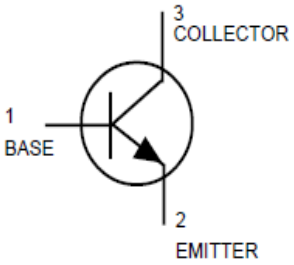
Dimensions SOT-23

●FEATURES

1) We declare that the material of product compliant with RoHS requirements and Halogen Free.
2) S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

Pin Configuration



●DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
MMBT4401	2X	3000/Tape&Reel

●MAXIMUM RATINGS(Ta = 25℃)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	60	Vdc
Emitter–Base Voltage	V_{EBO}	6	Vdc
Collector Current — Continuous	I_C	600	mAdc

●THERMAL CHARACTERISTICS

Total Device Dissipation, FR−5 Board (Note 1) @ T_A = 25°C Derate above 25°C	P_D	 225 1.8	 mW mW/℃
Thermal Resistance, Junction–to–Ambient(Note 1)	$R_{\Theta JA}$	556	℃/W
Total Device Dissipation, Alumina Substrate (Note 2) @ T_A = 25°C Derate above 25°C	P_D	 300 2.4	 mW mW/℃
Thermal Resistance, Junction–to–Ambient(Note 2)	$R_{\Theta JA}$	417	℃/W
Junction and Storage temperature	T_J,Tstg	−55～+150	℃

1. FR–5 = 1.0×0.75×0.062 in.
2. Alumina = 0.4×0.3×0.024 in. 99.5% alumina.

●ELECTRICAL CHARACTERISTICS (Ta= 25℃)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (I_C = 1.0 mAdc, I_B = 0)	$V_{BR(CEO)}$	40	–	–	V
Collector–Base Breakdown Voltage (I_C = 0.1mAdc, I_E = 0)	$V_{BR(CBO)}$	60	–	–	V
Emitter–Base Breakdown Voltage (I_E = 0.1mAdc, I_C = 0)	$V_{BR(EBO)}$	6	–	–	V
Collector Cutoff Current (V_{CE} = 35 Vdc, V_{EB} = 0.4Vdc)	I_{CEX}	–	–	0.1	μA
Base Cutoff Current (V_{CE} = 35 Vdc, V_{EB} = 0.4Vdc)	I_{BEV}	–	–	0.1	μA

ON CHARACTERISTICS (Note 3.)

DC Current Gain	h_{FE}				
(I_C = 0.1 mAdc, V_{CE} = 1.0 Vdc)		20	–	–	
(I_C = 1.0 mAdc, V_{CE} = 1.0 Vdc)		40	–	–	
(I_C = 10 mAdc, V_{CE} = 1.0 Vdc)		80	–	–	
(I_C = 150 mAdc, V_{CE} = 1.0 Vdc)		100	–	300	
(I_C = 500 mAdc, V_{CE} = 2.0 Vdc)		40	–	–	
Collector–Emitter Saturation Voltage(3)					V
(I_C = 150 mAdc, I_B = 15 mAdc)	$V_{CE(sat)}$	–	–	0.4	
(I_C = 500mAdc, I_B = 50 mAdc)		–	–	0.75	
Base–Emitter Saturation Voltage					V
(I_C = 150 mAdc, I_B = 15 mAdc)	$V_{BE(sat)}$	0.75		0.95	
(I_C = 500mAdc, I_B = 50 mAdc)		–	–	1.2	

SMALL–SIGNAL CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Current–Gain — Bandwidth Product (I_C = 20mAdc, V_{CE}= 20Vdc, f = 100MHz)	f_T	250	–	–	MHz
Collector–Base Capacitance (V_{CB} = 5.0 Vdc, I_E = 0, f = 1.0 MHz)	C_{cb}	–	–	6.5	pF
Emitter–Base Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	C_{eb}	–	–	30	pF
Input Impedance (V_{CE}= 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{ie}	1		15	k Ω
Voltage Feedback Ratio (V_{CE}= 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{re}	0.1	–	8	X 10^{-4}
Small–Signal Current Gain (V_{CE}= 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{fe}	40		500	
Output Admittance (V_{CE}= 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{oe}	1		30	μmhos

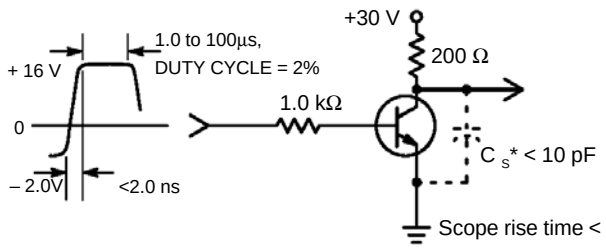
SWITCHING CHARACTERISTICS

Delay Time	(V_{CC} = 30 Vdc, V_{EB}= 2.0Vdc,I_C = 150 mAdc, I_{B1} = 15 mAdc)	t_d	–	–	15	ns
Rise Time		t_r	–	–	20	
Storage Time	(V_{CC} = 30 Vdc, I_C = 150 mAdc,I_{B1} = I_{B2} = 15 mAdc)	t_s	–	–	225	
Fall Time		t_f	–	–	30	

