NPN Silicon Planar Epitaxial Transistor

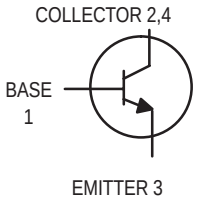
PZT651T1

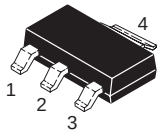
Motorola Preferred Device

SOT–223 PACKAGE
HIGH CURRENT
NPN SILICON
TRANSISTOR
SURFACE MOUNT

This NPN Silicon Epitaxial transistor is designed for use in industrial and consumer applications. The device is housed in the SOT–223 package which is designed for medium power surface mount applications.

- High Current: 2.0 Amp
- The SOT–223 package can be soldered using wave or reflow.
- SOT–223 package ensures level mounting, resulting in improved thermal conduction, and allows visual inspection of soldered joints. The formed leads absorb thermal stress during soldering, eliminating the possibility of damage to the die.
- Available in 12 mm Tape and Reel
  Use PZT651T1 to order the 7 inch/1000 unit reel
  Use PZT651T3 to order the 13 inch/4000 unit reel
- PNP Complement is PZT751T1





CASE 318E–04, STYLE 1
TO–261AA

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	60	Vdc
Collector–Base Voltage	V_{CBO}	80	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	2.0	Adc
Total Power Dissipation @ T_A = 25°C(1) Derate above 25°C	P_D	0.8 6.4	Watts mW/°C
Storage Temperature Range	T_{stg}	–65 to 150	°C
Junction Temperature	T_J	150	°C

DEVICE MARKING

651

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance from Junction–to–Ambient in Free Air	$R_{\theta JA}$	156	°C/W
Maximum Temperature for Soldering Purposes Time in Solder Bath	T_L	260 10	°C Sec

1. Device mounted on a FR–4 glass epoxy printed circuit board using minimum recommended footprint.

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 1

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage (I_C = 10 mAdc, I_B = 0)	$V_{(BR)CEO}$	60	—	Vdc
Collector–Emitter Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	80	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	5.0	—	Vdc
Base–Emitter Cutoff Current (V_{EB} = 4.0 Vdc)	I_{EBO}	—	0.1	μAdc
Collector–Base Cutoff Current (V_{CB} = 80 Vdc, I_E = 0)	I_{CBO}	—	100	nAdc
ON CHARACTERISTICS (2)				
DC Current Gain	h_{FE}			—
(I_C = 50 mAdc, V_{CE} = 2.0 Vdc)		75	—	
(I_C = 500 mAdc, V_{CE} = 2.0 Vdc)		75	—	
(I_C = 1.0 Adc, V_{CE} = 2.0 Vdc)		75	—	
(I_C = 2.0 Adc, V_{CE} = 2.0 Vdc)		40	—	
Collector–Emitter Saturation Voltages	$V_{CE(sat)}$			Vdc
(I_C = 2.0 Adc, I_B = 200 mAdc)		—	0.5	
(I_C = 1.0 Adc, I_B = 100 mAdc)		—	0.3	
Base–Emitter Voltages (I_C = 1.0 Adc, V_{CE} = 2.0 Vdc)	$V_{BE(on)}$	—	1.0	Vdc
Base–Emitter Saturation Voltage (I_C = 1.0 Adc, I_B = 100 mAdc)	$V_{BE(sat)}$	—	1.2	Vdc
Current–Gain — Bandwidth (I_C = 50 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)	f_T	75	—	MHz

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle = 2.0%