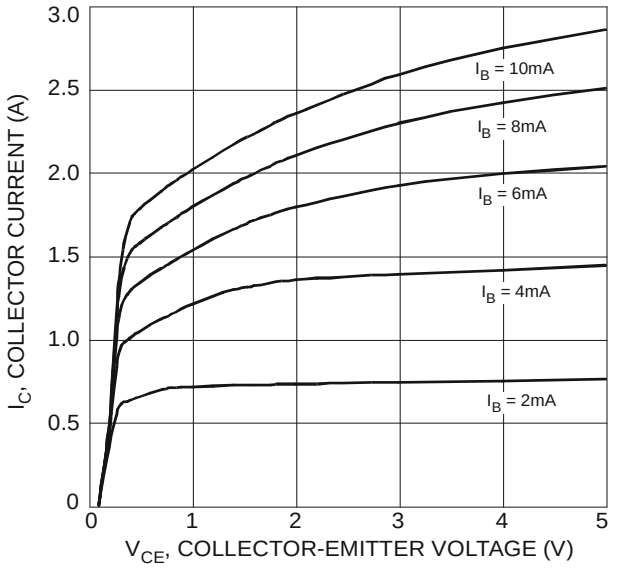


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

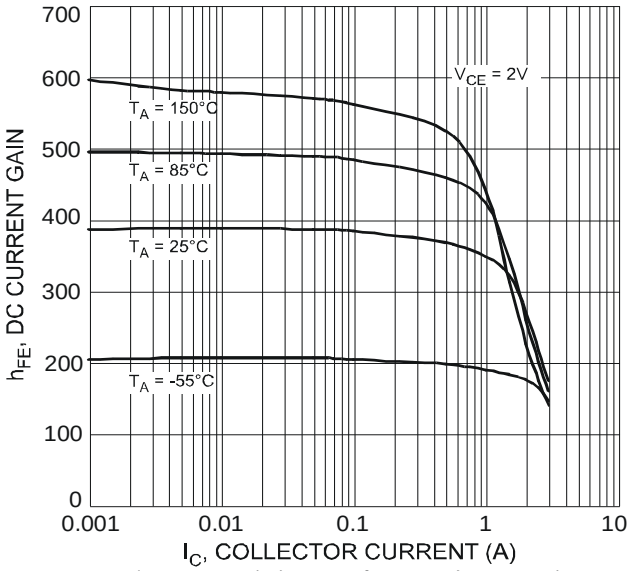


Fig. 3 Typical DC Current Gain vs. Collector Current

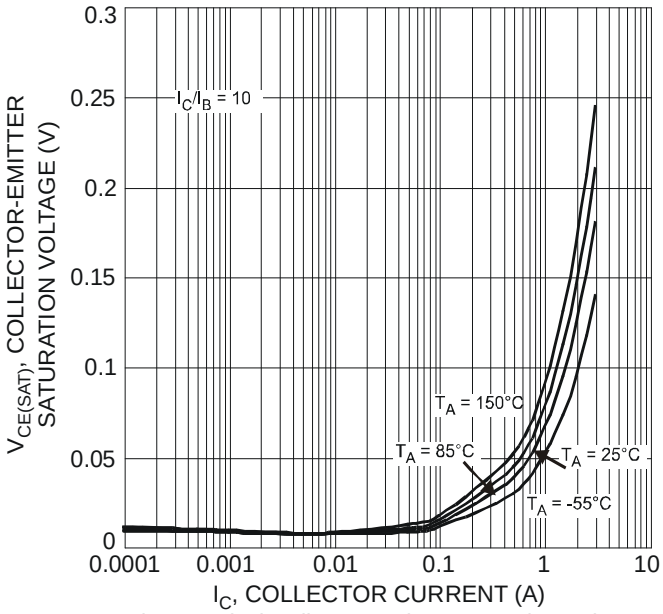


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

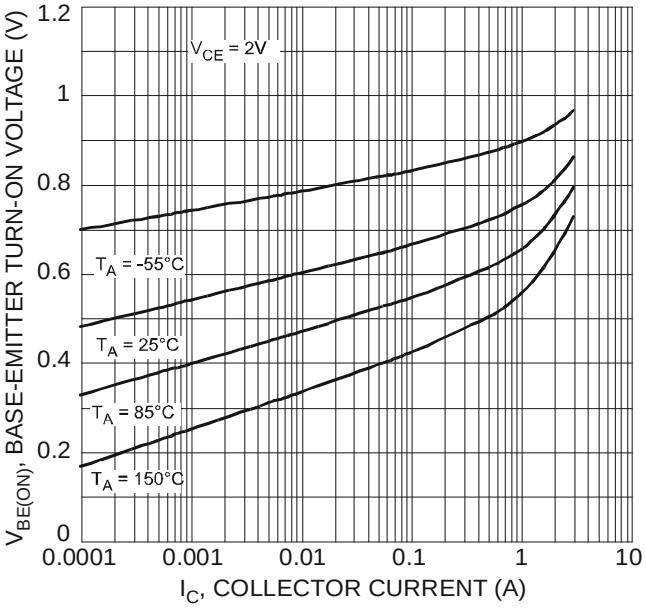


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.) (Cont.)