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

ELRCTRICAL CHARACTERISTICS CURVES

SWITCHING TIME EQUIVALENT TEST CIRCUITS



*Total shunt capacitance of test jig connectors, and oscilloscope

Figure 1. Turn–On Time

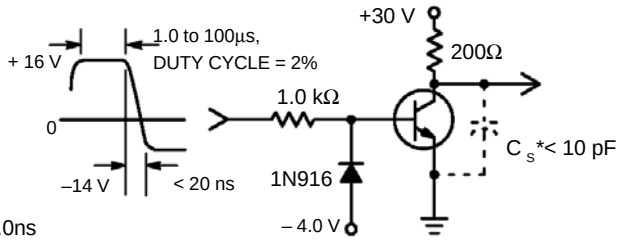


Figure 2. Turn–Off Time

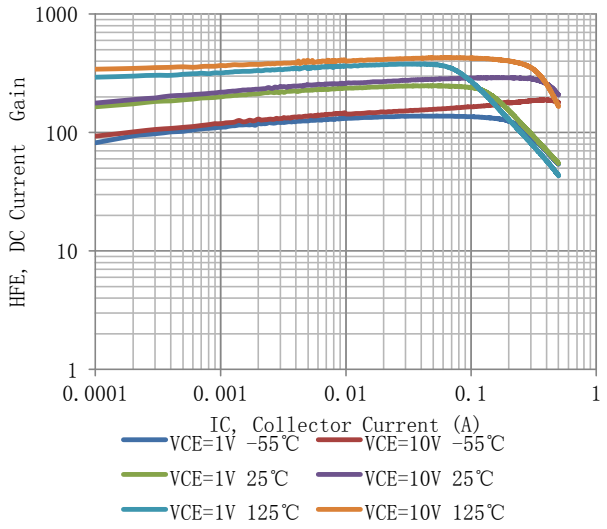


Figure 3. DC Current Gain

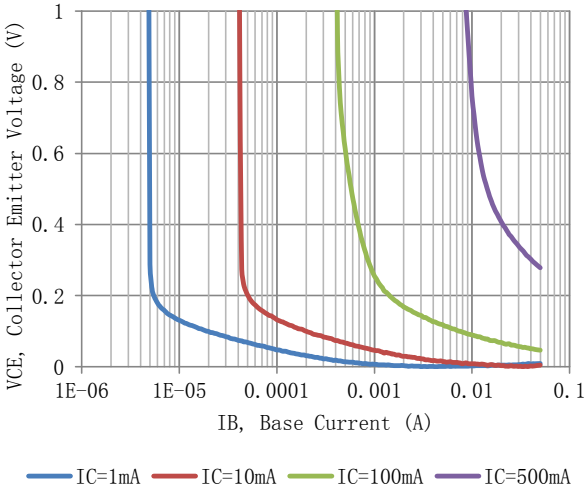


Figure 4. Collector Saturation Region

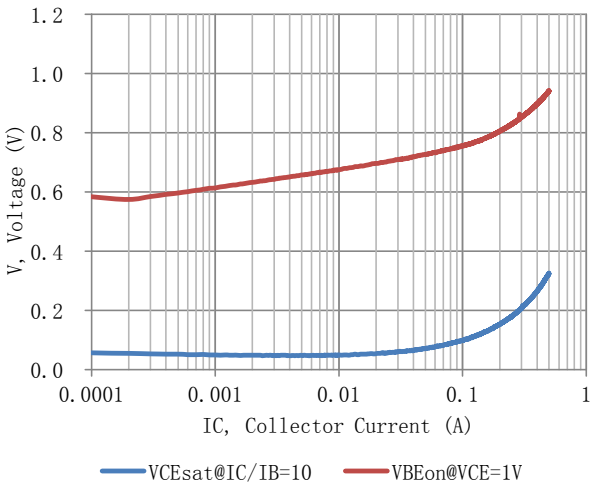


Figure 5. "On" Voltage

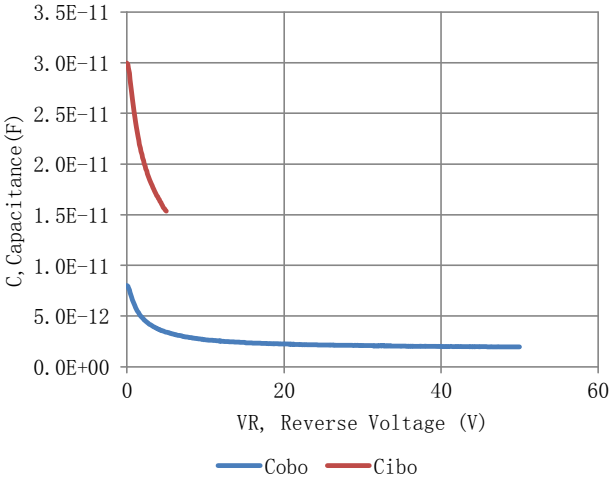


Figure 6. Capacitance

ELRCTRICAL CHARACTERISTICS CURVES

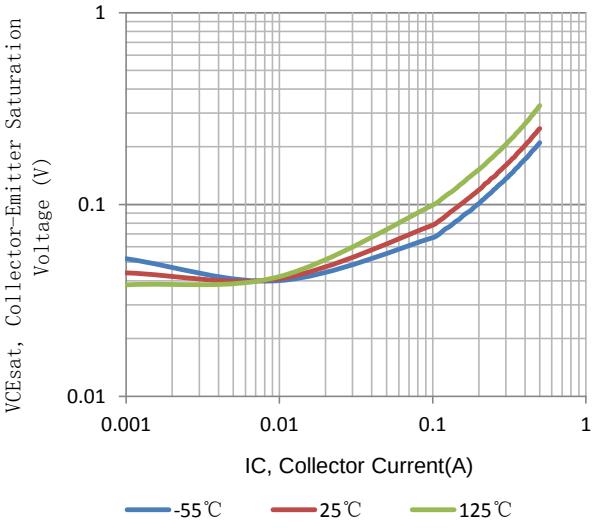


