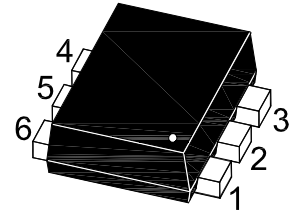
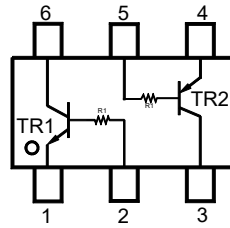


MMDTX430DE

Complementary NPN/PNP Silicon Epitaxial Planar Digital Transistor

Features

- Built-in bias resistors: $R_1 = 4.7 \text{ K}\Omega$
- Simplification of circuit design
- Reduces number of components and board space



TR1: 1. Emitter 2. Base 6. Collector
TR2: 4. Emitter 5. Base 3. Collector
SOT-563 Plastic package

Applications

- Switching and interface
- Circuit and drive circuit

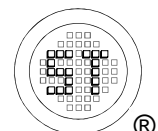
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value		Unit
		TR1	TR2	
Collector Base Voltage	V_{CB0}	50	-50	V
Collector Emitter Voltage	V_{CEO}	50	-50	V
Emitter Base Voltage	V_{EBO}	5	-5	V
Collector Current	I_C	100	-100	mA
Peak Collector Current	I_{CM}	100	-100	mA
Total Power Dissipation	P_D	150		mW
Junction Temperature	T_j	150		$^\circ\text{C}$
Operating ambient and Storage Temperature Range	T_{stg}	- 55 to + 150		$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$

¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout



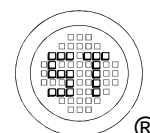
MMDTX430DE

Characteristics at $T_a = 25^\circ\text{C}$ (TR1 NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 1\text{ mA}$	h_{FE}	100	-	600	-
Collector-Base Breakdown Voltage at $I_C = 50\text{ }\mu\text{A}$	$V_{(BR)CBO}$	50	-	-	V
Collector-Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	50	-	-	V
Emitter- Base Breakdown Voltage at $I_E = 50\text{ }\mu\text{A}$	$V_{(BR)EBO}$	5	-	-	V
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$	I_{CBO}	-	-	0.5	μA
Emitter Base Cutoff Current at $V_{EB} = 4\text{ V}$	I_{EBO}	-	-	0.5	μA
Collector Emitter Saturation Voltage at $I_C = 5\text{ mA}$, $I_B = 0.25\text{ mA}$	V_{CEsat}	-	-	0.3	V
Transition Frequency at $V_{CE} = 10\text{ V}$, $I_E = -5\text{ mA}$, $f = 100\text{ MHz}$	f_T	-	250	-	MHz
Input Resistance	R_1	3.29	4.7	6.11	K Ω

Characteristics at $T_a = 25^\circ\text{C}$ (TR2 PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE} = 5\text{ V}$, $-I_C = 1\text{ mA}$	h_{FE}	100	-	600	-
Collector-Base Breakdown Voltage at $-I_C = 50\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	50	-	-	V
Collector-Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	50	-	-	V
Emitter- Base Breakdown Voltage at $-I_E = 50\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	-	V
Collector Base Cutoff Current at $-V_{CB} = 50\text{ V}$	$-I_{CBO}$	-	-	0.5	μA
Emitter Base Cutoff Current at $-V_{EB} = 4\text{ V}$	$-I_{EBO}$	-	-	0.5	μA
Collector Emitter Saturation Voltage at $-I_C = 5\text{ mA}$, $-I_B = 0.25\text{ mA}$	$-V_{CEsat}$	-	-	0.3	V
Transition Frequency at $-V_{CE} = 10\text{ V}$, $I_E = 5\text{ mA}$, $f = 100\text{ MHz}$	f_T	-	250	-	MHz
Input Resistance	R_1	3.29	4.7	6.11	K Ω



MMDTX430DE

Electrical Characteristics Curves(TR1 NPN)

