350V NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

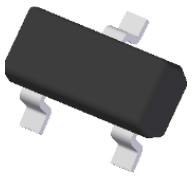
Features

- BV_{CEO} > 250V
- I_C = 0.5A Continuous Collector Current
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DP350T05)
- Ideal for Medium Power Amplification and Switching
- **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**

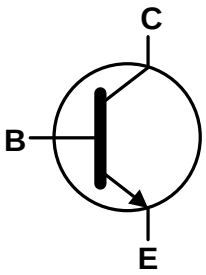
Mechanical Data

- Case: SOT23
- 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 e3
- Weight: 0.008 grams (Approximate)

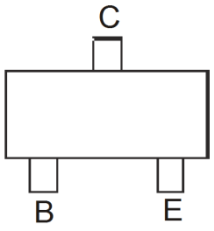
SOT23



Top View



Device Symbol



Top View
Pin-Out

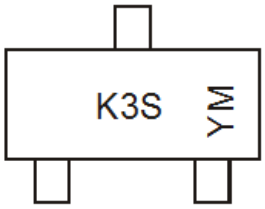
Ordering Information (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DN350T05-7	AEC-Q101	K3S	7	8	3,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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 http://www.diodes.com/products/packages.html.

Marking Information

SOT23



K3S = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: E = 2017
M = Month ex: 9 = September

Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024
Code	E	F	G	H	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	O	N	D

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	350	V
Collector-Emitter Voltage	V_{CEO}	350	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Continuous Base Current	I_B	25	mA
Continuous Collector Current	I_C	500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	417	°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	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	350	—	V	I_C = 100µA, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	350	—	V	I_C = 1.0mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5.0	—	V	I_E = 10µA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	50	nA	V_{CB} = 250V, I_E = 0
Collector Cutoff Current	I_{EBO}	—	50	nA	V_{CE} = 5V, I_C = 0
ON CHARACTERISTICS (Note 6)					
DC Current Gain	h_{FE}	20 30 30 20 15	— — 200 200 —	—	I_C = 1.0mA, V_{CE} = 10V I_C = 10mA, V_{CE} = 10V I_C = 30mA, V_{CE} = 10V I_C = 50mA, V_{CE} = 10V I_C = 100mA, V_{CE} = 10V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	— — — —	0.30 0.35 0.50 1.0	V	I_C = 10mA, I_B = 1.0mA I_C = 20mA, I_B = 2.0mA I_C = 30mA, I_B = 3.0mA I_C = 50mA, I_B = 5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	— — —	0.75 0.80 0.90	V	I_C = 10mA, I_B = 1.0mA I_C = 20mA, I_B = 2.0mA I_C = 30mA, I_B = 3.0mA
Base-Emitter On Voltage	$V_{BE(ON)}$	—	2.0	V	I_C = 100mA, V_{CE} = 10V
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	—	7.0	pF	V_{CB} = 20V, f = 1.0MHz, I_E = 0
Transition Frequency	f_T	50	—	MHz	V_{CE} = 10V, I_C = 20mA

Notes: 5. For a device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper; device is measured under still air conditions whilst operating in a steady-state.
6. Short duration pulse test used to minimize self-heating effect.

