

Features

- $BV_{CEO} > 60V$
- $I_C = 3.0A$ High Continuous Current
- Extremely Low Equivalent On-Resistance; $R_{CE(SAT)} 62m\Omega$ at 2A
- Complementary PNP Type: DPLS350E
- **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: SOT223
- 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 208③
- Weight: 0.112 grams (Approximate)

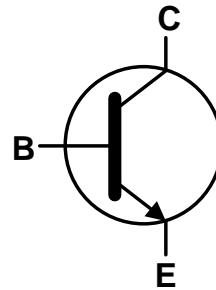
Applications

- Ideal for Medium Power Switching or Amplification Applications

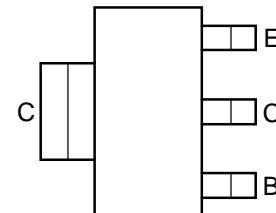
SOT223



Top View



Device Symbol



Top View
Pin-Out

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DNLS350E-13	AEC-Q101	N35	13	12	2,500

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

SOT223



N35 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 15 = 2015)
 WW = Week Code (01 – 52)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	3	A
Peak Pulse Collector Current	I_{CM}	5	A
Peak Pulse Base Current	I_{BM}	1	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	3	W
		2	
		1	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	41.7	°C/W
		62.5	
		125	
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	15	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

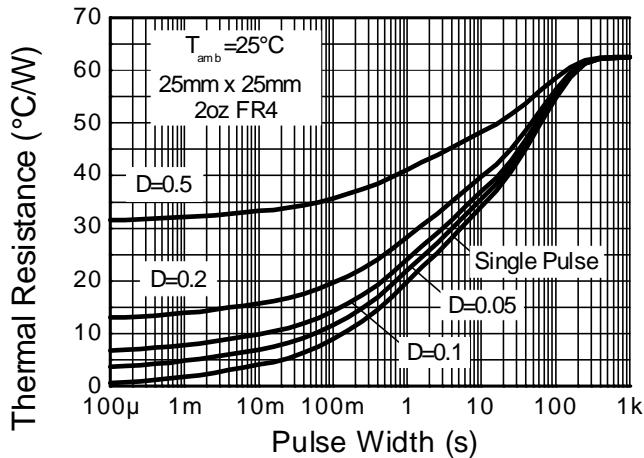
ESD Ratings (Note 9)

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

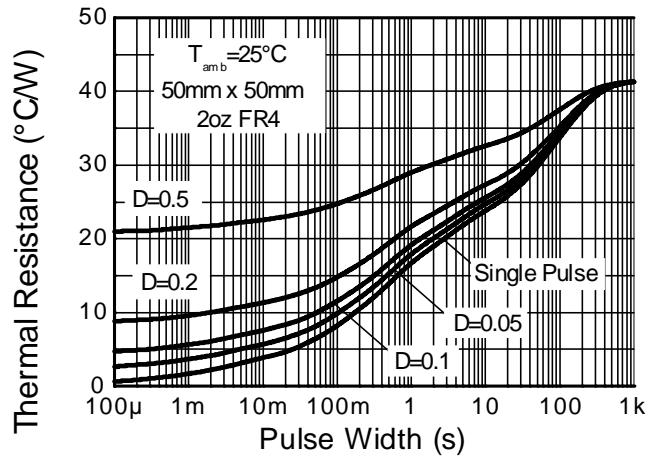
Notes:

- 5. For a device mounted with the collector lead on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
- 6. Same as Note (5), except mounted on 25mm x 25mm 2oz copper.
- 7. Same as Note (5), except mounted on minimum recommended pad (MRP) layout.
- 8. Thermal resistance from junction to solder-point (at the end of the collector lead).
- 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

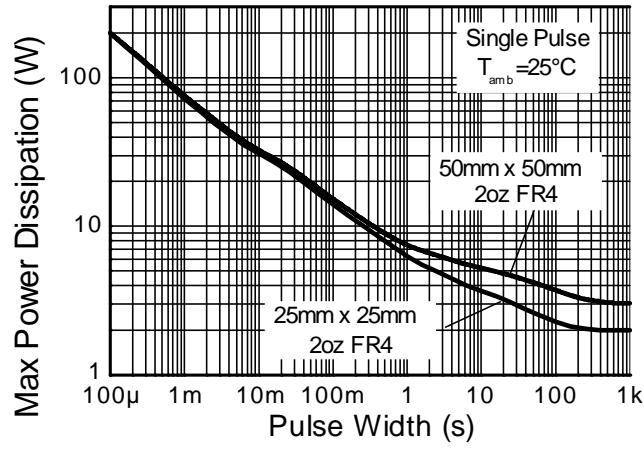
Thermal Characteristics and Derating Information



