



## SOT-23 Plastic-Encapsulate Transistors

**MMBTA13** TRANSISTOR (NPN)

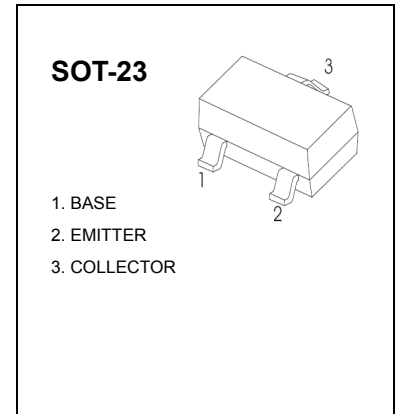
**FEATURES**

Darlington Amplifier

Marking : K2D

**MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	30	V
V <sub>CEO</sub>	Collector-Emitter Voltage	30	V
V <sub>EBO</sub>	Emitter-Base Voltage	10	V
I <sub>C</sub>	Collector Current -Continuous	0.3	A
P <sub>C</sub>	Collector Power Dissipation	300	mW
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	417	°C/W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C



**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 100μA, I <sub>E</sub> =0	30		V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 100μA, I <sub>B</sub> =0	30		V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 100μA, I <sub>C</sub> =0	10		V
Collector cut-off current	I <sub>CBO</sub> *	V <sub>CB</sub> =30 V, I <sub>E</sub> =0		0.1	μA
Emitter cut-off current	I <sub>EBO</sub> *	V <sub>EB</sub> = 10V, I <sub>C</sub> =0		0.1	μA
DC current gain	h <sub>FE(1)</sub> *	V <sub>CE</sub> =5V, I <sub>C</sub> = 10mA	5000		
	h <sub>FE(2)</sub> *	V <sub>CE</sub> =5V, I <sub>C</sub> = 100mA	10000		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub> *	I <sub>C</sub> =100mA, I <sub>B</sub> =0.1mA		1.5	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub> *	I <sub>C</sub> =100mA, I <sub>B</sub> =0.1mA		2	V
Base-emitter voltage	V <sub>BE</sub> *	V <sub>CE</sub> =5V, I <sub>C</sub> = 100mA		2.0	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> = 10mA f=100MHz	125		MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz		12	pF

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

# Typical Characteristics

# MMBTA13

