12V LOW $V_{CE(sat)}$ PNP SURFACE MOUNT TRANSISTOR

Features

- Low Collector-Emitter Saturation Voltage, $V_{CE(sat)}$
- Ultra-Small Surface Mount Package
- **"Lead Free", RoHS Compliant (Note 1)**
- **Halogen and Antimony Free. "Green" Device (Note 2)**
- **ESD rating: 400V-MM, 8KV-HBM**

Applications

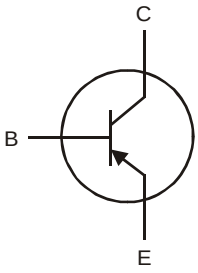
- DC-DC converter
- Portable equipments
- Power management units

Mechanical Data

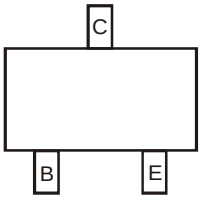
- Case: SOT-523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.002 grams (approximate)

SOT-523

Top View



Device Symbol



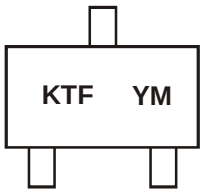
Top View
Pin Configuration

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
2DA2018-7	KTF	7	8mm	3,000

Notes: 1. No purposefully added lead.
2. Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com
3. For packaging details, go to our website at http://www.diodes.com

Marking Information



KTF = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: W = 2009)
M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015	2015
Code	W	X	Y	Z	A	B	C	C

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

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-15	V
Collector-Emitter Voltage	V_{CEO}	-12	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current - Continuous	I_C	-500	mA
Peak Pulse Collector Current	I_{CM}	-1	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ T_A = 25°C	P_D	150	mW
Thermal Resistance, Junction to Ambient (Note 4) @ T_A = 25°C	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 4. Device mounted on FR-4 PCB with minimum recommended pad layout.

