

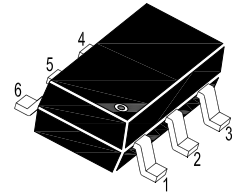
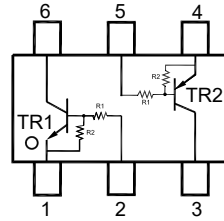
MMDTX436DW

Complementary NPN/PNP Silicon Epitaxial Planar Digital Transistor

For switching and interface circuit and drivecircuit applications

Features

- Transistors with different polarity and built-in bias resistors R1 and R2
- 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

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$:TR1

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CB0}	50	V
Collector Emitter Voltage	V_{CE0}	50	V
Emitter Base Voltage	V_{EB0}	5	V
Collector Current	I_c	100	mA

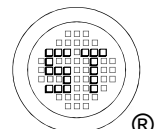
Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$:TR2

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CB0}$	50	V
Collector Emitter Voltage	$-V_{CE0}$	50	V
Emitter Base Voltage	$-V_{EB0}$	5	V
Collector Current	$-I_c$	100	mA

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

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{tot}	200	mW
Thermal Resistance, Junction to Ambient ¹⁾	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

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



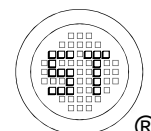
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Characteristics at $T_a = 25^\circ\text{C}$:TR1

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$	h_{FE}	80	-	-	-
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$	I_{CBO}	-	-	100	nA
Collector Emitter Cutoff Current at $V_{CE} = 50\text{ V}$	I_{CEO}	-	-	500	nA
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	I_{EBO}	-	-	0.138	mA
Collector Emitter Saturation Voltage at $I_C = 5\text{ mA}$, $I_B = 0.25\text{ mA}$	V_{CEsat}	-	-	0.3	V
Input Voltage (OFF) at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ }\mu\text{A}$	$V_{I(OFF)}$	0.5	-	0.8	V
Input Voltage (ON) at $V_{CE} = 0.2\text{ V}$, $I_C = 5\text{ mA}$	$V_{I(ON)}$	0.7	-	1.3	V
Gain Bandwidth Product at $V_{CE} = 10\text{ V}$, $I_C = 5\text{ mA}$	f_T	-	250	-	MHz
Collector output capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	-	-	6	pF
Input Resistance	R_1	3.29	4.7	6.11	K Ω
Resistance Ratio	R_1/R_2	0.09	0.1	0.11	-

Characteristics at $T_a = 25^\circ\text{C}$:TR2

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE} = 5\text{ V}$, $-I_C = 10\text{ mA}$	h_{FE}	80	-	-	-
Collector Base Cutoff Current at $-V_{CB} = 50\text{ V}$	$-I_{CBO}$	-	-	100	nA
Collector Emitter Cutoff Current at $-V_{CE} = 50\text{ V}$	$-I_{CEO}$	-	-	500	nA
Emitter Base Cutoff Current at $-V_{EB} = 5\text{ V}$	$-I_{EBO}$	-	-	0.138	mA
Collector Emitter Saturation Voltage at $-I_C = 5\text{ mA}$, $-I_B = 0.25\text{ mA}$	$-V_{CEsat}$	-	-	0.3	V
Input Voltage (OFF) at $-V_{CE} = 5\text{ V}$, $-I_C = 100\text{ }\mu\text{A}$	$-V_{I(OFF)}$	0.5	-	0.8	V
Input Voltage (ON) at $-V_{CE} = 0.2\text{ V}$, $-I_C = 5\text{ mA}$	$-V_{I(ON)}$	0.7	-	1.3	V
Gain Bandwidth Product at $-V_{CE} = 10\text{ V}$, $-I_C = 5\text{ mA}$	f_T	-	200	-	MHz
Collector output capacitance at $-V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	-	-	6	pF
Input Resistance	R_1	3.29	4.7	6.11	K Ω
Resistance Ratio	R_1/R_2	0.09	0.1	0.11	-



