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September 2015

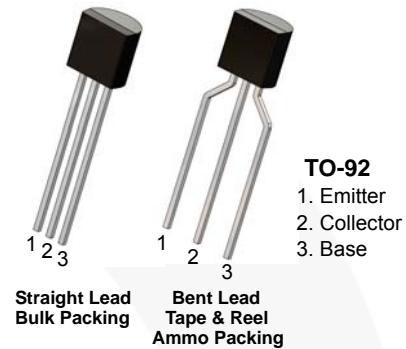


KSC5019 — NPN Epitaxial Silicon Transistor

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) ⁽¹⁾	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⁽²⁾

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

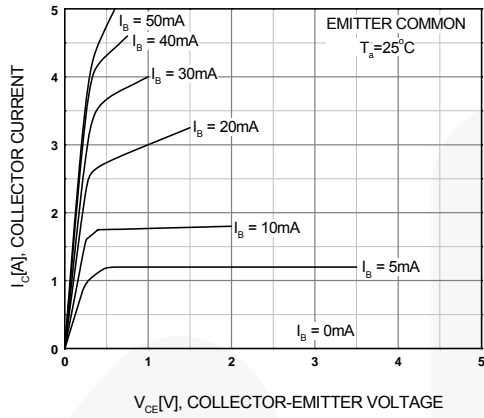


Figure 1. Static Characteristic

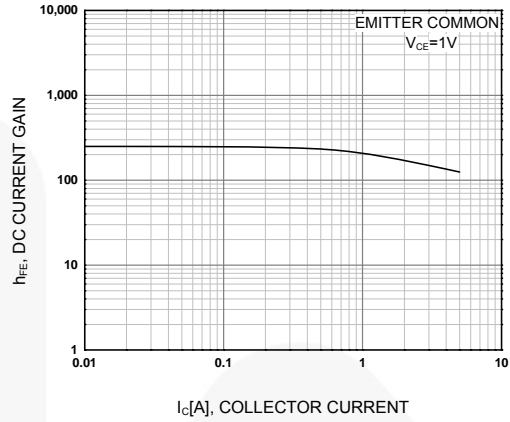


Figure 2. DC Current Gain

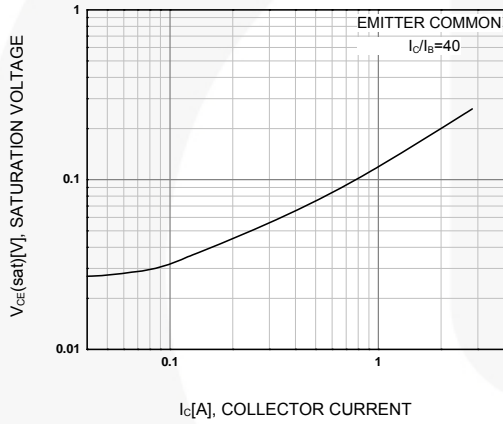


