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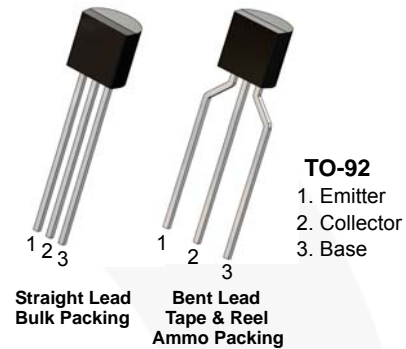


September 2015

# KSC5019 NPN Epitaxial Silicon Transistor

## Features

- Low Saturation
- $V_{CE(sat)} = 0.5\text{ V}$  at  $I_C = 2\text{ A}$ ,  $I_B = 50\text{ mA}$



## Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC5019MTA	C5019	TO-92 3L	Ammo

## 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	30	V
$V_{CES}$	Collector-Emitter Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	10	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current (DC)	2	A
$I_{CP}$	Collector Current (Pulse) <sup>(1)</sup>	5	A
$I_B$	Base Current	2	A
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to 150	$^\circ\text{C}$

### Note:

1.  $PW \leq 10\text{ ms}$ , duty cycle  $\leq 30\%$

**Thermal Characteristics<sup>(2)</sup>**

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

Symbol	Parameter	Value	Unit
$P_C$	Collector Power Dissipation	750	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	160	$^\circ\text{C}/\text{W}$

**Note:**

2. 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.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 30\text{ V}, I_E = 0$			100	nA
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 6\text{ V}, I_C = 0$			100	nA
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}, I_B = 0$	10			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1\text{ mA}, I_C = 0$	6			V
$h_{FE1}$	DC Current Gain	$V_{CE} = 1\text{ V}, I_C = 0.5\text{ A}$	140		600	
$h_{FE2}$		$V_{CE} = 1\text{ V}, I_C = 2\text{ A}$	70	200		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 2\text{ A}, I_B = 50\text{ mA}$		0.2	0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 1\text{ V}, I_C = 2\text{ A}$		0.86	1.50	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 1\text{ V}, I_C = 0.5\text{ A}$		150		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0,$ $f = 1\text{ MHz}$		27		pF