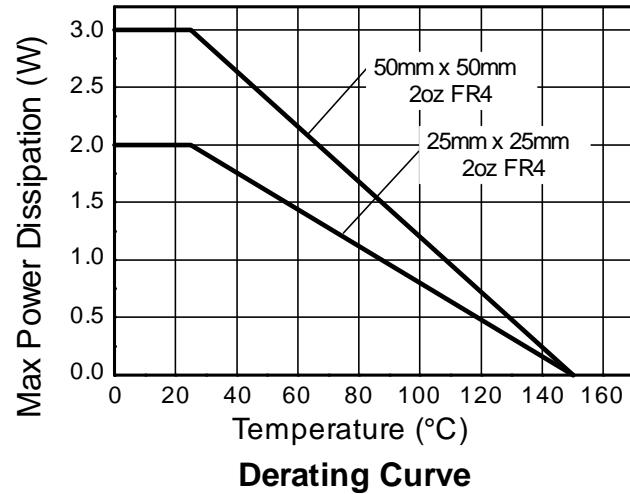
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	50	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	$I_E = 100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	$V_{\text{CB}} = 50\text{V}, I_E = 0$
		—	—	50	μA	$V_{\text{CB}} = 50\text{V}, I_E = 0, T_A = +150^\circ\text{C}$
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	$V_{\text{EB}} = 5\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 10)						
DC Current Gain	h_{FE}	200	—	—	—	$V_{\text{CE}} = 2\text{V}, I_C = 0.5\text{A}$
		200	—	—		$V_{\text{CE}} = 2\text{V}, I_C = 1\text{A}$
		100	—	—		$V_{\text{CE}} = 2\text{V}, I_C = 2\text{A}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	—	90	mV	$I_C = 0.5\text{A}, I_B = 50\text{mA}$
		—	—	170		$I_C = 1\text{A}, I_B = 50\text{mA}$
		—	—	290		$I_C = 2\text{A}, I_B = 200\text{mA}$
Equivalent On-Resistance	$R_{\text{CE}(\text{SAT})}$	—	62	145	$\text{m}\Omega$	$I_C = 2\text{A}, I_B = 200\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	—	1.2	V	$I_C = 2\text{A}, I_B = 200\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{ON})}$	—	—	1.1	V	$V_{\text{CE}} = 2\text{V}, I_C = 1\text{A}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	$V_{\text{CE}} = 5\text{V}, I_C = 100\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	30	pF	$V_{\text{CB}} = 10\text{V}, f = 1\text{MHz}$

Note: 10. 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.)

