

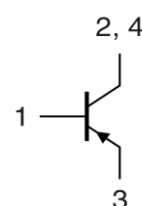
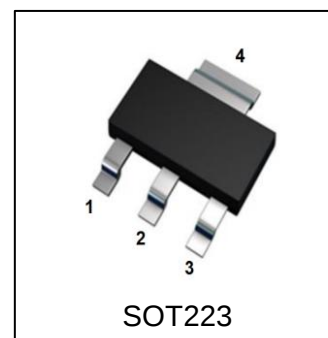
LBTP460Z4TZHG

S-LBTP460Z4TZHG

60 V PNP TRANSISTOR

1. FEATURES

- Low collector-emitter saturation voltage
- High collector current capability
- High collector current gain
- High efficiency due to less heat generation
- Smaller required Printed-Circuit Board (PCB)
- MM:>400V, HBM:>8000V
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.

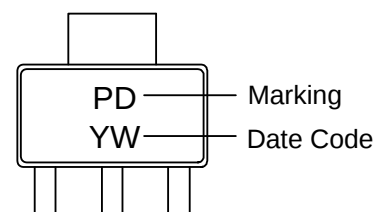


2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LBTP460Z4TZHG	PD	1000/Tape&Reel

3. MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	VCEO	-60	V
Collector–Base Voltage	VCBO	-60	V
Emitter–Base Voltage	VEBO	-5	V
Collector Current — Continuous	IC	-4.5	A
Peak Pulse Current(tp ≤ 1 ms)	ICM	-9	A
Junction and Storage temperature	TJ,Tstg	-55~+150	°C



4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation, FR-4 Board (Note 1) @ TA = 25°C	PD	1	W
Thermal Resistance, Junction–to–Ambient(Note 1)	RθJA	125	°C/W
Thermal Resistance, Junction–to–Case	RθJC	30	°C/W

1. FR-4 = 30.0mm×25.0mm×1.6mm.

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = -1 mA, IB = 0)	VBR(CEO)	-60	-	-	V
Collector–Base Breakdown Voltage (IC = -100 μ A, IE = 0)	VBR(CBO)	-60	-	-	V
Emitter–Base Breakdown Voltage (IE = -100 μ A, IC = 0)	VBR(EBO)	-5	-	-	V
Collector Cutoff Current (VCB = -60V, IE = 0 A) (VCB = -60V, IE = 0 A, Tj = 150 °C)	ICBO	-	-	-100 -50	nA μ A
Emitter CutOff Current (VEB = -5 V, IC = 0 A)	IEBO	-	-	-100	nA
Collector-Emitter cutoff Current (VCE = -60V, IB = 0)	ICEO	-	-	-10	μ A

ON CHARACTERISTICS (Note 2)

DC Current Gain (VCE = -2 V, IC = -0.5 A) (VCE = -2 V, IC = -1 A) (VCE = -2 V, IC = -2 A) (VCE = -2 V, IC = -4 A) (VCE = -2 V, IC = -6 A)	HFE	200 200 150 120 60	295 270 230 170 100	- - - - -	
Collector–Emitter Saturation Voltage (IC = -0.5 A, IB = -50 mA) (IC = -1 A, IB = -50 mA) (IC = -1 A, IB = -10 mA) (IC = -2 A, IB = -40 mA) (IC = -4 A, IB = -200 mA) (IC = -4 A, IB = -400 mA) (IC = -4.5 A, IB = -225 mA)	VCE(sat)	- - - - - - -	-35 -65 -130 -165 -210 -160 -265	-50 -90 -190 -230 -300 -230 -375	mV
Base–Emitter Saturation Voltage (IC = -1 A, IB = -100 mA) (IC = -4 A, IB = -400 mA)	VBE(sat)	- -	-0.81 -0.93	-0.9 -1.05	V
Base-Emitter Turn-On Voltage (VCE = -2 V, IC = -2 A)	VBE(on)	-	-0.77	-0.85	V

