

MMST2222

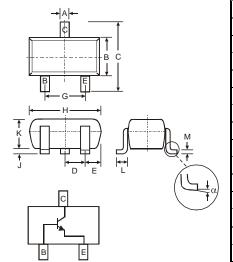
NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- **Epitaxial Planar Die Construction**
- Complementary PNP Type Available (MMST2907A)
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

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-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Information: K3P See Page 4
- Ordering & Date Code Information: See Page 4
- Weight: 0.006 grams (approximate)



SOT-323										
Dim	Min	Max								
Α	0.25	0.40								
В	1.15	1.35								
С	2.00	2.20								
D	0.65 Nominal									
E	0.30	0.40								
G	1.20	1.40								
Н	1.80	2.20								
J	0.0	0.10								
K	0.90	1.00								
L	0.25	0.40								
M	0.10	0.18								
α	0°	8°								
All Dimensions in mm										

Maximum Ratings @TA = 25℃ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	75	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6.0	V
Collector Current – Continuous (Note 1)	Ic	600	mA
Power Dissipation (Note 1)	Pd	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ heta JA}$	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Notes:

- Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
- No purposefully added lead.
- Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
- Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

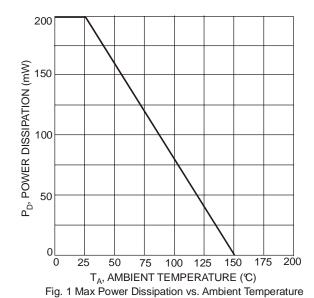


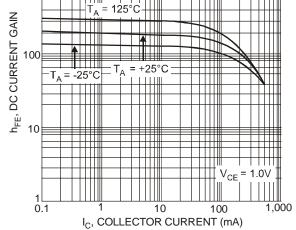
Electrical Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	75		V	$I_C = 10\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	40	_	V	$I_C = 10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6.0		V	$I_E = 10\mu A, I_C = 0$
Collector Cutoff Current	I _{CBO}		10	nA	$V_{CB} = 60V, I_{E} = 0$
Concetor Outon Current	ICBO		10	μΑ	$V_{CB} = 60V, I_E = 0, T_A = 150^{\circ}C$
Collector Cutoff Current	I _{CEX}	_	10	nA	$V_{CE} = 60V$, $V_{EB(OFF)} = 3.0V$
Emitter Cutoff Current	I _{EBO}	_	10	nA	$V_{EB} = 3.0V, I_{C} = 0$
Base Cutoff Current	I_{BL}	_	20	nA	$V_{CE} = 60V$, $V_{EB(OFF)} = 3.0V$
ON CHARACTERISTICS (Note 5)				r	
		35	_		$I_C = 100 \mu A, V_{CE} = 10 V$
		50	_		$I_C = 1.0 \text{mA}, V_{CE} = 10 \text{V}$
		75	_	_	$I_{C} = 10 \text{mA}, V_{CE} = 10 \text{V}$
DC Current Gain	h _{FE}	100	300		$I_C = 150 \text{mA}, V_{CE} = 10 \text{V}$
		40	_		$I_{C} = 500 \text{mA}, V_{CE} = 10 \text{V}$
		50 35	_		$I_{C} = 10 \text{mA}, V_{CE} = 10 \text{V}, T_{A} = -55 \text{°C}$
		35	_		I _C = 150mA, V _{CE} = 1.0V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	_	0.3 1.0	V	$I_{C} = 150 \text{mA}, I_{B} = 15 \text{mA}$
	- (- ,	0.6	1.0		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$ $I_C = 150 \text{mA}, I_B = 15 \text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	U.U	2.0	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$
SMALL SIGNAL CHARACTERISTICS				l.	ic committee commit
Output Capacitance	C _{obo}	_	8	pF	$V_{CB} = 10V, f = 1.0MHz, I_E = 0$
Input Capacitance	Cibo		25	pF	V _{EB} = 0.5V, f = 1.0MHz, I _C = 0
Current Gain-Bandwith Product		300		MHz	$V_{CE} = 20V, I_{C} = 20mA,$
Current Gain-Bandwith Product	f⊤	300		IVITZ	f = 1.0MHz
Noise Figure	NF		4.0	dB	$V_{CE} = 10V, I_{C} = 100 \mu A,$
Noise rigure	INI		4.0	uБ	$R_S = 1.0k\Omega$, $f = 1.0kHz$
SWITCHING CHARACTERISTICS					
Delay Time	t _d		10	ns	$V_{CC} = 30V, I_C = 150mA,$
Rise Time	t _r	_	25	ns	$V_{BE(OFF)} = -0.5V, I_{B1} = 15mA$
Storage Time	ts	_	225	ns	$V_{CC} = 30V, I_C = 150mA,$
Fall Time	t _f		60	ns	$I_{B1} = I_{B2} = 15mA$

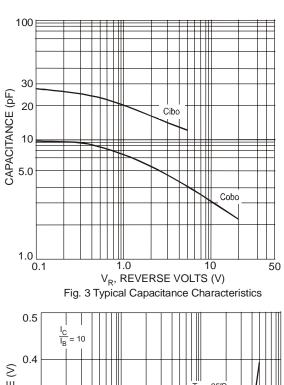
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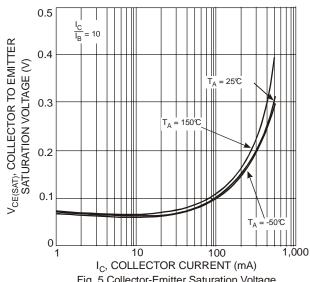
^{5.} Short duration pulse test used to minimize self-heating effect.

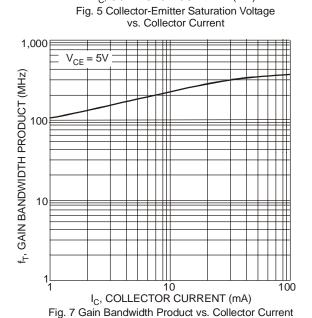


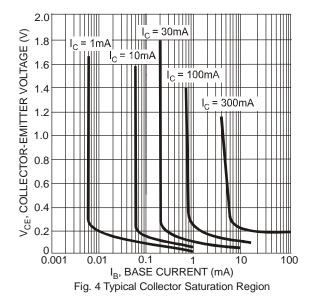


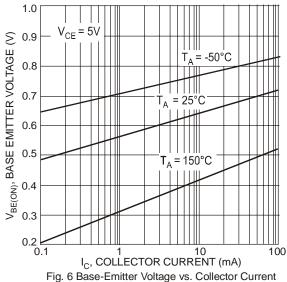












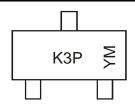


Ordering Information (Notes 4 & 6)

Device	Packaging	Shipping			
MMST2222A-7-F	SOT-323	3000/Tape & Reel			

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K3P = Product Type Marking Code YM = Date Code Marking Y = Year ex: N = 2002 M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	М	Ν	Р	R	S	T	J	V	W	Χ	Υ	Z

	_				_							
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

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