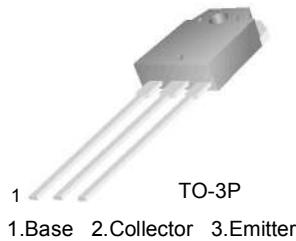


KSC5024

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	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			10	μA
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	μs
t_s	Storage Time	$I_C = 5\text{A}, I_{B1} = -2.5\text{A}, I_{B2} = 5\text{A}$			3	μs
t_f	Time Fall Time	$R_L = 40\Omega$			0.3	μs

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

Typical Characteristics

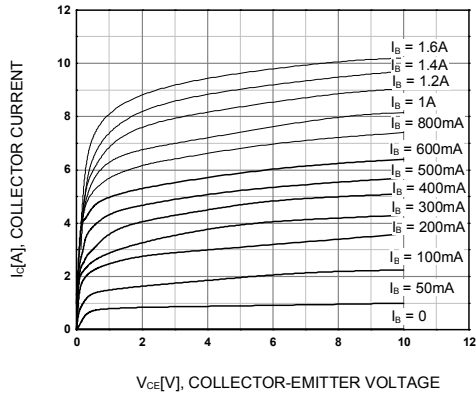


Figure 1. Static Characteristic

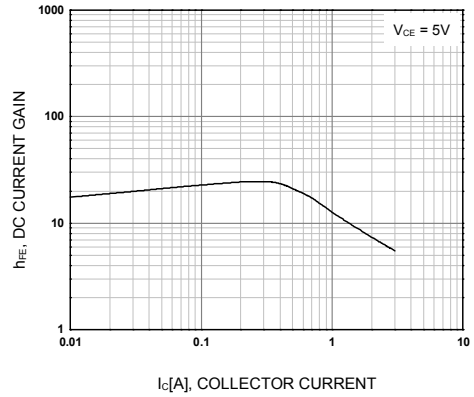


Figure 2. DC current Gain

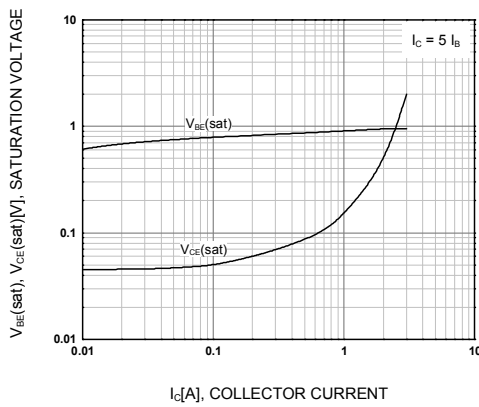


