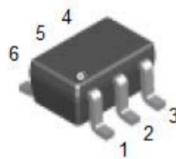


Features

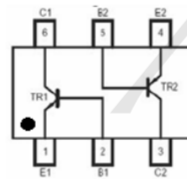
- Epitaxial planar die construction
- Two internal isolated NPN/PNP transistors in one package
- Ultra-small surface mount package

Ordering Information

- Case: SOT363
- Shipping Qty: 3000/7inch Tape & Reel



SOT363



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	NPN	PNP	Unit
Collector-Base Voltage	V_{CBO}	75	-60	V
Collector-Emitter Voltage	V_{CEO}	40	-60	V
Emitter-Base Voltage	V_{EBO}	6	-5	V
Collector Current (Continuous)	I_C	0.6	-0.6	A
Collector Current (Pulse)	I_{CM}	1.2	-1.2	A

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

Parameter	Symbol	Value	Unit
Power Dissipation ^{*1}	P_D	0.2	W
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*2}	$R_{\theta JA}$	350	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case ^{*2}	$R_{\theta JC}$	250	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Lead ^{*2}	$R_{\theta JL}$	300	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	75	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	40	-	-	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}	$V_{CB} = 60\text{V}, I_E = 0$	-	-	10	nA
		$V_{CB} = 60\text{V}, I_E = 0, T_J = 150^\circ\text{C}$	-	-	10	μA
Collector Cut-off Current	I_{CEX}	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3\text{V}$	-	-	10	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$	-	-	10	nA
Base Cut-off Current	I_{BL}	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3\text{V}$	-	-	20	nA
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	35	-	-	-
		$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	50	-	-	-
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	75	-	-	-
		$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100	-	300	-
		$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	40	-	-	-
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}, T_J = -55^\circ\text{C}$	50	-	-	-
		$V_{CE} = 1\text{V}, I_C = 150\text{mA}$	35	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	-	-	0.3	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	1.0	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}$	0.6	-	1.2	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	2.0	V
Transition Frequency	f_T	$I_C = 20\text{mA}, V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	300	-	-	MHz
Collector Output Capacitance	C_{OBO}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	8	pF
Input Capacitance	C_{IBO}	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$	-	-	25	pF
Noise Figure	N_F	$V_{CE} = 10\text{V}, f = 1.0\text{kHz}$ $I_C = 100\text{mA}, R_S = 1.0\text{k}\Omega$	-	-	4.0	dB
Delay Time	t_d	$V_{CC} = 30\text{V}, V_{BE(OFF)} = 0.5\text{V}$	-	-	10	ns
Rise Time	t_r	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	-	-	25	ns
Storage Time	t_s	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$	-	-	225	ns
Fall Time	t_f	$I_{B1} = I_{B2} = 15\text{mA}$	-	-	60	ns

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}, I_B = 0$	-60	-	-	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}	$V_{CB} = -50\text{V}, I_E = 0$	-	-	-10	nA
		$V_{CB} = -50\text{V}, I_E = 0, T_J = 125^\circ\text{C}$	-	-	-10	μA
Collector Cut-off Current	I_{CEX}	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$	-	-	-50	nA
Base Cut-off Current	I_{BL}	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$	-	-	-50	nA
DC Current Gain	h_{FE}	$V_{CE} = -10\text{V}, I_C = -0.1\text{mA}$	75	-	-	-
		$V_{CE} = -10\text{V}, I_C = -1\text{mA}$	100	-	-	-
		$V_{CE} = -10\text{V}, I_C = -10\text{mA}$	100	-	-	-
		$V_{CE} = -10\text{V}, I_C = -150\text{mA}$	100	-	300	-
		$V_{CE} = -10\text{V}, I_C = -500\text{mA}$	50	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$	-	-	-0.4	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-1.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -150\text{mA}, I_B = -15\text{mA}$	-	-	-1.3	V
		$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-2.6	V
Transition Frequency	f_T	$V_{CE} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$	200	-	-	MHz
Output Capacitance	C_{OBO}	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	8	pF
Input Capacitance	C_{iBo}	$V_{EB} = -2\text{V}, f = 1.0\text{MHz}, I_C = 0$	-	-	30	pF
Delay Time	t_d	$V_{CC} = -30\text{V}, I_C = -150\text{mA}$	-	-	10	ns
Rise Time	t_r	$I_{B1} = -15\text{mA}$	-	-	40	ns
Storage Time	t_s	$V_{CC} = -6\text{V}, I_C = -150\text{mA}$	-	-	80	ns
Fall Time	t_f	$I_{B1} = I_{B2} = -15\text{mA}$	-	-	30	ns

