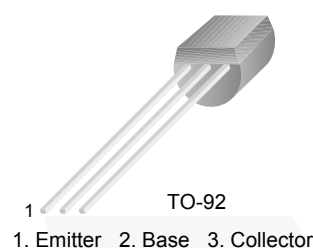


KSP44/45

NPN Epitaxial Silicon Transistor

Features

- High-Voltage Transistor
- Collector-Emitter Voltage: V_{CEO} = KSP44: 400V
KSP45: 350V
- Collector Power Dissipation: $P_C(\text{max})$ = 625mW



Ordering Information

Part Number	Top Mark	Package	Packing Method
KSP44BU	KSP44	TO-92 3L	Bulk
KSP44TA	KSP44	TO-92 3L	Ammo
KSP44TF	KSP44	TO-92 3L	Tape and Reel
KSP45TA	KSP45	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 : KSP44 : KSP45	500 400	V V
V_{CEO}	Collector-Emitter Voltage : KSP44 : KSP45	400 350	V V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	300	mA
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Unit
P_C	Collector Power Dissipation ($T_A = 25^\circ\text{C}$)	625	mW
P_C	Collector Power Dissipation ($T_C = 25^\circ\text{C}$)	1.5	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^\circ\text{C/W}$

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 : KSP44 : KSP45	$I_C = 100\mu\text{A}, I_B = 0$	500 400		V V
BV_{CEO}	Collector -Emitter Breakdown Voltage ⁽¹⁾ : KSP44 : KSP45	$I_C = 1\text{mA}, I_B = 0$	400 350		V V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}, I_C = 0$	6		V
I_{CBO}	Collector Cut-off Current : KSP44 : KSP45	$V_{CB} = 400\text{V}, I_E = 0$ $V_{CB} = 320\text{V}, I_E = 0$		0.1 0.1	μA μA
I_{CES}	Collector Cut-off Current : KSP44 : KSP45	$V_{CE} = 400\text{V}, I_B = 0$ $V_{CE} = 320\text{V}, I_B = 0$		0.5 0.5	μA μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 4\text{V}, I_C = 0$		0.1	μA
h_{FE}	DC Current Gain ⁽¹⁾	$V_{CE} = 10\text{V}, I_C = 1\text{mA}$ $V_{CE} = 10\text{V}, I_C = 10\text{mA}$ $V_{CE} = 10\text{V}, I_C = 50\text{mA}$ $V_{CE} = 10\text{V}, I_C = 100\text{mA}$	40 50 45 40	200	
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage ⁽¹⁾	$I_C = 1\text{mA}, I_B = 0.1\text{mA}$ $I_C = 10\text{mA}, I_B = 1\text{mA}$ $I_C = 50\text{mA}, I_B = 5\text{mA}$		0.4 0.5 0.75	V V V
$V_{BE}(\text{sat})$	Base-Emitter Saturation Voltage ⁽¹⁾	$I_C = 10\text{mA}, I_B = 1\text{mA}$		0.75	V
C_{ob}	Output Capacitance	$V_{CB} = 20\text{V}, I_E = 0,$ $f = 1\text{MHz}$		7	pF

Note:

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

Typical Performance Characteristics

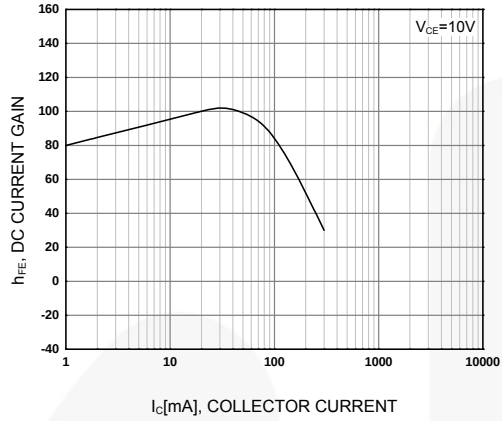


Figure 1. DC Current Gain

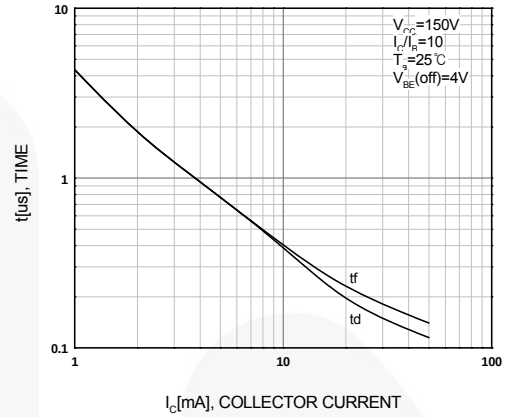


Figure 2. Turn-On Switching Times

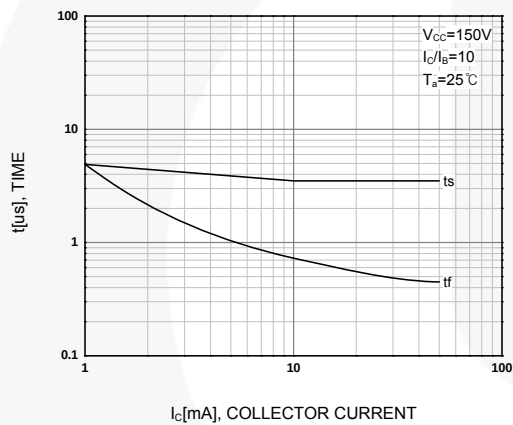


Figure 3. Turn-Off Switching Times

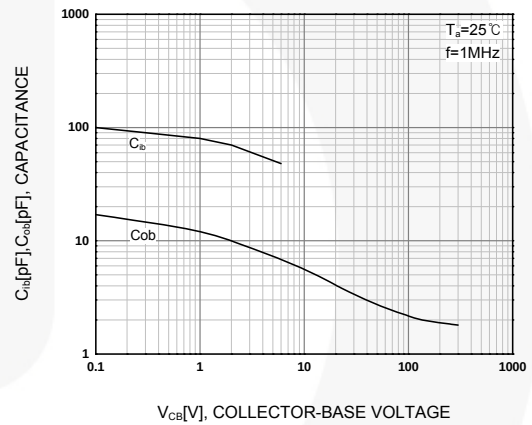


Figure 4. Capacitance

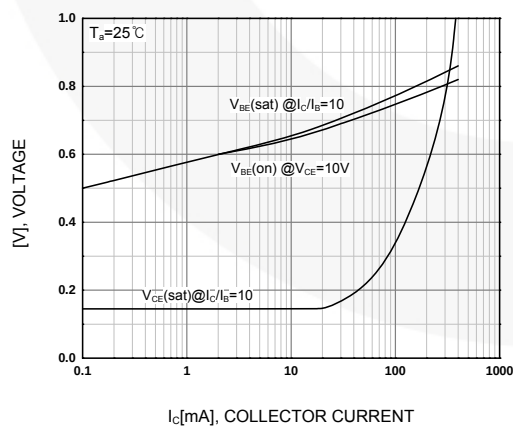


Figure 5. On Voltage

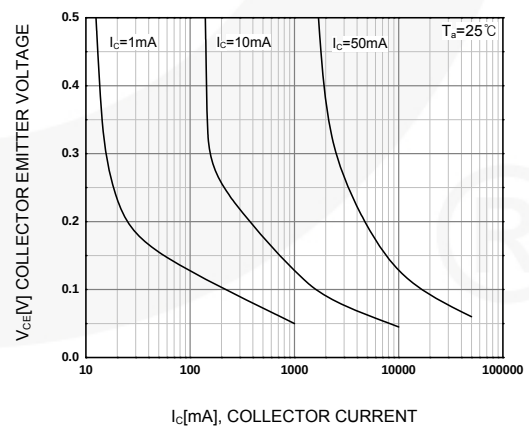


Figure 6. Collector Saturation Region

Typical Performance Characteristics (Continued)