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

SMALL-SIGNAL CHARACTERISTICS

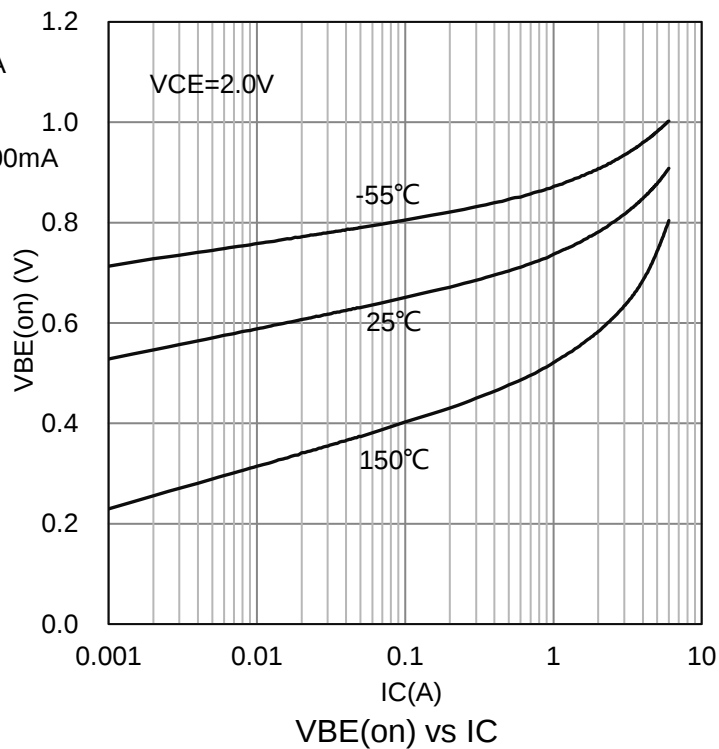
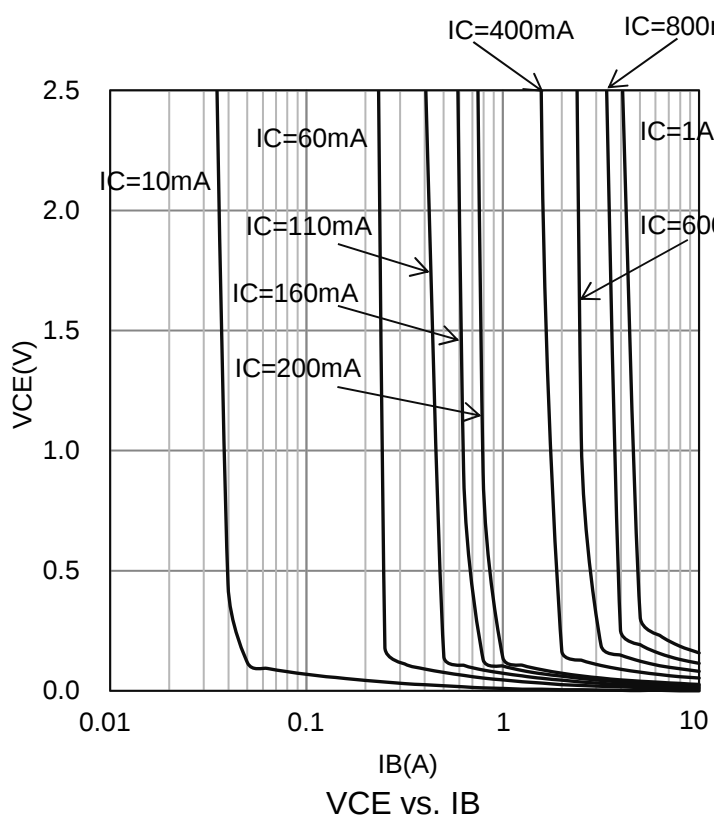
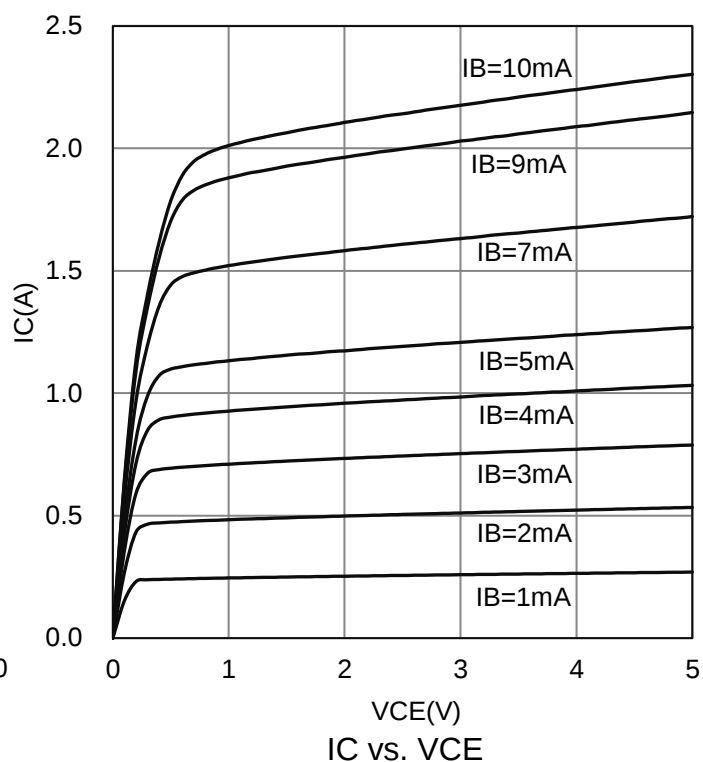
