



DESCRIPTION

The MBTA42~MBTA43 is available in SOT-23 Package.

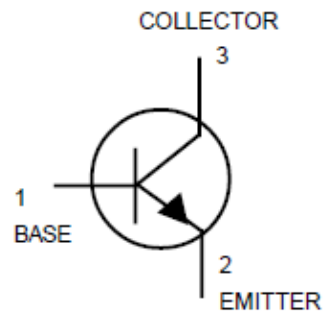
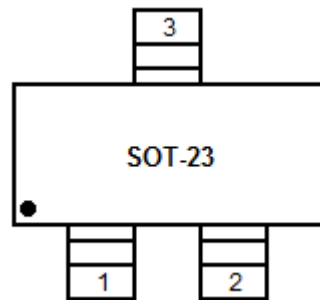
FEATURES

- Available in SOT-23 Package.

ORDERING INFORMATION

Package Type	Part Number
SOT-23	MBTA42
	MBTA43
Note	SPQ: 3,000pcs/ Reel
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION





ABSOLUTE MAXIMUM RATINGS

V _{CEO} , Collector–Emitter Voltage	MBTA42	300Vdc
	MBTA43	200Vdc
V _{CBO} , Collector–Base Voltage	MBTA42	300Vdc
	MBTA43	200Vdc
V _{EBO} , Emitter–Base Voltage	MBTA42	6.0Vdc
	MBTA43	
I _C , Collector Current–Continuous	MBTA42	500mAdc
	MBTA43	

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, ^{NOTE1} T _A = 25°C Derate above 25°C	P _D	225	mW
		1.8	mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate, ^{NOTE2} T _A = 25°C Derate above 25°C	P _D	300	mW
		2.4	mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	417	°C/W
Junction and Storage Temperature	T _J , T _{STG}	-55 to +150	°C



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions		Min.	Max.	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage ^{NOTE3}	V _{(BR)CEO}	I _C =1.0mA, I _B =0	MBTA42	300	-	Vdc
			MBTA43	200	-	
Collector–Base Breakdown Voltage	V _{(BR)CBO}	I _C =100μA, I _E =0	MBTA42	300	-	Vdc
			MBTA43	200	-	
Emitter–Base Breakdown Voltage	V _{(BR)EBO}	I _E =100μA, I _C =0		6.0	-	Vdc
Collector Cutoff Current	I _{CBO}	V _{CB} =200Vdc, I _E =0	MBTA42	-	0.1	μA
		V _{CB} =160Vdc, I _E =0	MBTA43	-	0.1	
Emitter Cutoff Current	I _{EBO}	V _{EB} = 6.0Vdc, I _C =0	MBTA42	-	0.1	μA
		V _{EB} = 4.0Vdc, I _C =0	MBTA43	-	0.1	
ON CHARACTERISTICS^{NOTE3}						
DC Current Gain	h _{FE}	I _C =1.0mA, V _{CE} =10Vdc	Both Types	25	-	-
			Both Types	40	-	
		I _C =30mA, V _{CE} =10Vdc	MBTA42	40	-	
			MBTA43	40	-	
Collector–Emitter Saturation Voltage	V _{CE(sat)}	I _C =20mA, I _B =2.0mA			0.5	Vdc
Base–Emitter Saturation Voltage	V _{BE(sat)}	I _C =20mA, I _B =2.0mA			0.9	Vdc
SMALL–SIGNAL CHARACTERISTICS						
Current –Gain–Bandwidth Product	f _T	V _{CE} =20Vdc, I _C =10mA, f=100MHz		50	-	MHz
Collector – Base Capacitance	C _{cb}	V _{CB} =20Vdc, I _E =0, f=1.0MHz	MBTA42	-	3.0	pF
			MBTA43	-	4.0	

NOTE1: FR–5 = 1.0 x 0.75 x 0.062 in.

NOTE2: Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

NOTE3: Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.



