DESCRIPTION

The MBTA42_MBTA43 is available in SOT–23 Package

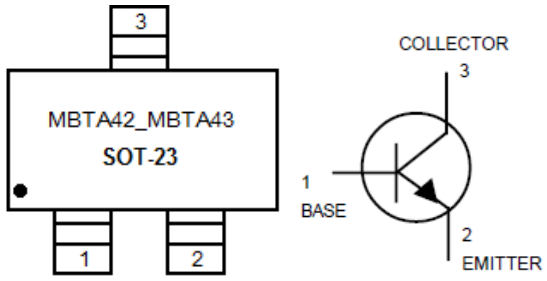
FEATURES

- RoHS Compliant
- Available in SOT–23 Package

ORDERING INFORMATION

Package Type	Part Number
SOT–23	MBTA42
	MBTA43
Note	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	50mAdc
	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

P_D ,Total Device Dissipation FR– 5 Board[NOTE1]	T_A = 25°C	225mW
	Derate above 25°C	1.8mW/°C
$R_{\theta JA}$,Thermal Resistance, Junction to Ambient		556°C/W
P_D ,Total Device Dissipation Alumina Substrate [NOTE2]	TA = 25°C	300mW
	Derate above 25°C	2.4mW/°C
$R_{\theta JA}$,Thermal Resistance, Junction to Ambient		417°C/W
T_J, T_{STG} ,Junction and Storage Temperature		–55°C to +150°C

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.

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=1.0mAdc,I_B =0	MBTA42	300		Vdc
			MBTA43	200		
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=100μAdc,I_E=0	MBTA42	300		Vdc
			MBTA43	200		
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=100μAdc,I_C= 0		6.0		Vdc
Collector Cutoff Current	I_{CBO}	V_{CB}=200Vdc,I_E=0	MBTA42		0.1	μAdc
		V_{CB}=160Vdc,I_E=0	MBTA43		0.1	
Emitter Cutoff Current	I_{EBO}	V_{EB}= 6.0Vdc,I_C=0	MBTA42		0.1	μAdc
		V_{EB}= 4.0Vdc,I_C=0	MBTA43		0.1	
ON CHARACTERISTICS NOTE3						
DC Current Gain	h_{FE}	I_C=1.0mAdc,V_{CE}=10Vdc	Both Types	25		
		I_C=10mAdc,V_{CE}=10Vdc	Both Types	40		
		I_C=30mAdc,V_{CE}=10Vdc	MBTA42	40		
			MBTA43	40		
Collector–Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=20mAdc,I_B=2.0mAdc	MBTA42		0.5	Vdc
			MBTA43			
Base–Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=20mAdc,I_B=2.0mAdc			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	

