





PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

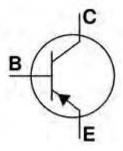
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (MMST4401)
- Ultra-Small Surface Mount Package
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)

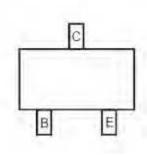
Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Weight: 0.006 grams (approximate)

SOT-323







Top view

Device symbol

Pinout - top view

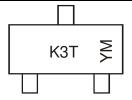
Ordering Information (Note 3)

Device	Packaging	Shipping		
MMST4403-7-F	SOT-323	3000/Tape & Reel		

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



K3T = Product Type Marking Code

YM = Date Code Marking Y = Year ex: N = 2002 M = Month ex: 9 = September

Date Code Key

Year	2010		2011	2012		2013	2014		2015	2016		2017
Code	X		Υ	Z		Α	В		С	D		E
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 $@T_A = 25^{\circ}C$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-40	V
Collector-Emitter Voltage	V _{CEO}	-40	V
Emitter-Base Voltage	V _{EBO}	-5.0	V
Collector Current – Continuous (Note 4)	Ic	-600	mA
Power Dissipation (Note 4)	P _d	200	mW
Thermal Resistance, Junction to Ambient (Note 4)	$R_{ heta JA}$	625	K/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

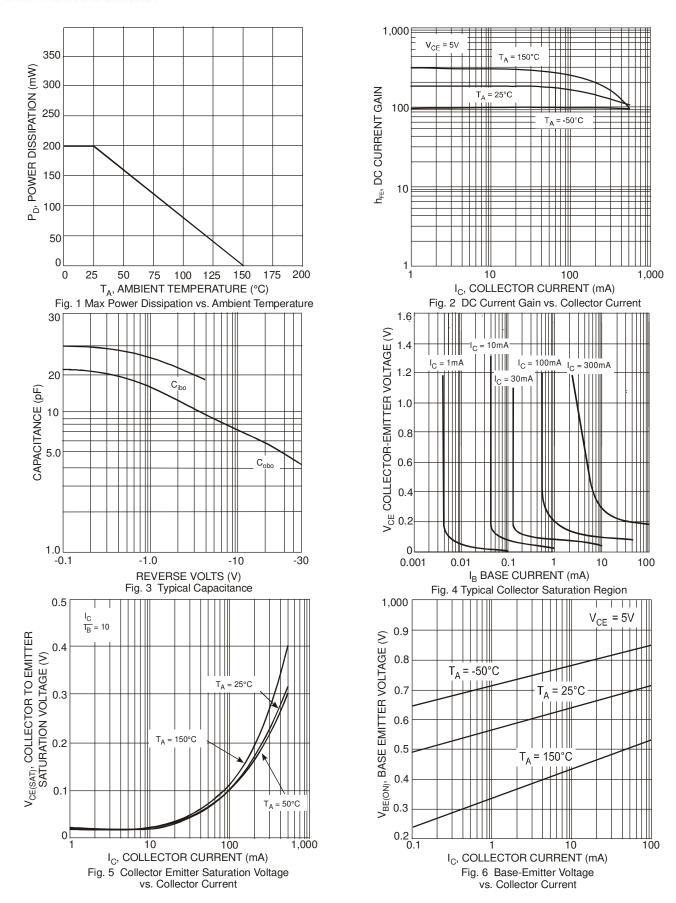
Notes: 4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch;

