

# MMDT2222ATB6-AU

## Dual Surface Mount NPN Transistors

**Voltage** **40V** **Current** **600mA**

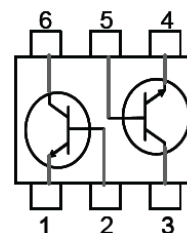
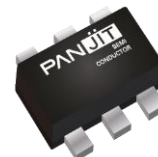
### Features

- Electrically Isolated Dual NPN Switching Transistor
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 Standard

### Mechanical Data

- Case : SOT-563 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0026 grams

SOT-563



## Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Collector-Base Voltage	V <sub>CBO</sub>	75	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Collector Current	I <sub>C</sub>	600	mA
Total Power Dissipation <sup>(Note 1)</sup>	P <sub>D</sub>	200	mW
Operating Junction Temperature Range	T <sub>J</sub>	-55~150	°C
Storage Temperature Range	T <sub>STG</sub>	-55~150	°C
THERMAL CHARACTERISTICS			
Thermal Resistance, Junction to Ambient <sup>(Note 1)</sup>	R <sub>θJA</sub>	625	°C/W

NOTE : 1.FR-4 board 70 x 60 x 1mm with minimum recommended pad layout.

# MMDT2222ATB6-AU

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 10mA	45	-	-	V
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10uA	75	-	-	V
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 10uA	6	-	-	V
Collector Cutoff Current	I <sub>CEX</sub>	V <sub>CE</sub> = 60V, V <sub>EB</sub> = 3V	-	-	10	nA
Base Cutoff Current	I <sub>BL</sub>	V <sub>CE</sub> = 60V, V <sub>EB</sub> = 3V	-	-	20	nA
DC Current Gain <sup>(Note 2)</sup>	h <sub>FE</sub>	I <sub>C</sub> = 0.1mA, V <sub>CE</sub> = 10V	35	-	-	-
		I <sub>C</sub> = 1mA, V <sub>CE</sub> = 10V	50	-	-	
		I <sub>C</sub> = 10mA, V <sub>CE</sub> = 10V	75	-	-	
		I <sub>C</sub> = 10mA, V <sub>CE</sub> = 10V T <sub>J</sub> =-55 °C	50	-	-	
		I <sub>C</sub> = 150mA, V <sub>CE</sub> = 10V	100	-	300	
		I <sub>C</sub> = 500mA, V <sub>CE</sub> = 10V	40	-	-	
		I <sub>C</sub> = 150mA, V <sub>CE</sub> = 1V	35	-	-	
Collector-Emitter Saturation Voltage <sup>(Note 2)</sup>	V <sub>CE(SAT)</sub>	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA	-	-	0.3	V
		I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	-	-	1	
Base-Emitter Saturation Voltage <sup>(Note 2)</sup>	V <sub>BE(SAT)</sub>	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA	0.6	-	1.2	V
		I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	-	-	2	
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> = 20V, I <sub>C</sub> = 20mA f = 100MHz	300	-	-	MHz
Collector-Base Capacitance	C <sub>CB0</sub>	V <sub>CB</sub> = 10V, f=1MHz	-	-	8	pF
Emitter-Base Capacitance	C <sub>EBO</sub>	V <sub>EB</sub> = 0.5V, f=1MHz	-	-	25	pF
Delay Time	t <sub>d</sub>	V <sub>CC</sub> = 30V, I <sub>C</sub> = 150mA	-	-	10	ns
Rise Time	t <sub>r</sub>	V <sub>BE(off)</sub> = -0.5V I <sub>B1</sub> = 15mA	-	-	25	
Storage Time	t <sub>s</sub>	V <sub>CC</sub> = 30V, I <sub>C</sub> = 150mA	-	-	225	ns
Fall Time	t <sub>f</sub>	I <sub>B1</sub> = I <sub>B2</sub> = 15mA	-	-	60	