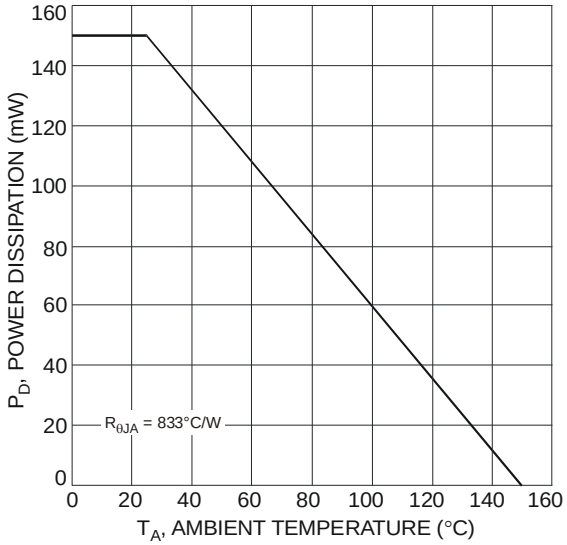


Fig. 1 Power Dissipation vs. Ambient Temperature

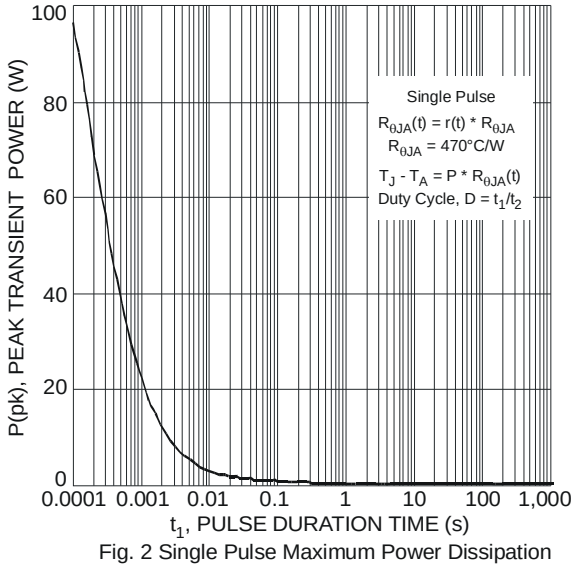


Fig. 2 Single Pulse Maximum Power Dissipation

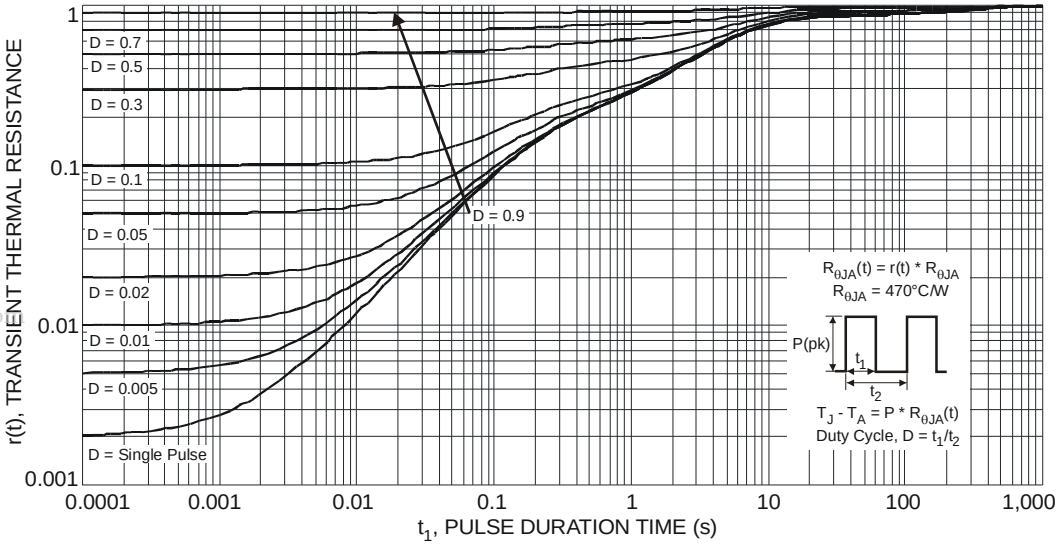


Fig. 3 Transient Thermal Response

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-15	—	—	V	I_C = -10μA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 5)	BV_{CEO}	-12	—	—	V	I_C = -1mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	I_E = -10μA, I_C = 0
Collector Cutoff Current	I_{CBO}	—	—	-100 -50	nA μA	V_{CB} = -15V, I_E = 0 V_{CB} = -15V, I_E = 0, T_A = 150°C
Emitter Cutoff Current	I_{EBO}	—	—	-100	nA	V_{EB} = -6V, I_C = 0
DC Current Gain (Note 5)	h_{FE}	270	—	680	—	V_{CE} = -2V, I_C = -10mA
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$	—	—	-250	mV	I_C = -200mA, I_B = -10mA
Output Capacitance	C_{obo}	—	7.4	—	pF	V_{CB} = -10V, f = 1.0MHz
Current Gain-Bandwidth Product	f_T	—	260	—	MHz	V_{CE} = -2V, I_C = -10mA, f = 100MHz
Turn-On Time	t_{on}	—	40	—	ns	V_{CC} = -6V I_C = -200mA, I_{B1} = I_{B2} = -10mA
Delay Time	t_d	—	18	—	ns	
Rise Time	t_r	—	22	—	ns	
Turn-Off Time	t_{off}	—	106	—	ns	
Storage Time	t_s	—	87	—	ns	
Fall Time	t_f	—	19	—	ns	

