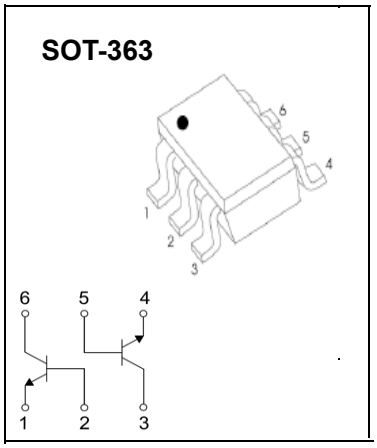
Plastic-Encapsulate Transistors

DUAL TRANSISTOR (NPN+NPN)



FEATURES

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching

MRKING:K2X

Maximum Ratings (T_a = 25℃ unless otherwise specified)

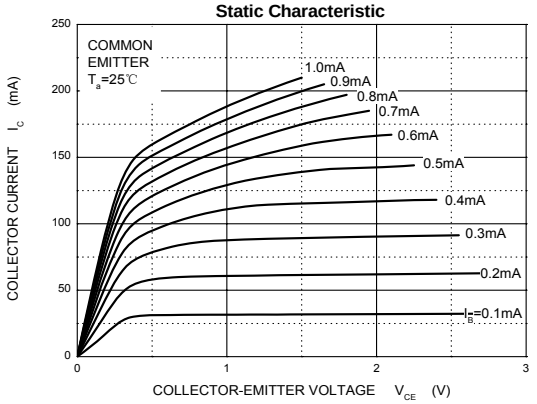
Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	0.6	A
P_C	Collector Power Dissipation	0.2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	℃/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55 to +150	℃

NPN 4401 ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

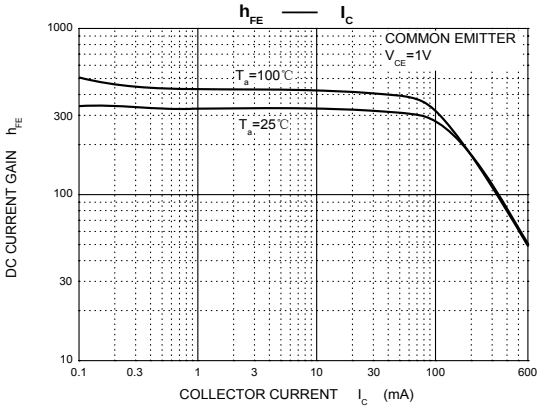
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100 μA, I_E=0	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 1mA, I_B=0	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100 μA, I_C=0	6		V
Collector cut-off current	I_{CBO}	V_{CB}= 50 V , I_E=0		0.1	μA
Collector cut-off current	I_{CEO}	V_{CE}= 35 V , I_B=0		0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V , I_C=0		0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}= 1V, I_C= 0.1mA	20		
	$h_{FE(2)}$	V_{CE}= 1V, I_C= 1mA	40		
	$h_{FE(3)}$	V_{CE}= 1V, I_C= 10mA	80		
	$h_{FE(4)}$	V_{CE}= 1V, I_C= 150mA	100	300	
	$h_{FE(5)}$	V_{CE}= 2V, I_C= 500mA	40		
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C=150 mA, I_B= 15mA		0.4	V
	$V_{CE(sat)2}$	I_C=500 mA, I_B= 50mA		0.75	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	I_C= 150 mA, I_B= 15mA	0.75	0.95	V
	$V_{BE(sat)2}$	I_C= 500 mA, I_B= 50mA		1.2	V
Transition frequency	f_T	V_{CE}= 10V,I_C= 20mA,f=100MHz	250		MHz
Output capacitance	C_{ob}	V_{CB}=5V, I_E= 0,f=1MHz		6.5	pF
Delay time	t_d	V_{CC}=30V, V_{BE}=2V,I_C=150mA ,I_{B1}=15mA		15	nS
Rise time	t_r			20	nS
Storage time	t_S	V_{CC}=30V, I_C=150mA,I_{B1}=-I_{B2}=15mA		225	nS
Fall time	t_f			30	nS