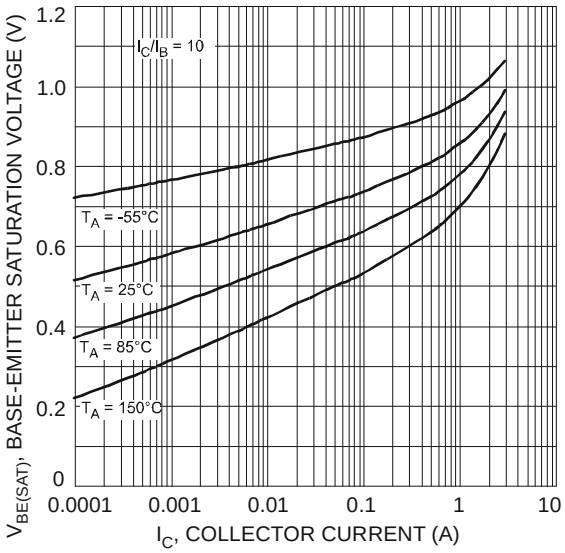


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

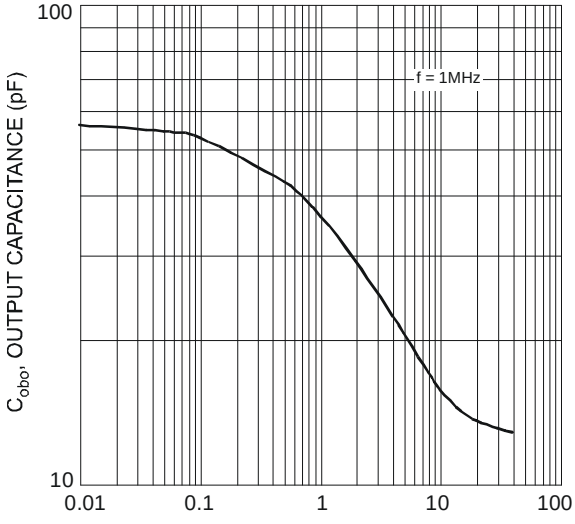


Fig. 7 Typical Output Capacitance Characteristics

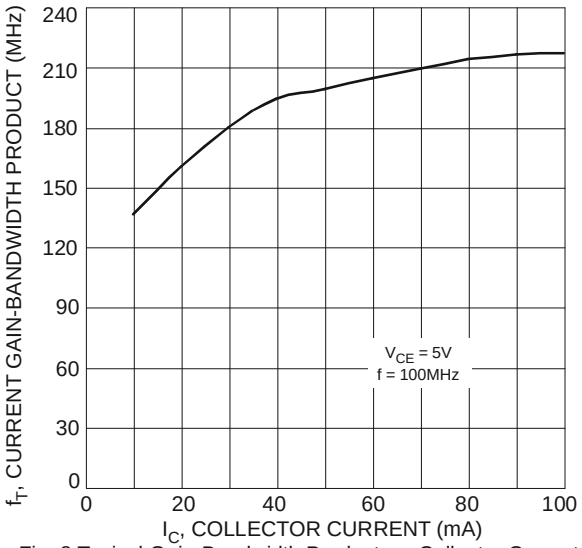


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

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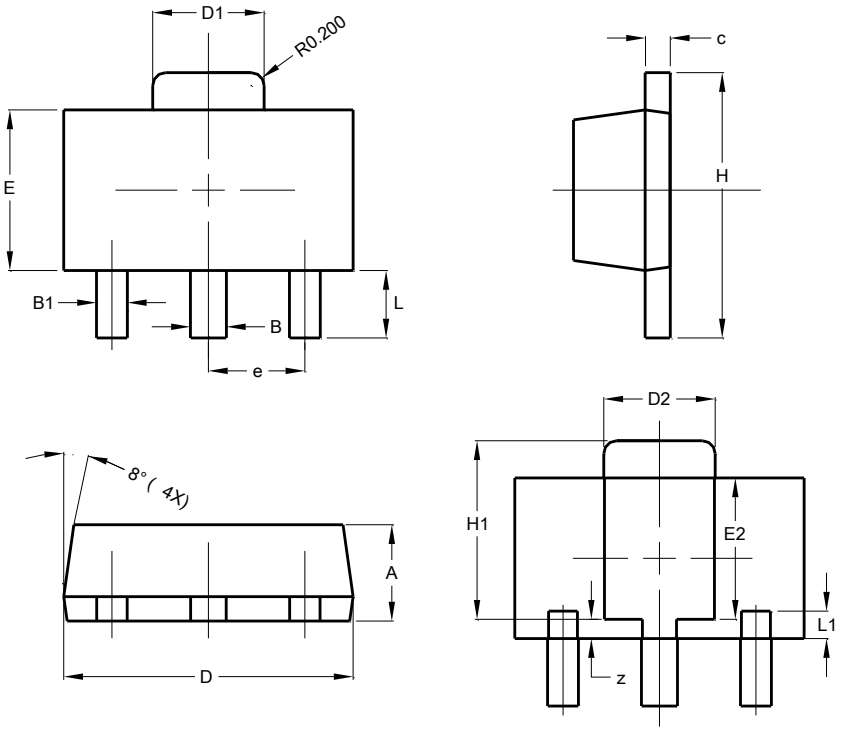
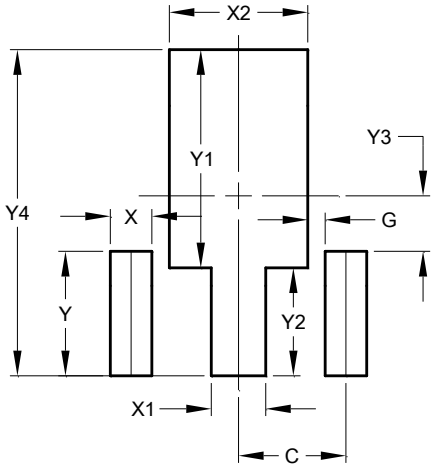


SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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