

50V PNP LOW SATURATION POWER TRANSISTOR IN SOT89
Features

- $BV_{CEO} > -50V$
- $I_C = -3A$ High Continuous Collector Current
- I_{CM} up to $-5A$ Peak Pulse Current
- 2W Power Dissipation
- Low Saturation Voltage $V_{CE(sat)} < -180mV @ 1A$
- $R_{CE(sat)} = 67m\Omega @ 2A$ for a Low Equivalent On-Resistance
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

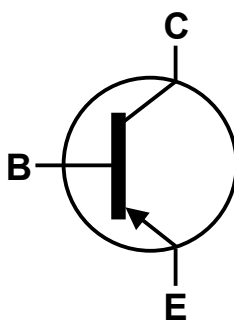
Mechanical Data

- 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 (3)
- Weight: 0.052 grams (Approximate)

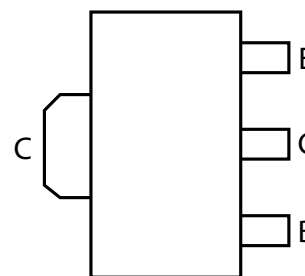


SOT89

Top View



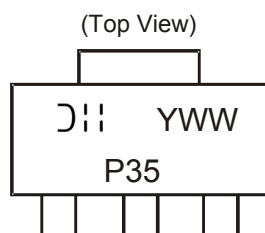
Device Symbol


 Top View
Pin-Out

Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DPLS350Y-13	P35	13	12	2,500
DPLS350Y-13R	P35	13	12	4,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 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


P35 = Product Type Marking Code:
 YWW = Date Code Marking
 Y = Last digit of year ex: 1 = 2011
 WW = Week code 01 - 52

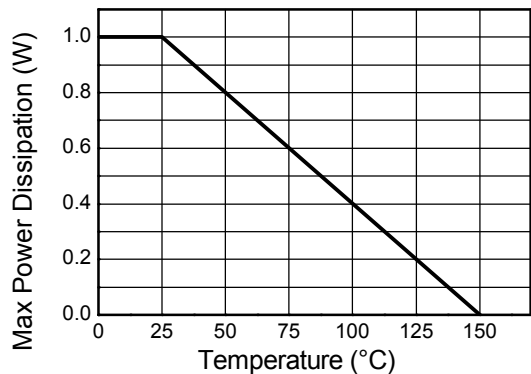
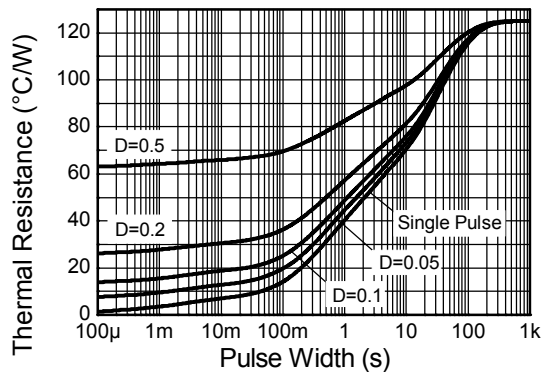
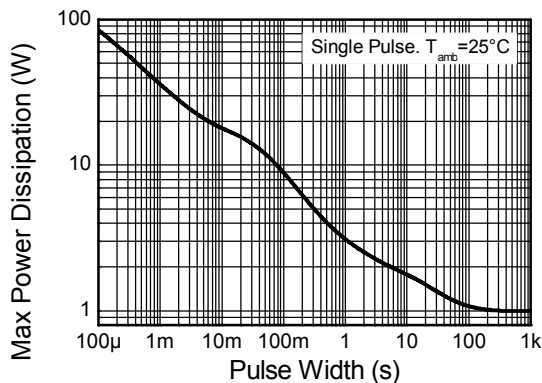
Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-3	A
Peak Pulse Current	I_{CM}	-5	A
Base Current	I_B	-500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	1	W
		2	
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	125	$^\circ\text{C/W}$
		62.5	
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	5.73	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in steady state condition.
 - Same as note (5), except the device is mounted on 40mm x 40mm x 1.6mm FR4 PCB.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

