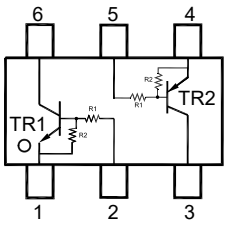
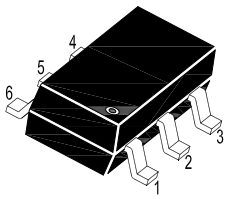
MMDTX237DW

Complementary NPN/PNP Silicon Epitaxial Planar Digital Transistor

Features

- Built in bias resistor NPN and PNP
- 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

Applications

- For switching and interface circuit and drivecircuit

Absolute Maximum Ratings at T_a = 25℃

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{tot}	250	mW
Thermal Resistance from Junction to Ambient [1)]	$R_{\theta JA}$	500	℃/W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 65 to + 150	℃

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

Absolute Maximum Ratings at T_a = 25℃ (TR1)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	50	V
Collector Emitter Voltage	V_{CEO}	50	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	100	mA

Absolute Maximum Ratings at T_a = 25℃ (TR2)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	50	V
Collector Emitter Voltage	$-V_{CEO}$	50	V
Emitter Base Voltage	$-V_{EBO}$	6	V
Collector Current	$-I_C$	100	mA

Characteristics at T_a = 25℃ (TR1:NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 5 mA	h_{FE}	70	-	-	-
Collector Base Cutoff Current at V_{CB} = 40 V	I_{CBO}	-	-	100	nA
Emitter Base Cutoff Current at V_{EB} = 5 V	I_{EBO}	-	-	164	μA
Collector Emitter Saturation Voltage at I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	-	-	0.3	V
Input Voltage (OFF) at V_{CE} = 5 V, I_C = 100 μA	$V_{I(OFF)}$	0.4	-	0.8	V
Input Voltage (ON) at V_{CE} = 0.3 V, I_C = 2 mA	$V_{I(ON)}$	0.5	-	1.1	V
Gain Bandwidth Product at V_{CE} = 5 V, I_C = 10 mA, f = 100 MHz	f_T	-	170	-	MHz
Collector output capacitance at V_{CB} = 10 V, f = 1 MHz	Cob	-	2	-	pF
Input Resistance	R_1	1.5	2.2	2.9	KΩ
Resistance Ratio	R_1/R_2	0.042	0.047	0.052	-

Characteristics at T_a = 25℃ (TR2:PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE}$ = 5 V, $-I_C$ = 5 mA	h_{FE}	70	-	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 40 V	$-I_{CBO}$	-	-	100	nA
Emitter Base Cutoff Current at $-V_{EB}$ = 5 V	$-I_{EBO}$	-	-	164	μA
Collector Emitter Saturation Voltage at $-I_C$ = 10 mA, $-I_B$ = 0.5 mA	$-V_{CEsat}$	-	-	0.3	V
Input Voltage (OFF) at $-V_{CE}$ = 5 V, $-I_C$ = 100 μA	$-V_{I(OFF)}$	0.4	-	0.8	V
Input Voltage (ON) at $-V_{CE}$ = 0.3 V, $-I_C$ = 2 mA	$-V_{I(ON)}$	0.5	-	1.1	V
Gain Bandwidth Product at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA, f = 100 MHz	f_T	-	170	-	MHz
Collector output capacitance at $-V_{CB}$ = 10 V, f = 1 MHz	Cob	-	2	-	pF
Input Resistance	R_1	1.5	2.2	2.9	KΩ
Resistance Ratio	R_1/R_2	0.042	0.047	0.052	-

