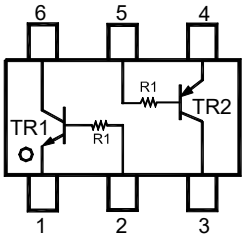
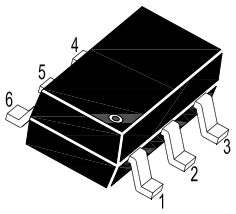
MMDTX430DW

Complementary NPN/PNP Silicon Epitaxial Planar Digital Transistor

Features

- Built-in bias resistors R1
- 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-363 Plastic Package

NPN Absolute Maximum Ratings (T_a = 25℃ unless otherwise specified)(TR1)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	50	V
Collector Emitter Voltage	V_{CEO}	50	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	100	mA
Total Power Dissipation [1)]	P_D	200	mW
Operating Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

PNP Absolute Maximum Ratings (T_a = 25℃ unless otherwise specified)(TR2)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	50	V
Collector Emitter Voltage	$-V_{CEO}$	50	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	100	mA
Peak Collector Current	$-I_{CM}$	100	mA
Total Power Dissipation [1)]	P_D	200	mW
Operating Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

Thermal Characteristics (TR1、TR2)

Parameter	Symbol	Value	Unit
Thermal Resistance from Juntion to Ambient [1)]	$R_{\theta JA}$	625	°C/W

[1)] Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

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NPN Characteristics at T_a = 25℃ unless otherwise specified (TR1)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 1 mA	h_{FE}	200	-	-	-
Collector Base Cutoff Current at V_{CB} = 50 V	I_{CBO}	-	-	100	nA
Collector Emitter Cutoff Current at V_{CE} = 30 V	I_{CEO}	-	-	1	μA
Emitter Base Cutoff Current at V_{EB} = 5 V	I_{EBO}	-	-	100	nA
Collector Base Breakdown Voltage at I_C = 50 μA	$V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at I_C = 1 mA	$V_{(BR)CEO}$	50	-	-	V
Emitter Base Breakdown Voltage at I_E = 50 μA	$V_{(BR)EBO}$	5	-	-	V
Collector Emitter Saturation Voltage at I_C = 5 mA, I_B = 0.25 mA	$V_{CE(sat)}$	-	-	100	mV
Input Resistance	R1	3.3	4.7	6.1	KΩ

PNP Characteristics at T_a = 25℃ unless otherwise specified (TR2)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE}$ = 5 V, $-I_C$ = 1 mA	h_{FE}	200	-	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 50 V	$-I_{CBO}$	-	-	100	nA
Collector Emitter Cutoff Current at $-V_{CE}$ = 30 V	$-I_{CEO}$	-	-	1	μA
Emitter Base Cutoff Current at $-V_{EB}$ = 5 V	$-I_{EBO}$	-	-	100	nA
Collector Base Breakdown Voltage at $-I_C$ = 50 μA	$-V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA	$-V_{(BR)CEO}$	50	-	-	V
Emitter Base Breakdown Voltage at $-I_E$ = 50 μA	$-V_{(BR)EBO}$	5	-	-	V
Collector Emitter Saturation Voltage at $-I_C$ = 5 mA, $-I_B$ = 0.25 mA	$-V_{CE(sat)}$	-	-	100	mV
Input Resistance	R1	3.3	4.7	6.1	KΩ

Electrical Characteristics Curves(TR1 NPN)