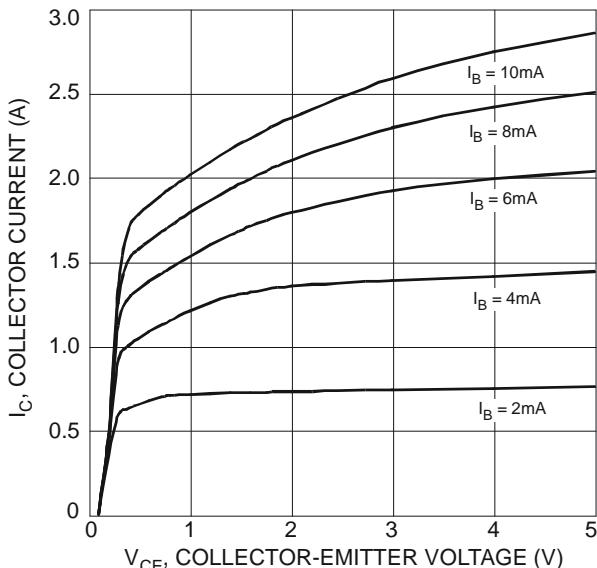


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

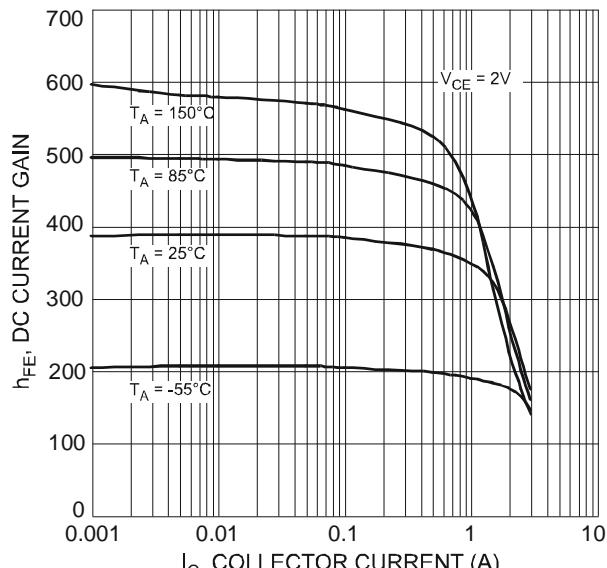


Fig. 3 Typical DC Current Gain vs. Collector Current

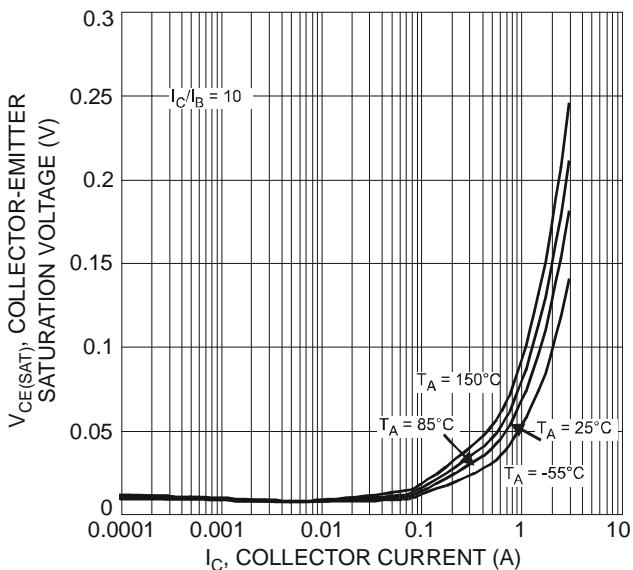


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

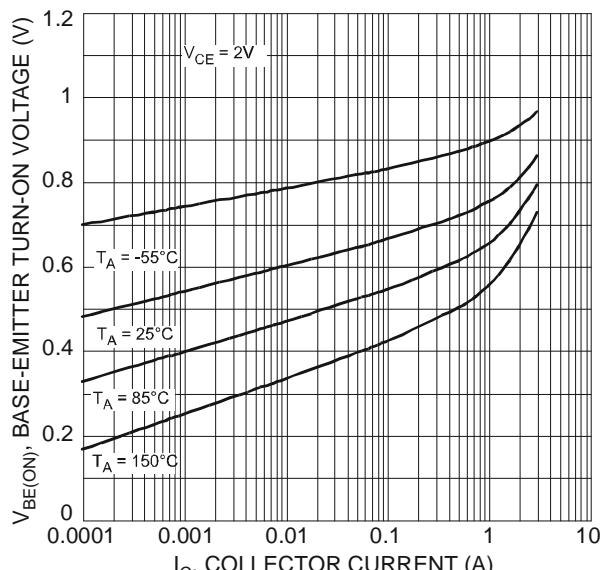


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

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

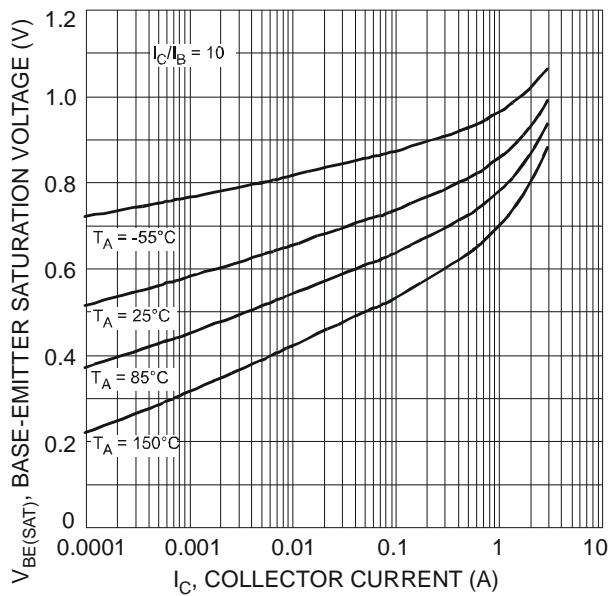


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

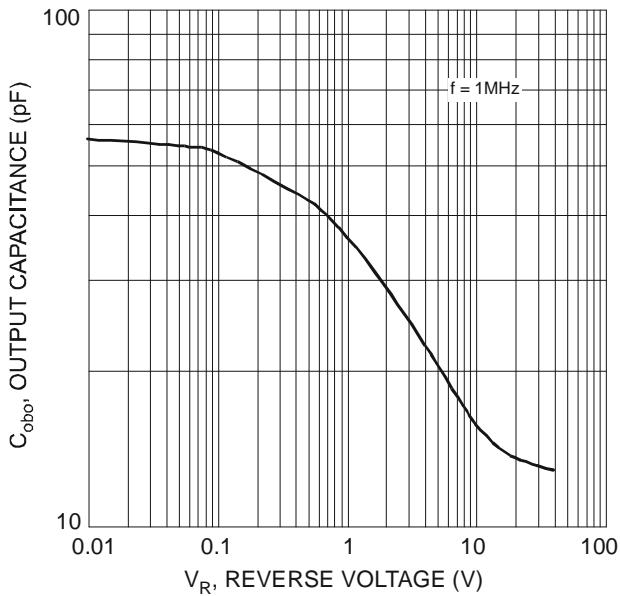


