



BC846AS

65V DUAL NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR IN SOT363

Features

- BV_{CEO} > 65V
- Ultra-Small Surface Mount Package
- Ideally Suited for Automated Insertion
- · For Switching and AF Amplifier Application
- Complementary PNP Type Available (BC856AS)
- 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
- An Automotive-Compliant Part is Available Under Separate Datasheet (<u>BC846ASQ</u>)

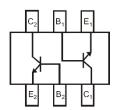
Mechanical Data

- Case: SOT363
- 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 Finish. Solderable per MIL-STD-202, Method 208 <a>®3
- Weight: 0.006 grams (Approximate)

SOT363



Top View



Device Schematic Top View

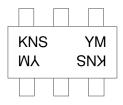
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
BC846AS-7	AEC-Q101	KNS	7	8	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. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



 $\begin{array}{l} KNS = Product\ Type\ Marking\ Code \\ YM = Date\ Code\ Marking \\ Y\ or\ \overline{Y} = Year\ (ex:\ E=2017) \\ M\ or\ \overline{M} = Month\ (ex:\ 9=September) \end{array}$

Date Code Key

Year	2017	201	18	2019	20	020	2021	2	2022	2023		2024
Code	Е	F		G		Н	I		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



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	65	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	lc	100	mA
Peak Collector Current	I _{CM}	200	mA
Peak Base Current	I _{BM}	200	mA

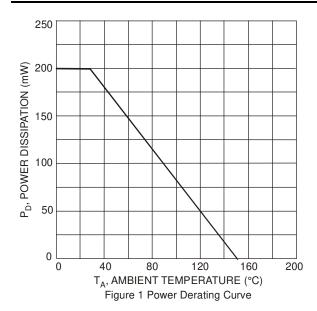
Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_{D}	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{ hetaJA}$	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

ESD Ratings (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	400	٧	С

Thermal Characteristics and Derating Information



^{5.} For a device mounted with the collector lead on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



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

Characteristic (Note 7)	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	80	1	1	V	$I_C = 100\mu A, I_B = 0$
Collector-Emitter Breakdown Voltage	BV _{CEO}	65	_	_	V	$I_C = 10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV _{EBO}	6	-	-	V	$I_E = 100 \mu A, I_C = 0$
DC Current Gain	h _{FE}	110		220	_	$V_{CE} = 5V$, $I_C = 2mA$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	1	90 200	250 600	mV	$I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 100$ mA, $I_B = 5$ mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	1	700 900	1	mV	$I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 100$ mA, $I_B = 5$ mA
Base-Emitter Voltage	V _{BE(ON)}	580 —	660 —	700 770	mV	V _{CE} = 5V, I _C = 2mA V _{CE} = 5V, I _C = 10mA
Collector-Cutoff Current	1			15	nA	$V_{CB} = 40V$
Collector-Cuton Current	ICBO		-	5	μΑ	$V_{CB} = 30V, T_A = +125^{\circ}C$
Emitter-Cutoff Current	I _{CES}	-	-	15	nA	$V_{CE} = 80V, I_{C} = 0$
Gain Bandwidth Product	f⊤	100			MHz	V _{CE} = 5V, I _C = 10mA, f = 100MHz
Collector-Base Capacitance	C _{CBO}	_	2.0	_	pF	V _{CB} = 10V, f = 1MHz

Note: 7. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.



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

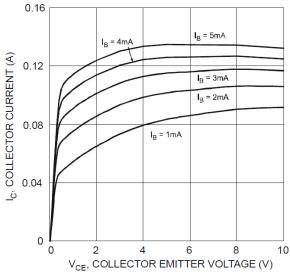
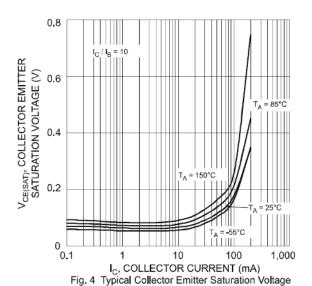


Fig. 2 Typical Collector Current vs. Collector Emitter Voltage



vs. Collector Current

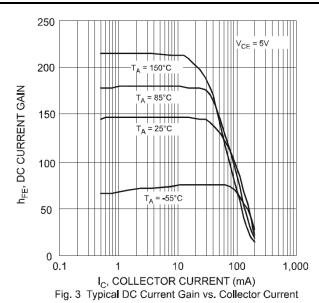
1.0

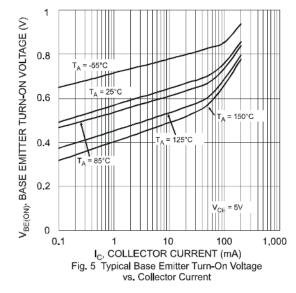
0.8

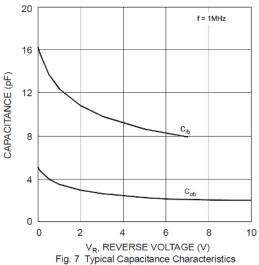
T_A = .55°C

T_A = 150°C

T_A =

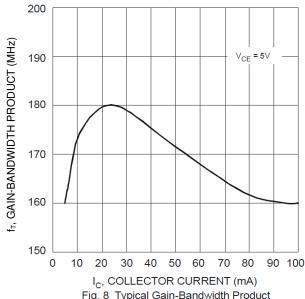








Typical Electrical Characteristics (Cont. @T_A = +25°C, unless otherwise specified.)

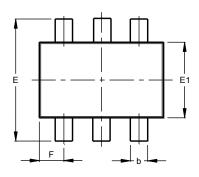


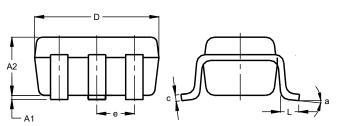


Package Outline Dimensions

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

SOT363



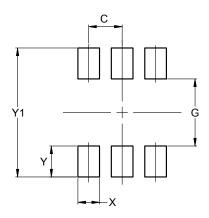


SOT363						
Dim	Min	Max	Тур			
A1	0.00	0.10	0.05			
A2	0.90	1.00	1.00			
b	0.10	0.30	0.25			
С	0.10	0.22	0.11			
D	1.80	2.20	2.15			
Е	2.00	2.20	2.10			
E1	1.15	1.35	1.30			
е	C).650 E	SC			
F	0.40	0.45	0.425			
L	0.25	0.40	0.30			
а	0°	8°				
All Dimensions in mm						

Suggested Pad Layout

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

SOT363



Dimensions	Value
Dillielisions	(in mm)
С	0.650
G	1.300
X	0.420
Υ	0.600
Y1	2.500

October 2017



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