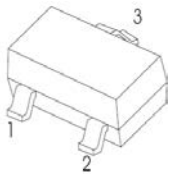
MMBTA13 TRANSISTOR (NPN)

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

FEATURES

Darlington Amplifier

Marking : K2D

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

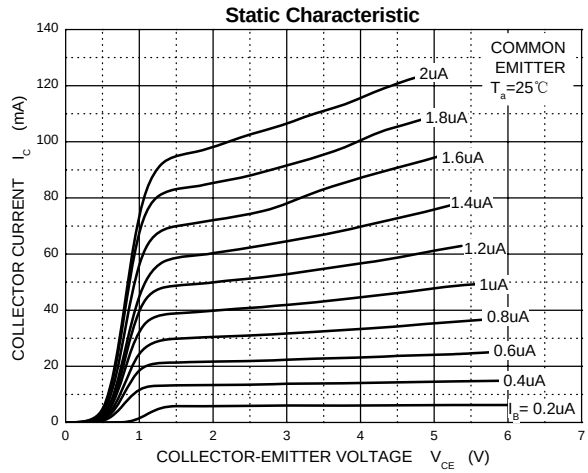
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	30	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{EBO}	Emitter-Base Voltage	10	V
I_C	Collector Current -Continuous	0.3	A
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	417	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

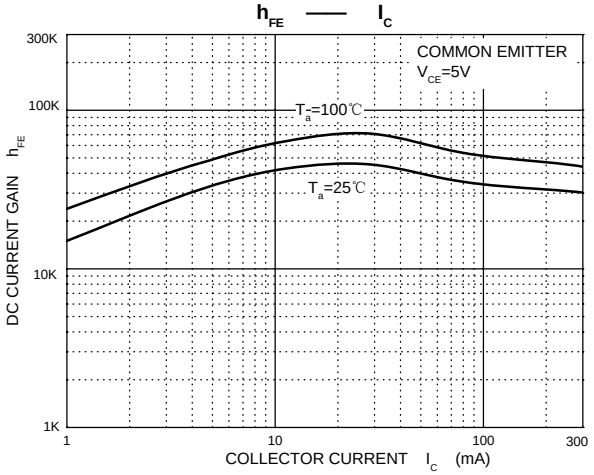
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

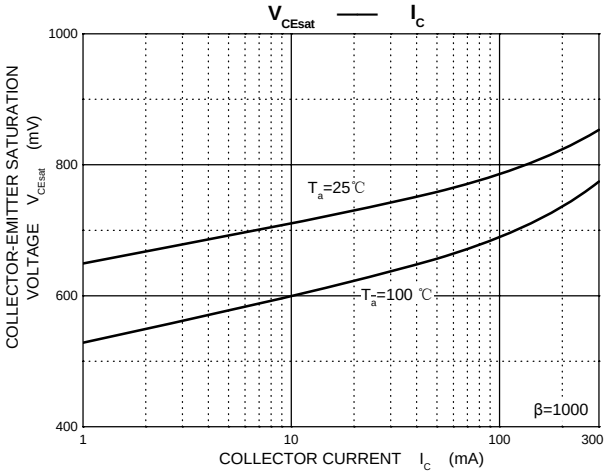
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100μA,I_E=0	30		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 100μA, I_B=0	30		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100μA, I_C=0	10		V
Collector cut-off current	I_{CBO}*	V_{CB}=30 V, I_E=0		0.1	μA
Emitter cut-off current	I_{EBO}*	V_{EB}= 10V ,I_C=0		0.1	μA
DC current gain	$h_{FE(1)}$*	V_{CE}=5V, I_C= 10mA	5000		
	$h_{FE(2)}$*	V_{CE}=5V, I_C= 100mA	10000		
Collector-emitter saturation voltage	$V_{CE\ (sat)}$*	I_C=100mA, I_B=0.1mA		1.5	V
Base-emitter saturation voltage	$V_{BE\ (sat)}$*	I_C=100mA, I_B=0.1mA		2	V
Base-emitter voltage	V_{BE}*	V_{CE}=5V,I_C= 100mA		2.0	V
Transition frequency	f_T	V_{CE}=5V, I_C= 10mA f=100MHz	125		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0,f=1MHz		12	pF

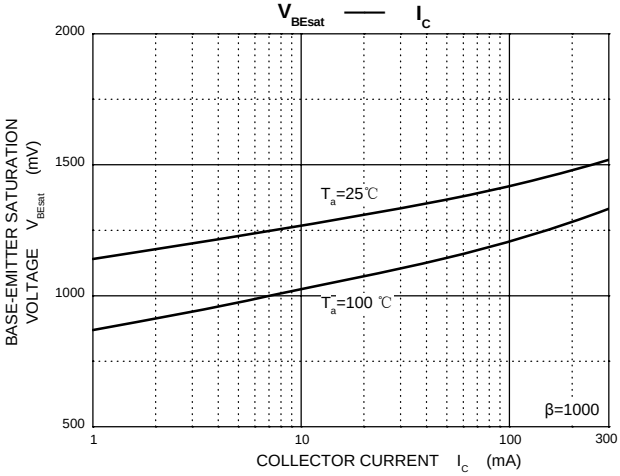
* Pulse Test : pulse width≤300μs,duty cycle≤2%.