Fig 1. Base-Emitter Voltage vs. Collector Current

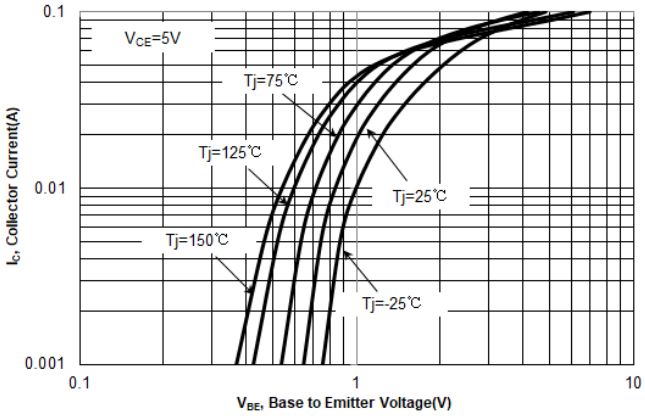


Fig 2. DC Current Gain vs. Collector Current

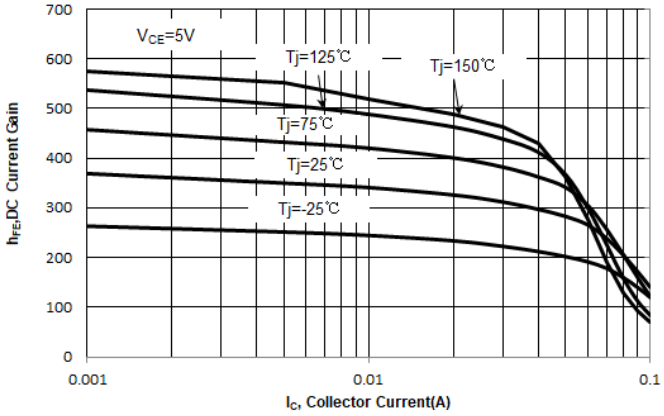
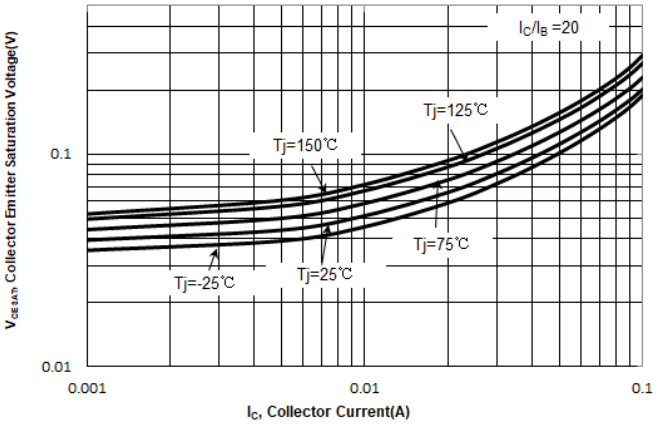


Fig 3. V_{CESAT} vs. Collector Current



Electrical Characteristics Curves(TR2 PNP)