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

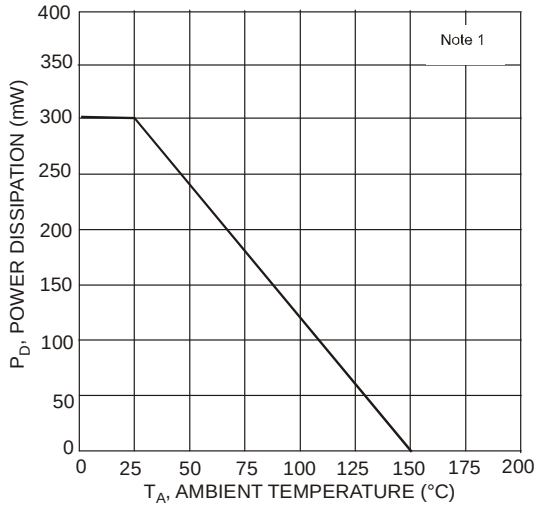


Fig. 1, Max Power Dissipation vs. Ambient Temperature

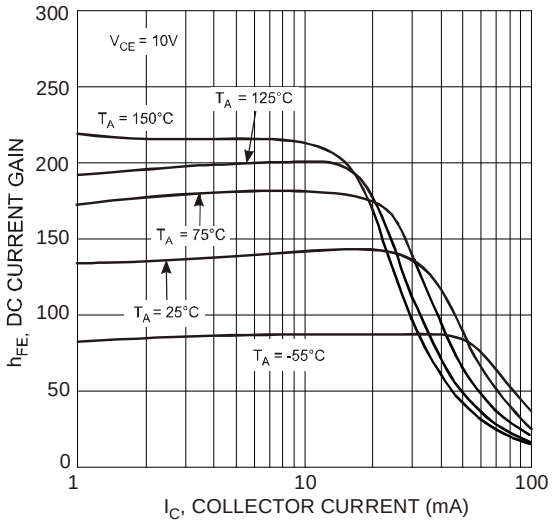


Fig. 2, DC Current Gain vs. Collector Current

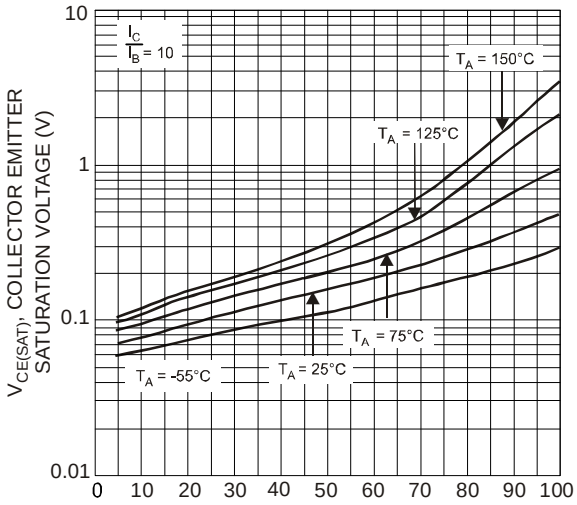


Fig. 3, Collector-Emitter Saturation Voltage vs. Collector Current

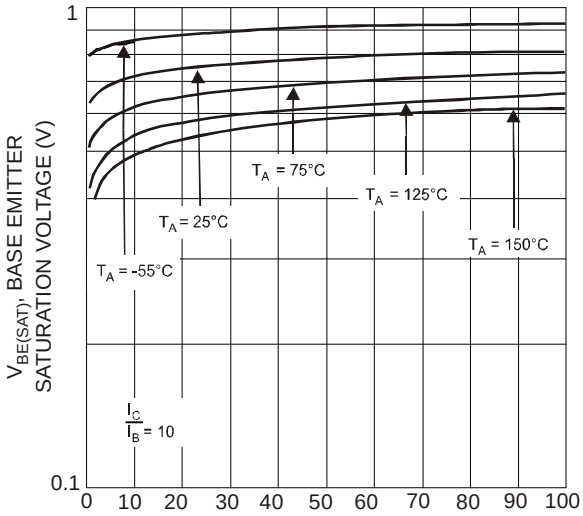


Fig. 4, Base Emitter Saturation Voltage vs. Collector Current

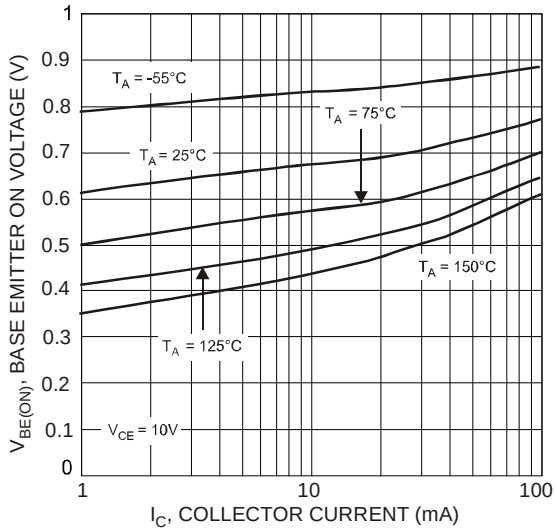


Fig. 5, Base-Emitter On Voltage vs. Collector Current

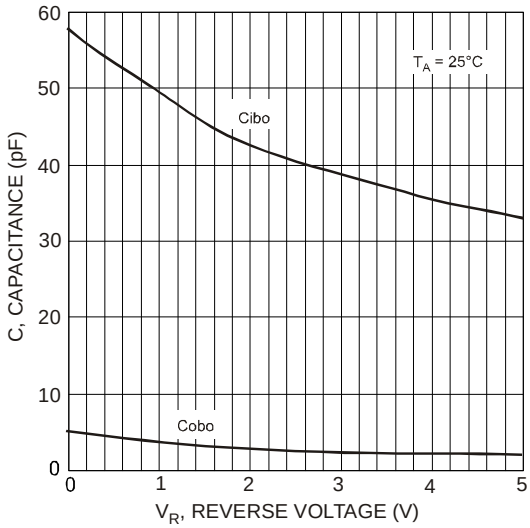
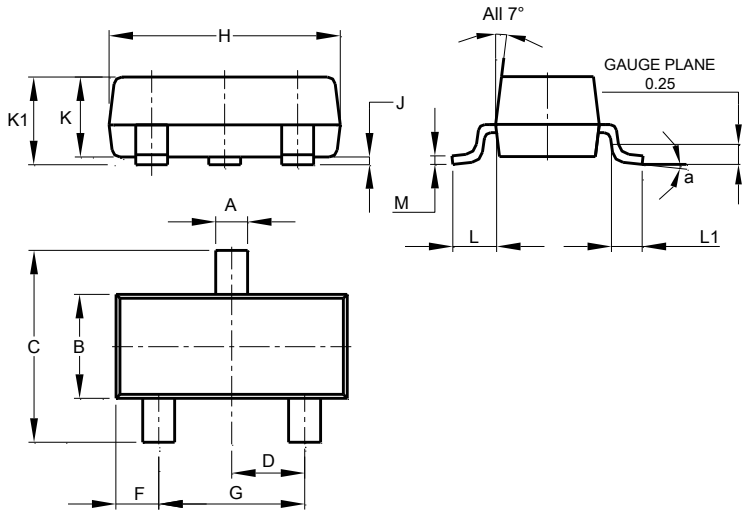


Fig. 6, Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

SOT23

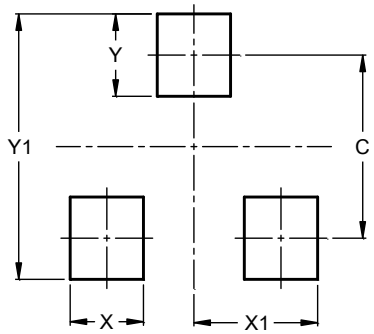


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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