Typical Characteristics

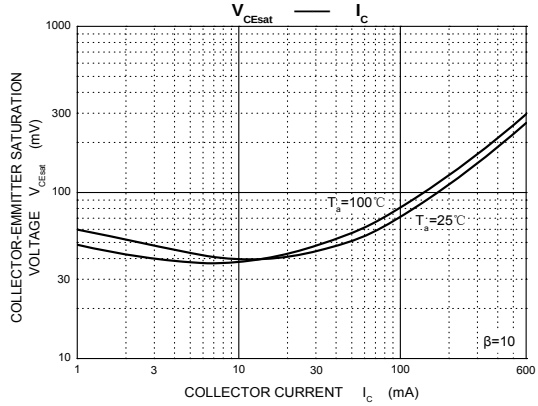
Static Characteristic



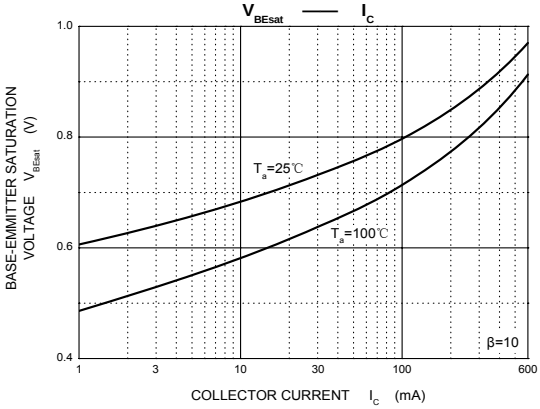
h_{FE} — I_C



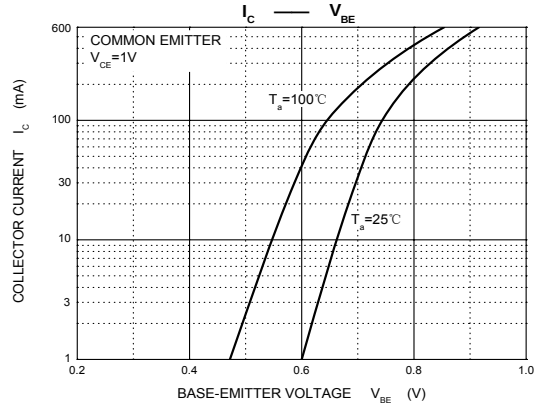
V_{CEsat} — I_C



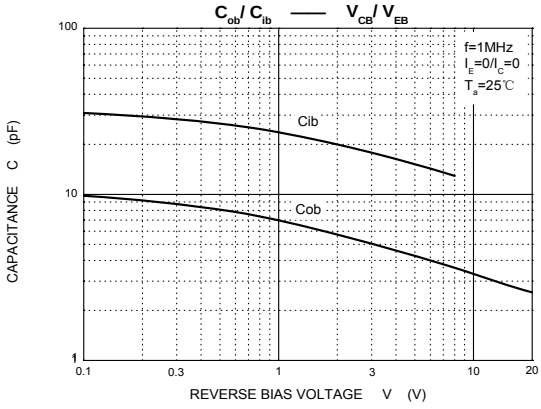
V_{BEsat} — I_C



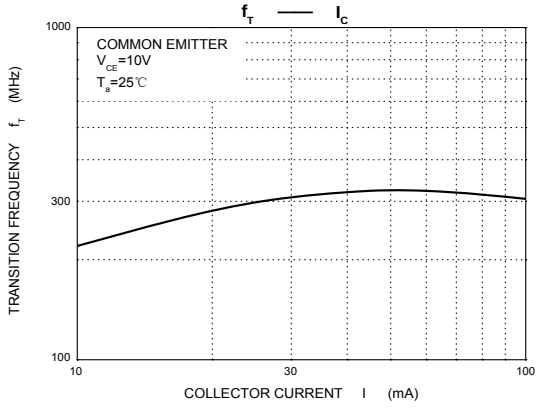