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Electrical Characteristics Curves:TR1

Fig. 1 Output Characteristics Curve

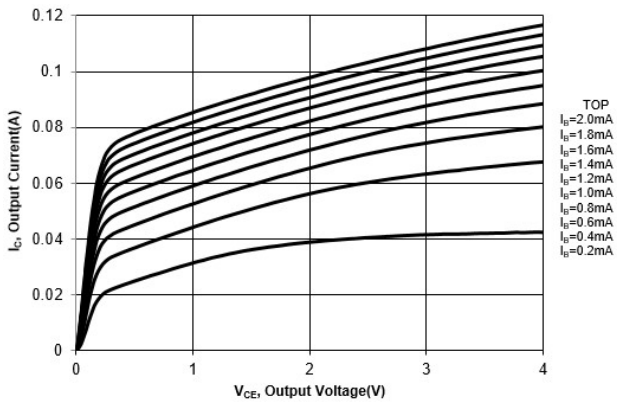


Fig. 2 Output Current vs. $V_{I(ON)}$, Input Voltage

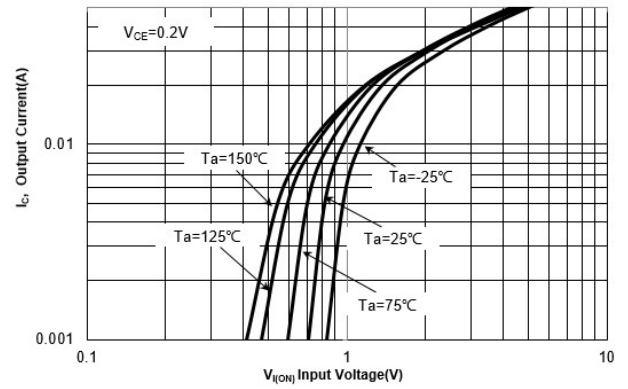


Fig. 3 Output Current vs. $V_{I(OFF)}$, Input Voltage

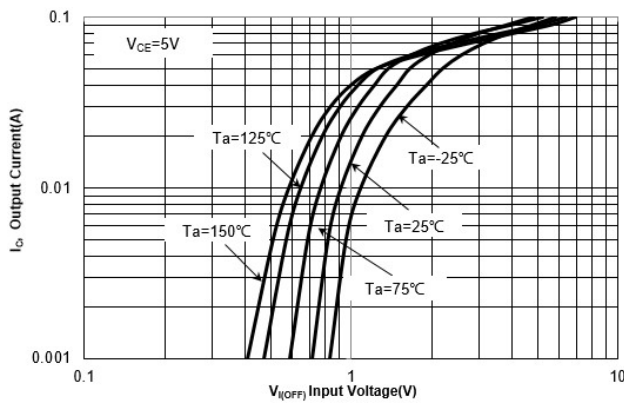


Fig. 4 DC Current Gain vs. Output Current

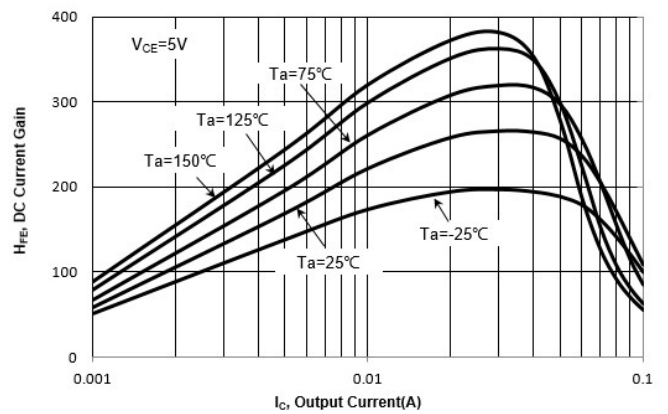
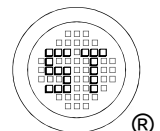
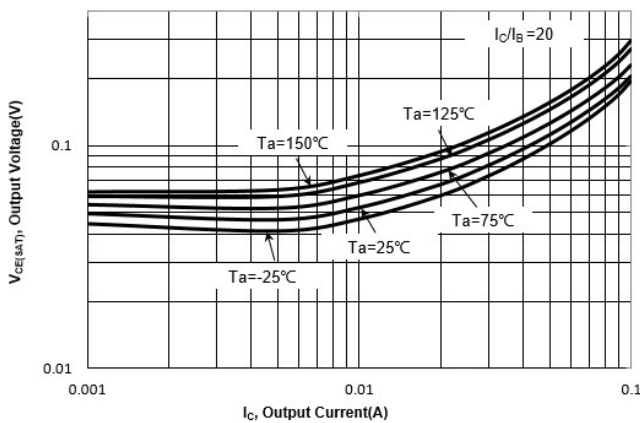


