PNP SURFACE MOUNT TRANSISTOR

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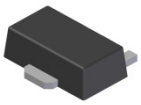
Features

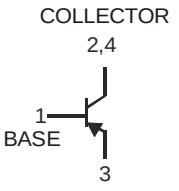
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

Mechanical Data

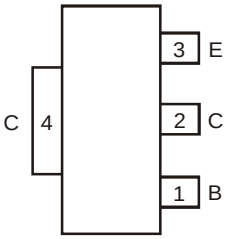
- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.055 grams (approximate)



Top View



Device Schematic



TOP VIEW
Pin Out Configuration

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
Continuous Collector Current	I_C	-2	A
Base Current	I_B	-0.4	A

Thermal Characteristics

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

Characteristic		Symbol	Min	Typ	Max	Unit	Conditions
OFF CHARACTERISTICS (Note 4)							
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	-50	—	—	V	I_C = -100μA, I_E = 0
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	-50	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	-5	—	—	V	I_E = -100μA, I_C = 0
Collector Cut-Off Current		I_{CBO}	—	—	-0.1	μA	V_{CB} = -50V, I_E = 0
Emitter Cut-Off Current		I_{EBO}	—	—	-0.1	μA	V_{EB} = -5V, I_C = 0
ON CHARACTERISTICS (Note 4)							
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	—	-0.5	V	I_C = -1A, I_B = -50mA
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	—	—	-1.2	V	I_C = -1A, I_B = -50mA
DC Current Gain	2DA1213O	h_{FE}	70	—	140	—	V_{CE} = -2V, I_C = -0.5A
	2DA1213Y		120	—	240	—	V_{CE} = -2V, I_C = -0.5A
	2DA1213O, 2DA1213Y		20	—	—	—	V_{CE} = -2V, I_C = -2A
SMALL SIGNAL CHARACTERISTICS							
Transition Frequency		f_T	—	160	—	MHz	V_{CE} = -2V, I_C = -100mA, f = 100MHz
Output Capacitance		C_{obo}	—	17	—	pF	V_{CB} = -10V, I_E = 0, f = 1MHz
SWITCHING CHARACTERISTICS							
Turn-On Time		t_{on}	—	25	—	ns	V_{CE} = -2V, I_C = -1A, I_{B1} = -I_{B2} = -50mA
Storage Time		t_s	—	130	—	ns	
Fall Time		t_f	—	12	—	ns	

