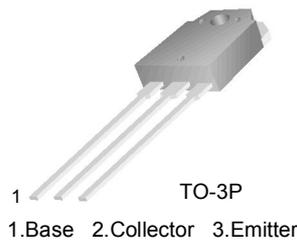


# KSC5024

## NPN Silicon Transistor

- High Voltage and High Reliability
- High Speed Switching
- Wide SOA



### Absolute Maximum Ratings\* $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Ratings	Units
$V_{CBO}$	Collector-Base Voltage	800	V
$V_{CEO}$	Collector-Emitter Voltage	500	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current (DC)	10	A
$I_{CP}$	Collector Current (Pulse)	20	A
$I_B$	Base Current	3	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	90	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

### Electrical Characteristics\* $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	800			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	500			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1\text{mA}, I_C = 0$	7			V
$V_{CEX(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 3.5\text{A}, I_{B1} = -I_{B2} = 1.4\text{A}$ $L = 500\mu\text{H}, \text{Clamped}$	500			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 500\text{V}, I_E = 0$			10	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			10	$\mu\text{A}$
$h_{FE1}$ $h_{FE2}$	DC Current Gain	$V_{CE} = 5\text{V}, I_C = 0.8\text{A}$ $V_{CE} = 5\text{V}, I_C = 4\text{A}$	15 8		50	
$V_{CE(Sat)}$	Collector-Emitter Saturation Voltage	$I_C = 4\text{A}, I_B = 0.8\text{A}$			1	V
$V_{BE(Sat)}$	Base-Emitter Saturation Voltage	$I_C = 4\text{A}, I_B = 0.8\text{A}$			1.5	V
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		120		pF
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.8\text{A}$		18		MHz
$t_{on}$	Turn On Time	$V_{CC} = 200\text{V}$			0.5	$\mu\text{s}$
$t_s$	Storage Time	$I_C = 5\text{A}, I_{B1} = -2.5\text{A}, I_{B2} = 5\text{A}$			3	$\mu\text{s}$
$t_f$	Time Fall Time	$R_L = 40\Omega$			0.3	$\mu\text{s}$

\* Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 2\%$

# Typical Characteristics

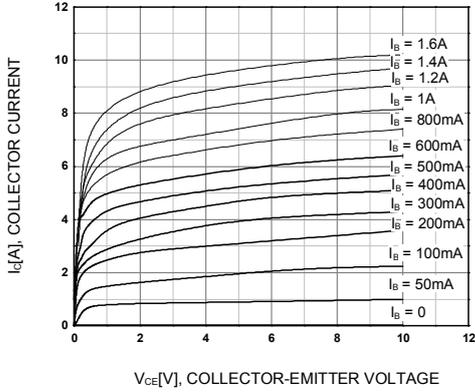


Figure 1. Static Characteristic

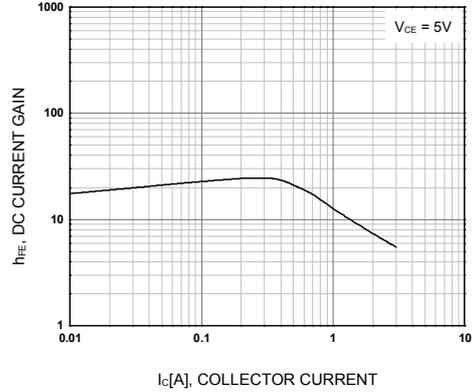


Figure 2. DC current Gain

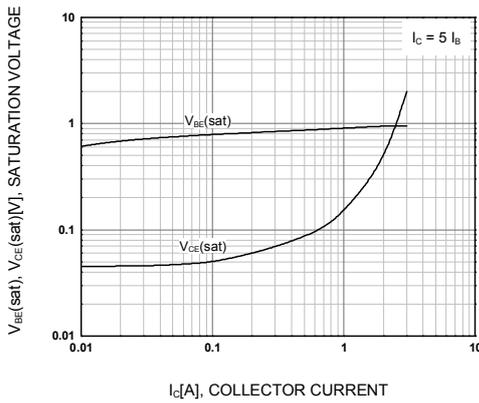


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

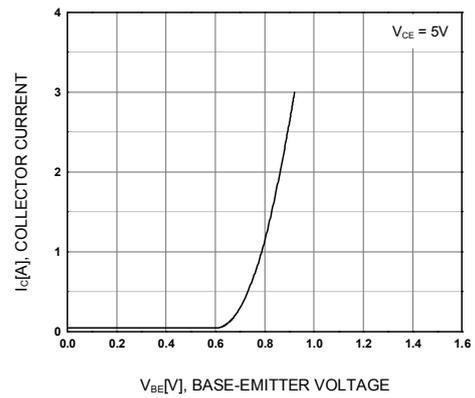


Figure 4. Base-Emitter On Voltage

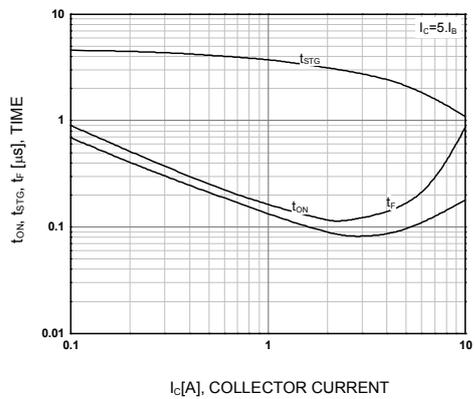


Figure 5. Switching Time

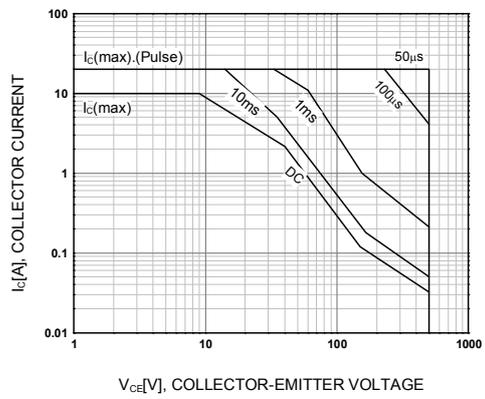
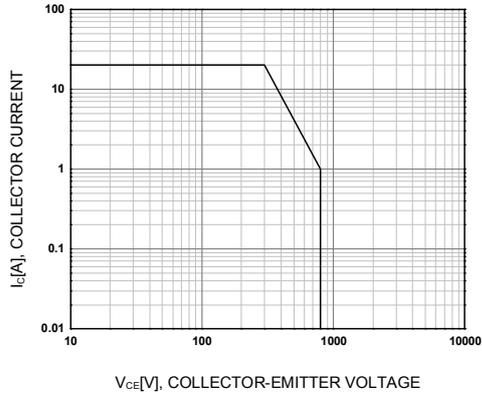
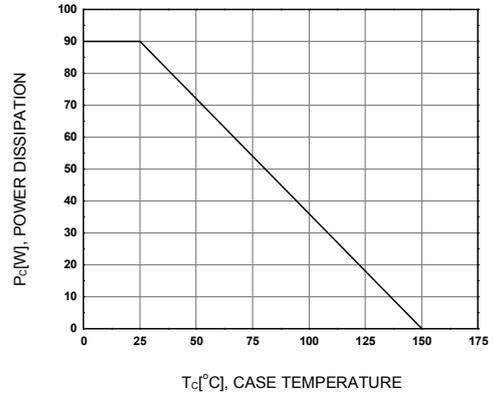


Figure 6. Safe Operating Area

**Typical Characteristics** (Continued)

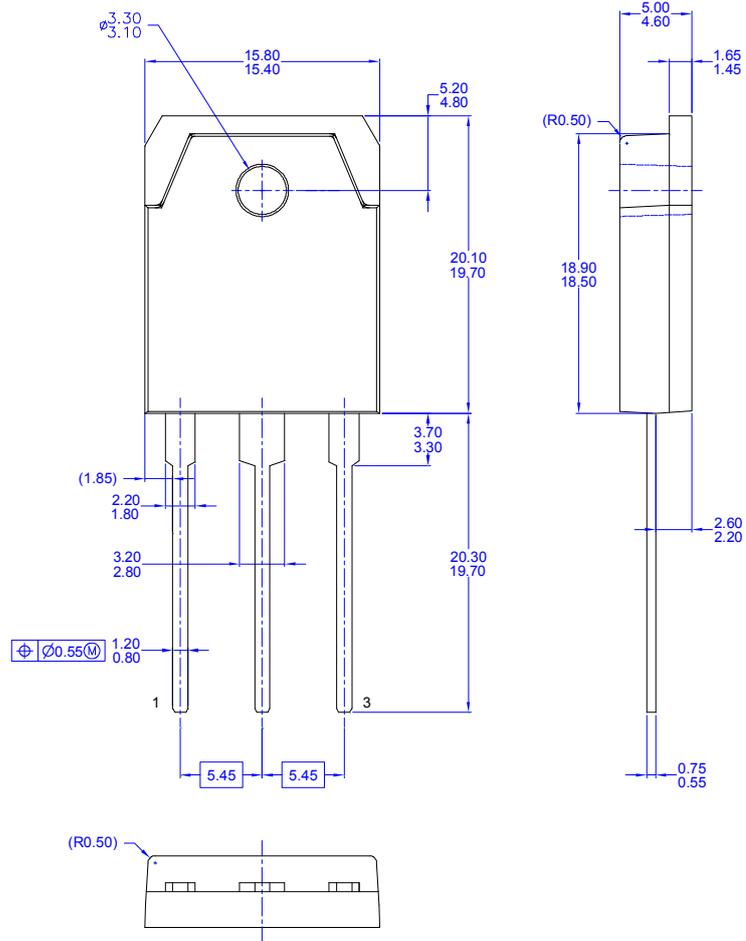


**Figure 1. Reverse Bias Safe Operating Area**



**Figure 2. Power Derating**

# Package Dimension (TO-3P)



- NOTES:
- A) THIS PACKAGE CONFORMS TO EIAJ SC-65 PACKAGING STANDARD.
  - B) ALL DIMENSIONS ARE IN MILLIMETERS.
  - C) DIMENSIONING AND TOLERANCING PER ASME14.5 1973.
  - D) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
  - E) DRAWING FILE NAME: TO3P03AREV2.



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FPS <sup>™</sup>	 <sup>®</sup>	SuperSOT <sup>™</sup> -3	VCX <sup>™</sup>
FRFET <sup>®</sup>	PDP-SPM <sup>™</sup>	SuperSOT <sup>™</sup> -6	
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