Electrical Characteristics Curves:TR1

Fig 1. $V_{I(off)}$ vs. Collector Current

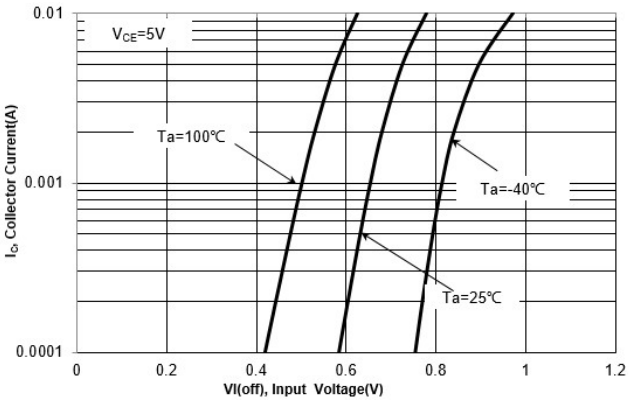


Fig 2. DC Current Gain vs. Collector Current

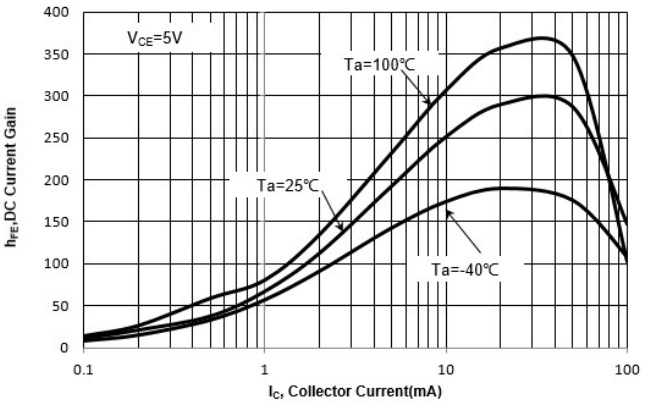


Fig 3. $V_{I(ON)}$ vs. Collector Current

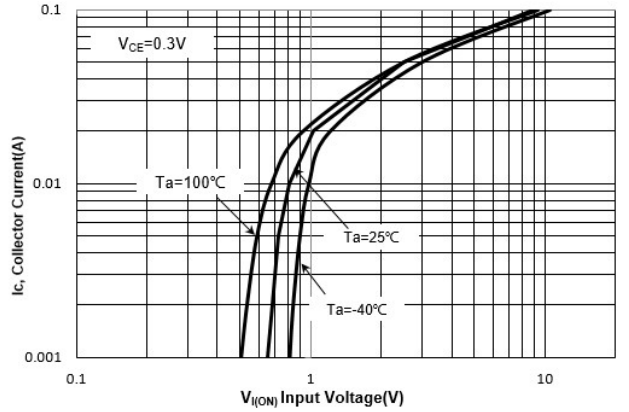
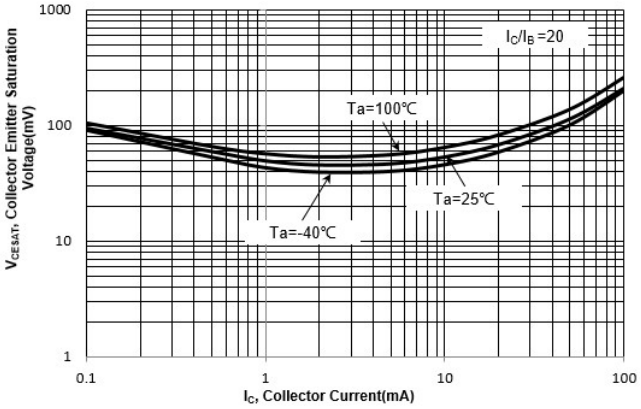