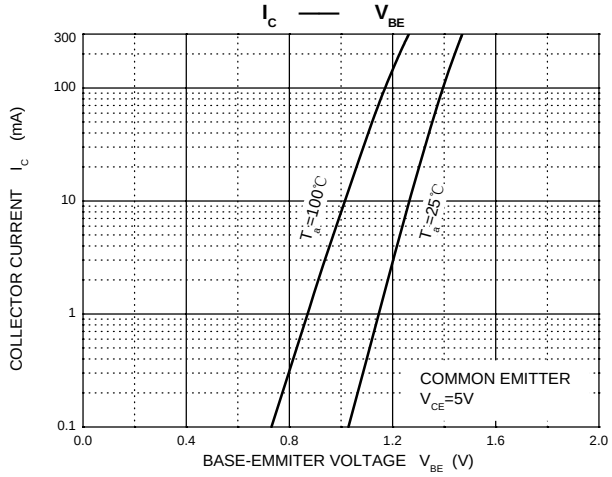
Typical Characteristics

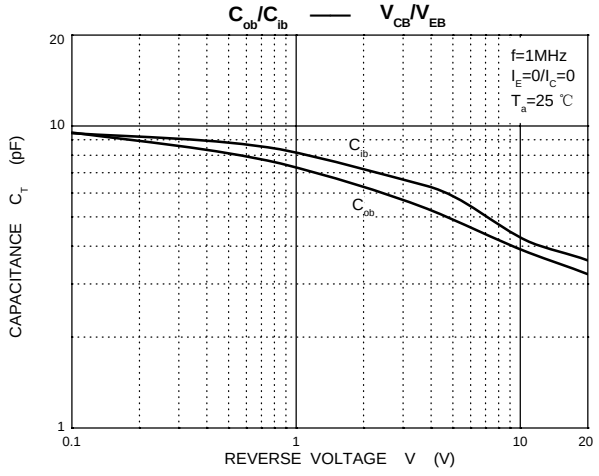


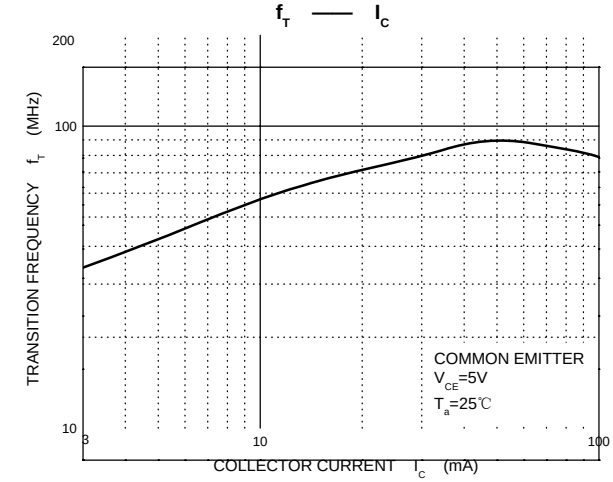


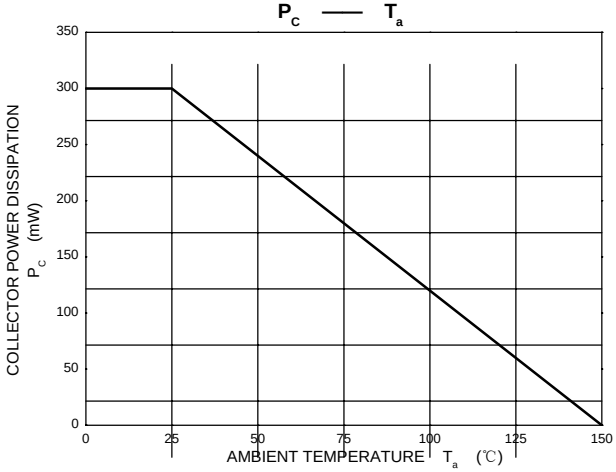




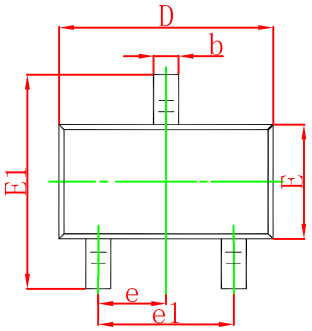


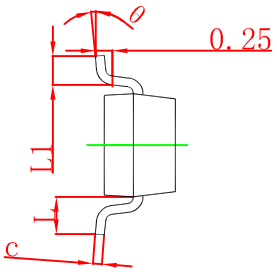


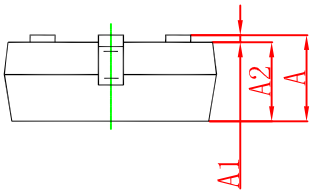




SOT-23 Package Outline Dimensions

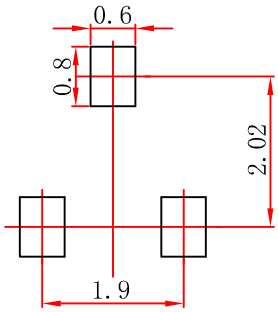






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



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