NOTE : 2. Short duration test pulse used to minimize self-heating

# MMDT2222ATB6-AU

## TYPICAL CHARACTERISTIC CURVES

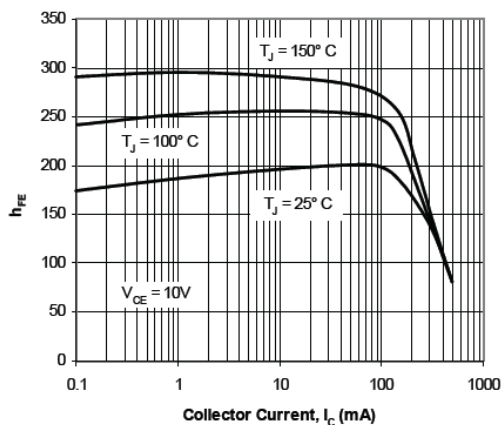


Fig.1  $h_{FE}$  vs.  $I_C$

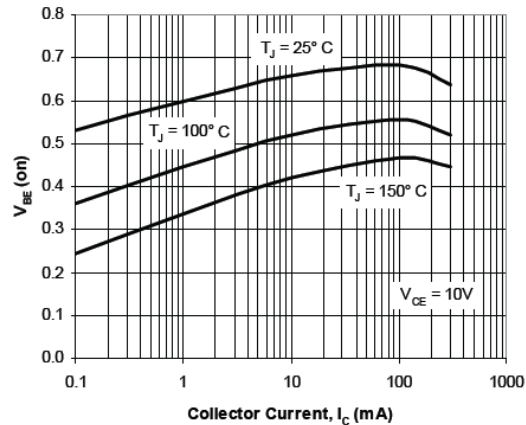


Fig.2  $V_{BE}$  vs.  $I_C$

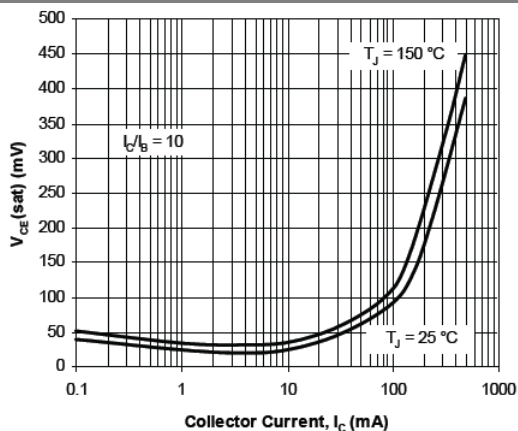


Fig.3  $V_{CE(sat)}$  vs.  $I_C$

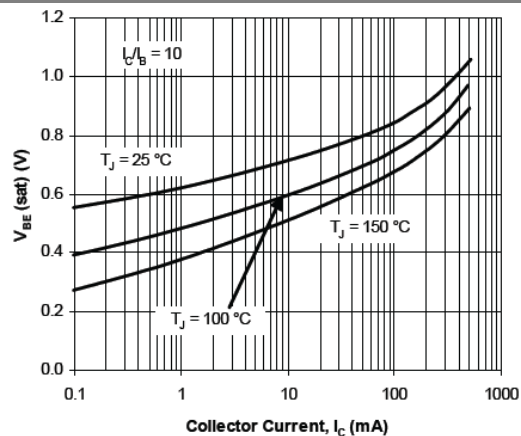


Fig.4  $V_{BE(sat)}$  vs.  $I_C$