Figure 7. Collector Emitter Saturation Voltage vs. Collector Current

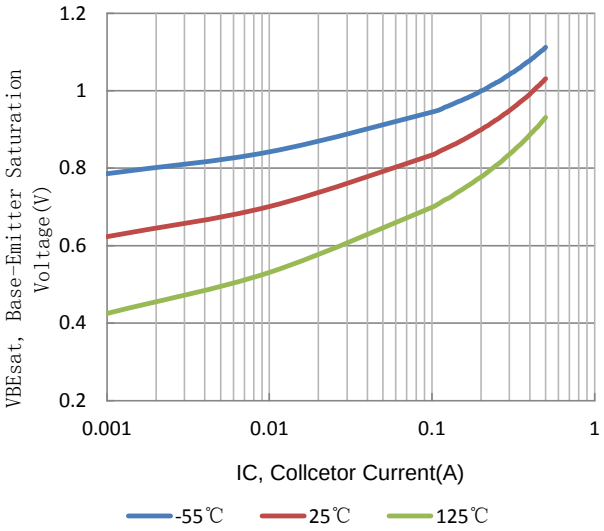


Figure 8. Base Emitter Saturation Voltage vs. Collector Current

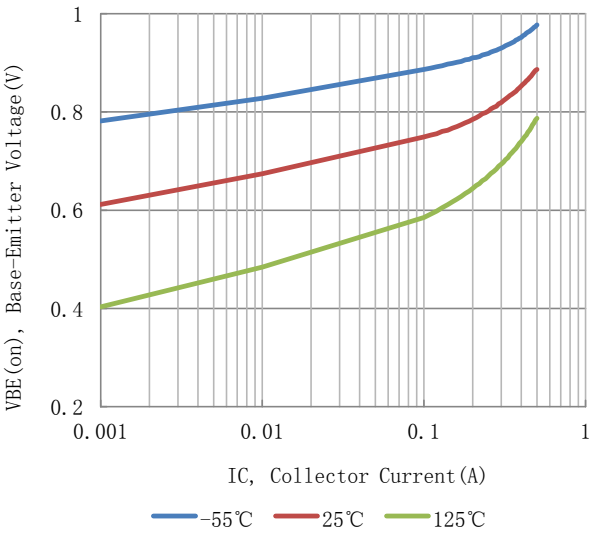
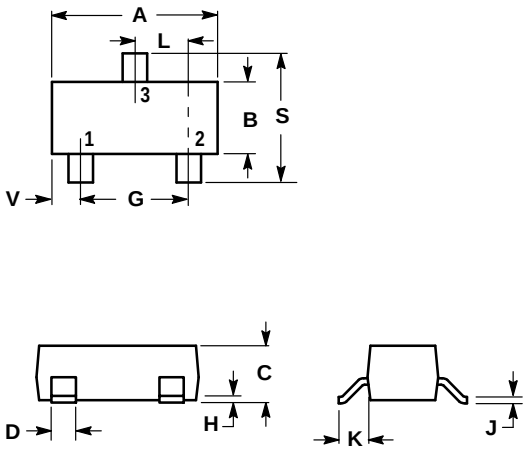


Figure 9. Base Emitter Voltage vs. Collector Current

SOT-23

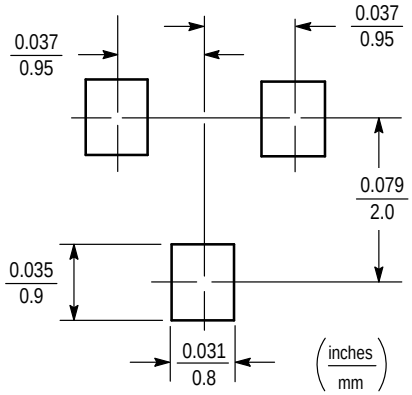


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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

PIN 1. BASE
2. EMITTER
3. COLLECTOR



Shanghai Leiditech Electronic Co.,Ltd
Email: sale1@leiditech.com
Tel : +86- 021 50828806
Fax : +86- 021 50477059