

NPN High Voltage Amplifier

MMBTA45

FEATURES

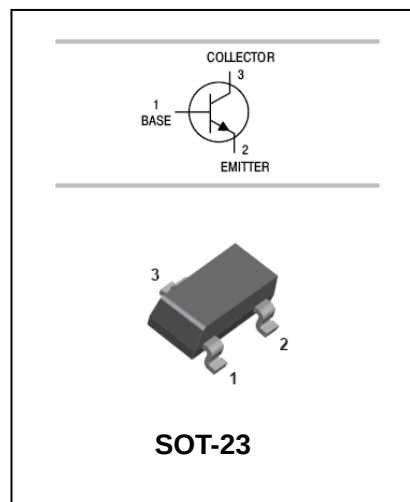
- High voltage
- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability I_C and I_{CM}
- High collector current gain (h_{FE}) at high I_C



Lead-free

APPLICATIONS

- Electronic ballasts
- LED driver for LED chain module
- LCD backlighting
- Automotive motor management
- Flyback converters



ORDERING INFORMATION

Type No.	Marking	Package Code
MMBTA45	LK	SOT-23

MAXIMUM RATING @ $T_a=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Value	UNIT
V_{CBO}	collector-base voltage	500	V
V_{CEO}	collector-emitter voltage	500	V
V_{EBO}	emitter-base voltage	6	V
I_C	collector current (DC)	0.15	A
P_C	Collector dissipation	300	mW
$R_{\theta JA}$	Thermal resistance Junction-to-ambient	200	$^{\circ}\text{C/W}$
T_J, T_{stg}	junction and storage temperature	-65 to +150	$^{\circ}\text{C}$

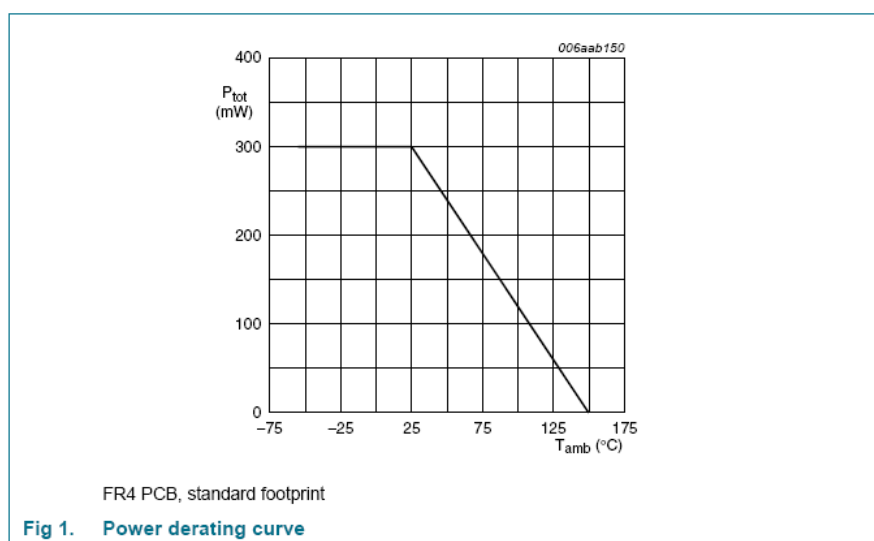
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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