Fig 1. Base-Emitter Voltage vs. Collector Current

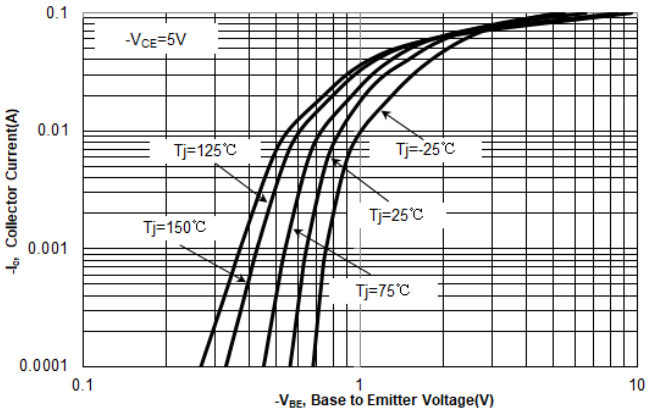


Fig 2. DC Current Gain vs. Collector Current

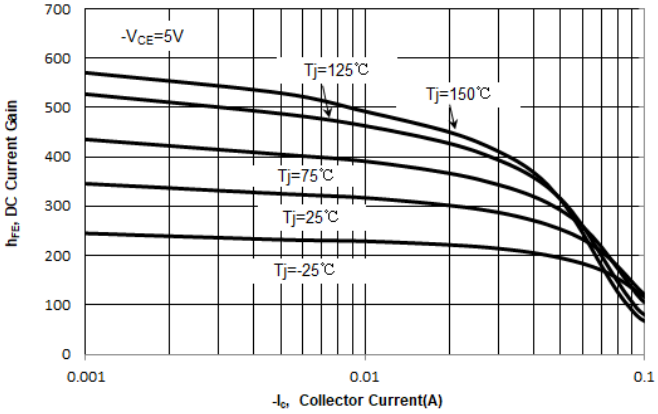
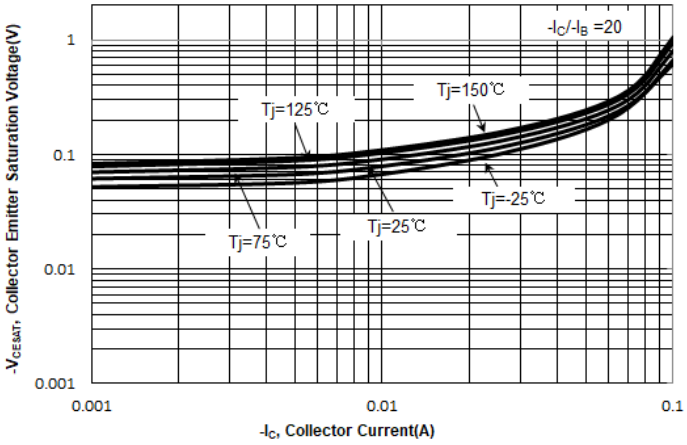
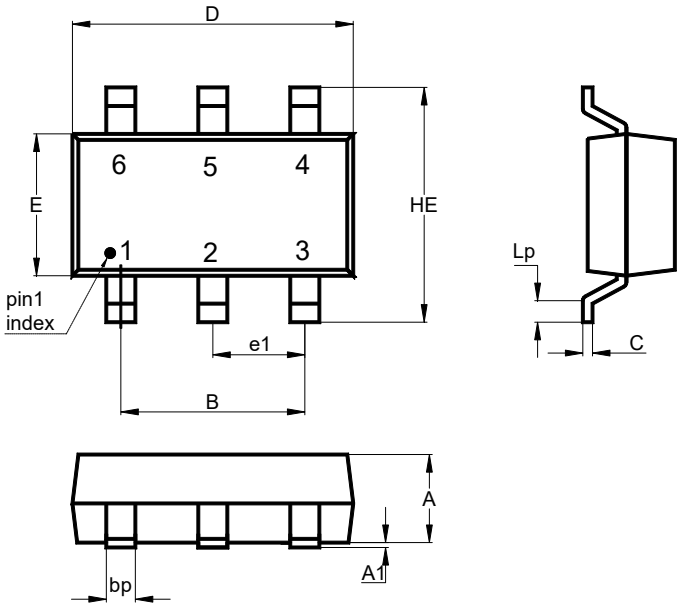


Fig 3. V_{CESAT} vs. Collector Current

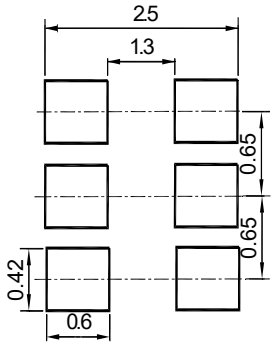


Package Outline (Dimensions in mm) SOT-363



Unit	A	A1	B	C	D	E	e1	HE	Lp	bp
mm	1.0 0.9	0.1 0	1.3 typ.	0.25 0.1	2.2 1.8	1.35 1.15	0.65 typ.	2.2 2.0	0.4 0.15	0.3 0.1

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-363	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" XK " = Part No.
"YM" = Date Code Marking
"Y" = Year
"M" = Month
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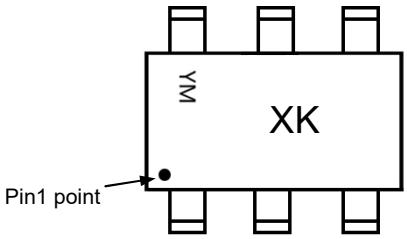

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