

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!



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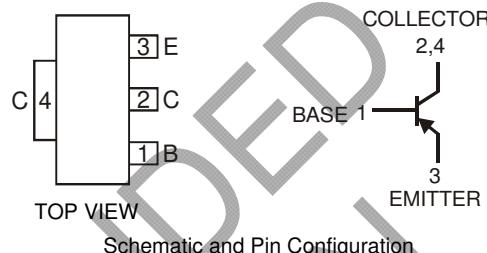
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Lead-free Green

Features

- Epitaxial Planar Die Construction
- Low Collector-Emitter Saturation Resistance $R_{CE(SAT)} = 70m\Omega$ at $I_C = 3A$
- High DC Current Gain $h_{FE} > 300$ at $I_C = 2A$
- Complementary NPN Type Available (DNL5412E)
- 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: SOT-223
- 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: 0.112 grams (approximate)

Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-15	V
Collector-Emitter Voltage	V_{CEO}	-15	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-3	A
Peak Pulse Current	I_{CM}	-8	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ C$ (Note 3)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 1) @ $T_A = 25^\circ C$	$R_{\theta JA}$	125	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

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, pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics

 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(\text{BR})\text{CBO}}$	-15	—	—	V	$I_C = -100\mu\text{A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	-15	—	—	V	$I_C = -10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	-5	—	—	V	$I_E = -100\mu\text{A}$, $I_C = 0$
Collector Cutoff Current	I_{CBO}	—	—	-0.1	μA	$V_{\text{CB}} = -10\text{V}$, $I_E = 0$
Emitter Cutoff Current	I_{EBO}	—	—	-0.1	μA	$V_{\text{EB}} = -4\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 4)						
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	-0.08 -0.12 -0.22 -0.21	-0.15 -0.25 -0.45 -0.5	V	$I_C = -0.5\text{A}$, $I_B = -2.5\text{mA}$ $I_C = -1\text{A}$, $I_B = -5\text{mA}$ $I_C = -2\text{A}$, $I_B = -10\text{mA}$ $I_C = -3\text{A}$, $I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	—	-0.9	V	$I_C = -1\text{A}$, $I_B = -5\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{ON})}$	—	-0.75	—	V	$V_{\text{CE}} = -2\text{V}$, $I_C = -1\text{A}$
DC Current Gain	h_{FE}	500 400 300 150	— — — —	1500	—	$V_{\text{CE}} = -2\text{V}$, $I_C = -10\text{mA}$ $V_{\text{CE}} = -2\text{V}$, $I_C = -1\text{A}$ $V_{\text{CE}} = -2\text{V}$, $I_C = -2\text{A}$ $V_{\text{CE}} = -2\text{V}$, $I_C = -6\text{A}$
AC CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	$V_{\text{CE}} = -5\text{V}$, $I_C = -50\text{mA}$, $f = 50\text{MHz}$
Input Capacitance	$C_{\text{ib}0}$	—	245	—	MHz	$V_{\text{EB}} = -0.5\text{V}$, $f = 1\text{MHz}$
Output Capacitance	$C_{\text{ob}0}$	—	45	—	pF	$V_{\text{CB}} = -10\text{V}$, $f = 1\text{MHz}$
Switching Times	t_{on} t_{off}	— —	35 200	— —	ns ns	$V_{\text{CC}} = -10\text{V}$, $I_C = -500\text{mA}$, $I_{\text{B1}} = -I_{\text{B2}} = -50\text{mA}$

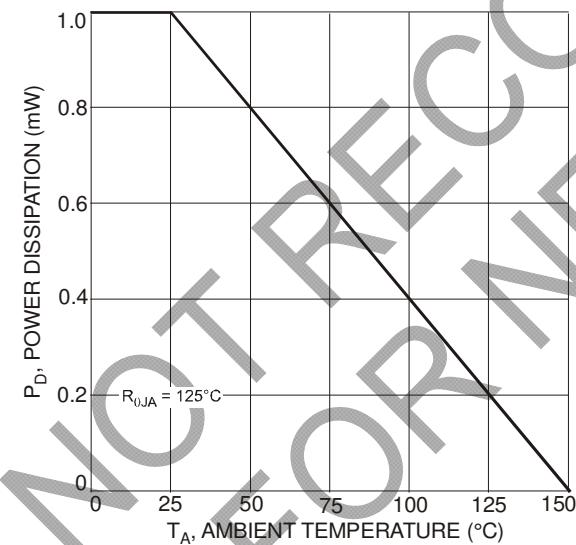
 Notes: 4. Pulse Test: Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2.0\%$.