Typical Electrical Characteristic Curves (NPN)

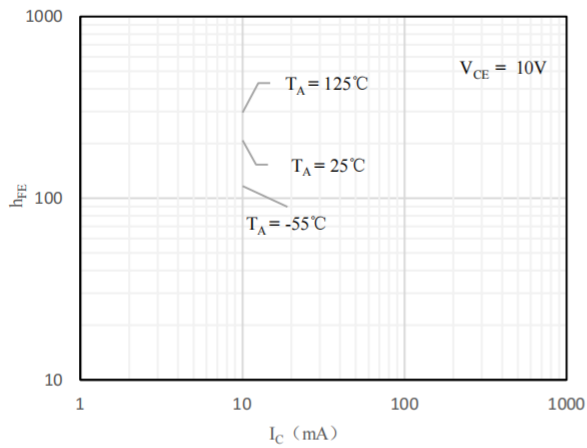


Fig 1 h_{FE} vs. I_C

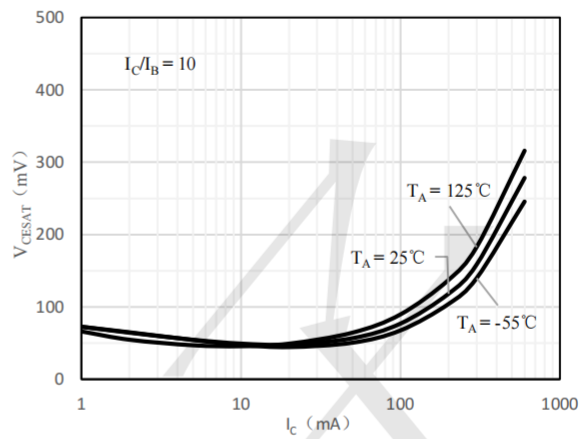


Fig 2 $V_{CE(sat)}$ vs. I_C

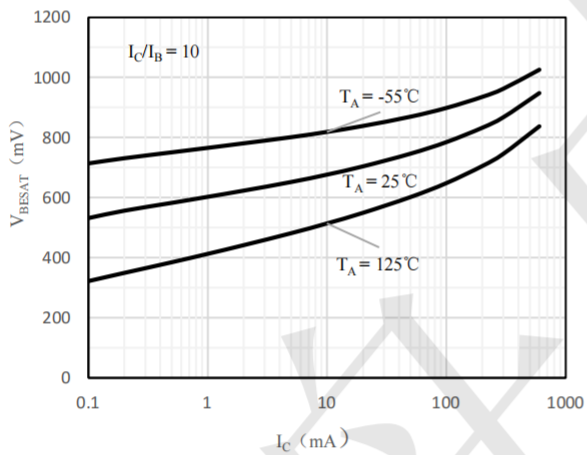


Fig 3 $V_{BE(sat)}$ vs. I_C

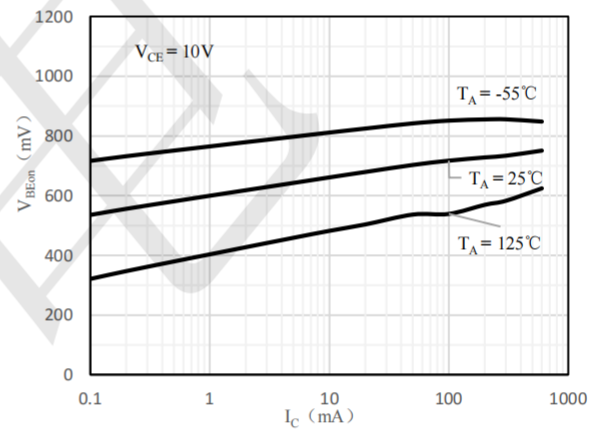
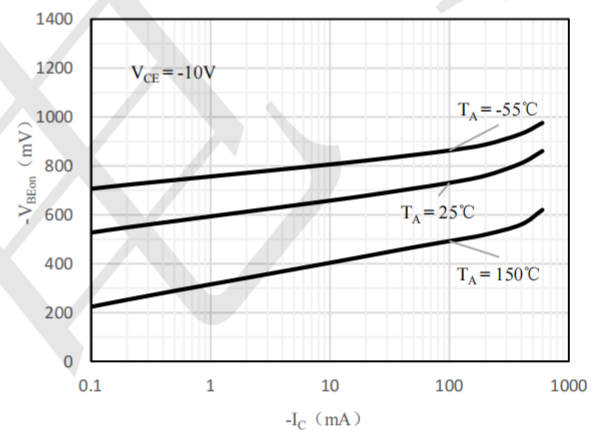
