

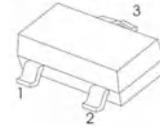
FEATURES

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (MMBTA05 / MMBTA06)
- Ideal for Low Power Amplification and Switching

MMBTA55 Marking: 2H

MMBTA56 Marking: 2GM

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	MMBTA55	MMBTA56	Unit
Collector-Base Voltage	V_{CB0}	-60	-80	V
Collector-Emitter Voltage	V_{CEO}	-60	-80	V
Emitter-Base Voltage	V_{EBO}	-4.0		V
Collector Current - Continuous	I_C	-500		mA
Power Dissipation	P_d	300		mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417		$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150		$^\circ\text{C}$

Electrical Characteristics Ta = 25°C

Characteristic		Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	MMBTA55 MMBTA56	$V_{(BR)CBO}$	-60 -80	—	V	$I_C = -100\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	MMBTA55 MMBTA56	$V_{(BR)CEO}$	-60 -80	—	V	$I_C = -1.0mA, I_B = 0$
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	-4.0	—	V	$I_E = -100\mu A, I_C = 0$
Collector Cutoff Current	MMBTA55 MMBTA56	I_{CBO}	—	-100	nA	$V_{CB} = -60V, I_E = 0$ $V_{CB} = -80V, I_E = 0$
Collector Cutoff Current	MMBTA55 MMBTA56	I_{CEX}	—	-100	nA	$V_{CE} = -60V, I_{BO} = 0V$ $V_{CE} = -80V, I_{BO} = 0V$
ON CHARACTERISTICS						
DC Current Gain		h_{FE}	100	—	—	$I_C = -10mA, V_{CE} = -1.0V$ $I_C = -100mA, V_{CE} = -1.0V$
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	-0.25	V	$I_C = -100mA, I_B = -10mA$
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	—	-1.2	V	$I_C = -100mA, V_{CE} = -1.0V$
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product		f_T	50	—	MHz	$V_{CE} = -1.0V, I_C = -100mA,$ $f = 100MHz$