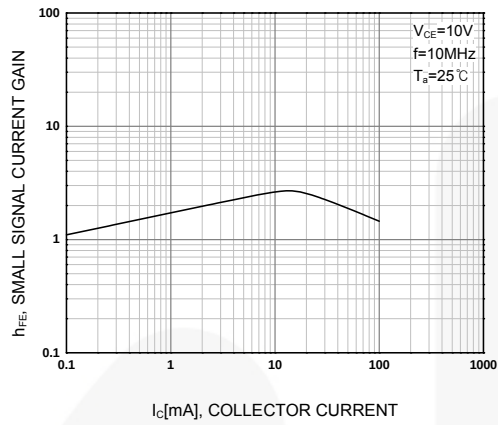


Figure 7. High-Frequency Current Gain

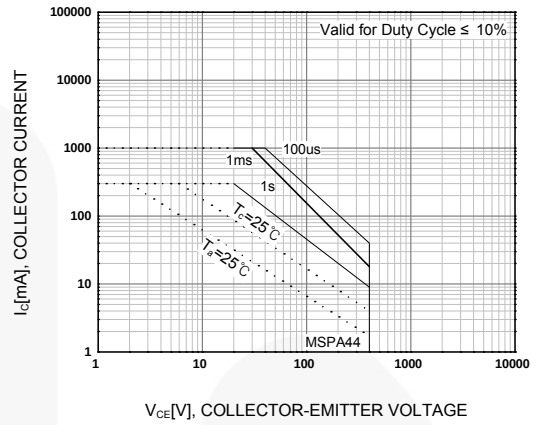
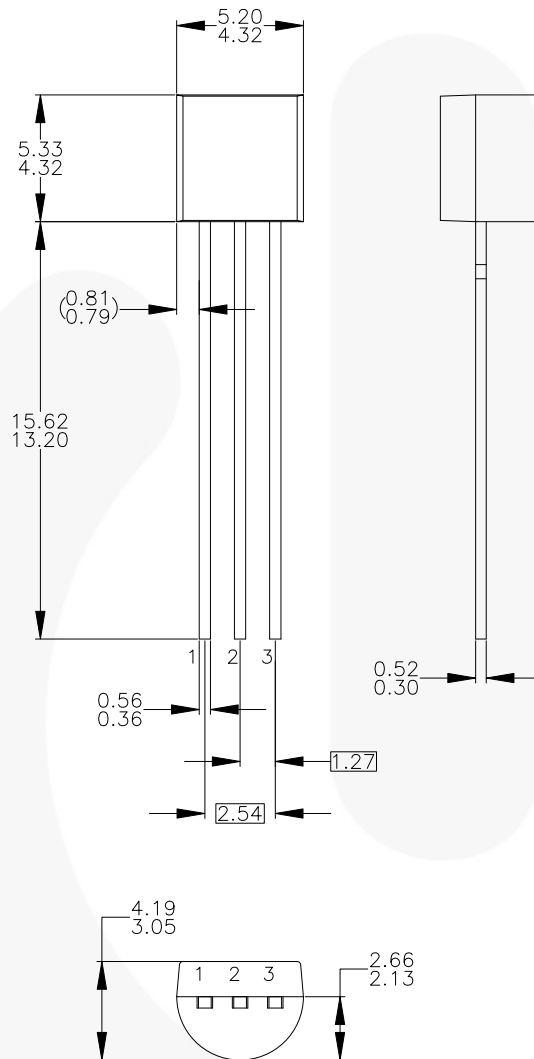


Figure 8. Safe Operating Area

Physical Dimensions

TO-92



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
 B) ALL DIMENSIONS ARE IN MILLIMETERS.
 C) DRAWING CONFORMS TO ASME Y14.5M-1994.
 D) TO-92 (92,94,96,97,98) PIN CONFIGURATION:

PIN	92			94			96			97			98		
	P	F	M	P	F	M	P	F	M	P	F	M	P	F	M
1	E	S	S	E	S	S	B	D	G	C	G	D	C	G	D
2	B	D	G	C	G	D	E	S	S	B	D	G	E	S	S
3	C	G	D	B	D	G	C	G	D	E	S	S	B	D	G

LEGEND:

P — BIPOLAR E — EMITTER D — DRAIN
 F — JFET B — BASE S — SOURCE
 M — DMOS C — COLLECTOR G — GATE

- E) FOR PACKAGE 92, 94, 96, 97 AND 98:
 PIN CONFIGURATION DRAIN "D" AND SOURCE "S"
 ARE INTERCHANGEABLE AT JFET "F" OPTION.
 F) DRAWING FILENAME: MKT-ZA03DREV3.