Fig 1. Output Characteristics Curves

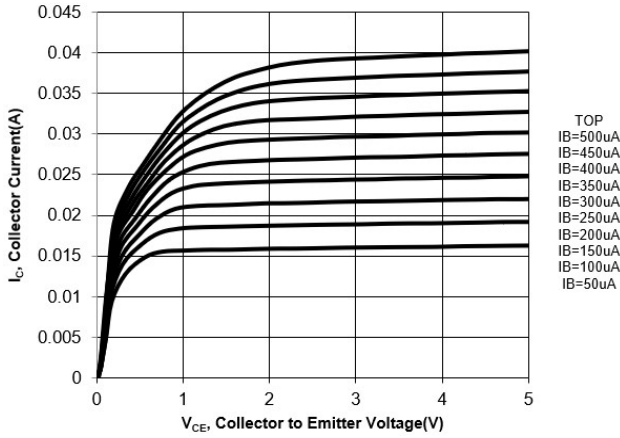


Fig 2. Base-Emitter Voltage vs. Collector Current

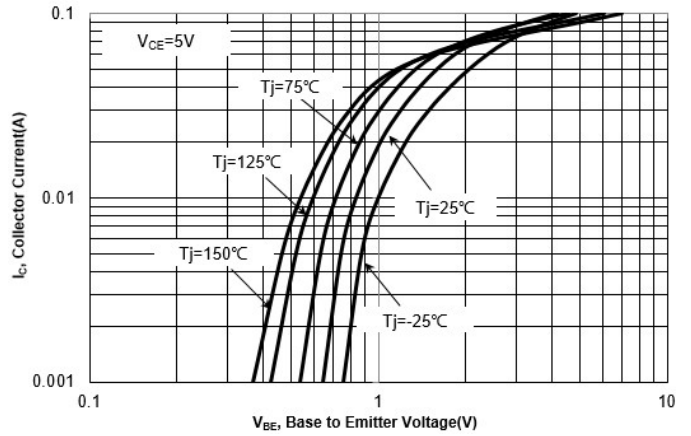


Fig 3. DC Current Gain vs. Collector Current

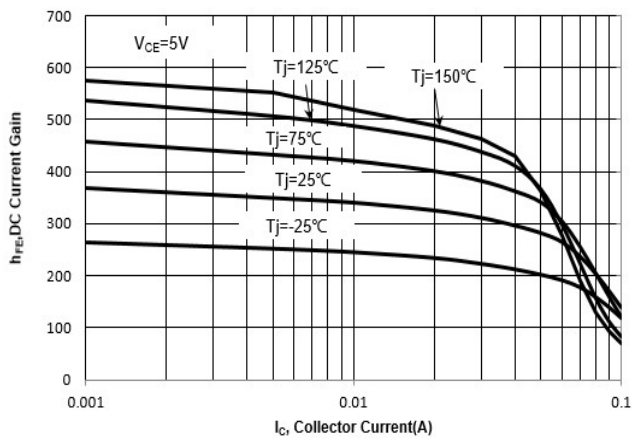
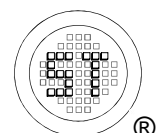
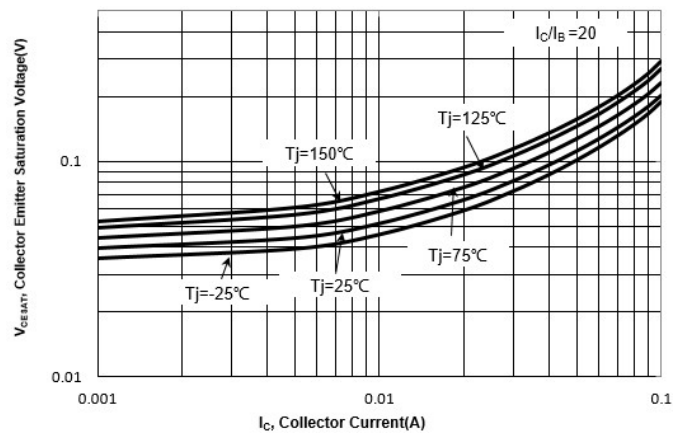


Fig 4. V_{CESAT} vs. Collector Current



MMDTX430DE

Electrical Characteristics Curves(TR2 PNP)