Electrical Characteristics @TA = 25°C unless otherwise specified

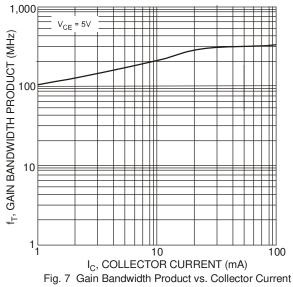
Characteristic	Symbol	Min	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 5)						
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-40	_	V	$I_C = -100 \mu A, I_E = 0$	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-40	_	V	$I_C = -1.0 \text{mA}, I_B = 0$	
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-5.0	_	V	$I_E = -100 \mu A, I_C = 0$	
Collector Cutoff Current	I _{CEX}	_	-100	nA	$V_{CE} = -35V, V_{EB(OFF)} = -0.4V$	
Base Cutoff Current	I _{BL}	_	-100	nA	$V_{CE} = -35V, V_{EB(OFF)} = -0.4V$	
ON CHARACTERISTICS (Note 5)	•			•		
DC Current Gain	h _{FE}	30 60 100 100 20	 300 	_	$\begin{split} I_C &= -100 \mu A, \ V_{CE} = -1.0 V \\ I_C &= -1.0 m A, \ V_{CE} = -1.0 V \\ I_C &= -10 m A, \ V_{CE} = -1.0 V \\ I_C &= -150 m A, \ V_{CE} = -2.0 V \\ I_C &= -500 m A, \ V_{CE} = -2.0 V \end{split}$	
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		-0.40 -0.75	V	$I_C = -150 \text{mA}, I_B = -15 \text{mA}$ $I_C = -500 \text{mA}, I_B = -50 \text{mA}$	
Base-Emitter Saturation Voltage	V _{BE(SAT)}	-0.75 —	-0.95 -1.30	V	$I_C = -150 \text{mA}, I_B = -15 \text{mA}$ $I_C = -500 \text{mA}, I_B = -50 \text{mA}$	
SMALL SIGNAL CHARACTERISTICS	•			•		
Output Capacitance	C _{ob}	_	8.5	pF	$V_{CB} = -10V$, $f = 1.0MHz$, $I_E = 0$	
Input Capacitance	C _{eb}		30	pF	$V_{EB} = -0.5V$, $f = 1.0MHz$, $I_C = 0$	
Input Impedance	h _{ie}	1.5	15	kΩ		
Voltage Feedback Ratio	h _{re}	0.1	8.0	x 10 ⁻⁴	V _{CE} = -10V, I _C = -1.0mA,	
Small Signal Current Gain	h _{fe}	60	500		f = 1.0MHz	
Output Admittance	h _{oe}	1.0	100	μS		
Current Gain-Bandwith Product	f _T	200	_	MHz	$V_{CE} = -10V, I_{C} = -20mA,$ f = 100MHz	
SWITCHING CHARACTERISTICS				•		
Delay Time	t _d	_	15	ns	V _{CE} = -30V, I _C = -150mA,	
Rise Time	t _r	_	20	ns	$V_{BE(OFF)} = -2.0V, I_{B1} = -15mA$	
Storage Time	ts		225	ns	V _{CE} = -30V, I _C = -150mA,	
Fall Time	t _r	_	30	ns	$I_{B1} = I_{B2} = -15\text{mA}$	

Notes: 5. Short duration pulse test used to minimize self-heating effect

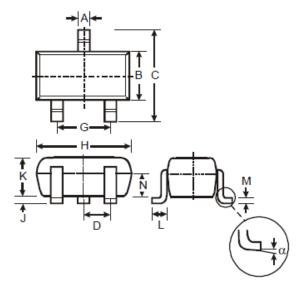








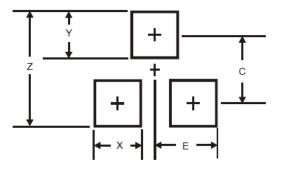
Package Outline Dimensions



SOT-323						
Dim	Min	Max	Тур			
Α	0.25	0.40	0.30			
В	1.15	1.35	1.30			
С	2.00	2.20	2.10			
D	-	-	0.65			
G	1.20	1.40	1.30			
Н	1.80	2.20	2.15			
J	0.0	0.0 0.10				
K	0.90	0.90 1.00				
L	0.25	0.40	0.30			
М	0.10	0.18	0.11			
N			-			
α	0°	8°	-			
All Dimensions in mm						



Suggested Pad Layout



Dimensions	SOT-323				
Z	2.8				
X	0.7				
Υ	0.9				
С	1.9				
E	1.0				

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