Derating Curve

Transient Thermal Impedance

Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-50	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	$I_E = -100\mu\text{A}$
Collector-Emitter Cut-off Current	I_{CES}	—	—	-100	nA	$V_{CE} = -50\text{V}$
Collector Cut-off Current	I_{CBO}	—	—	-100	nA	$V_{CB} = -50\text{V}$
Emitter Cut-off Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5\text{V}$
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	200	—	—	—	$I_C = -100\text{mA}, V_{CE} = -2\text{V}$
		200		—		$I_C = -500\text{mA}, V_{CE} = -2\text{V}$
		200		450		$I_C = -1\text{A}, V_{CE} = -2\text{V}$
		130		—		$I_C = -2\text{A}, V_{CE} = -2\text{V}$
		80		—		$I_C = -3\text{A}, V_{CE} = -2\text{V}$
Collector-Emitter saturation Voltage (Note 8)	$V_{CE(sat)}$	—	—	-90	mV	$I_C = -500\text{mA}, I_B = -50\text{mA}$
				-180		$I_C = -1\text{A}, I_B = -50\text{mA}$
				-320		$I_C = -2\text{A}, I_B = -100\text{mA}$
				-270		$I_C = -2\text{A}, I_B = -200\text{mA}$
				-390		$I_C = -3\text{A}, I_B = -300\text{mA}$
Equivalent On-Resistance	$R_{CE(sat)}$	—	67	135	m Ω	$I_C = -2\text{A}, I_B = -200\text{mA}$
Base-Emitter saturation Voltage (Note 8)	$V_{BE(sat)}$	—	—	-1.1	V	$I_C = -2\text{A}, I_B = -100\text{mA}$
				-1.2		$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Turn-On Current (Note 8)	$V_{BE(on)}$	—	—	-1.1	V	$I_C = -1\text{A}, V_{CE} = -2\text{V}$
Transition frequency	f_T	100	—	—	MHz	$I_C = -100\text{mA}, V_{CE} = -5\text{V}, f = 100\text{MHz}$
Collector Output Capacitance	C_{obo}	—	—	35	pF	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$

Notes: 8. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

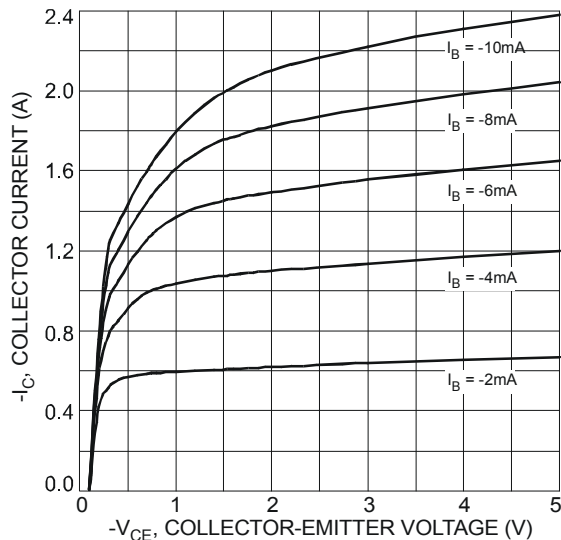
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