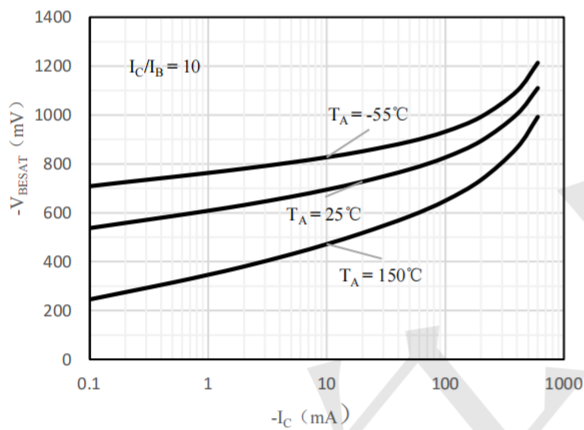
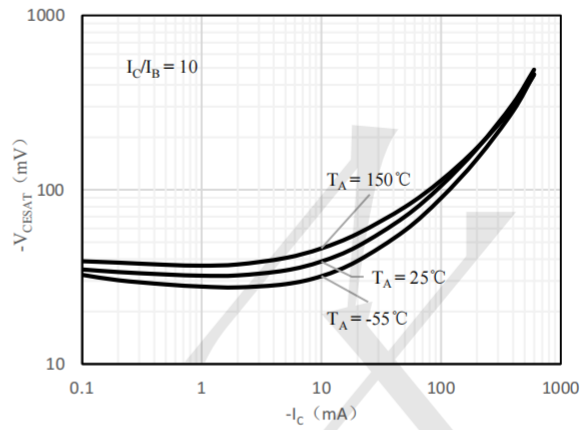
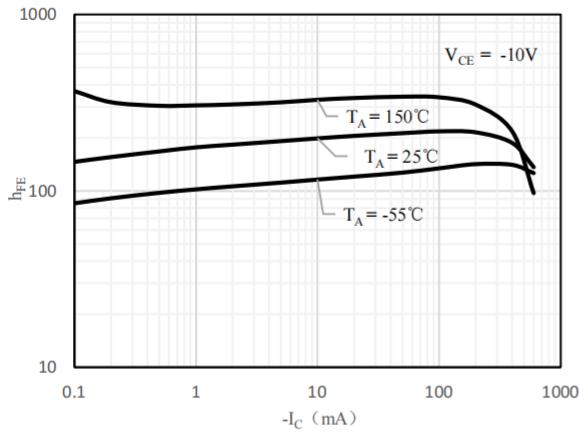
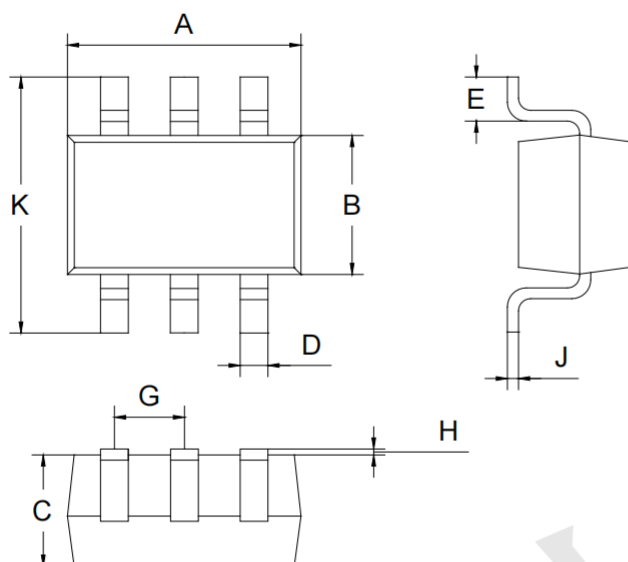


Fig 4 $V_{BE(on)}$ vs. I_C

Typical Electrical Characteristic Curves (PNP)



Outline Drawing - SOT363 (unit: mm)



SOT-363		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout-SOT363 (unit: mm)