Fig. 7 Typical Output Capacitance Characteristics

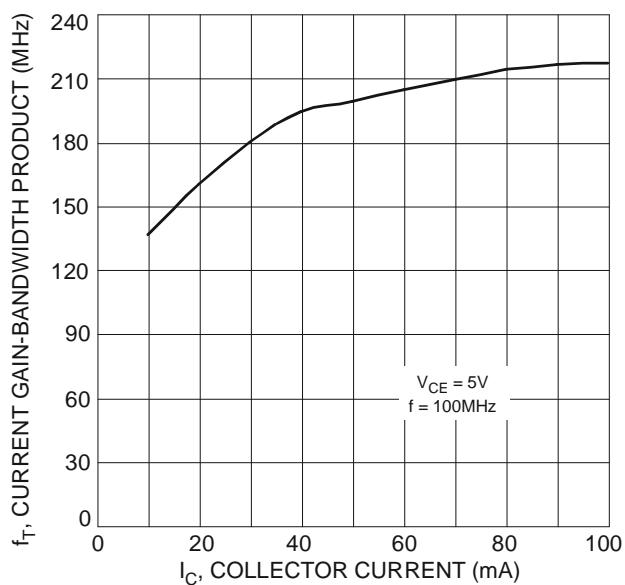
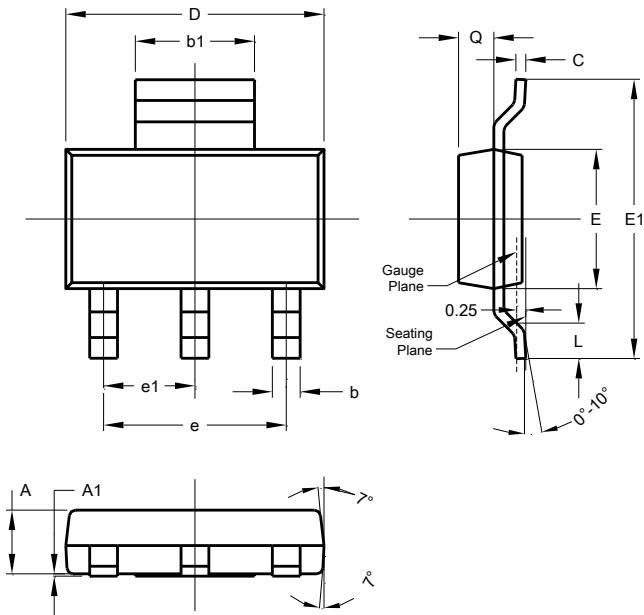


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

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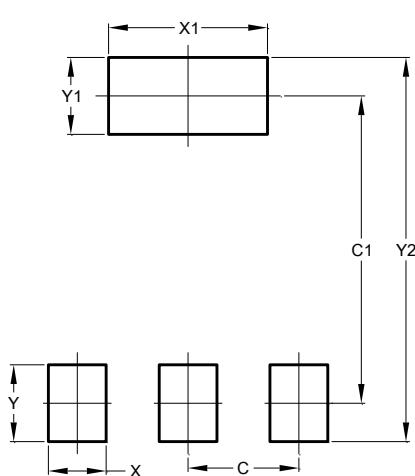
SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89

All Dimensions in mm

Suggested Pad Layout

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

SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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