

Features

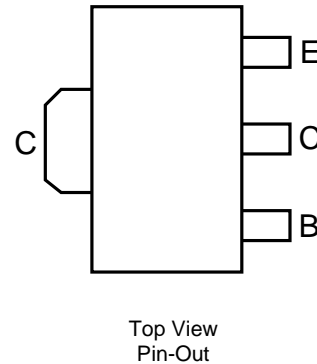
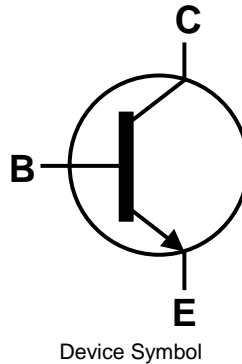
- $BV_{CEO} > 50V$
- $I_C = 3.0A$ Continuous Current
- Complementary PNP Type Available (DPLS350Y)
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SOT89
- Package 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 [Ⓔ]
- Weight: 0.052 grams (Approximate)

Applications

- Medium power switching or amplification

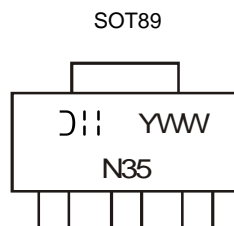


Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DNLS350Y-13	SOT89	N35	13	12	2,500	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



= Manufacturer's Marking
 N35 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 3 = 2023)
 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	P _D	(Note 5)	1
		(Note 6)	1.6
		(Note 7)	2.0
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 5)	125
		(Note 6)	78
		(Note 7)	62.5
Thermal Resistance, Junction to Lead	R _{θJL}	5.7	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 9)

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 exposed collector pad 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. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
 7. Same as note (5), except the device is mounted on 50mm x 50mm 1oz copper.
 8. Thermal resistance from junction to solder-point (on the exposed collector pad).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