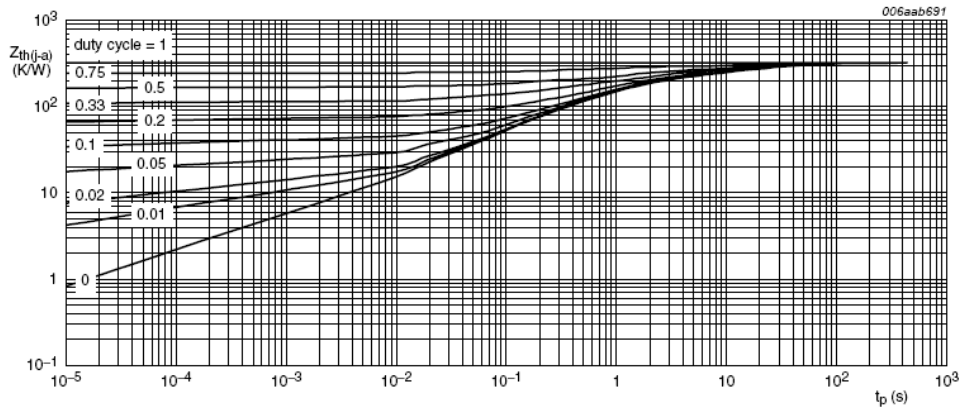
Symbol	Parameter	Test conditions	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=100\mu A, I_E=0$	500	-	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=1.0mA, I_B=0$	500	-	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=10\mu A, I_C=0$	6	-	V
I_{CBO}	collector cut-off current	$I_E = 0, V_{CB} = 360V$	-	0.1	μA
I_{CES}	collector cut-off current	$V_{BE} = 0, V_{CE} = 360V$	-	10	μA
I_{EBO}	emitter cut-off current	$I_C = 0, V_{EB} = 5V$	-	0.1	μA
h_{FE}	DC current gain	$V_{CE} = 10V; I_C=30mA$ $V_{CE} = 10V; I_C = 50mA$	50 50	- 100	
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C = 20mA; I_B = 2mA$ $I_C = 50mA; I_B = 6mA$	-	75 90	mV
$V_{BE(sat)}$	Base-emitter saturation voltage	$I_C = 10mA; I_B=1mA$	-	0.9	V
f_T	Current gain bandwidth product	$V_{CE}=10V, I_C=10mA$ $F=100MHz$		35	pF

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified



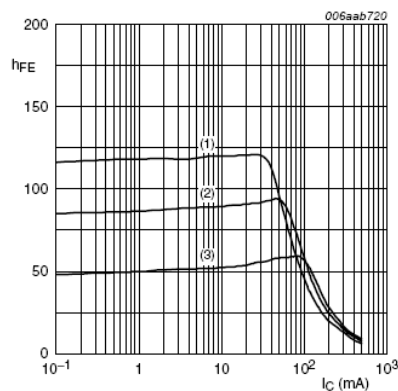
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FR4 PCB, standard footprint

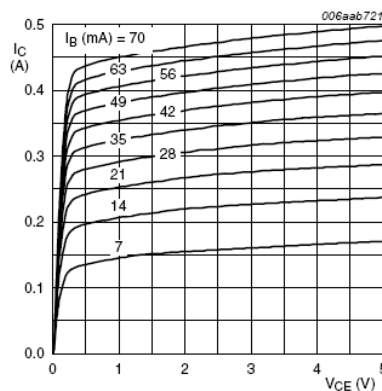
Fig 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



$V_{CE} = 10 \text{ V}$

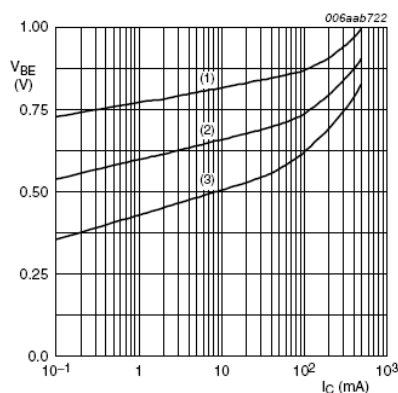
- (1) $T_{amb} = 100 \text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C}$
- (3) $T_{amb} = -55 \text{ }^{\circ}\text{C}$

Fig 3. DC current gain as a function of collector current; typical values



$T_{amb} = 25 \text{ }^{\circ}\text{C}$

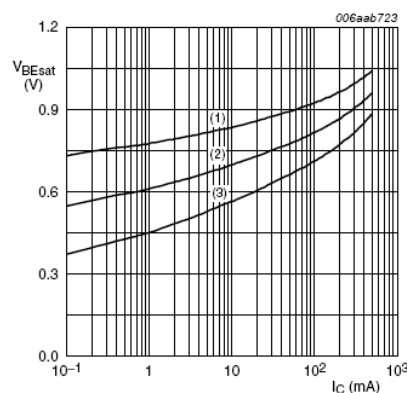
Fig 4. Collector current as a function of collector-emitter voltage; typical values