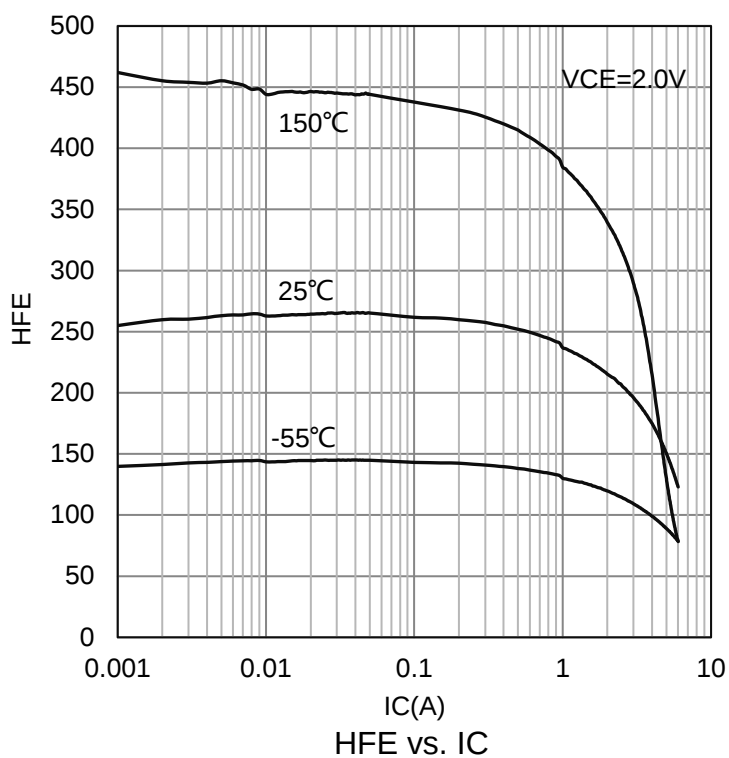
Transitional Frequency (VCE = -10 V, IC = -100 mA, f = 100 MHz)	fT	-	102	-	MHz
Collector capacitance (VCB = -10 V, IE = ie = 0 A, f = 1 MHz)	Cc	-	66.5	120	pF

