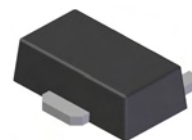


Features

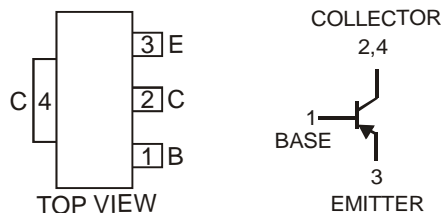
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)

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-020C
- 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: 0.072 grams (approximate)



SOT89-3L



Schematic and Pin Configuration

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-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 _{θJA}	125	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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	$I_C = -100\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	-50	—	—	V	$I_C = -10mA, I_B = 0$
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	-5	—	—	V	$I_E = -100\mu A, I_C = 0$
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:
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>.
 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

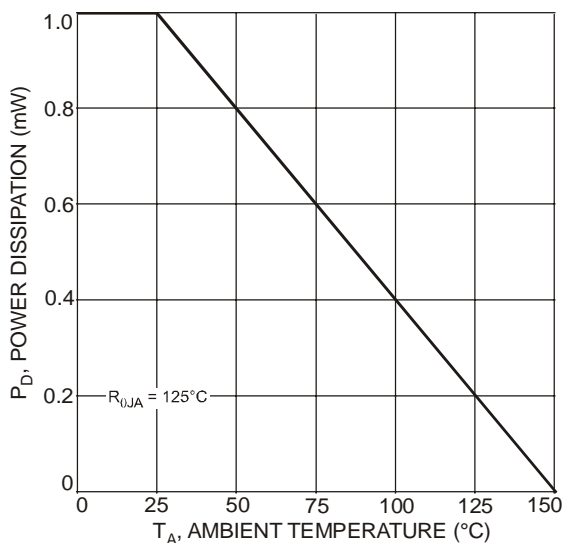


Fig. 1 Power Dissipation vs. Ambient Temperature

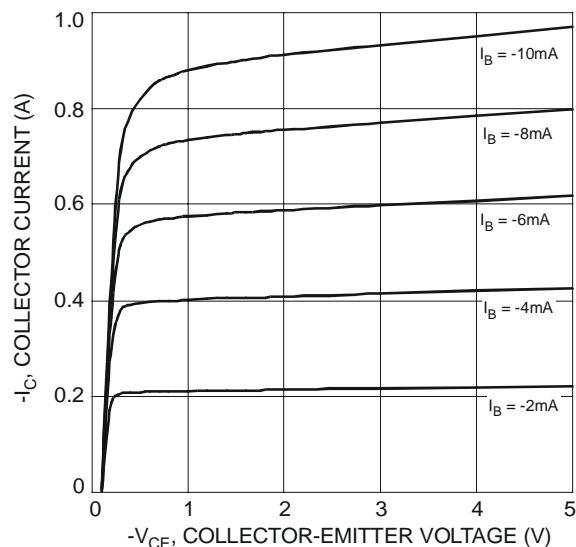


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

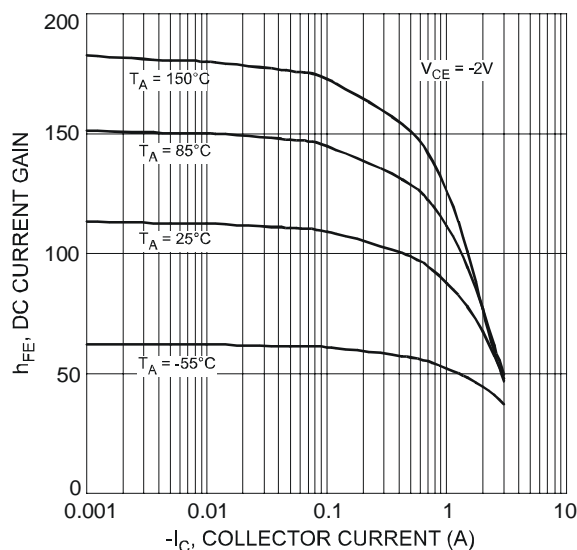


Fig. 3 Typical DC Current Gain vs. Collector Current (2DA12130)