Notes: 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

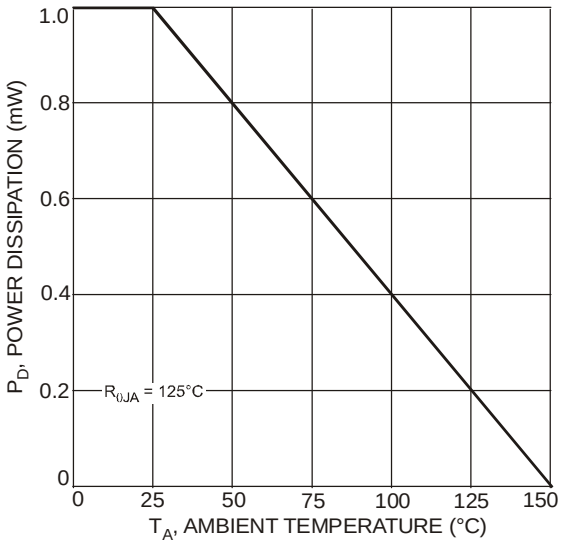


Fig. 1 Power Dissipation vs. Ambient Temperature

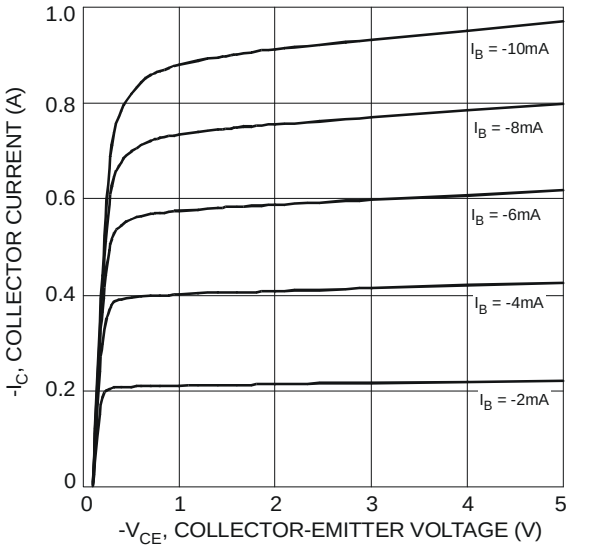


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

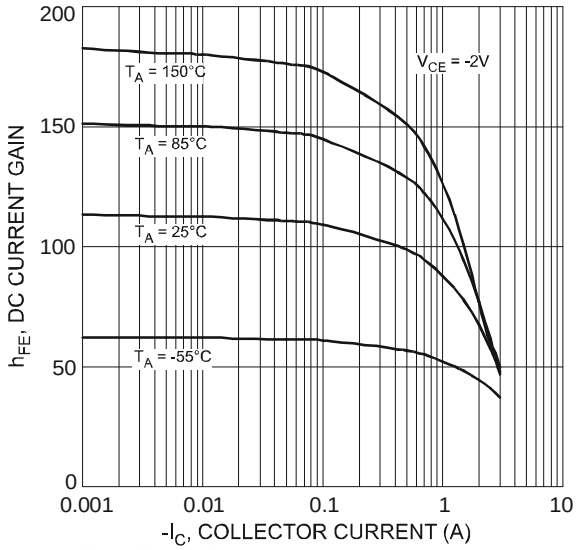


Fig. 3 Typical DC Current Gain vs. Collector Current (2DA1213O)