SWITCHING CHARACTERISTICS

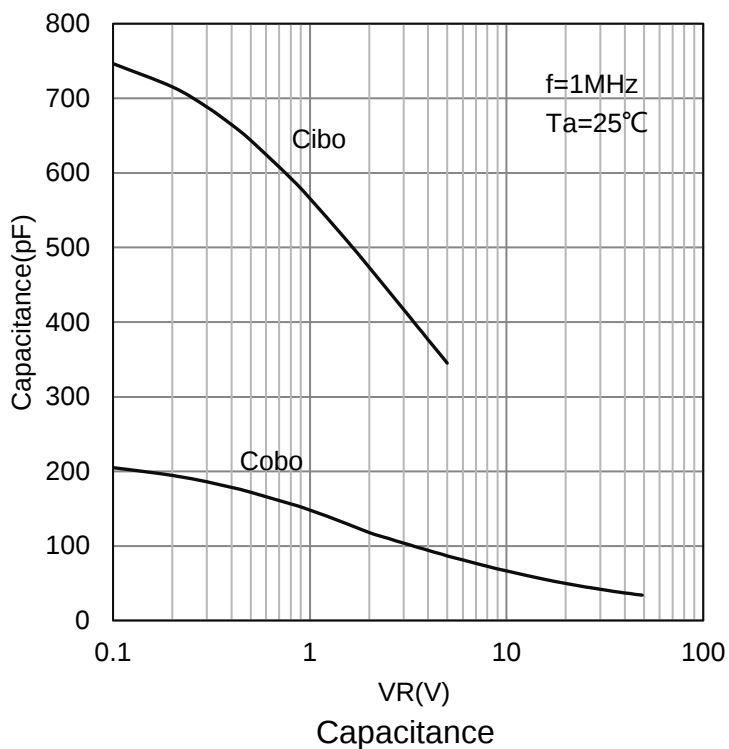
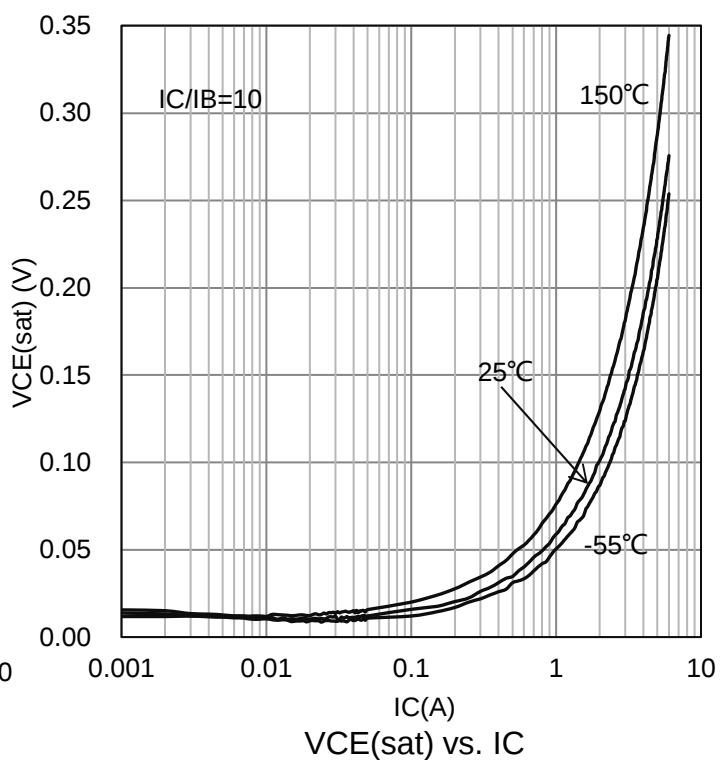
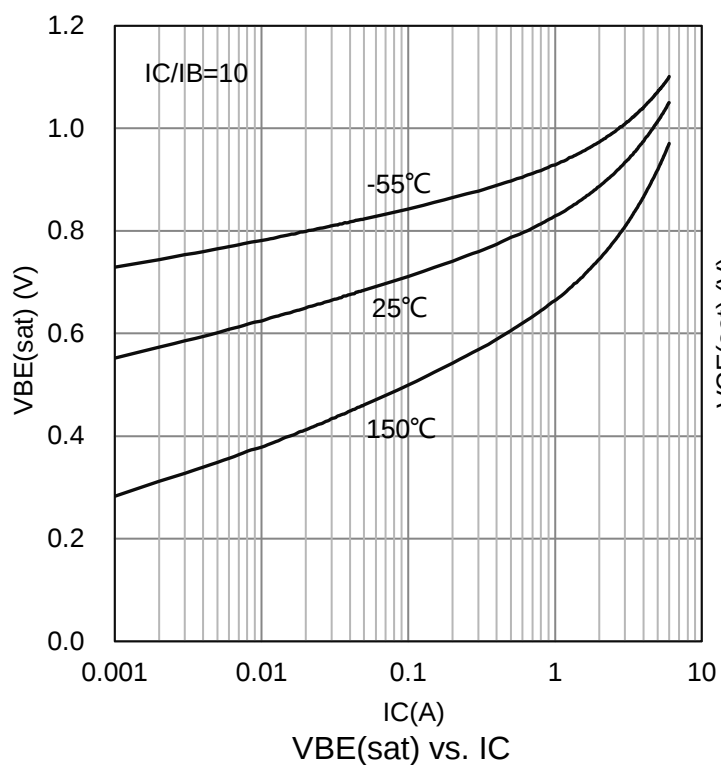
Delay time	(VCC = -12.5 V, IC = -3 A, IB(on) = -0.15 A, IB(off) = 0.15 A)	td	-	15	-	ns
Rise time		tr	-	65	-	
Turn-on time		ton	-	80	-	
Storage time		ts	-	225	-	
Fall time		tf	-	95	-	
Turn-off time		toff	-	320	-	

