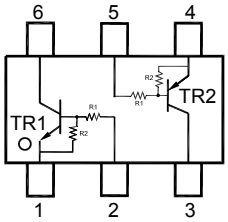
MMDTX436DW-HAF

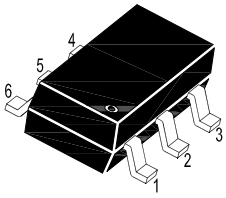
NPN/PNP Silicon Epitaxial Planar Digital Transistor

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
- Halogen and Antimony Free(HAF), RoHS compliant





1. Emitter 2. Base 3. Collector
4. Emitter 5. Base 6. Collector
SOT-363 Plastic Package

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}	5	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	$-V_{EBO}$	5	V
Collector Current	$-I_C$	100	mA

Absolute Maximum Ratings at T_a = 25℃ (TR1 and TR2)

Parameter	Symbol	Value	Unit
Total Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

Characteristics at T_a = 25℃ (TR1:NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 10 mA	h_{FE}	80	-	-	-
Collector Base Cutoff Current at V_{CB} = 50 V	I_{CBO}	-	-	100	nA
Collector Emitter Cutoff Current at V_{CE} = 50 V	I_{CEO}	-	-	500	nA
Emitter Base Cutoff Current at V_{EB} = 5 V	I_{EBO}	0.074	-	0.138	mA
Collector Emitter Saturation Voltage at I_C = 5 mA, I_B = 0.25 mA	V_{CEsat}	-	-	0.3	V
Input Voltage (OFF) at V_{CE} = 5 V, I_C = 100 μA	$V_{I(OFF)}$	0.5	-	0.8	V
Input Voltage (ON) at V_{CE} = 0.2 V, I_C = 5 mA	$V_{I(ON)}$	0.7	-	1.3	V
Gain Bandwidth Product at V_{CE} = 10 V, I_C = 5 mA	f_T	-	250	-	MHz
Collector output capacitance at V_{CB} = 10 V, f = 1 MHz	Cob	-	-	6	pF

Characteristics at T_a = 25℃ (TR2:PNP)

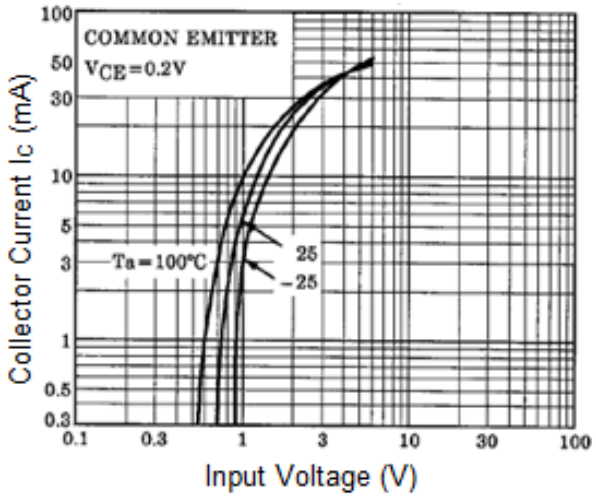
Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA	h_{FE}	80	-	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 50 V	$-I_{CBO}$	-	-	100	nA
Collector Emitter Cutoff Current at $-V_{CE}$ = 50 V	$-I_{CEO}$	-	-	500	nA
Emitter Base Cutoff Current at $-V_{EB}$ = 5 V	$-I_{EBO}$	0.074	-	0.138	mA
Collector Emitter Saturation Voltage at $-I_C$ = 5 mA, $-I_B$ = 0.25 mA	$-V_{CEsat}$	-	-	0.3	V
Input Voltage (OFF) at $-V_{CE}$ = 5 V, $-I_C$ = 100 μA	$-V_{I(OFF)}$	0.5	-	0.8	V
Input Voltage (ON) at $-V_{CE}$ = 0.2 V, $-I_C$ = 5 mA	$-V_{I(ON)}$	0.7	-	1.3	V
Gain Bandwidth Product at $-V_{CE}$ = 10 V, $-I_C$ = 5 mA	f_T	-	200	-	MHz
Collector output capacitance at $-V_{CB}$ = 10 V, f = 1 MHz	Cob	-	-	6	pF

Characteristics at T_a = 25℃ (TR1 and TR2)