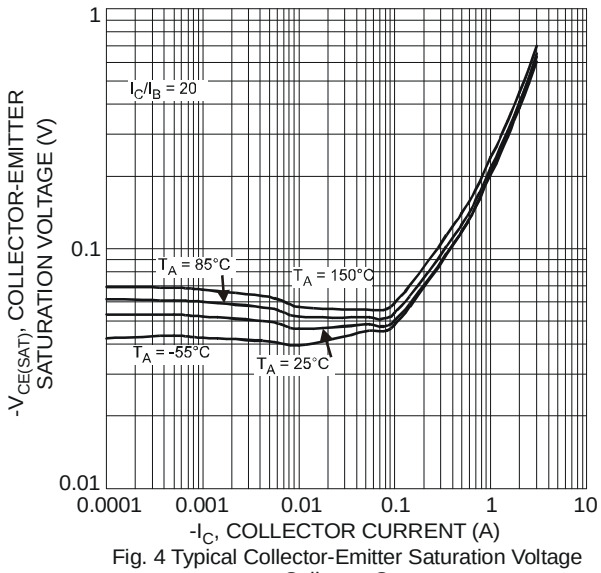


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

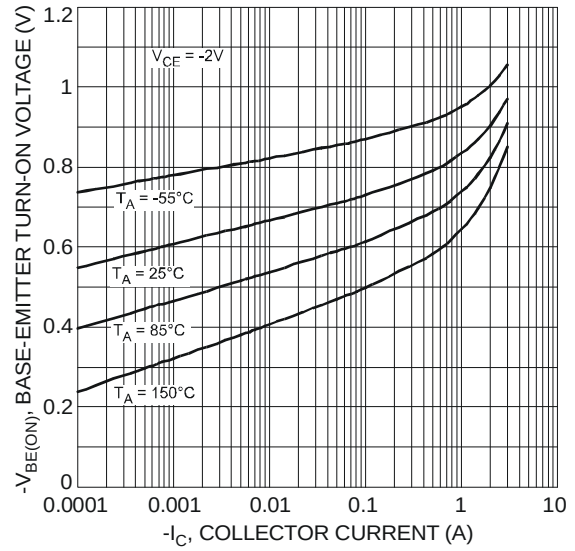


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

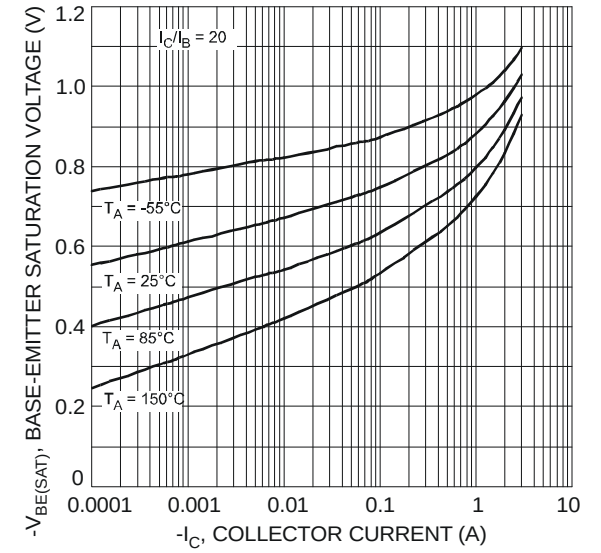


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

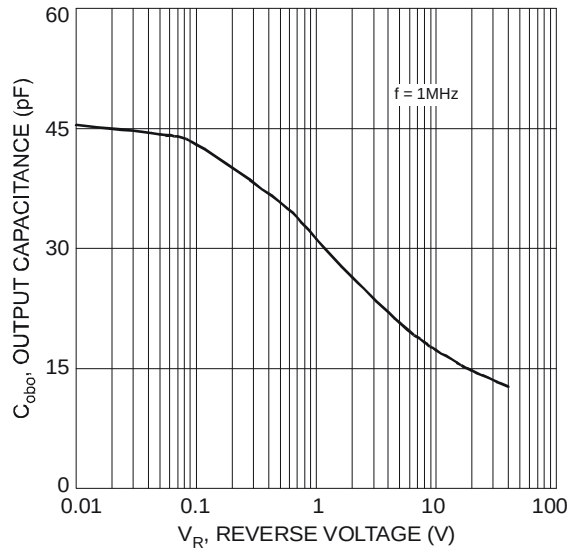


Fig. 7 Typical Output Capacitance Characteristics

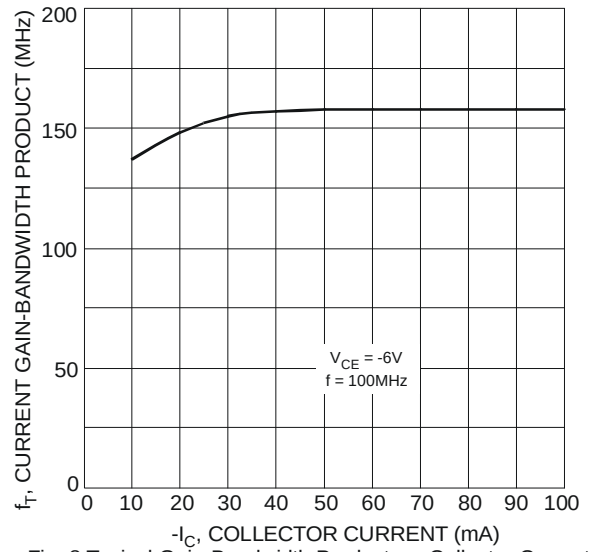


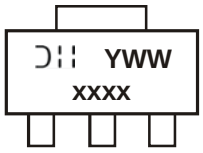
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Part Number	Case	Packaging
2DA1213O-13	SOT89-3L	2500/Tape & Reel
2DA1213Y-13	SOT89-3L	2500/Tape & Reel

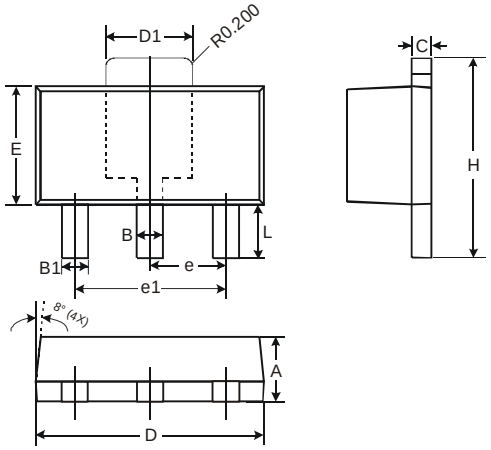
Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



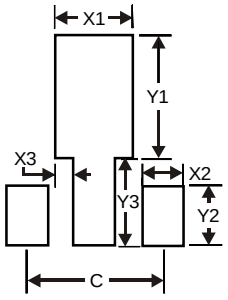
xxxx = Product Type Marking Code:
P25X = 2DA1213O
P25Y = 2DA1213Y
YWW = Date Code Marking
Y = Last digit of year (ex: 7 = 2007)
WW = Week code 01 - 53

Package Outline Dimensions



SOT89-3L		
Dim	**Min**	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X1	1.7
X2	0.9
X3	0.4
Y1	2.7
Y2	1.3
Y3	1.9
C	3.0

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Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9