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

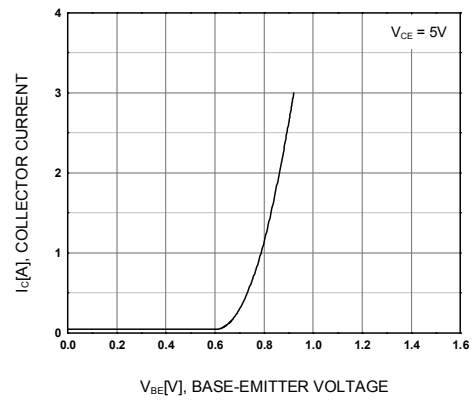


Figure 4. Base-Emitter On Voltage

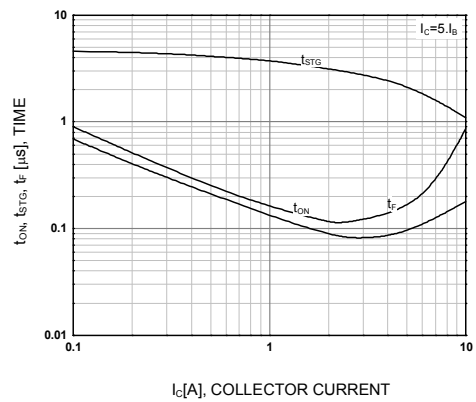


Figure 5. Switching Time

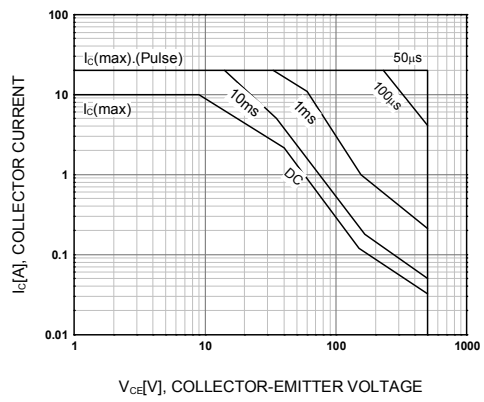


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

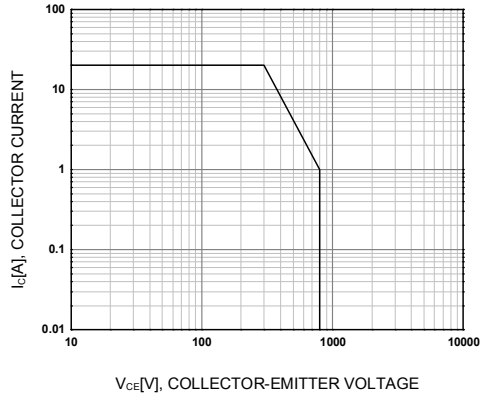


Figure 1. Reverse Bias Safe Operating Area

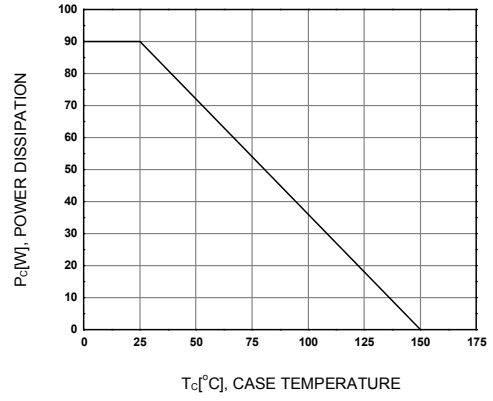
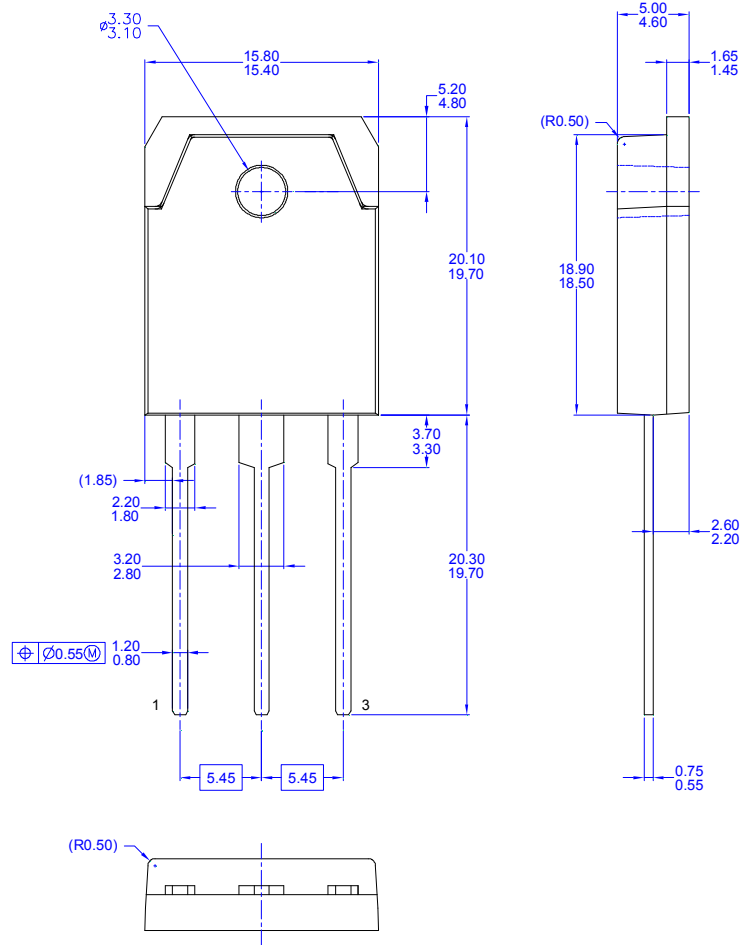


Figure 2. Power Derating

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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Rev. I31