 **$h_{FE}$  Classification**

Classification	L	M	N	P
$h_{FE1}$	140 ~ 240	200 ~ 330	300 ~ 450	420 ~ 600

Typical Performance Characteristics

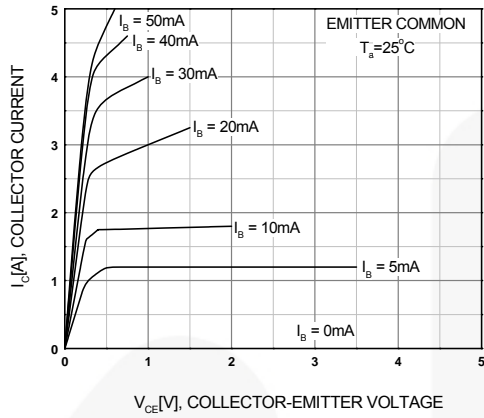


Figure 1. Static Characteristic

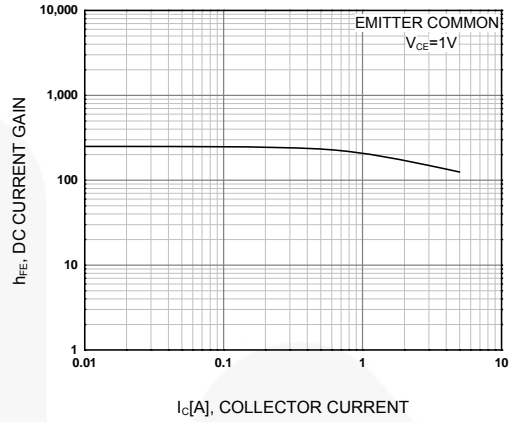


Figure 2. DC Current Gain

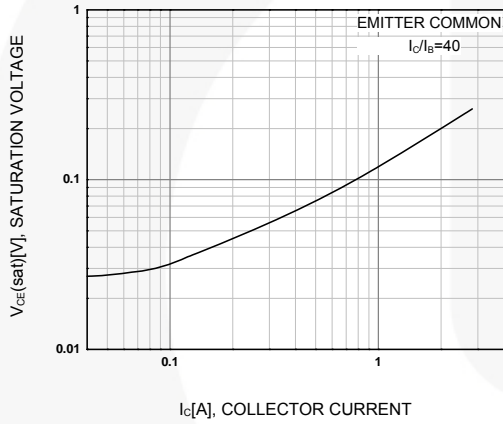


Figure 3. Collector-Emitter Saturation Voltage

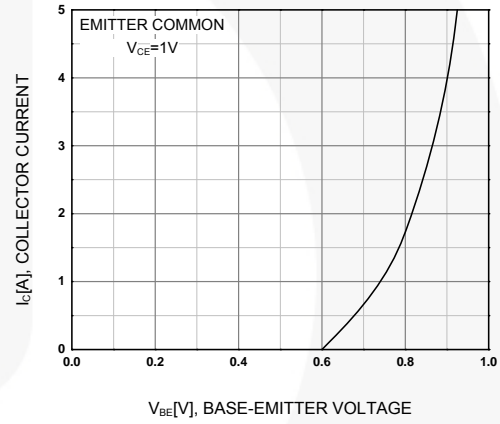


Figure 4. Base-Emitter On Voltage

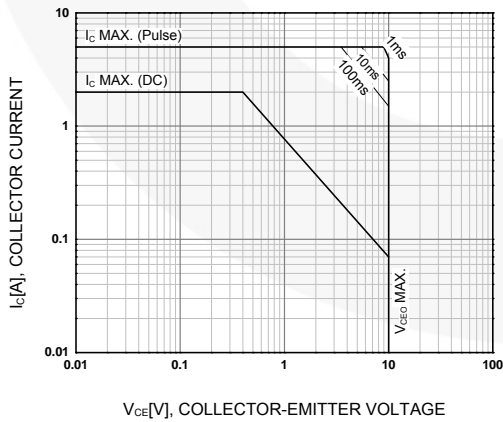


Figure 5. Safe Operating Area

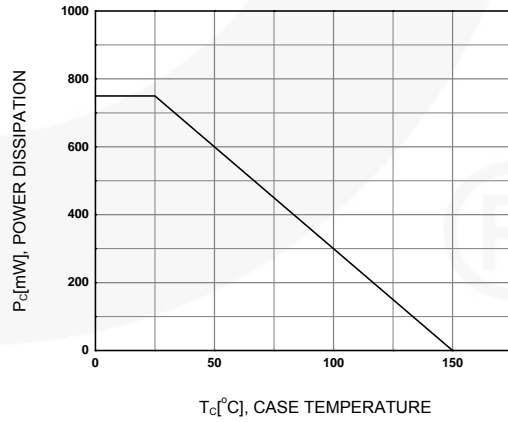
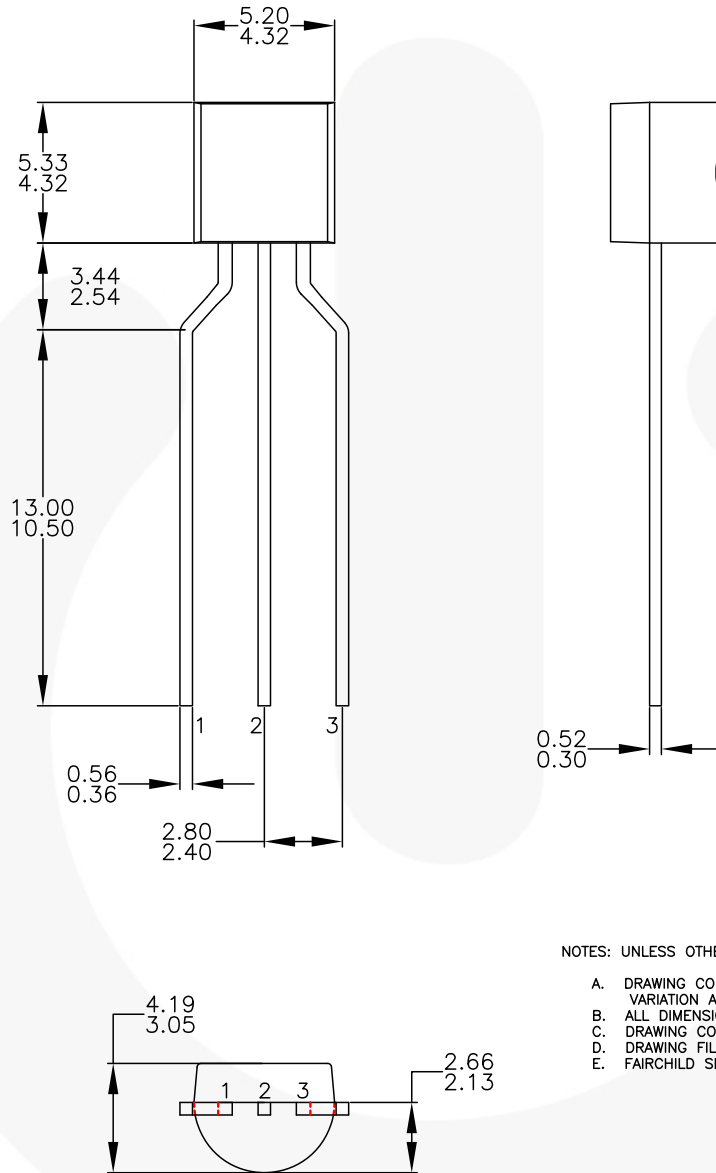


Figure 6. Power Derating

Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
- D. DRAWING FILENAME: MKT-ZA03FREV3.
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Figure 7. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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