Notes: 5. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

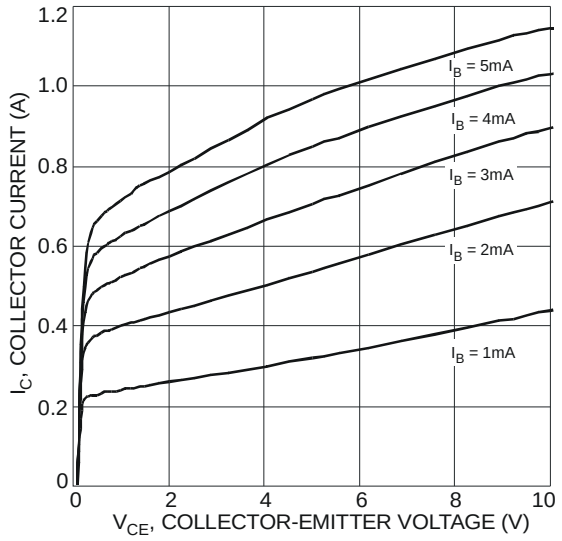


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

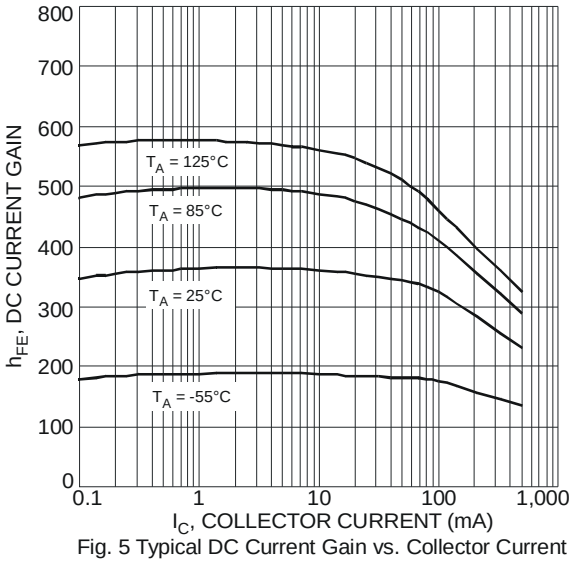


Fig. 5 Typical DC Current Gain vs. Collector Current

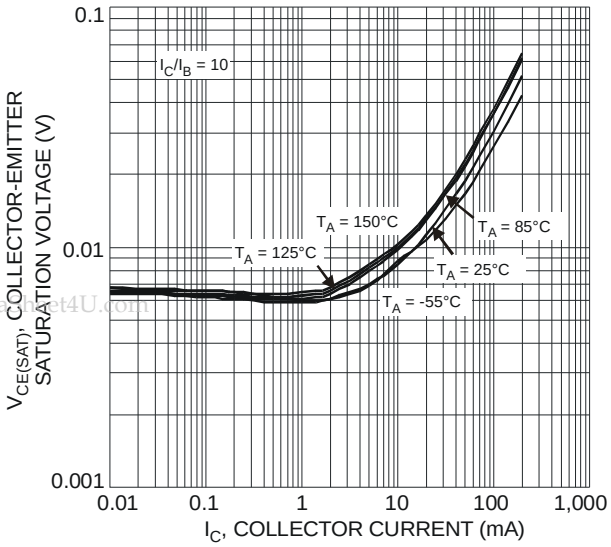


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

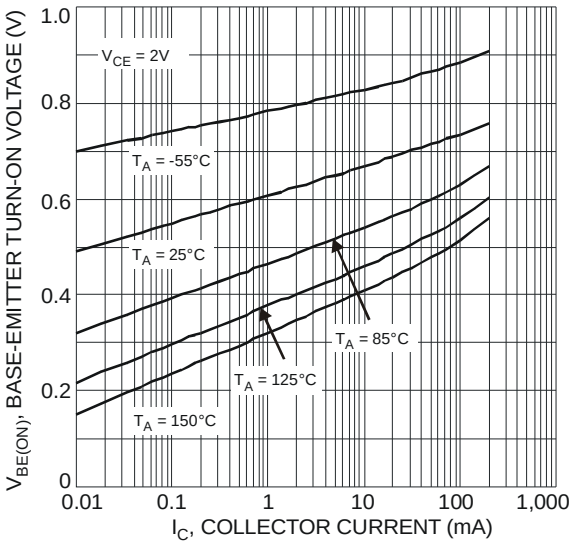


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

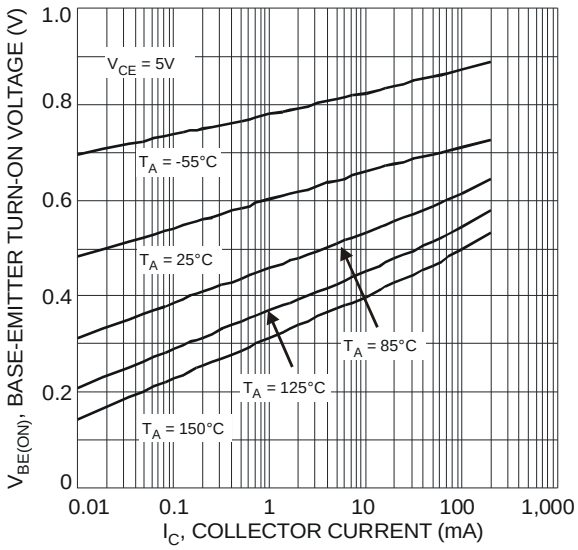


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