Fig. 5 $V_{CE(sAT)}$ vs. Output Current



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Electrical Characteristics Curves:TR2

Fig. 1 Output Characteristics Curve

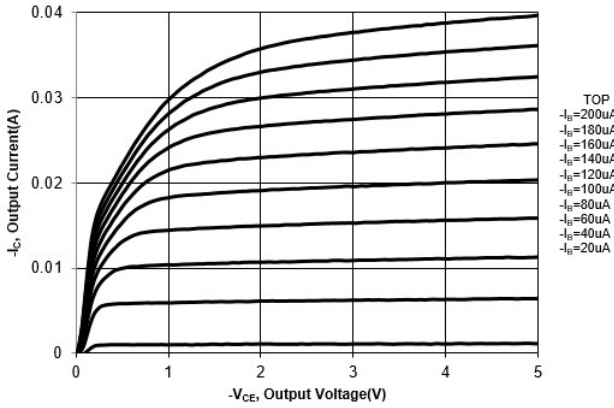


Fig. 2 Output Current vs. $V_{I(ON)}$, Input Voltage

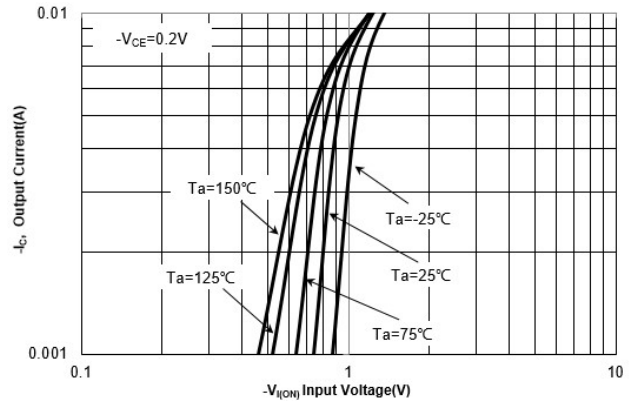


Fig. 3 Output Current vs. $V_{I(OFF)}$, Input Voltage

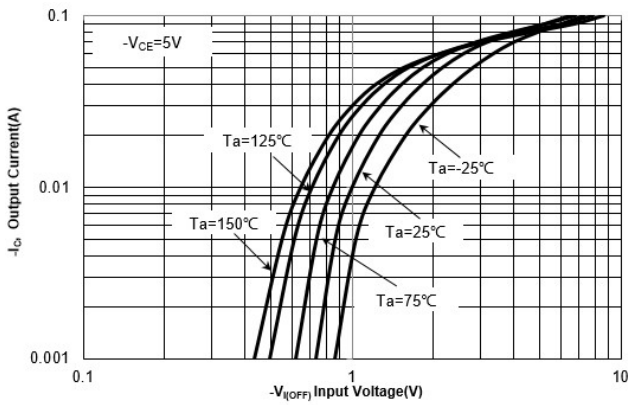


Fig. 4 DC Current Gain vs. Output Current