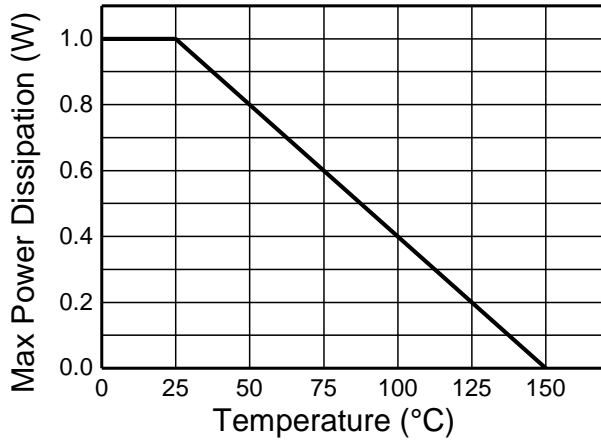


Figure 1. Derating Curve

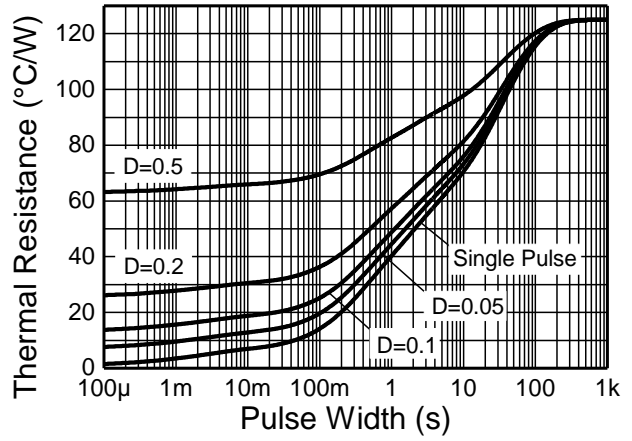


Figure 2. Transient Thermal Resistance

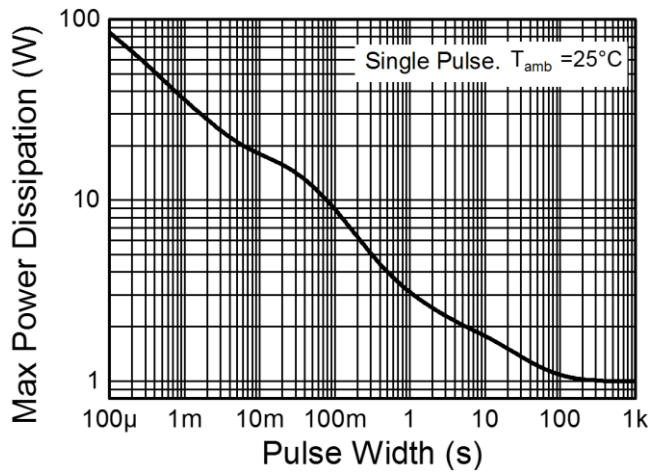


Figure 3. Pulse Power Dissipation

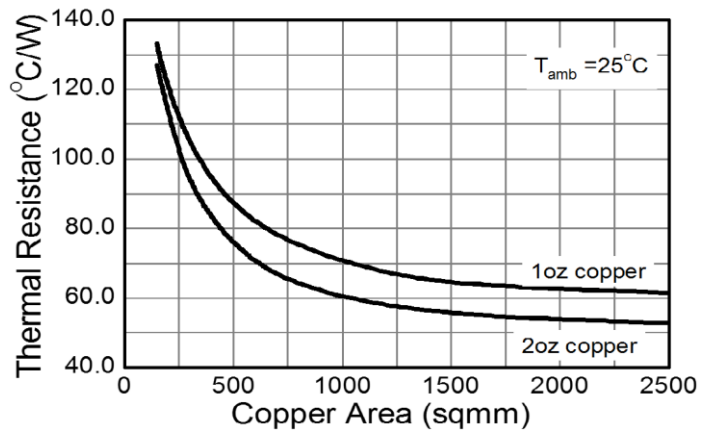


Figure 4. Rthja vs Area

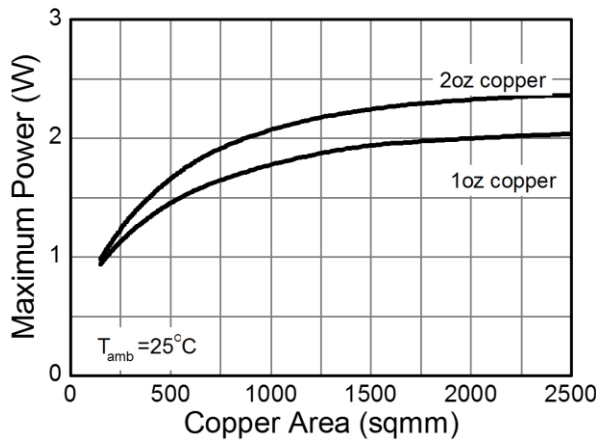


Figure 5. Max Power vs Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 10)						
Collector-Base Cutoff Current	I _{CBO}	—	—	100	nA	V _{CB} = 50V
		—	—	50	μA	V _{CB} = 50V, T _A = +150°C
Emitter-Base Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V
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 10)						
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