Fig 4. $V_{CE(sat)}$ vs. Collector Current



Electrical Characteristics Curves:TR2

Fig 1. $V_{I(ON)}$ vs. Output Current

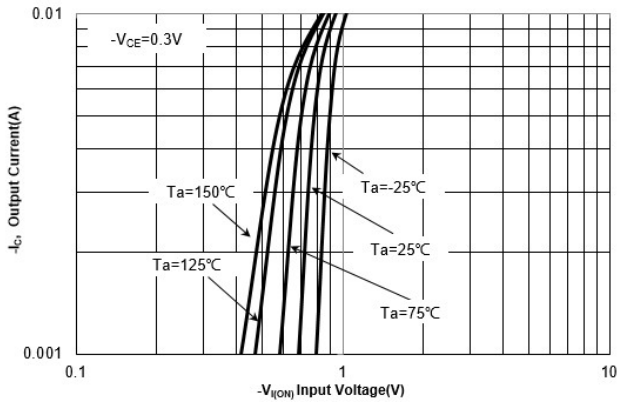


Fig 2. $V_{I(off)}$ vs. Output Current

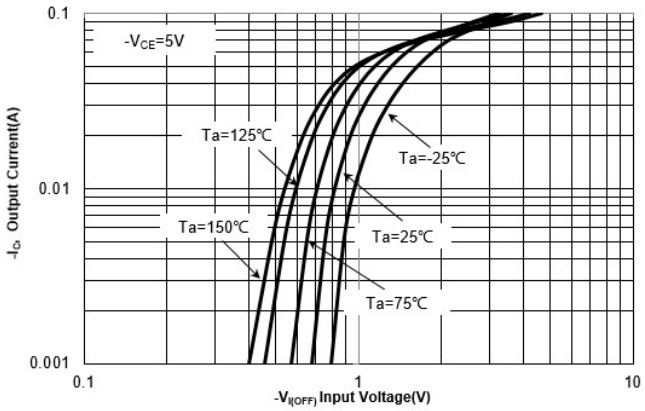


Fig 3. DC Current Gain vs. Output Current

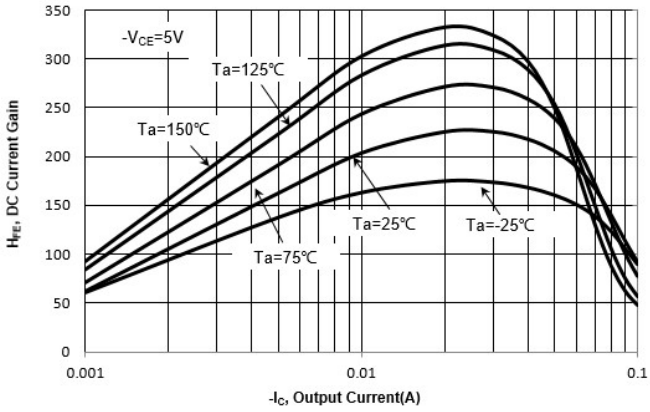
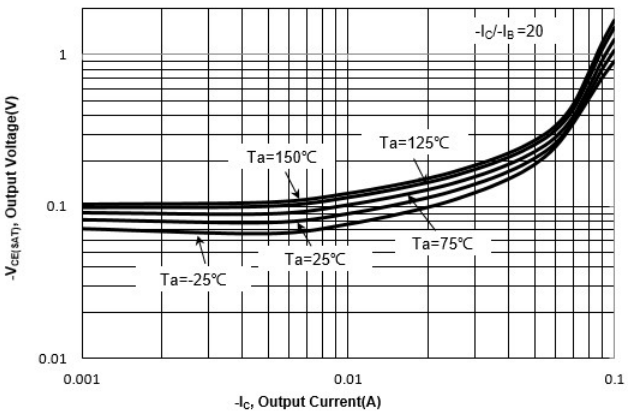
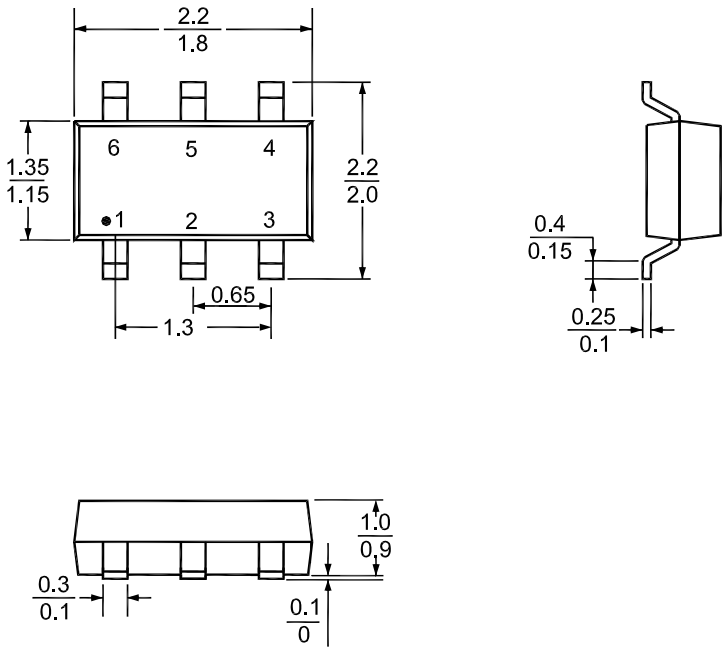


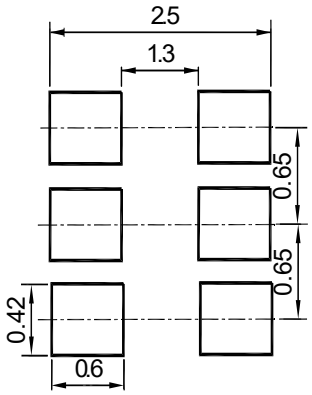
Fig 4. $V_{CE(sat)}$ vs. Output Current



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

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