$V_{CE} = 10 \text{ V}$

- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 100 \text{ }^{\circ}\text{C}$

Fig 5. Base-emitter voltage as a function of collector current; typical values



$I_C/I_B = 5$

- (1) $T_{amb} = -55 \text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 25 \text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 100 \text{ }^{\circ}\text{C}$

Fig 6. Base-emitter saturation voltage as a function of collector current; typical values

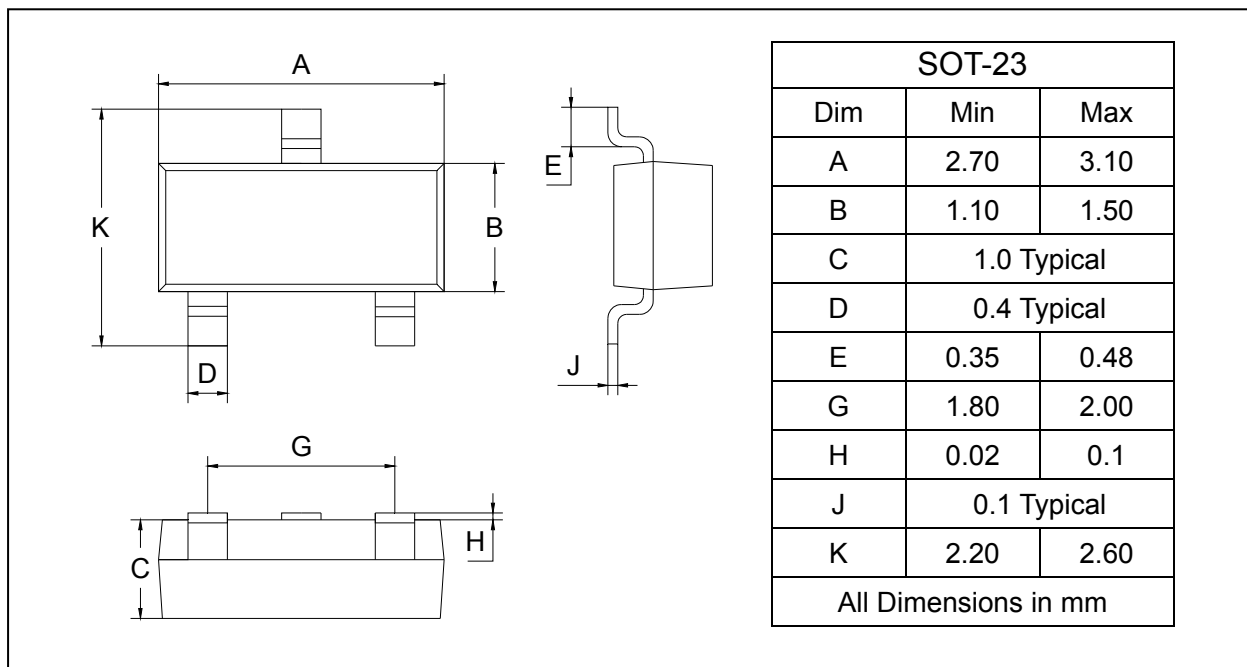
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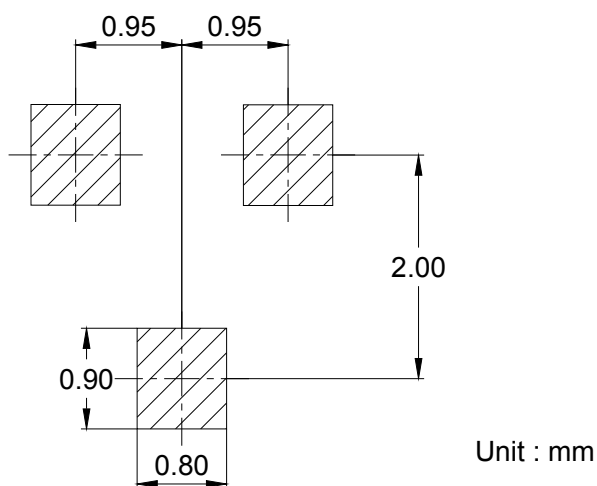
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
MMBTA45	SOT-23	3000/Tape&Reel