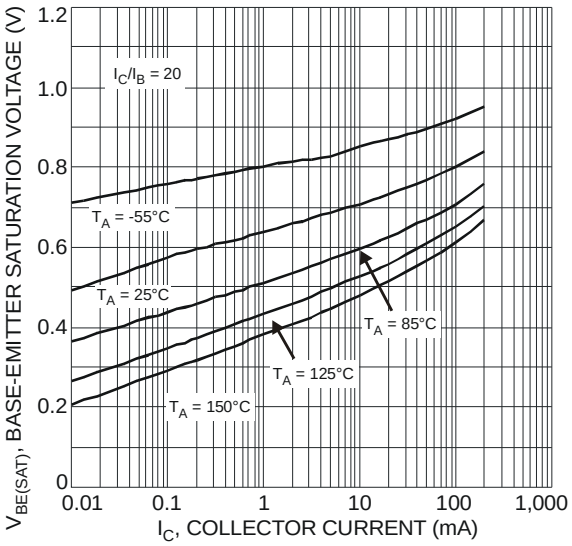


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

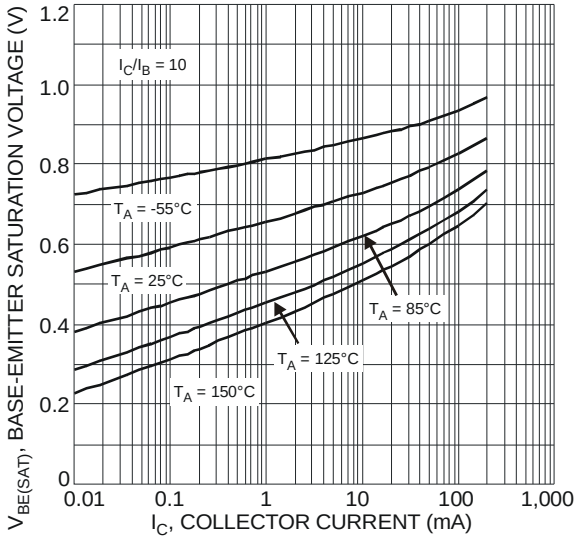


Fig. 10 Typical Base-Emitter Saturation Voltage vs. Collector Current

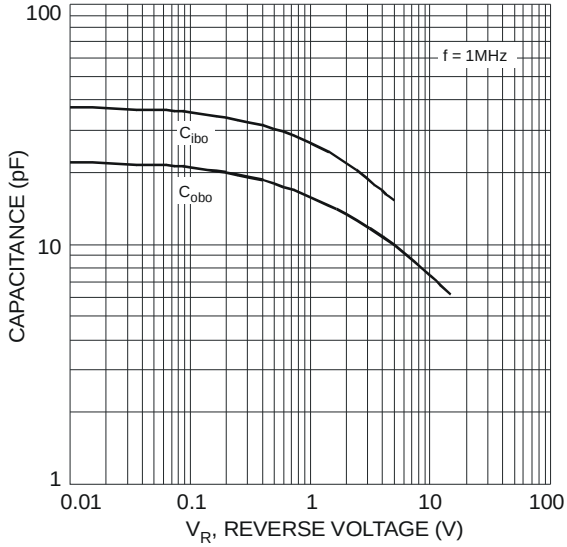
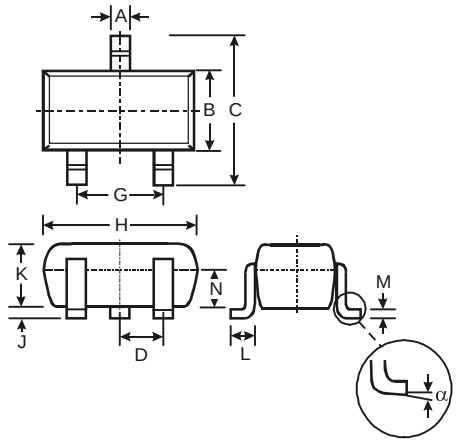


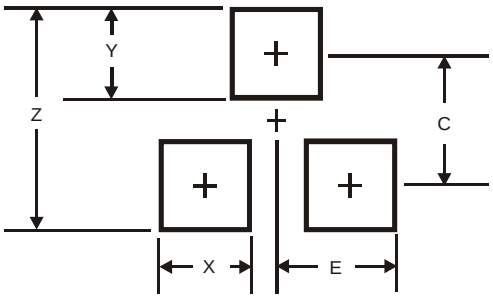
Fig. 11 Typical Capacitance Characteristics

Package Outline Dimensions



SOT-523			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.8
X	0.4
Y	0.51
C	1.3
E	0.7