RATING AND CHARACTERISTIC CURVES

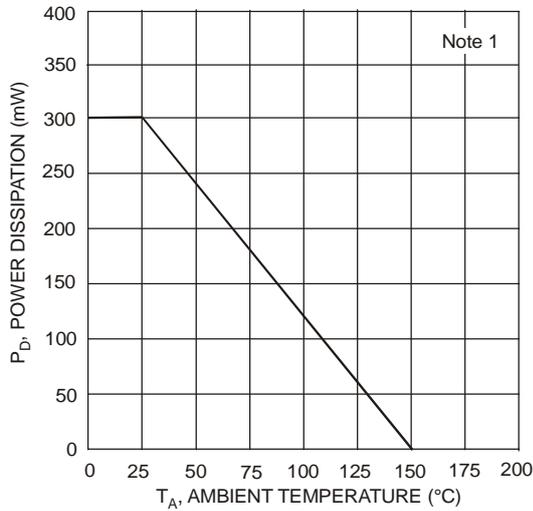


Fig. 1 Max Power Dissipation vs Ambient Temperature

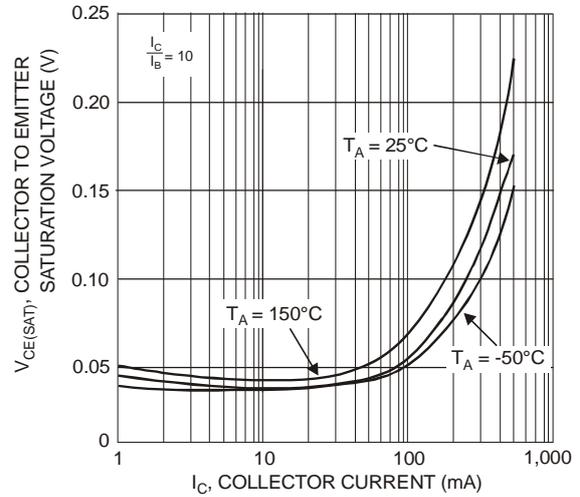


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

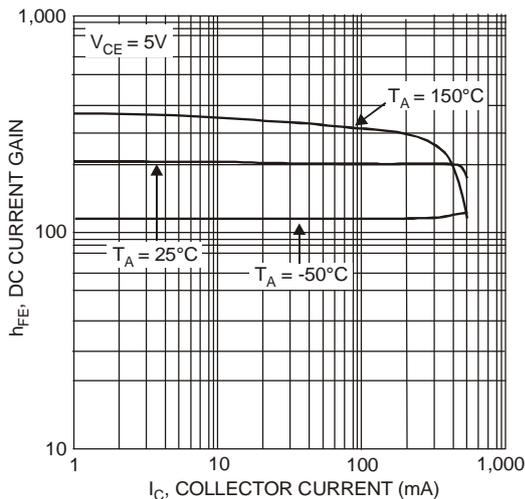


Fig. 3 DC Current Gain vs. Collector Current

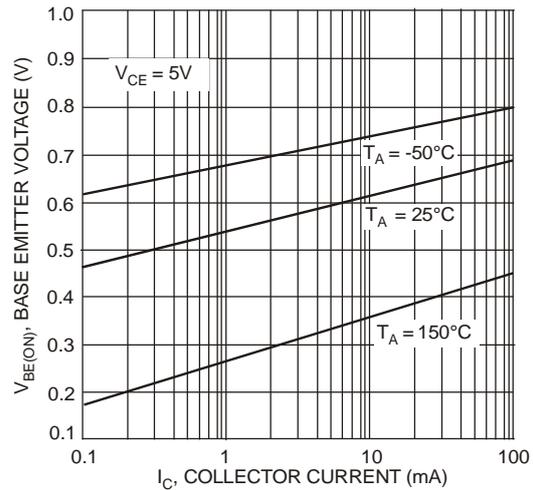
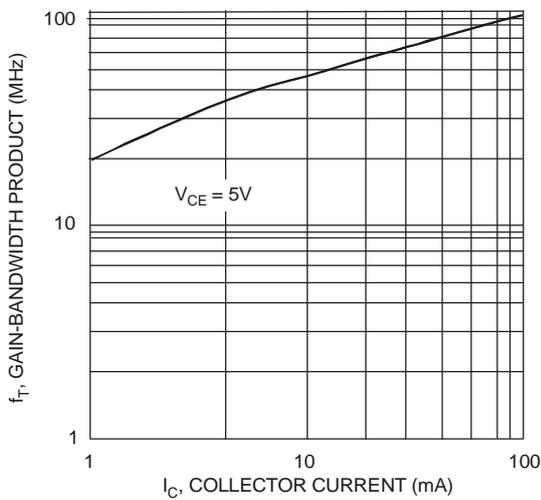
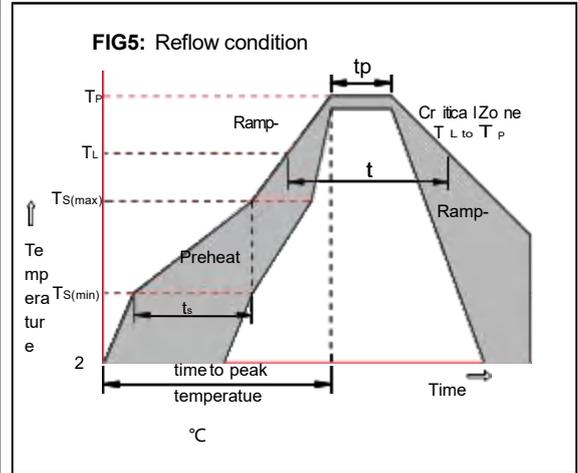


Fig. 4 Base Emitter Voltage vs. Collector Current



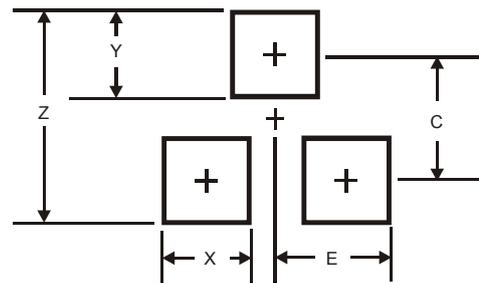
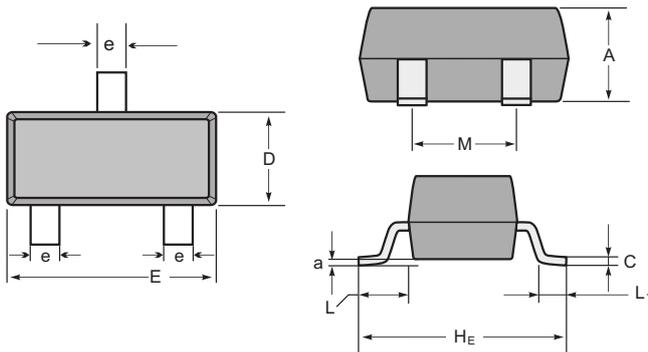
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23

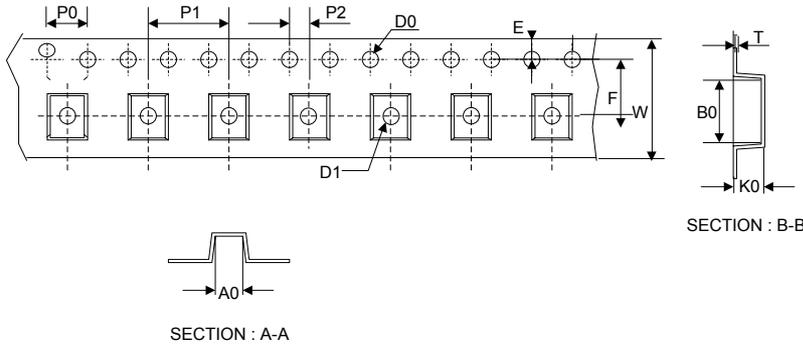
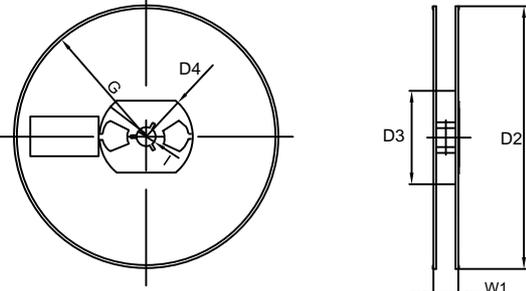


SOT-23 mechanical data

UNIT	A	C	D	E	He	e	M	L	L ₁	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape	Symbol	Dimension (mm)
	P0	4.00±0.10
	P1	4.00±0.10
	P2	2.00±0.10
	D0	1.55±0.10
	D1	1.05±0.10
	E	1.55±0.10
	F	3.60±0.10
	W	8.00±0.10
	A0	3.80±0.20
	B0	3.25±0.20
	K0	1.45±0.10
	T	0.25±0.05
	7" Reel	D2
	D3	55Min.
	D4	R24.0±3.0
	G	R82.0±3.0
	I	13.0±2.0
	W1	11.0±3.0
	Quantity: 3000PCS	