Figure 3. Collector-Emitter Saturation Voltage

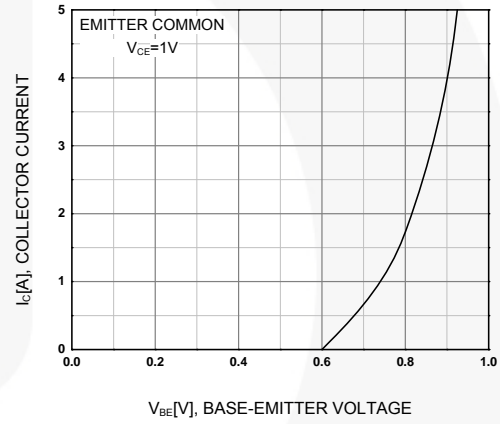


Figure 4. Base-Emitter On Voltage

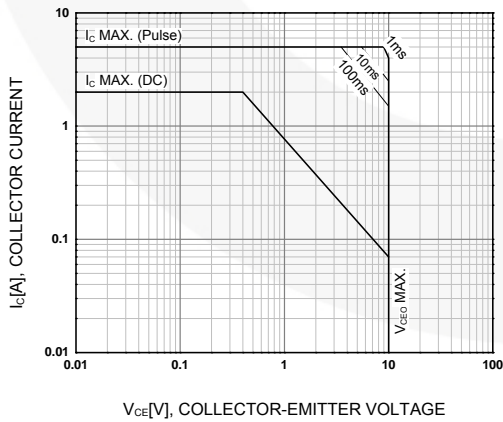


Figure 5. Safe Operating Area

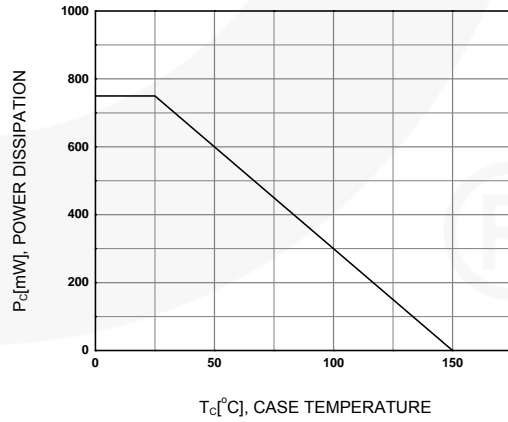
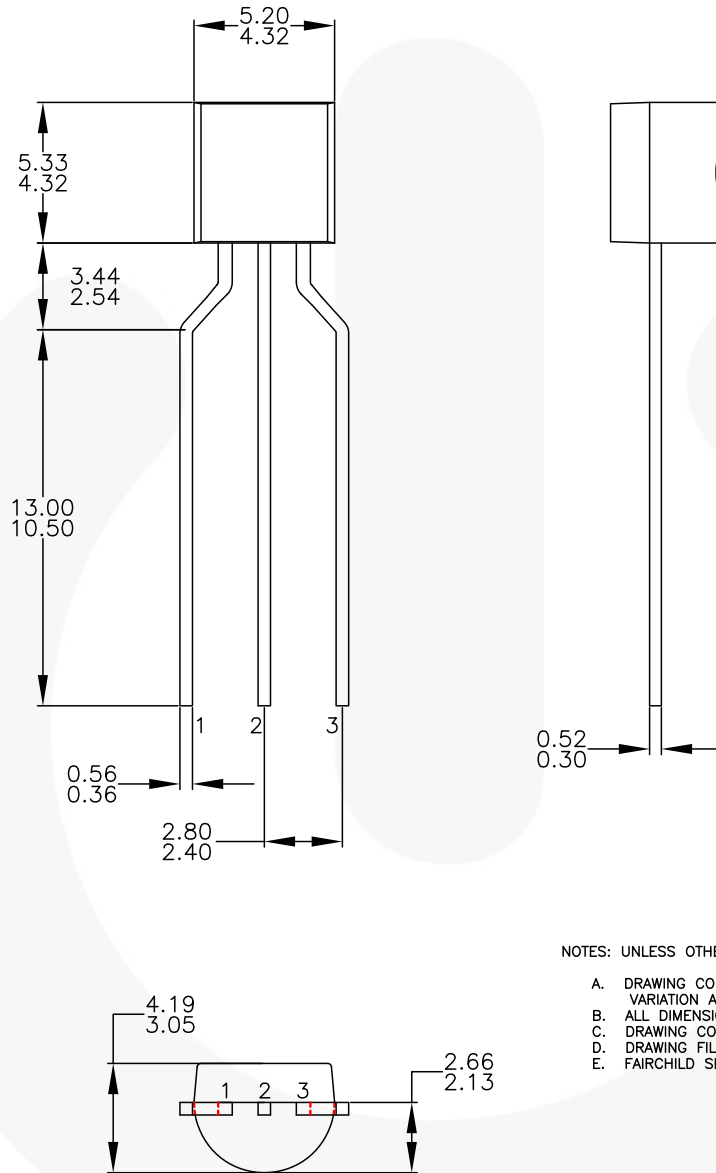


Figure 6. Power Derating

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.
- E. FAIRCHILD SEMICONDUCTOR.

Figure 7. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type





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