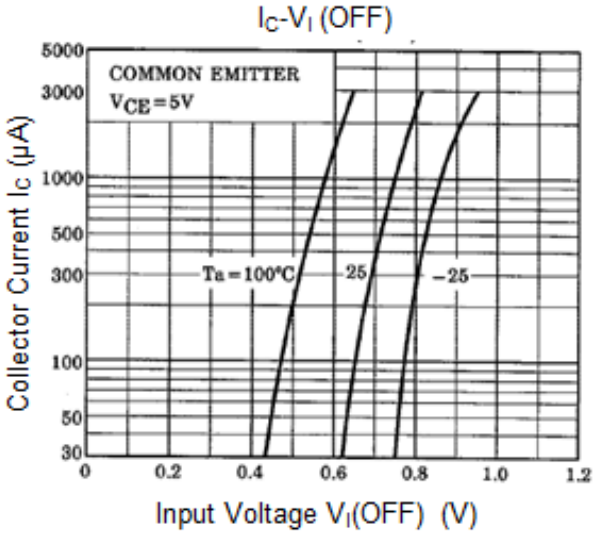
Input Resistance	R_1	3.29	4.7	6.11	KΩ
Resistance Ratio	R_1/R_2	0.09	0.1	0.11	-

TR1

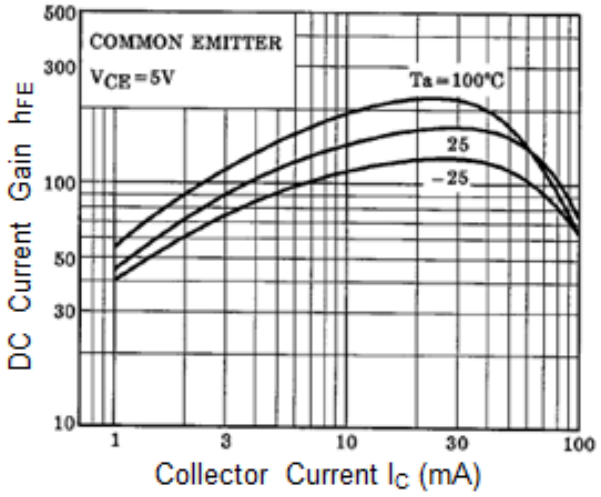
I_C-V_I (ON)



I_C-V_I (OFF)

