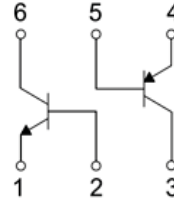


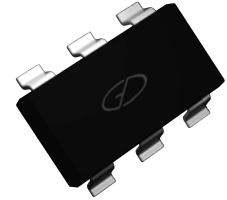
Complementary NPN+PNP Transistor

Features

- Complementary pair
- One 5551-Type NPN
- One 5401-Type PNP
- Epitaxial planar die construction
- Ideal for low power amplification and switching



Schematic Diagram



SOT-363

NPN Absolute Maximum Ratings

(T_A = 25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	180	V
Collector-Emitter Voltage	V _{CEO}	160	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current -Continuous	I _c	0.2	A
Collector Power Dissipation	P _c	0.2	W
Thermal Resistance from Junction to Ambient	R _{θJA}	625	°C/W
Junction Temperature	T _J	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

PNP Absolute Maximum Ratings

(T_A = 25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-160	V
Collector-Emitter Voltage	V _{CEO}	-150	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current -Continuous	I _c	-0.2	A
Collector Power Dissipation	P _c	0.2	W
Thermal Resistance from Junction to Ambient	R _{θJA}	625	°C/W
Junction Temperature	T _J	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Complementary NPN+PNP Transistor

NPN Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}$, $I_E=0$	180	--	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}$, $I_B=0$	160	--	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}$, $I_C=0$	6	--	V
Collector Cut-off Current	I_{CBO}	$V_{CB}=120\text{V}$, $I_E=0$	--	0.05	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=4\text{V}$, $I_C=0$	--	0.05	μA
DC Current Gain	h_{FE1}	$V_{CE}=5\text{V}$, $I_C=1\text{mA}$	80	--	
	h_{FE2}	$V_{CE}=5\text{V}$, $I_C=10\text{mA}$	100	300	
	h_{FE3}	$V_{CE}=5\text{V}$, $I_C=50\text{mA}$	30	--	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}$, $I_B=1\text{mA}$	--	0.15	V
		$I_C=50\text{mA}$, $I_B=5\text{mA}$	--	0.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10\text{mA}$, $I_B=1\text{mA}$	--	1	V
		$I_C=50\text{mA}$, $I_B=5\text{mA}$	--	1	V
Output Capacitance	C_{obo}	$V_{CB}=10\text{V}$, $f=1.0\text{MHz}$, $I_E=0$	--	6.0	pF
Current Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	100	300	MHz
Noise Figure	NF	$V_{CE}=5.0\text{V}$, $I_C=200\mu\text{A}$, $R_S=1.0\text{k}\Omega$, $f=1.0\text{kHz}$	--	8.0	dB

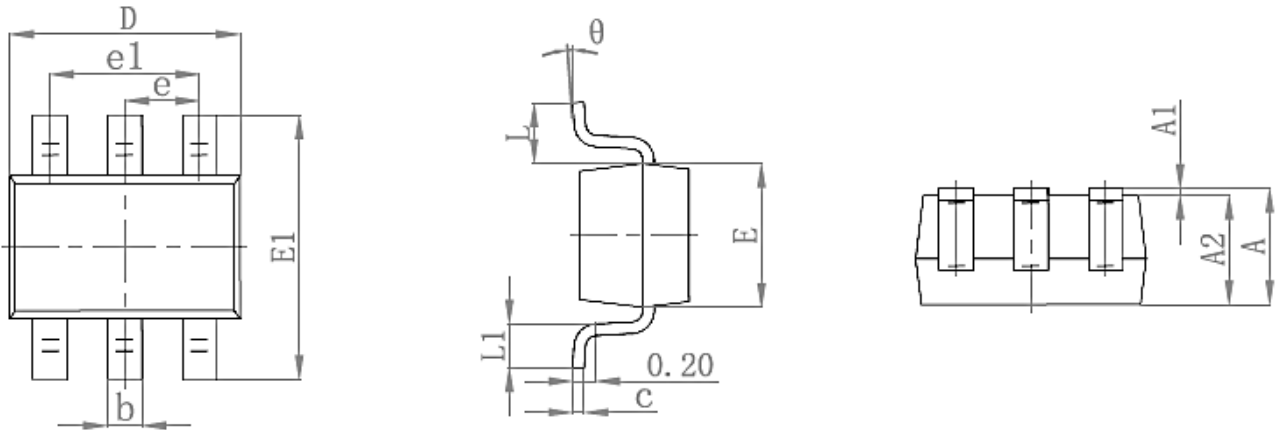
Complementary NPN+PNP Transistor

PNP Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}$, $I_E = 0$	-160	--	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}$, $I_B = 0$	-150	--	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}$, $I_C = 0$	-5	--	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -120\text{V}$, $I_E = 0$	--	-50	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -3\text{V}$, $I_C = 0$	--	-50	nA
DC Current Gain	h_{FE1}	$V_{CE} = -5\text{V}$, $I_C = -1\text{mA}$	50	--	
	h_{FE2}	$V_{CE} = -5\text{V}$, $I_C = -10\text{mA}$	100	300	
	h_{FE3}	$V_{CE} = -5\text{V}$, $I_C = -50\text{mA}$	50	--	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	--	-0.2	V
		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$	--	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	--	-1	V
		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$	--	-1	V
Output Capacitance	C_{obo}	$V_{CB} = -10\text{V}$, $f = 1.0\text{MHz}$, $I_E = 0$	--	6.0	pF
Current Gain-Bandwidth Product	f_T	$V_{CE} = -10\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$	100	300	MHz
Noise Figure	NF	$V_{CE} = -5.0\text{V}$, $I_C = -200\mu\text{A}$, $R_S = 10\Omega$, $f = 1.0\text{kHz}$	--	8.0	dB

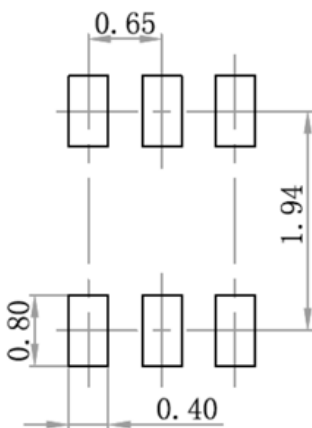
Complementary NPN+PNP Transistor

Package Outline Dimensions SOT-363



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purpose only

Marking and Ordering Information

Device	Package	Marking	Quantity	HSF Status
MMDT5451	SOT-363	KNM	3000pcs / Reel	RoHS Compliant