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

TYPICAL CHARACTERISTICS

Figure 1. DC Current Gain

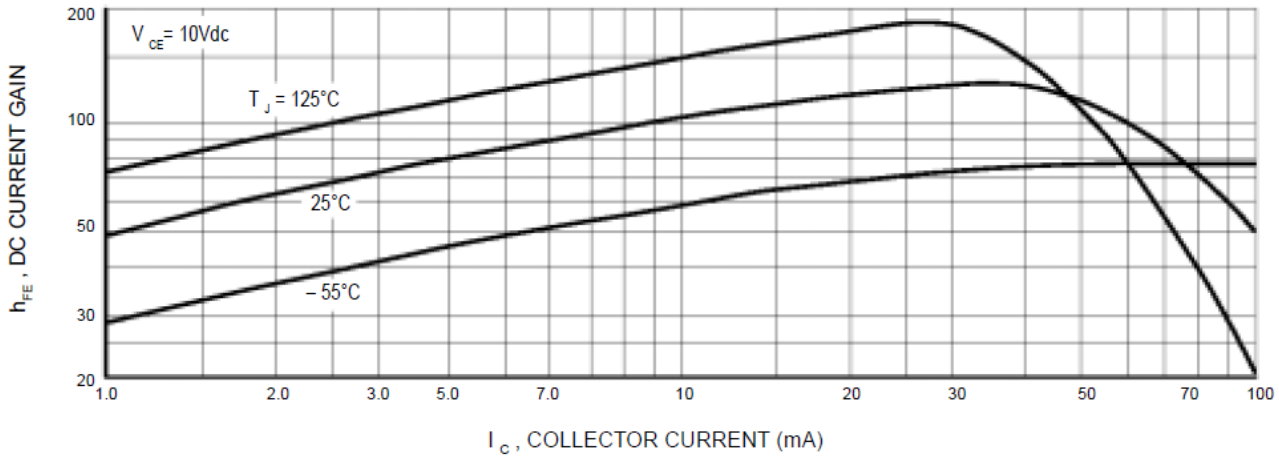


Figure 2. Capacitance

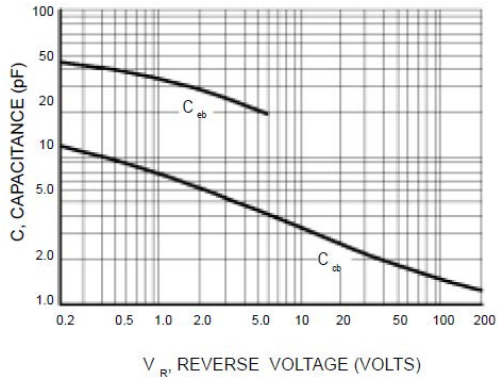


Figure 3. Current–Gain–Bandwidth Product

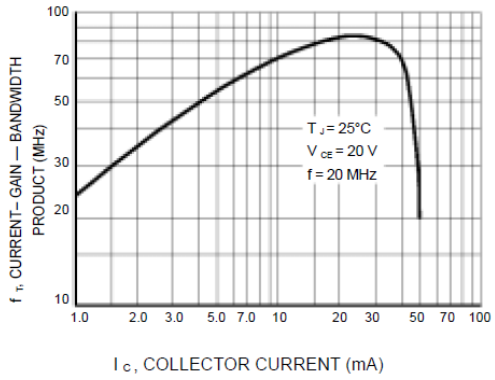
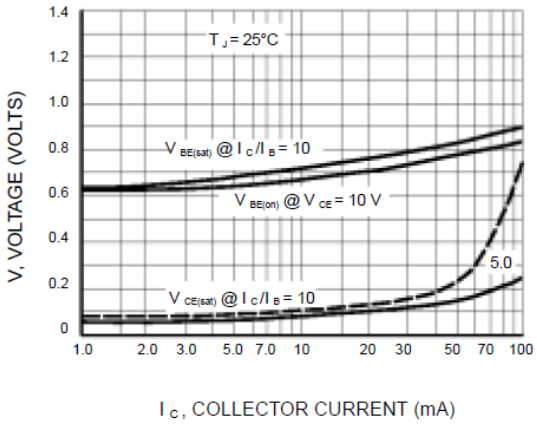
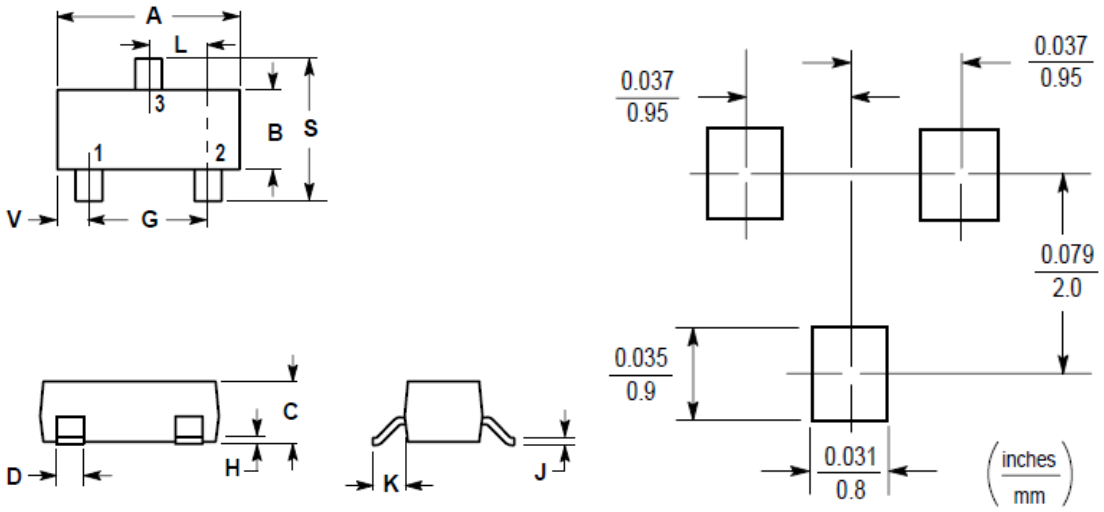


Figure 4. “On” Voltages



PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



Symbol	Min	Max
A	2.800	3.040
B	1.200	1.400
C	0.890	1.110
D	0.370	0.500
G	1.780	2.040
H	0.013	0.100
J	0.085	0.177
K	0.350	0.690
L	0.890	1.020
S	2.100	2.640
V	0.450	0.600

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