Figure 9. 3-Lead, TO-92, Molded, Standard Straight Lead, Bulk Type

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For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:

http://www.fairchildsemi.com/products/discrete/pdf/to92pdd_tr.pdf.

Physical Dimensions (Continued)

TO-92

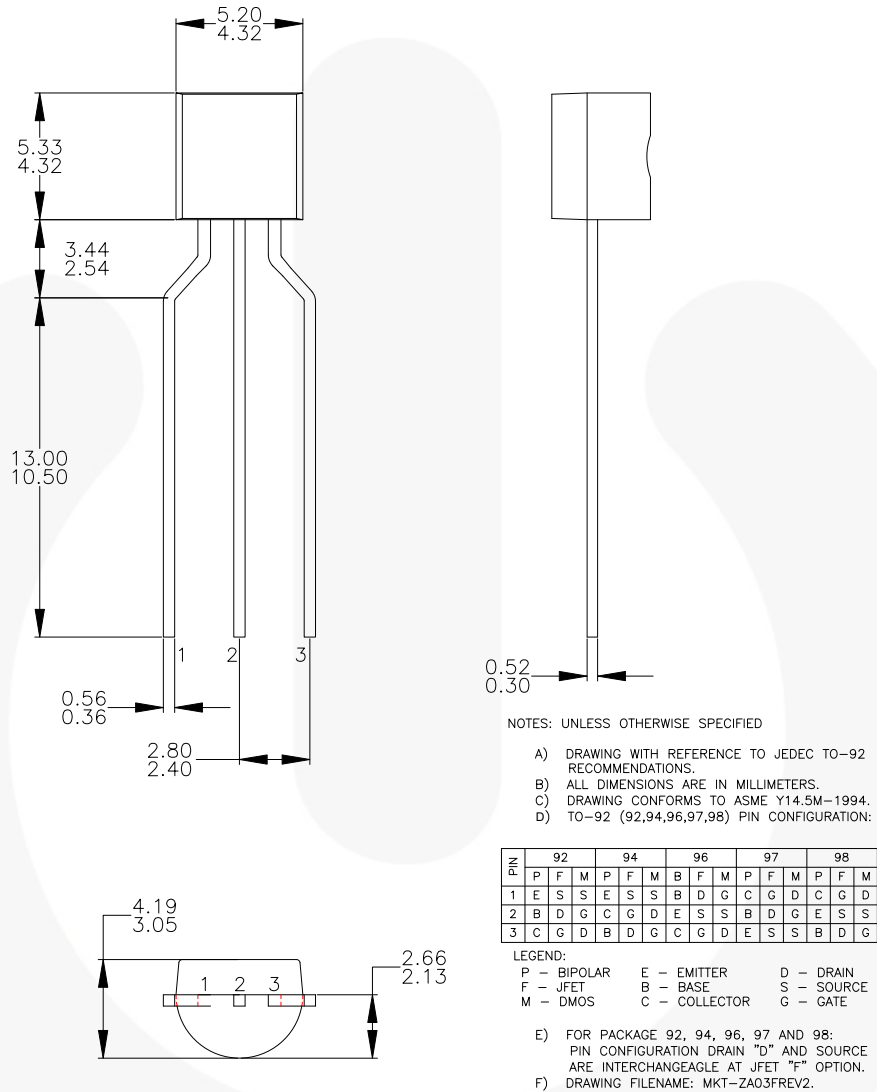


Figure 10. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings:

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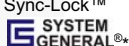
For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:

http://www.fairchildsemi.com/products/discrete/pdf/to92pdd_tr.pdf.



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CROSSVOL™	GTO™		TinyPower™
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