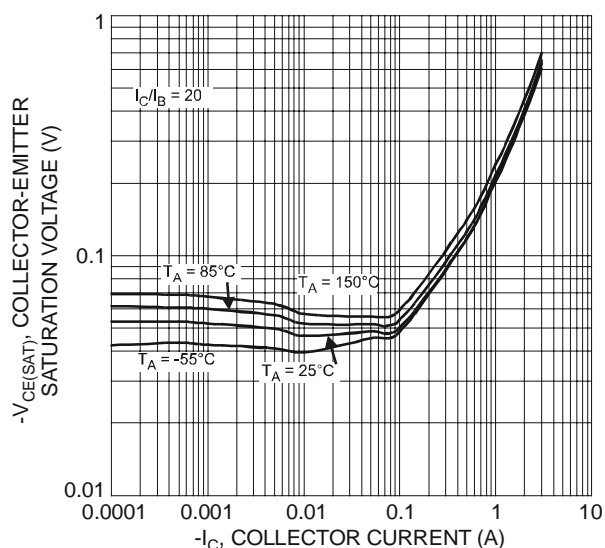


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

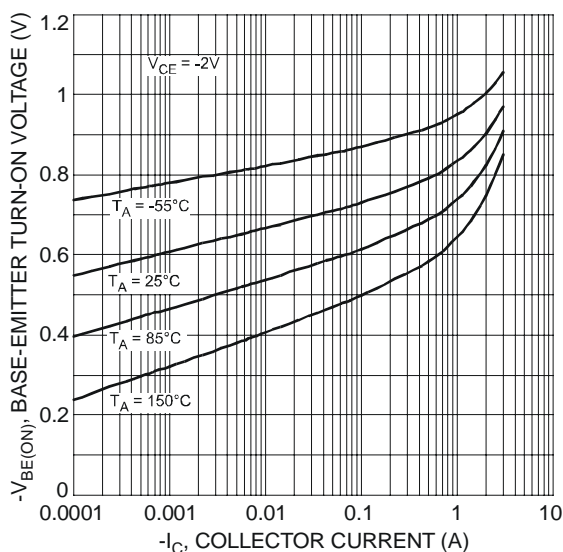


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

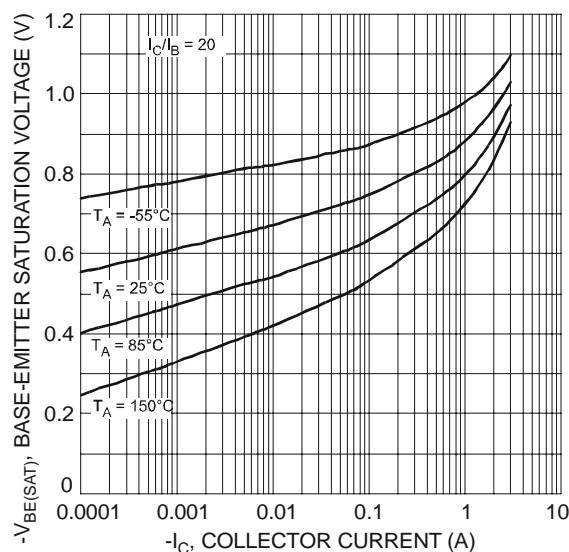


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

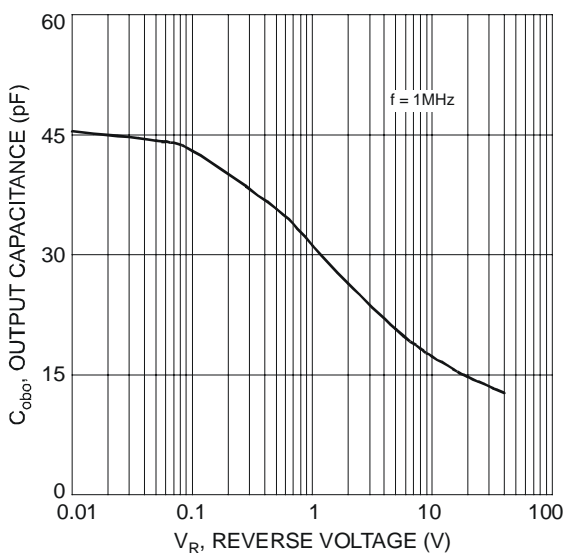


Fig. 7 Typical Output Capacitance Characteristics

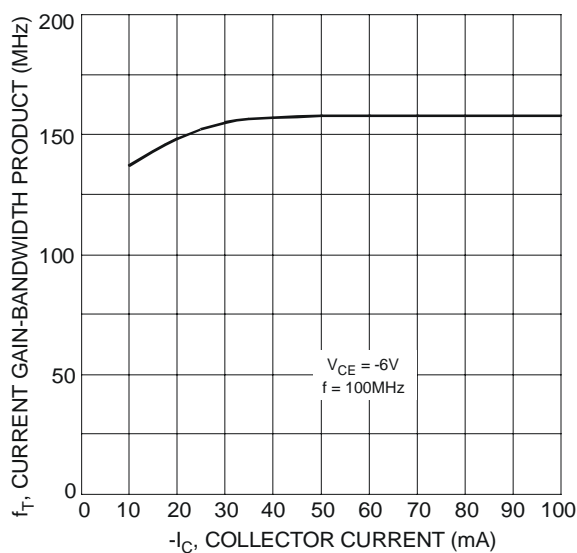


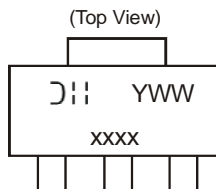
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
2DA1213O-13	SOT89-3L	2500/Tape & Reel
2DA1213Y-13	SOT89-3L	2500/Tape & Reel

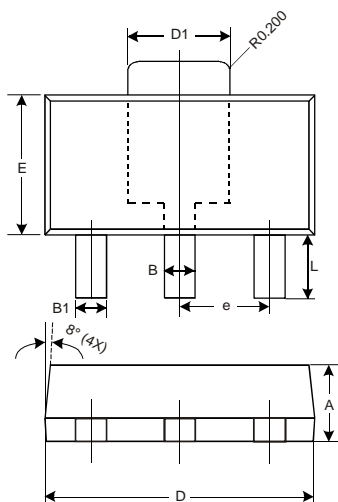
Notes: 5. For packaging details, please see below or go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



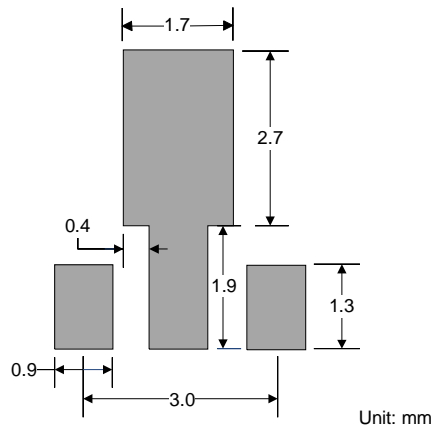
xxxx = Product Type Marking Code:
P25X = 2DA1213O
P25Y = 2DA1213Y
YWW = Date Code Marking
Y = Last digit of year ex: 7 = 2007
WW = Week code 01 - 52

Package Outline Dimensions



SOT89-3L			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.45	0.55	0.50
B1	0.37	0.47	0.42
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.50	1.70	1.60
E	2.40	2.60	2.50
e	—	—	1.50
H	3.95	4.25	4.10
L	0.90	1.20	1.05
All Dimensions in mm			

Suggested Pad Layout



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