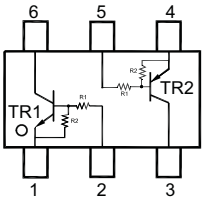
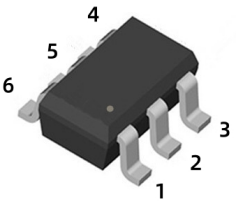
NPN/PNP Silicon Epitaxial Planar Digital Transistor

for switching and interface circuit and drivecircuit applications





1. Emitter 2. Base 3. Collector
4. Emitter 5. Base 6. Collector

■ **Simplified outline(SOT-363)**

Features

- Built in bias resistor NPN and PNP
- Simplification of circuit design
- Reduces number of components and board space

Absolute Maximum Ratings at Ta = 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 Ta = 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

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

Parameter		Symbol	Value	Unit
Total Power Dissipation	T_a = 115℃	P_{tot}	250	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	- 65 to + 150	℃

Characteristics at Ta = 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

Characteristics at Ta = 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

Characteristics at Ta = 25℃ (TR1 and TR2)

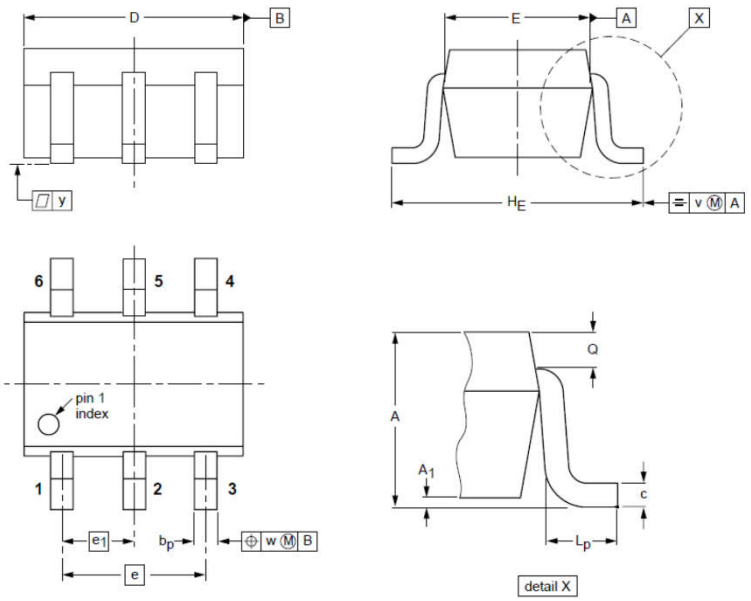
Input Resistance	R_1	1.5	2.2	2.9	KΩ
Resistance Ratio	R_1/R_2	0.042	0.047	0.052	-

Ordering information

Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel,7”reel	3000PCS/Reel 120000PCS/Carton

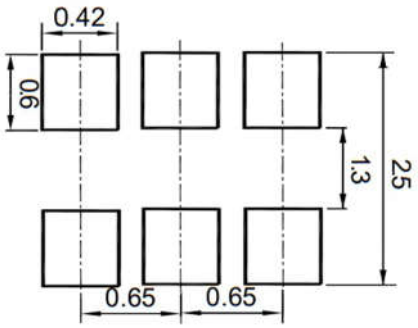
Package Dimensions

SOT-363



Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

The recommended mounting pad size



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