Note: 10. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

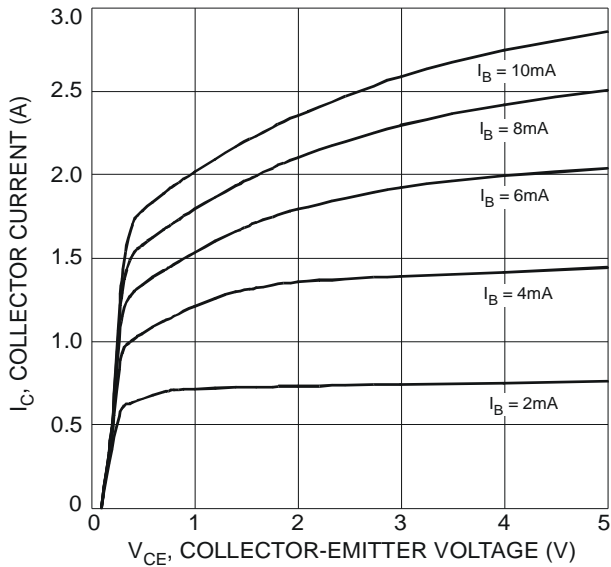


Figure 6. Typical Collector Current vs Collector-Emitter Voltage

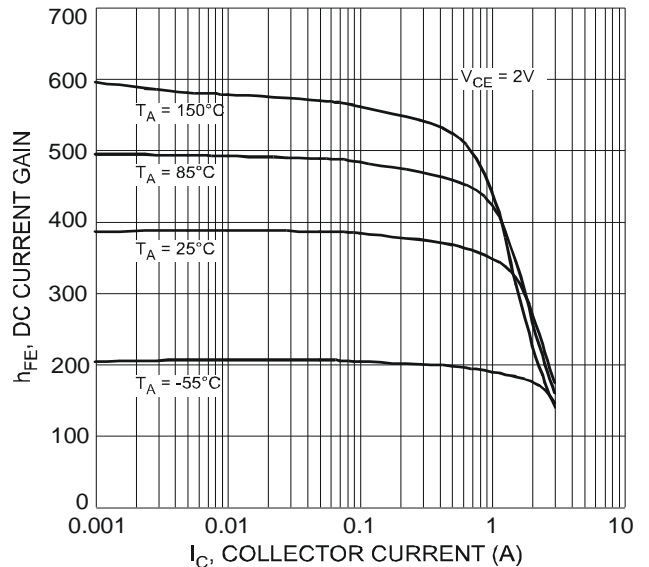


Figure 7. Typical DC Current Gain vs Collector Current

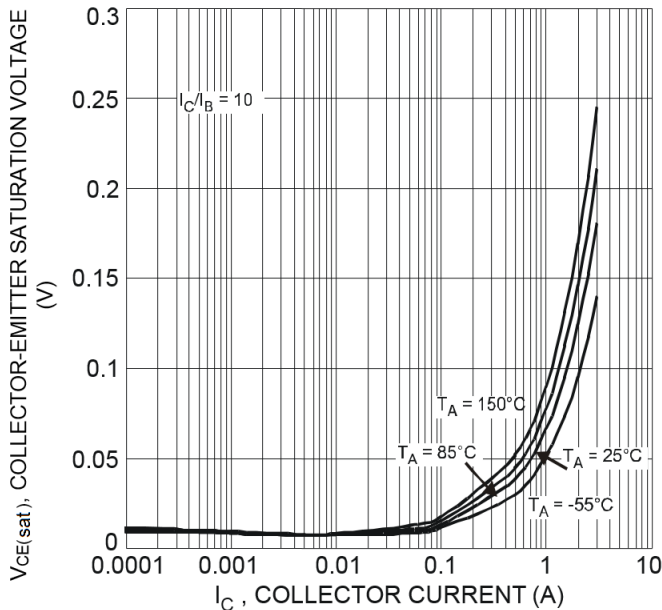


Figure 8. Saturation Voltage vs Collector Current

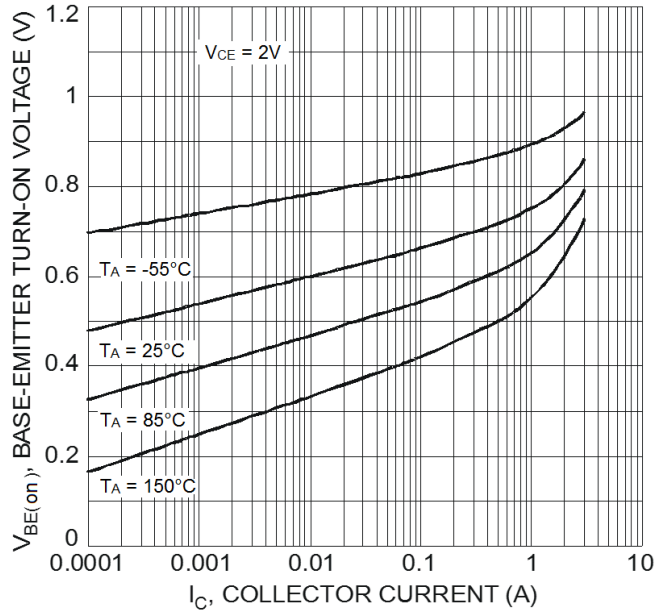


Figure 9. Typical Base-Emitter Turn-On Voltage vs Collector Current

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

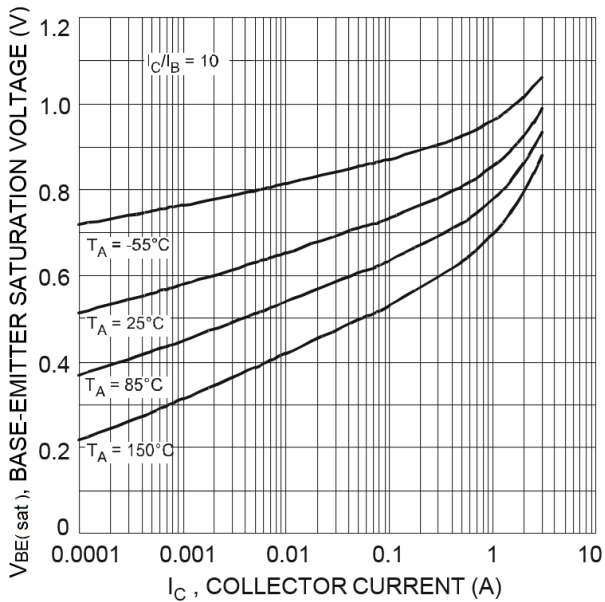


