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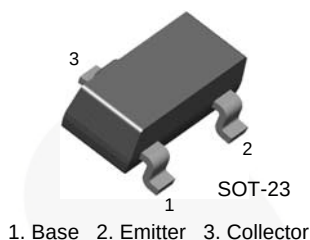
October 2014

KST2222A

NPN Epitaxial Silicon Transistor

Features

- General-Purpose Transistor



Ordering Information

Part Number	Marking	Package	Packing Method
KST2222AMTF	1P	SOT-23 3L	Tape and Reel

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_{C}	Collector Current	600	mA
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics⁽¹⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
P_{D}	Power Dissipation	350	mW
	Derate Above 25°C	2.8	mW/ $^\circ\text{C}$
$R_{\theta\text{JA}}$	Thermal Resistance, Junction-to-Ambient	357	$^\circ\text{C/W}$

Note:

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 10\ \mu\text{A}, I_E = 0$	75		V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 10\ \text{mA}, I_B = 0$	40		V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 10\ \mu\text{A}, I_C = 0$	6		V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 60\ \text{V}, I_E = 0$		0.01	μA
h_{FE}	DC Current Gain ⁽²⁾	$V_{CE} = 10\ \text{V}, I_C = 0.1\ \text{mA}$	35		
		$V_{CE} = 10\ \text{V}, I_C = 1\ \text{mA}$	50		
		$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}$	75		
		$V_{CE} = 10\ \text{V}, I_C = 150\ \text{mA}$	100	300	
		$V_{CE} = 10\ \text{V}, I_C = 500\ \text{mA}$	40		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁽²⁾	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}$		0.3	V
		$I_C = 500\ \text{mA}, I_B = 50\ \text{mA}$		1.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ⁽²⁾	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}$	0.6	1.2	V
		$I_C = 500\ \text{mA}, I_B = 50\ \text{mA}$		2.0	
f_T	Current Gain Bandwidth Product	$I_C = 20\ \text{mA}, V_{CE} = 20\ \text{V}, f = 100\ \text{MHz}$	300		MHz
C_{ob}	Output Capacitance	$V_{CB} = 10\ \text{V}, I_E = 0, f = 1\ \text{MHz}$		8	pF
NF	Noise Figure	$I_C = 100\ \mu\text{A}, V_{CE} = 10\ \text{V}, R_S = 1\ \text{k}\Omega, f = 1\ \text{MHz}$		4	dB
t_{ON}	Turn-On Time	$V_{CC} = 30\ \text{V}, I_C = 150\ \text{mA}, V_{BE} = 0.5\ \text{V}, I_{B1} = 15\ \text{mA}$		35	ns
t_{OFF}	Turn-Off Time	$V_{CC} = 30\ \text{V}, I_C = 150\ \text{mA}, I_{B1} = I_{B2} = 15\ \text{mA}$		285	ns

Note:

2. Pulse test: Pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

Typical Performance Characteristics

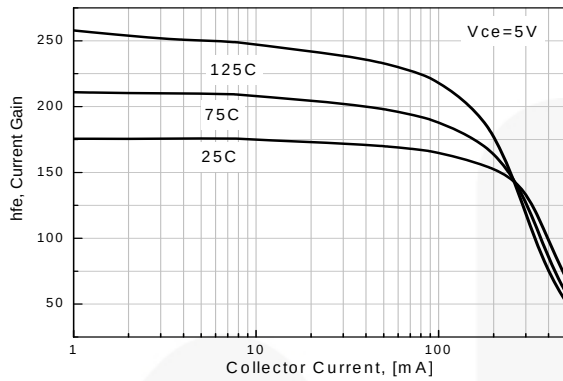


Figure 1. DC Current Gain

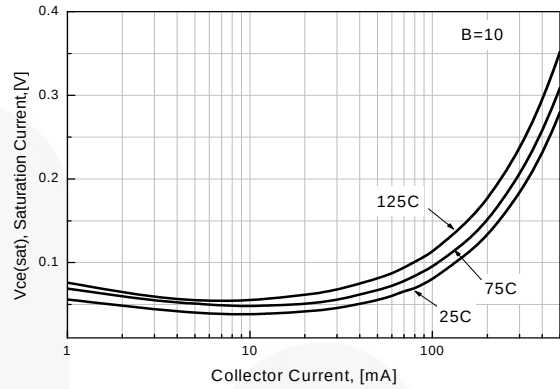


Figure 2. Collector-Emitter Saturation Voltage

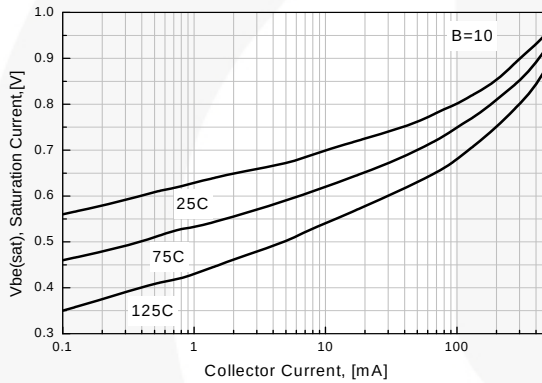


Figure 3. Base-Emitter Saturation Voltage

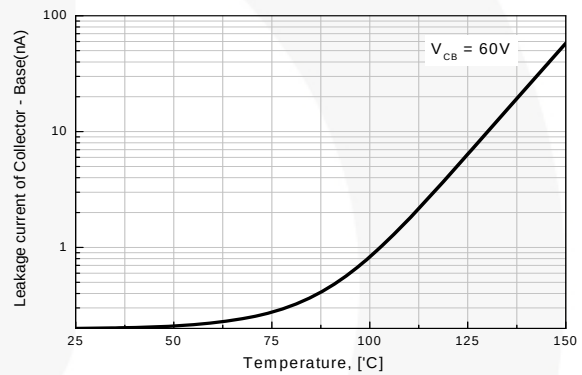


Figure 4. Collector-Base Leakage Current

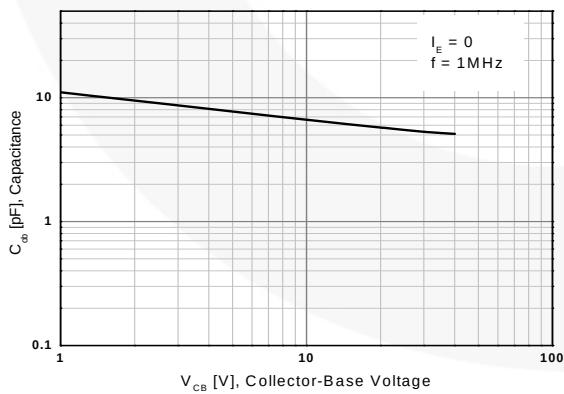


Figure 5. Output Capacitance

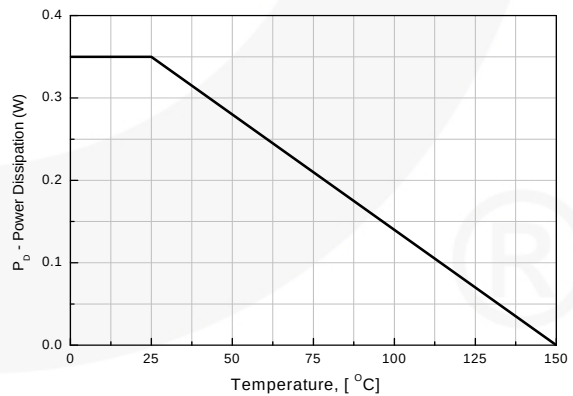


Figure 6. Power Dissipation vs. Ambient Temperature

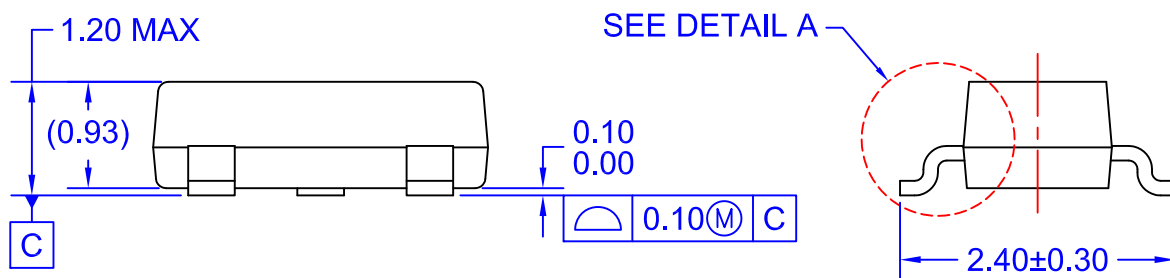


Figure 10.10 illustrates the dimensioning of a part with a hole. The diagram shows a cross-section of a mechanical part. Key dimensions and features include:

- Hole Diameter:** 0.23 with a tolerance of 0.08.
- Distance from Left Face to Start of Hole:** 0.20 MIN.
- Distance from Left Face to Center of Hole:** 0.55.
- Distance from Center of Hole to Right Face:** 0.25.
- GAGE PLANE:** Indicated by a dashed line across the part.
- SEATING PLANE:** Indicated by a solid line across the part.

- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 2009.
- E) DRAWING FILE NAME: MA03DREV12



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