



45V PNP SMALL SIGNAL TRANSISTOR IN SOT323

Description

AC857CWQ Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of Automotive Applications.

Features

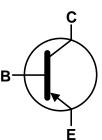
- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (AC847CWQ)
- For switching and AF Amplifier Applications
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

Mechanical Data

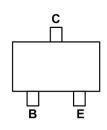
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.006 grams (Approximate)







Device Symbol



Top View Pin-Out

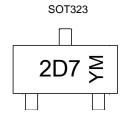
Ordering Information (Notes 4 & 5)

Ì	Product	Compliance	Marking	Reel Size (inches)	Quantity per Reel
	AC857CWQ-7	Automotive	2D7	7	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/quality/product_compliance_definitions/.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



2D7 = Product Type Marking Code (See Ordering Information) YM = Date Code Marking Y or \overline{Y} = Year (ex: A = 2013)

M or \overline{M} = Month (ex: 9 = September)

Date Code Key

Year	2017		2018	2019		2020	2021		2022	2023		2024
Code	Е		F	G		Н			J	K		L
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



Absolute 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}	-45	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Continuous Collector Current	Ic	-100	mA
Peak Collector Current	Ісм	-200	mA
Peak Emitter Current	I _{EM}	-200	mA

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_{D}	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	°C/W	
Operating and Storage Temperature Range		T _J , T _{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-50	-	-	V	I _C = -100nA
Collector-Emitter Breakdown Voltage (Note 7)	BV _{CEO}	-45	-	1	V	$I_C = -10mA$
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	ı	ı	V	I _E = -100nA
DC Current Gain (Note 7)	h _{FE}	420	520	800	-	$V_{CE} = -5.0V, I_{C} = -2.0mA$
Collector Cutoff Current	1	-	-	-15	nA	V _{CB} = -30V
Collector Cuton Current	I _{CBO}			-4	μΑ	V _{CB} = -30V, T _A = +150°C
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(sat)}	-	-75	-300	mV	$I_C = -10 \text{mA}, I_B = -0.5 \text{mA}$
Collector-Emitter Saturation Voltage (Note 7)			-250	-650		$I_C = -100 \text{mA}, I_B = -5.0 \text{mA}$
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(on)}	-600	-650	-750	mV	$I_C = -2mA$, $V_{CE} = -5V$
Base-Emiller Fulli-On Voltage (Note 1)		ı	-	-820		$I_C = -10 \text{mA}, V_{CE} = -5 \text{V}$
Base-Emitter Saturation Voltage (Note 7)	V _{BE(sat)}	-	-700	ı	mV	$I_C = -10mA$, $I_B = -0.5mA$
Base-Emilier Saturation Voltage (Note 1)			-850	-950		$I_C = -100 \text{mA}, I_B = -5 \text{mA}$
Output Capacitance	C _{obo}	ı	3	4.5	pF	$V_{CB} = -10V, f = 1.0MHz$
Transition Frequency	f⊤	100	200	ı	MHz	$V_{CE} = -5V, I_{C} = -10mA,$ f = 100MHz
Noise Figure	NF	-	-	10	dB	$\begin{split} &V_{CE}=\text{-}5V,\ I_{C}=\text{-}200\mu\text{A}\\ &R_{S}=2k\Omega,\ f=1k\text{Hz}\\ &\Delta f=200\text{Hz} \end{split}$

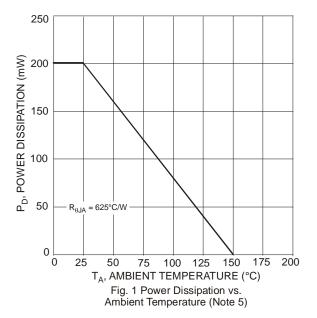
Notes:

^{6.} For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

^{7.} Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%



Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



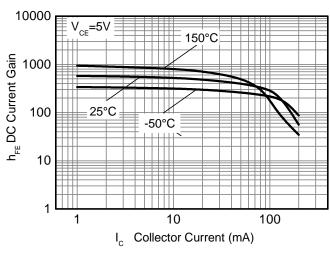


Fig. 3 Typical DC Current Gain (Group C) vs Collector Current (mA)

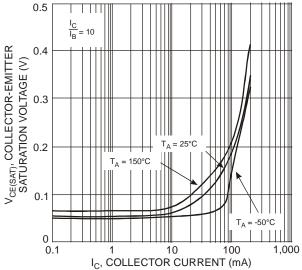


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

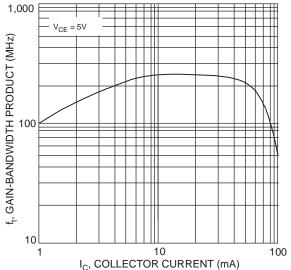
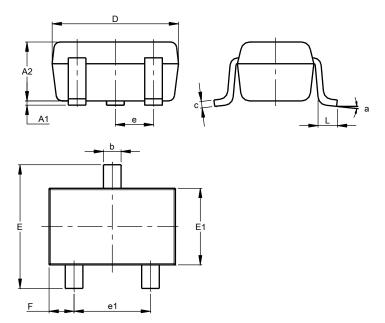


Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current



Package Outline Dimensions

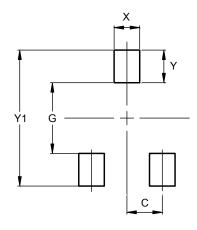
Please see http://www.diodes.com/package-outlines.html for the latest version.



SOT323							
Dim	Min	Max	Тур				
A1	0.00	0.10	0.05				
A2	0.90	1.00	0.95				
b	0.25	0.40	0.30				
С	0.10	0.18	0.11				
D	1.80	2.20	2.15				
Е	2.00	2.20	2.10				
E1	1.15	1.35	1.30				
е	0.650 BSC						
e1	1.20	1.40	1.30				
F	0.375	0.475	0.425				
L	0.25	0.40	0.30				
а	0°	8°					
All Dimensions in mm							

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.



Dimensions	Value (in mm)			
С	0.650			
G	1.300			
Х	0.470			
Y	0.600			
Y1	2.500			



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