Figure 9. Typical Base-Emitter Saturation Voltage vs Collector Current

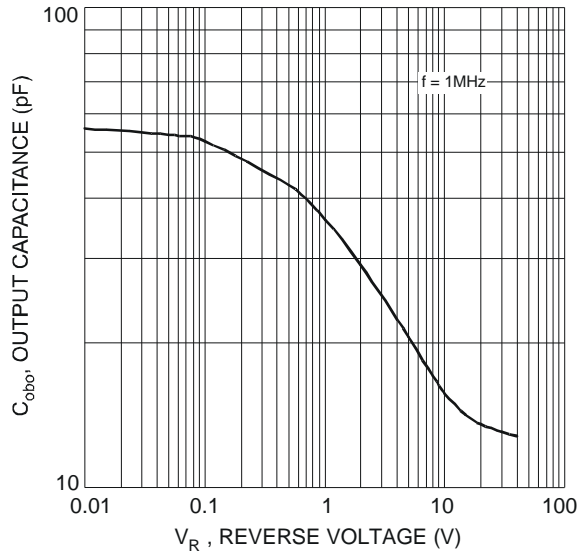


Figure 10. Typical Output Capacitance Characteristics

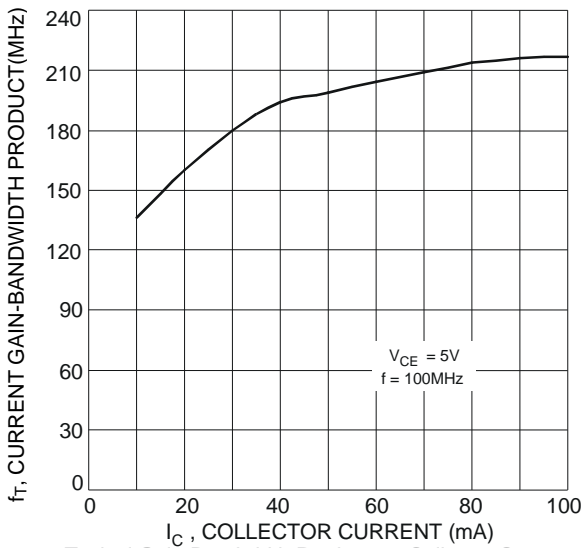
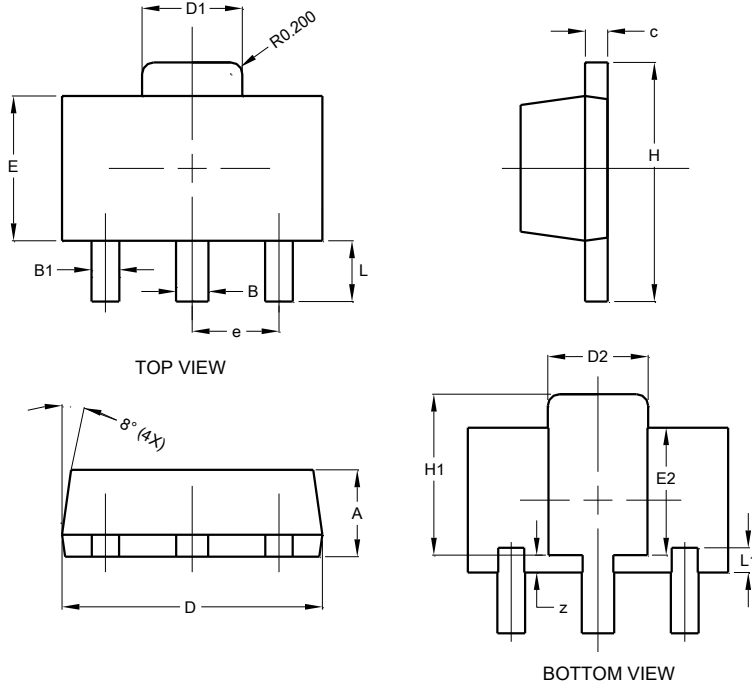


Figure 11. Typical Gain Bandwidth Product vs Collector Current

Package Outline Dimensions

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

SOT89

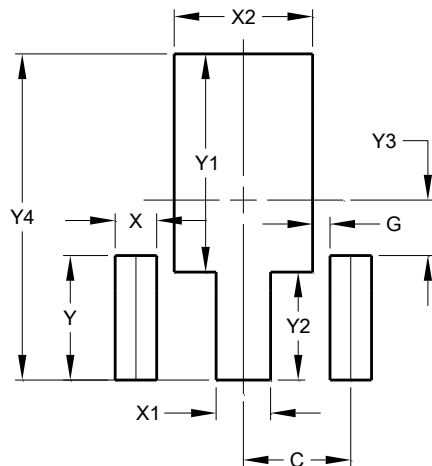


SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in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