

60V PNP SMALL SIGNAL TRANSISTOR IN SOT323

Features

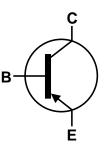
- BV_{CEO} > -60V
- I_C = -600mA Collector Current
- Epitaxial Planar Die Construction
- Ultra-Small Surface Mount Package
- Complementary NPN Type: MMST2222A
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

Mechanical Data

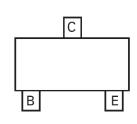
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads.
 Solderable per MIL-STD-202, Method 208 (2)
- Weight: 0.006 grams (Approximate)







Device Symbol



Pin-Out Top View

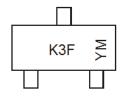
Ordering Information (Notes 4 & 5)

Product	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
MMST2907A-7-F	Active	AEC-Q101	K3F	7	8	3,000
MMST2907AQ-7	Active	Automotive	K3F	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



K3F = Product Type Marking Code YM = Date Code Marking Y or \overline{Y} = Year (ex: A = 2013) M or \overline{M} = Month (ex: 9 = September)

Date Code Key

Year	r	201	0	20	11	2012	2013	2014	2015	201	6 20	17	2018	2019	2020
Code	е	Х		\	Y	Z	Α	В	С	D		Ξ	F	G	Н
Me	onth		Ja	an	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
С	ode		1		2	3	4	5	6	7	8	9	0	N	D



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current	I _C	-600	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_{D}	200	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

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

Notes:

- 6. For a device mounted with the collector lead on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
- 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

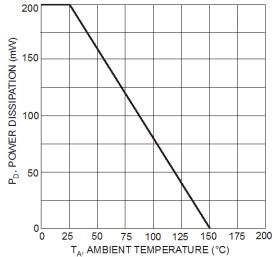


Fig. 1 Max Power Dissipation vs. Ambient Temperature



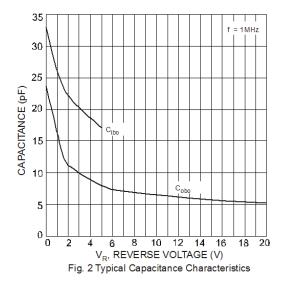
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

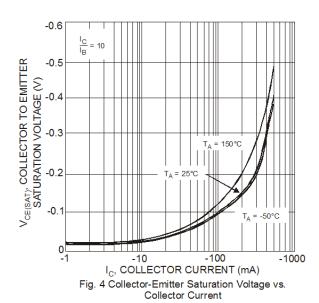
Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)					
Collector-Base Breakdown Voltage	BV_{CBO}	-60	_	V	$I_C = -10\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-60	_	V	$I_C = -10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	_	V	$I_E = -10\mu A, I_C = 0$
Collector Base Cutoff Current	I _{CBO}		-10	nΑ μΑ	$V_{CB} = -50V, I_E = 0$ $V_{CB} = -50V, I_E = 0, T_A = +125$ °C
Collector Cutoff Current	I _{CEX}		-50	nA	$V_{CE} = -30V, V_{EB(OFF)} = -0.5V$
Base Cutoff Current	I _{BL}	_	-50	nA	$V_{CE} = -30V, V_{EB(OFF)} = -0.5V$
ON CHARACTERISTICS (Note 8)					
DC Current Gain	h _{FE}	75 100 100 100 50	 300 	_	$I_C = -100\mu A, V_{CE} = -10V$ $I_C = -1mA, V_{CE} = -10V$ $I_C = -10mA, V_{CE} = -10V$ $I_C = -150mA, V_{CE} = -10V$ $I_C = -500mA, V_{CE} = -10V$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	_	-0.4 -1.6	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)}		1.3 2.6	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 _{OBO}	_	8	pF	$V_{CB} = -10V$, $f = 1.0MHz$, $I_E = 0$
Input Capacitance	C _{IBO}	_	30	pF	$V_{EB} = -2V$, $f = 1.0MHz$, $I_C = 0$
Current Gain-Bandwidth Product	f⊤	200	_	MHz	$V_{CE} = -20V, I_{C} = -50mA,$ f = 100MHz
SWITCHING CHARACTERISTICS					
Turn-On Time	t _{ON}	_	45	ns	Vcc = -30V, Ic = -150mA,
Delay Time	t_D	_	10	ns	I _{B1} = -15mA
Rise Time	t _R	_	40	ns	IBI - TOTILA
Turn-Off Time	t _{OFF}	_	100	ns	$V_{CC} = -6V$, $I_{C} = -150$ mA,
Storage Time	t _S	_	80	ns	$ V_{CC} = -6V$, $ C = -150 \text{ MA}$, $ B_1 = B_2 = -15 \text{ mA}$
Fall Time	t _F		30	ns	וווע – וווע – - ואווע

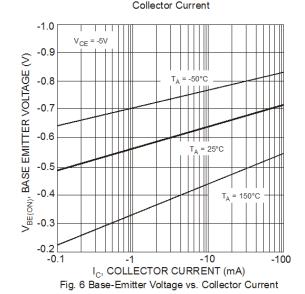
Note: 8. Measured under pulsed conditions. Pulse width \leq 300 μ s. Duty cycle \leq 2%.

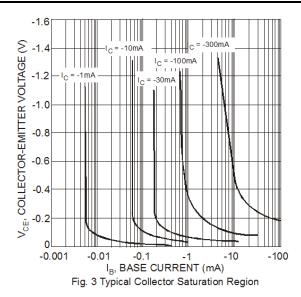


Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)









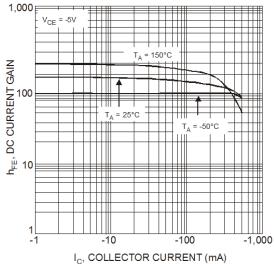


Fig. 5 DC Current Gain vs. Collector Current

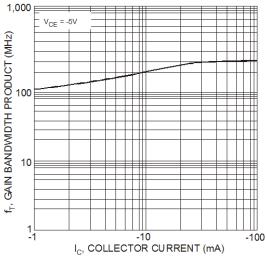


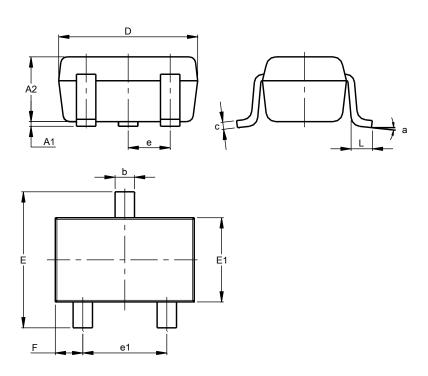
Fig. 7 Gain Bandwidth Product vs. Collector Current



Package Outline Dimensions

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

SOT323

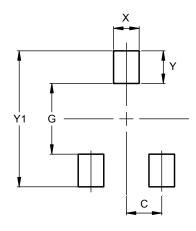


SOT323							
Dim	Min	Max	Тур				
A1	0.00	0.10	0.05				
A2	0.90	1.00	0.95				
b	0.25	0.40	0.30				
С	0.10	0.18	0.11				
D	1.80	2.20	2.15				
Е	2.00	2.20	2.10				
E1	1.15	1.35	1.30				
е	0.650 BSC						
e1	1.20	1.40	1.30				
F	0.375	0.475	0.425				
L	0.25	0.40	0.30				
а	0°	8°	_				
All Dimensions in mm							

Suggested Pad Layout

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

SOT323



Dimensions	Value (in mm)
С	0.650
G	1.300
Х	0.470
Y	0.600
Y1	2.500



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