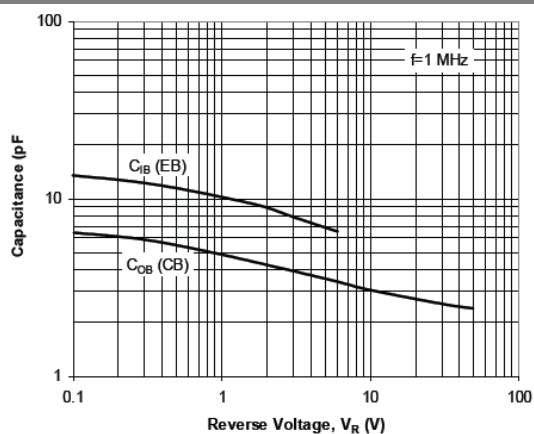


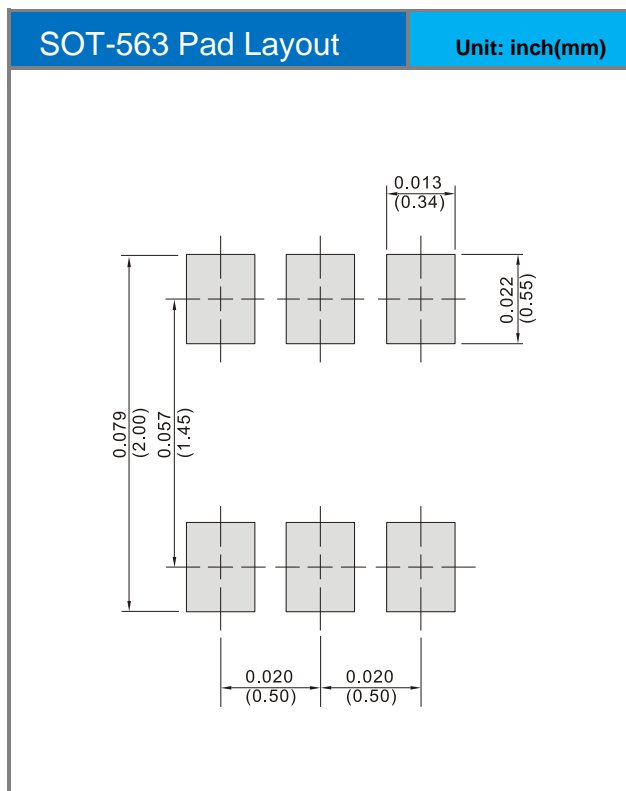
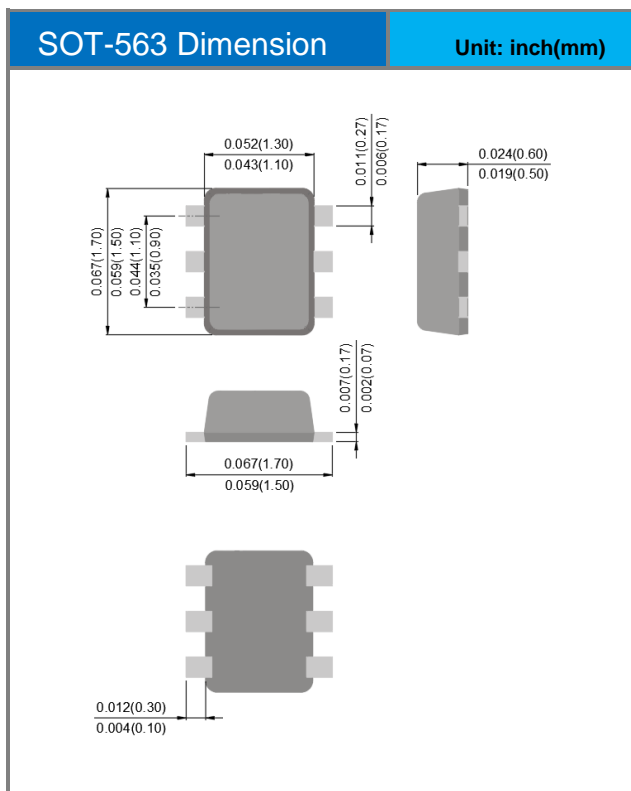
Fig.5 Capacitances

# MMDT2222ATB6-AU

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
MMDT2222ATB6-AU	SOT-563	4K pcs / 7" reel	TU

## Packaging Information & Mounting Pad Layout



## MMDT2222ATB6-AU

### Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.