2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

6.ELECTRICAL CHARACTERISTICS CURVES

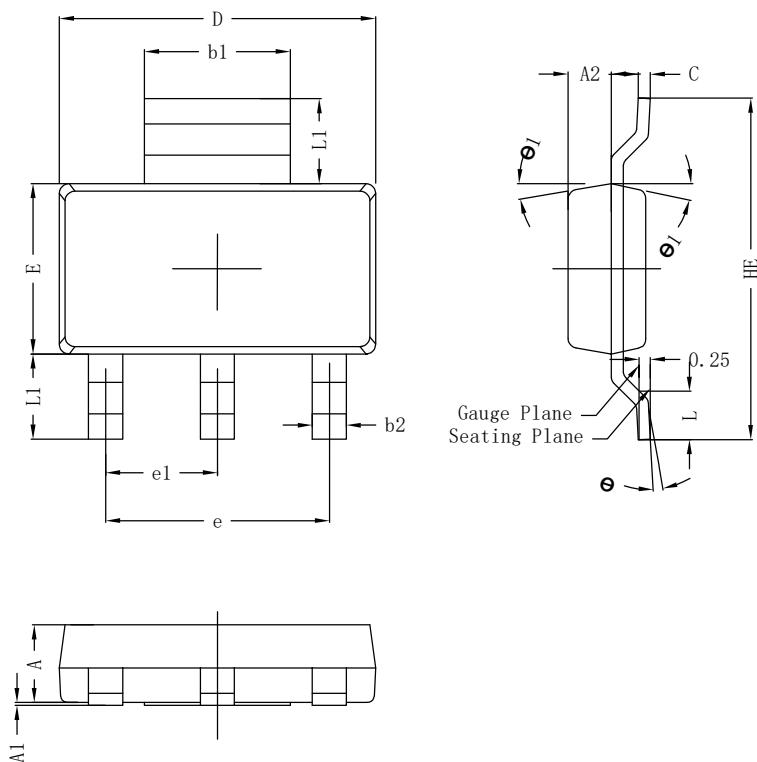


6.ELECTRICAL CHARACTERISTICS CURVES(Con.)



7.OUTLINE AND DIMENSIONS

SOT223

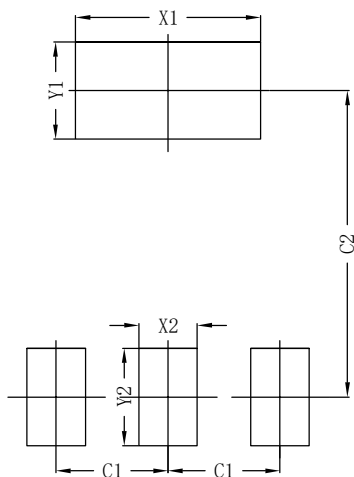


SOT223			
DIM	MIN	NOR	MAX
A	1.50	1.60	1.70
A1	0.00	0.05	0.10
A2	0.80	0.90	1.00
b1	2.90	3.02	3.10
b2	0.60	0.72	0.80
c	0.20	0.27	0.30
D	6.30	6.50	6.70
E	3.30	3.50	3.70
e	4.60BSC		
e1	2.30BSC		
HE	6.80	7.00	7.20
L	0.80	1.00	1.20
L1	1.75(REF)		
θ	0°~8°		
θ 1	8°	10°	12°
All Dimensions in mm			

GENERAL NOTES

1. Top package surface finish $Ra0.4 \pm 0.2 \mu m$
2. Bottom package surface finish $Ra0.7 \pm 0.2 \mu m$
3. Side package surface finish $Ra0.4 \pm 0.2 \mu m$
4. Protrusion or Gate Burrs shall not exceed 0.10mm per side.

8.SOLDERING FOOTPRINT



SOT223	
DIM	(mm)
X1	3.80
Y1	2.00
X2	1.20
Y2	2.00
C1	2.30
C2	6.30