TYPICAL CHARACTERISTICS

Figure 1. DC Current Gain

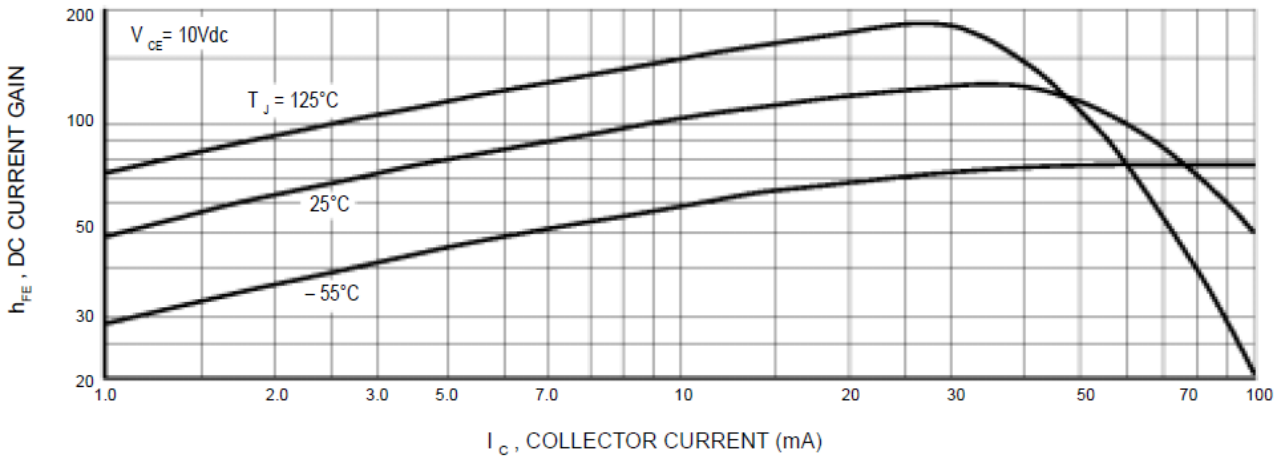


Figure 2. Capacitance

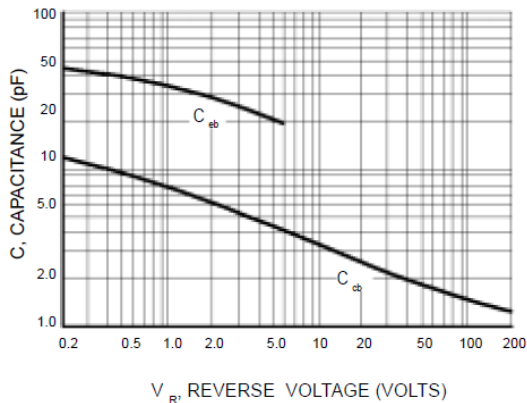


Figure 3. Current-Gain-Bandwidth Product

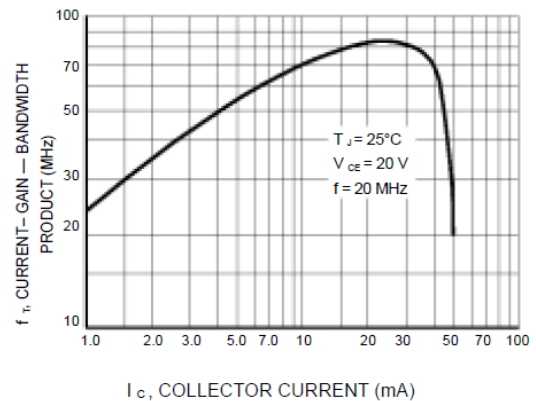
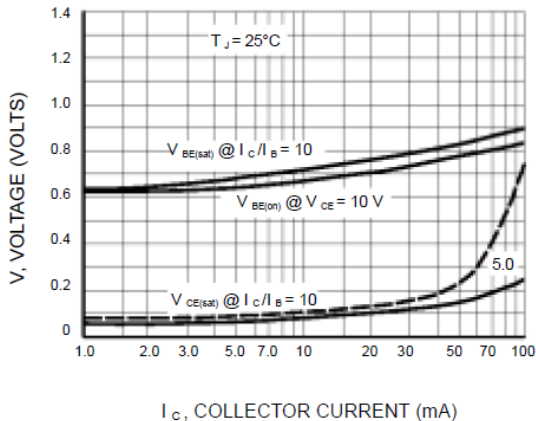


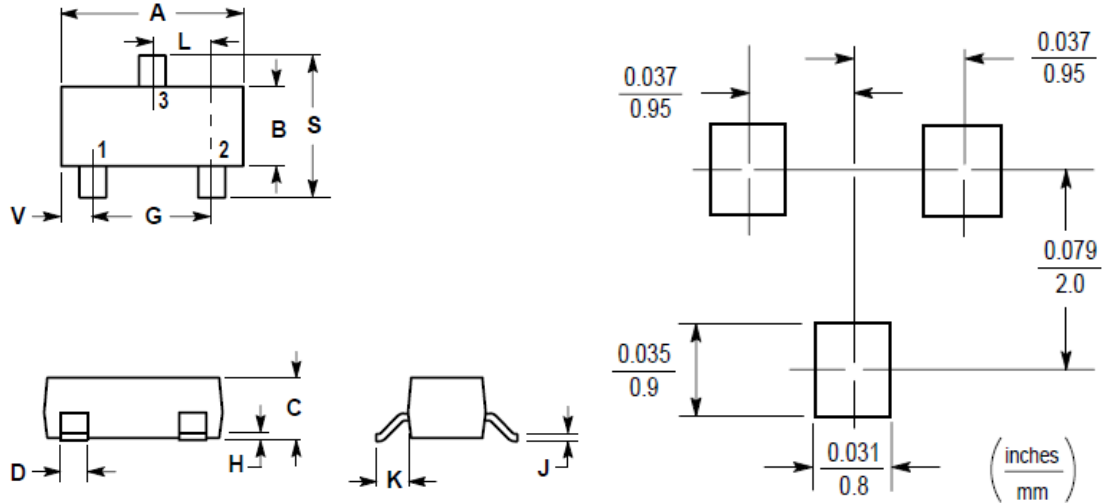
Figure 4. "On" Voltages





PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.11	0.0350	0.0440
D	0.37	0.50	0.0150	0.0200
G	1.78	2.04	0.0701	0.0807
H	0.013	0.100	0.0005	0.0040
J	0.085	0.177	0.0034	0.0070
K	0.35	0.69	0.0140	0.0285
L	0.89	1.02	0.0350	0.0401
S	2.10	2.64	0.0830	0.1039
V	0.45	0.60	0.0177	0.0236



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