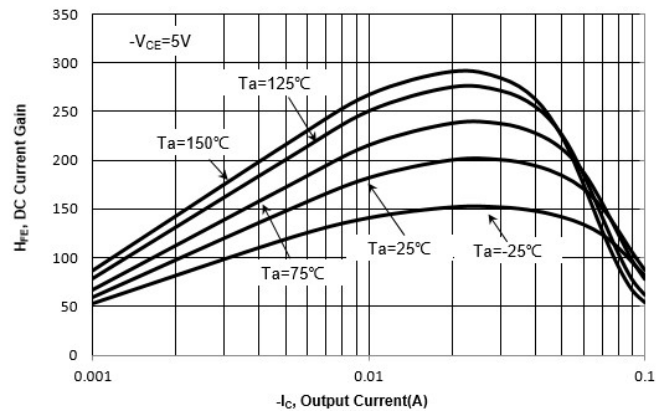
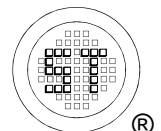
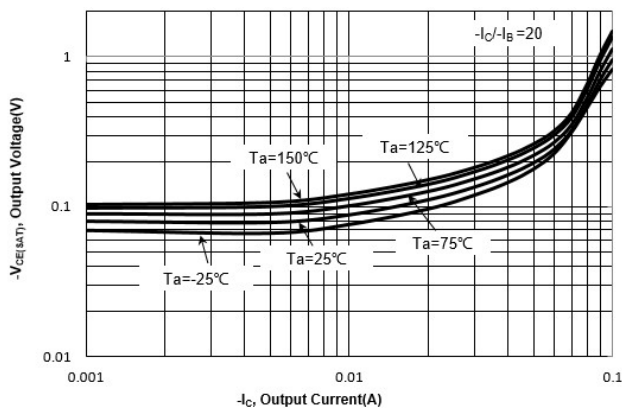


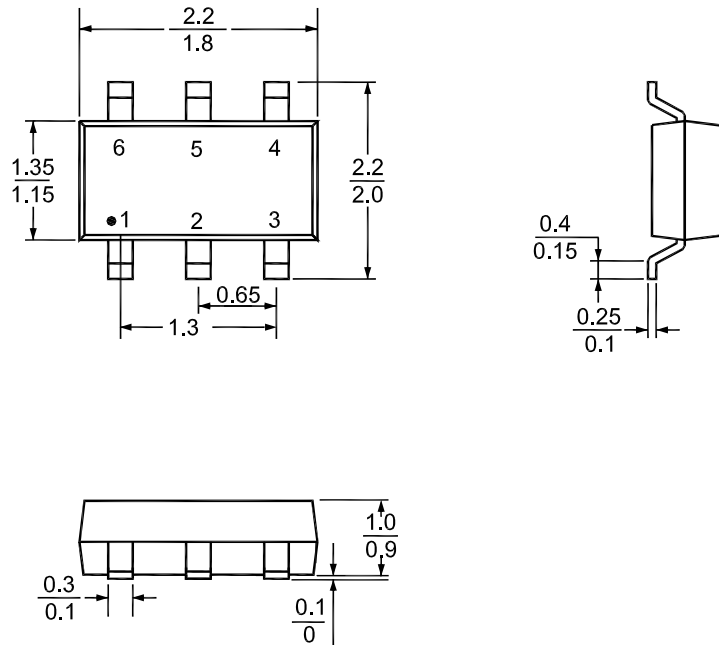
Fig. 5 $V_{CE(SAT)}$ vs. Output Current



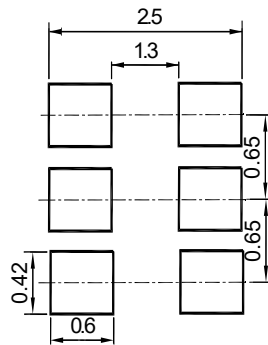
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Package Outline Dimensions (Units: mm)

SOT-363



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

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