Fig 1. Output Characteristics Curves

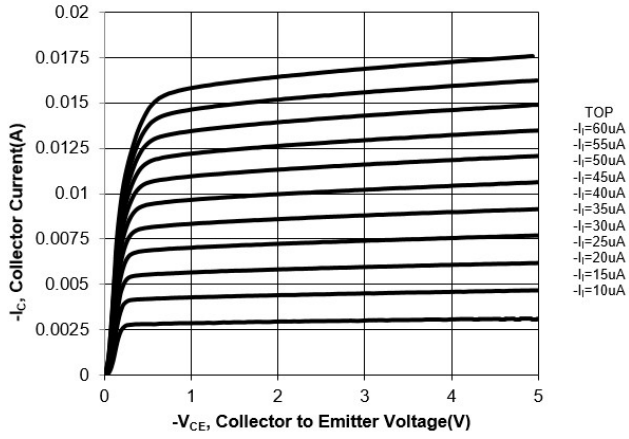


Fig 2. V_{BESAT} vs. Collector Current

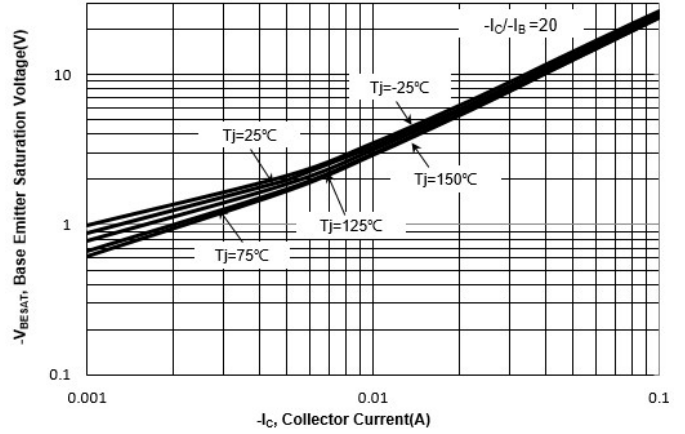


Fig 3. DC Current Gain vs. Collector Current

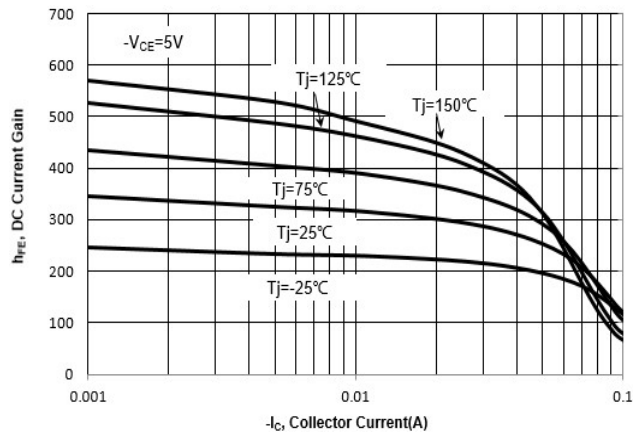
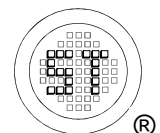
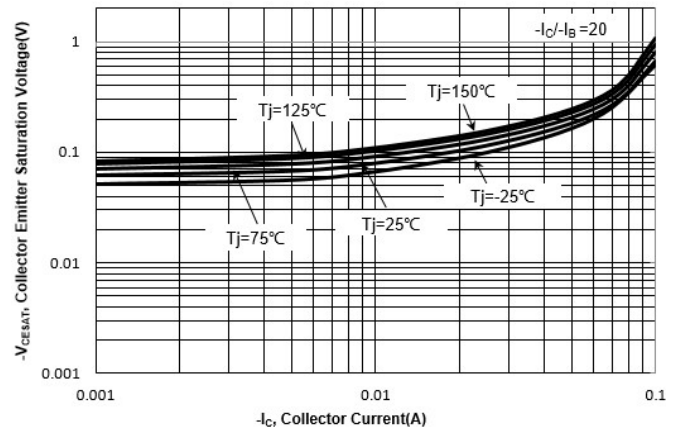


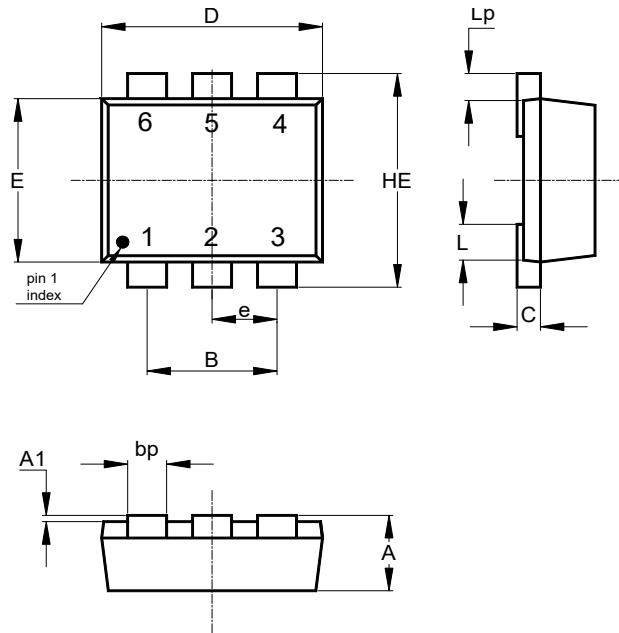
Fig 4. V_{CESAT} vs. Collector Current



MMDTX430DE

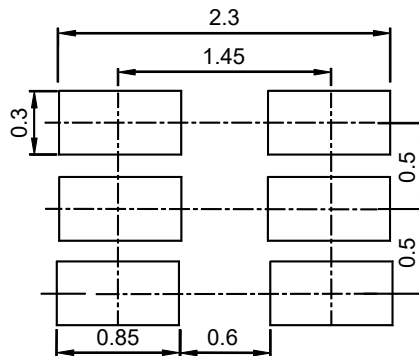
Package Outline (Dimensions in mm)

SOT-563



Unit	A	A1	B	C	D	E	HE	e	L	Lp	bp
mm	0.6	0.05	1.0	0.18	1.7	1.25	1.7	0.5	0.15	0.3	0.3
	0.5	0	typ.	0.1	1.5	1.1	1.55	Typ.	0.02	0.1	0.15

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-563	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

- " D3 " = Part No.
- " YM " = Date Code Marking
- " Y " = Year
- " M " = Month
- Font type: Arial