I_C — V_{BE}



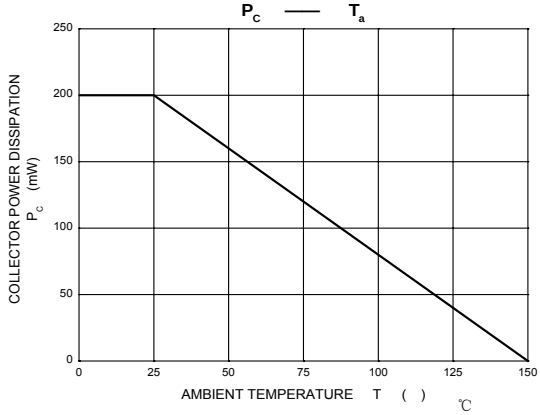
C_{ob}/ C_{ib} — V_{CB}/ V_{EB}



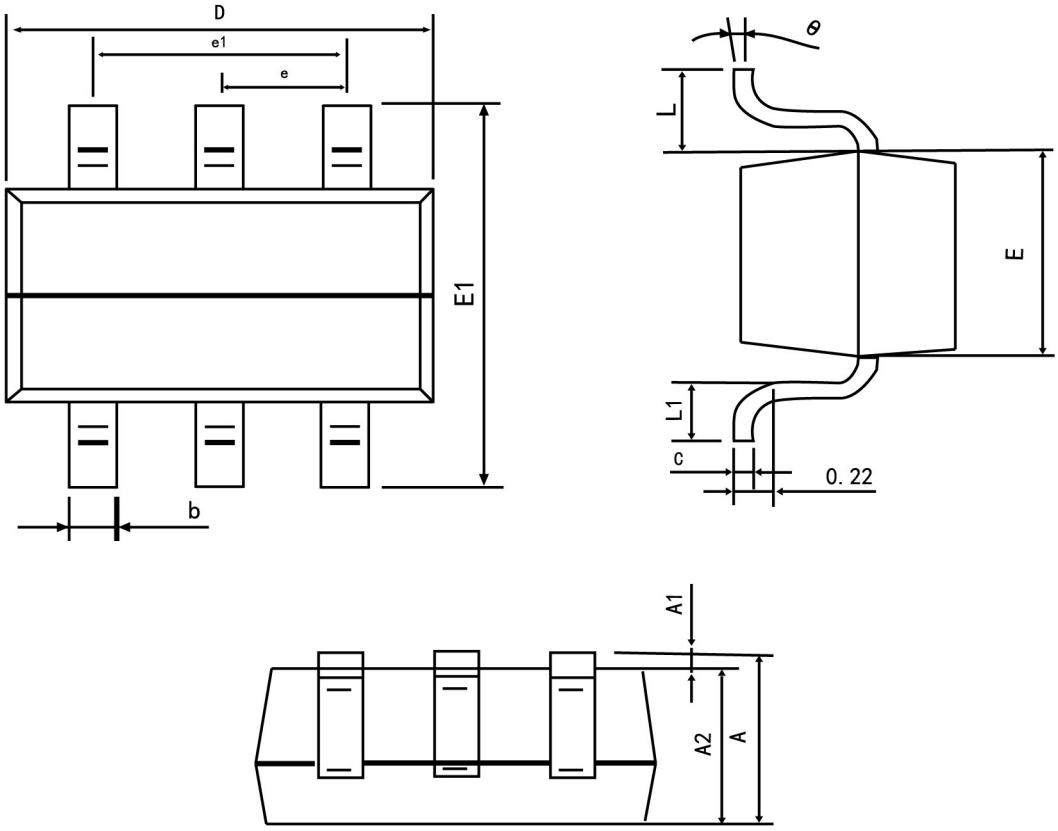
f_T — I_C



P_C — T_a



SOT-363-Package Outline Dimensions



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP	
e1	1.200	1.400
L	0.525 REF	
L1	0.260	0.460
θ	0°	8°