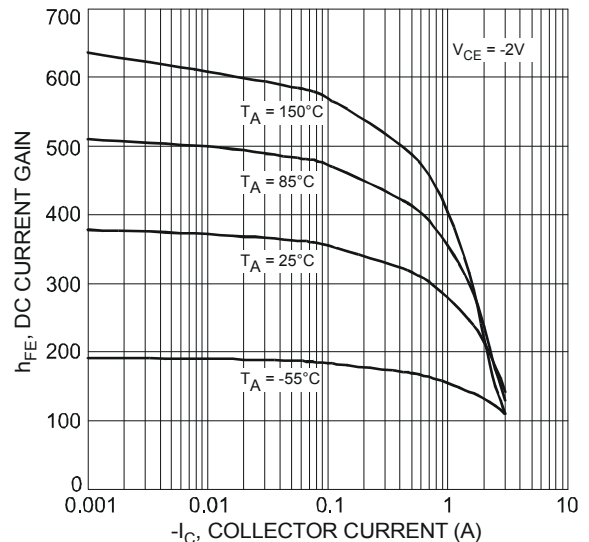


Figure 2 Typical DC Current Gain vs. Collector Current

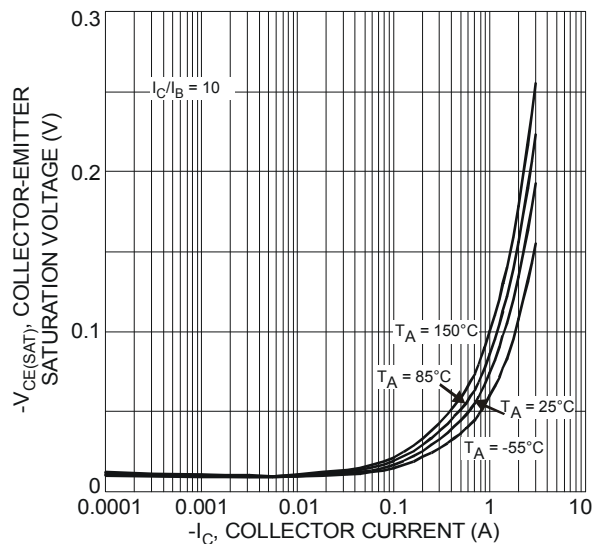


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

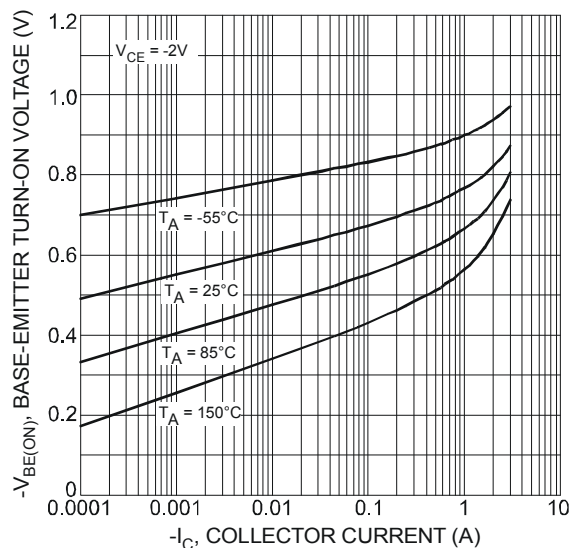


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

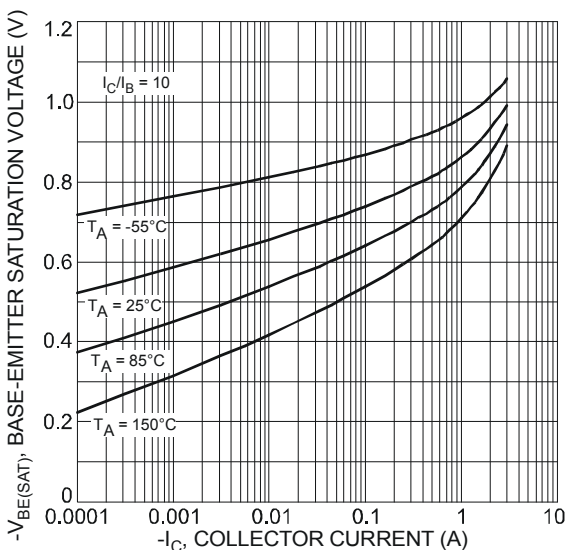


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

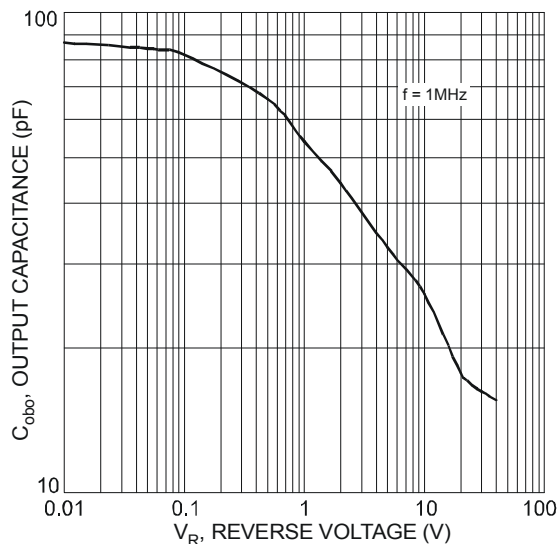


Figure 6 Typical Output Capacitance Characteristics

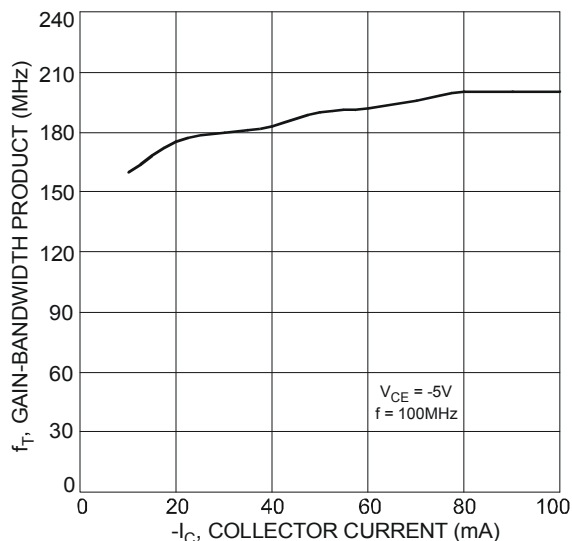
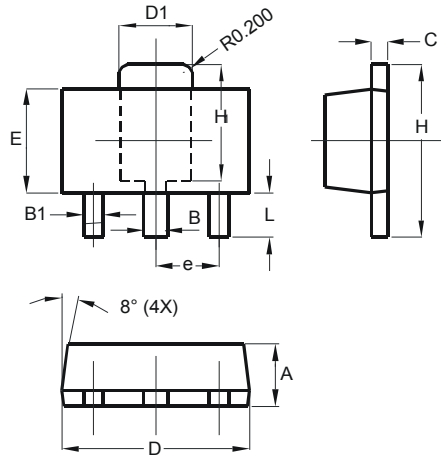


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

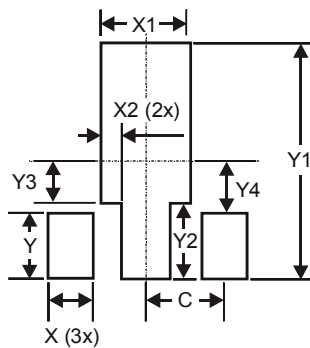
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

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