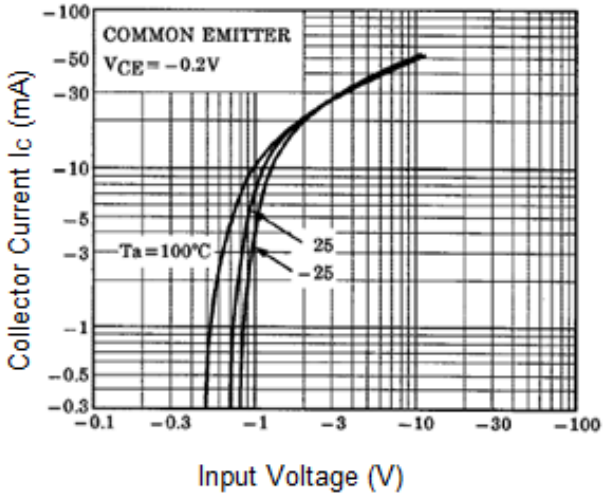


h_{FE}-I_C

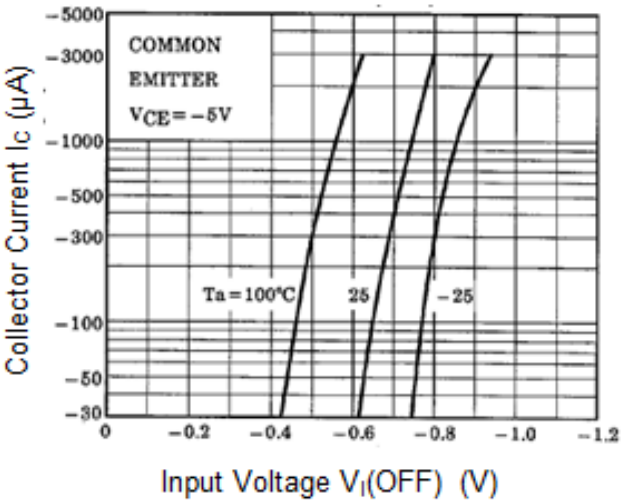


TR2

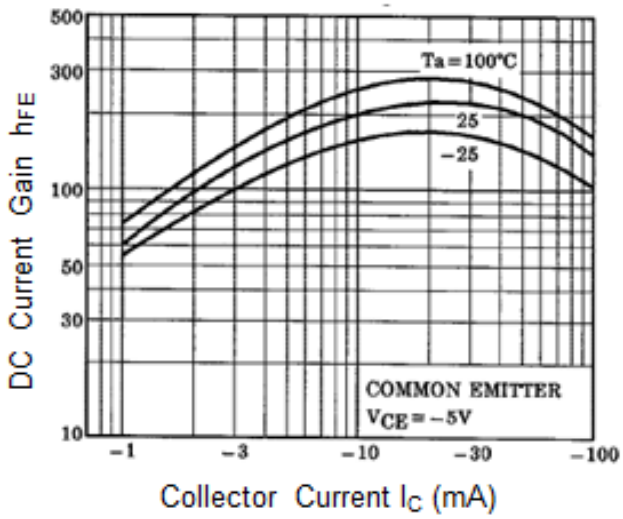
I_C-V_I (ON)



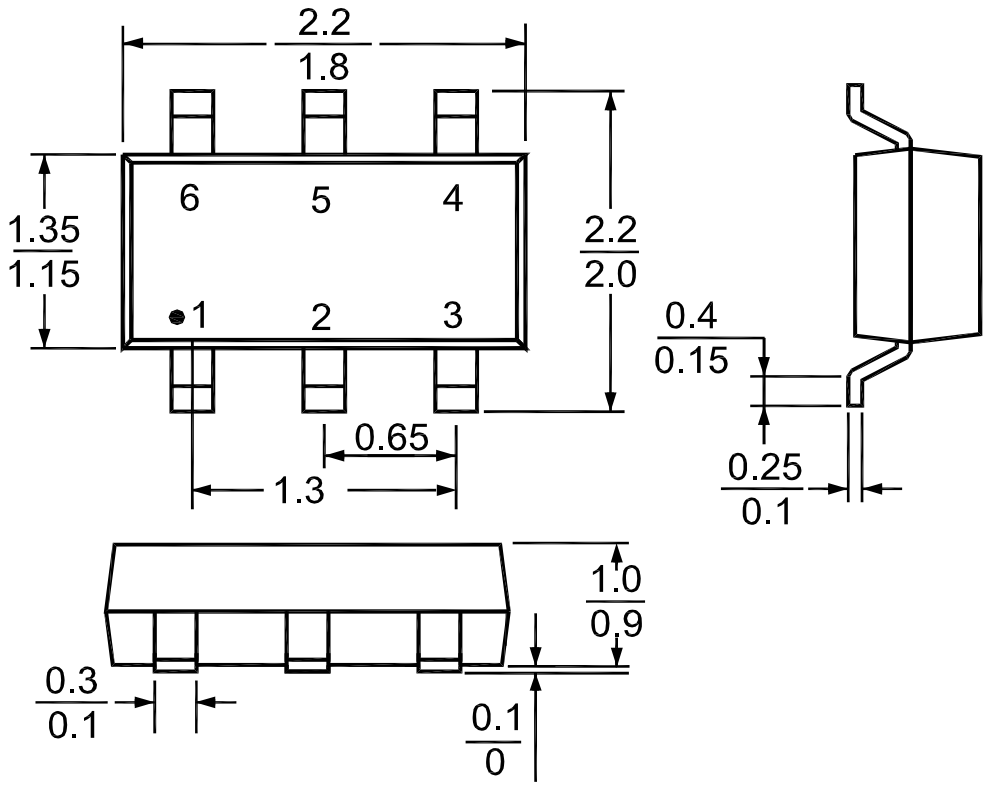
I_C-V_I (OFF)



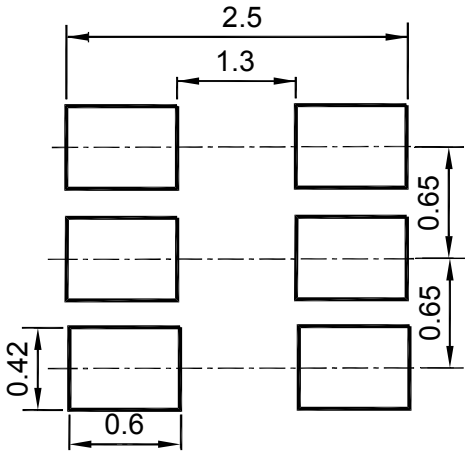
h_{FE}-I_C



SOT-363 Package Outline Dimensions (Units: mm)



Recommended Soldering Footprint



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