Fig. 1 Max Power Dissipation vs. Ambient Temperature

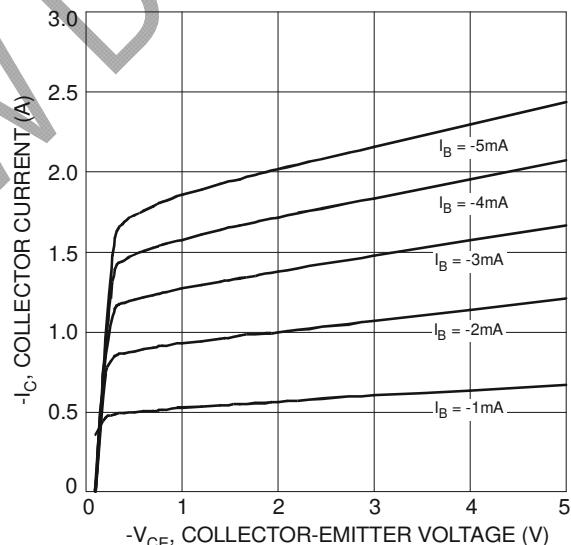


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

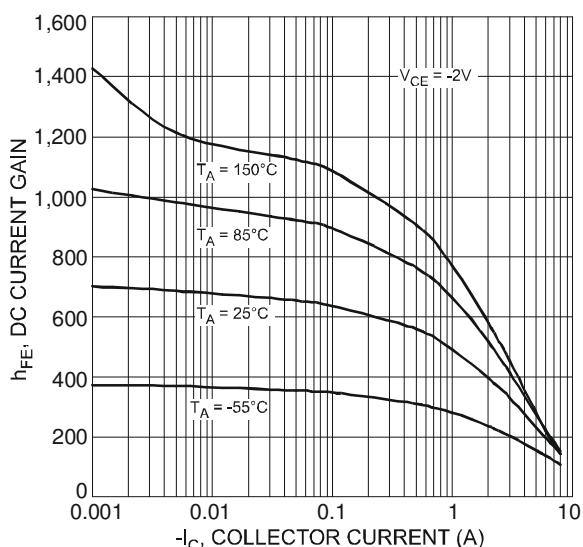


Fig. 3 Typical DC Current Gain vs. Collector Current

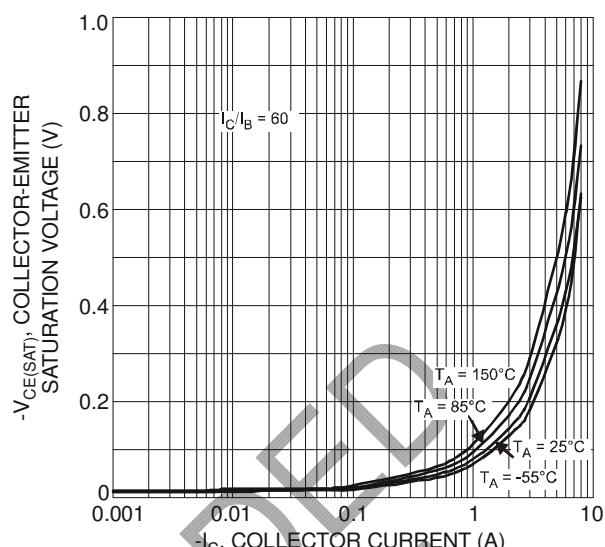


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

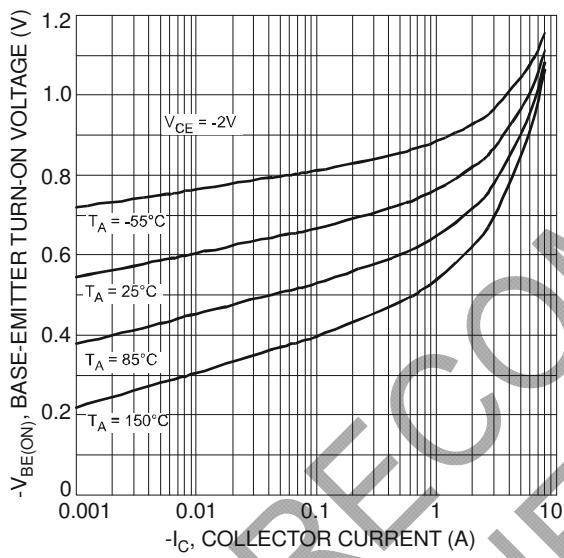


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

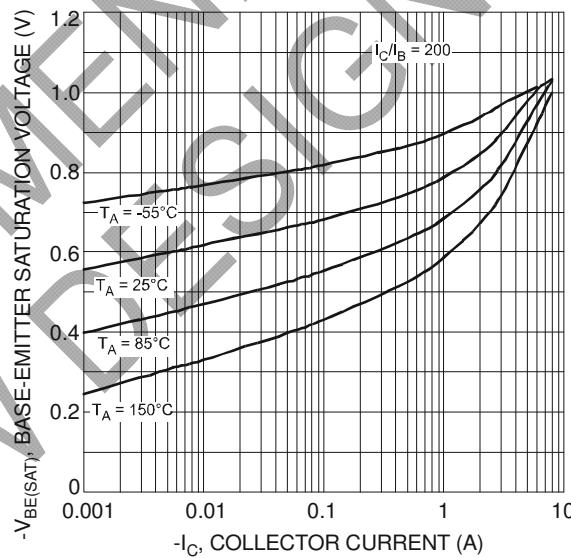


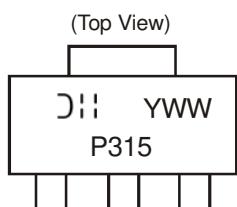
Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DPLS315E-13	SOT-223	2500/Tape & Reel

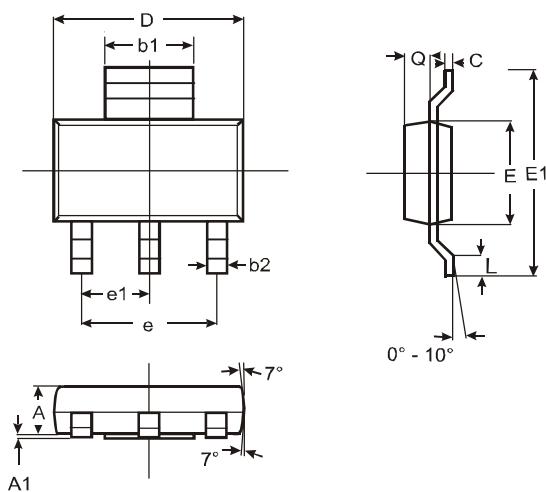
Notes: 5. For packaging details, please go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



P315 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

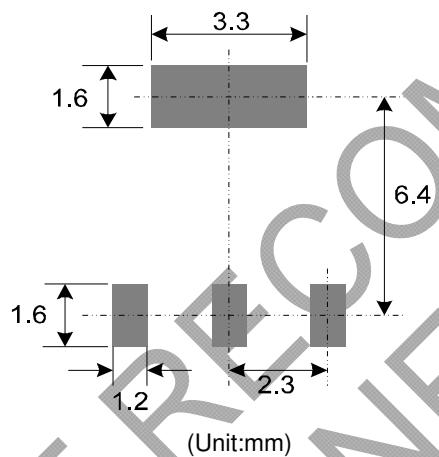
Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
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



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